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## Authors

Name	Affiliation	Contribution
Mary B. Codd	ASPHER Executive Board Member School of Public Health, Physiotherapy & Sports Science, University College Dublin, Ireland	ASPHER Core Curriculum Programme Lead
Karl F. Conyard	ASPHER Fellow School of Public Health, Physiotherapy & Sports Science, University College Dublin, Ireland	ASPHER Core Curriculum Programme Fellow

## Support Team

Uma Divya Kudupudi	Programme Research Assistant School of Public Health, Physiotherapy & Sports Science, University College Dublin, Ireland	Research Assistant / Programme Support
Mariah De Vos	Programme Young Professional School of Public Health, Physiotherapy & Sports Science, University College Dublin, Ireland	Research Assistant / Programme Support
Michal Bystram	ASPHER Young Professional Medical University of Gdansk, Poland	Research Assistant / Programme Support
Winnie Brennan	School of Public Health, Physiotherapy & Sports Science, University College Dublin, Ireland	Administrative Support

## Expert Consultative Group

Henrique Barros	ASPHER President; The Institute of Public Health of the University of Porto, Portugal
Mary Codd	ASPHER Executive Board; University College Dublin, Ireland
Karl F Conyard	ASPHER Fellow; University College Dublin, Ireland; Royal College of Surgeons in Ireland
Nadav Davidovitch	ASPHER Executive Board; Ben-Gurion University of the Negev, Israel
Anders Foldspang	Emeritus Professor, Århus University, Denmark
Jenny Houston	Usher Institute, The University of Edinburgh, UK
Rok Hrzič	ASPHER Task Force (DiPH); Maastricht University, The Netherlands
Polychronis Kostoulas	ASPHER Executive Board; Faculty of Veterinary Medicine, University of Thessaly, Greece
Lore Leighton	ASPHER Secretariat, Brussels, Belgium
Mzwandile Mabhala	ASPHER Executive Board; University of Chester, UK; University of Derby, UK
Alison McCallum	Usher Institute, The University of Edinburgh, UK
John Middleton	GNAPH Vice-President; Wolverhampton University, UK
Robert Otok	ASPHER Director, Brussels, Belgium
Alena Petrakova	Faculty of Health Sciences, Palacký University Olomouc, Czechia
Olalekan Popoola	University College Dublin, Ireland; Jagiellonian University in Krakow, Poland
Vladimir Prikazsky	National Institute of Public Health (NIPH), Prague, Czechia
Gaetano Privitera	Medical University of Pisa, Italy
Carlo Signorelli	ASPHER Vice-President; University Vita-Salute San Raffaele of Milan, Italy
Judit Simon	Medical University of Vienna, Austria
Farhang Tahzib	UK Faculty of Public Health, England

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### ASPHER Executive Board

<b>Name</b>	<b>Affiliation</b>
Henrique Barros	ASPHER President ISPUP, University of Porto, Portugal
Carlo Signorelli	ASPHER Vice President University Salute-Vita San Raffaele, Milan, Italy
Tomasz Bochenek	Jagiellonian University, Krakow, Poland
Mary Codd	University College Dublin, Ireland
Nadav Davidovitch	Ben-Gurion University of the Negev, Israel
Rumune Kalediene	Lithuanian University of Health Sciences, Lithuania
Polychronis Kostoulas	University of Thessaly, Greece
Mzwandile Mabhala	University of Derby, UK
Oliver Razum	Bielefeld University, Germany
Ines Siepmann	ASPHER Young Professional Lead, Belgium

### ASPHER Secretariat

<b>Name</b>	<b>Affiliation</b>
Robert Otok	ASPHER Director
Lore Leighton	ASPHER Secretariat, Project Manager & Communication

## Acknowledgements: Expert Advisory Group Members

The authors and the Expert Consultative Group wish to express their gratitude to the ASPHER Core Curriculum Expert Advisory Groups. Appendix A presents all Expert Advisors in subject groups.

### **Hazem Agah**

Assistant Professor of Public Health Nutrition,  
Al-Quds University, Jerusalem

### **Iacopo Aiello**

Public Health Medicine Resident  
Aix-Marseille University, France

### **Ahmed Al Lami**

Medical Student  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

### **Virginia B Arjona**

Lecturer in Environmental Science  
Andalusian School of Public Health, Granada,  
Spain

### **Nawar Arouk**

Young Professional / Europubhealth+  
University College Dublin, Ireland

### **Francesco Baglivo**

Public Health Medicine Resident  
University of Pisa, Italy

### **Hannah Balda**

Young Professional in Public Health  
University College Dublin, Ireland

### **Paul Barach**

Lecturer and Senior Advisor to the Dean  
Thomas Jefferson University, Philadelphia,  
USA

### **Henrique Barros**

Full Professor of Epidemiology,  
President, The Institute of Public Health of the  
University of Porto, Portugal

### **Sarah Barry**

Director of Academic Programmes,  
School of Population Health  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

### **Gerald Barry**

Assistant Professor of Veterinary Medicine  
School of Veterinary Medicine,  
Co-Director, WHO Collaborating Centre for  
One Health,  
University College Dublin, Ireland

### **Luca Bartolucci**

Public Health Medicine Resident  
Università Cattolica del Sacro Cuore, Italy

### **Ariane Bauernfeind**

Professor of Public Health  
Andalusian School of Public Health, Granada,  
Spain

### **Reuben Benjamin**

Young Professional in Public Health  
University College Dublin, Ireland

### **Alessandro Berionni**

Chair, Young World Federation of Public  
Health Associations, Italy

### **Rini Bhatnagar**

PhD Scholar in Public Health  
University College Dublin, Ireland

### **Hagai Boas**

Academic Director, Science, Technology and  
Society, The Van Leer Institute, Jerusalem

### **Tomasz Bochenek**

Deputy Director, Institute of Public Health  
Jagiellonian University Krakow, Poland

### **Arnold Bosman**

Medical Director  
Transmissable, Belgium

### **Monica Georgiana Brînzac**

Deputy Director, Center for Health Workforce  
Research and Policy,  
PhD Scholar,  
Babes-Bolyai University, Romania

### **Stefan Buttigieg**

Lecturer, University of Malta,  
Public Health Medicine Registrar  
Ministry for Health and Active Ageing,  
Public Service of Malta

### **Michal Bystram**

ASPHER Young Professional  
Medical University of Gdansk, Poland

### **Kylie Cashin**

Young Professional in Public Health  
University College Dublin, Ireland

**Ambrogio Cerri**

Former Vice President,  
Euronet Medical Residents in Public Health,  
University of Rome Tor Vergata, Italy,  
PhD Scholar  
Sapienza University of Rome, Italy

**Laurent Chambaud**

ASPHER Lead on Climate Health,  
Former Dean, Ecole des Hautes Études en  
Santé Publique, France

**Tara Chen**

ASPHER Fellow on Climate Health  
Waterloo University, Canada

**Mary Codd**

Director, MPH and EPH+ Programmes  
Associate Professor of Epidemiology and  
Biostatistics  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Sonia Colianni**

Public Health Student Ambassador  
London School of Hygiene and Tropical  
Medicine, UK

**Lauren Connell**

PhD Scholar  
University of Galway, Ireland

**Karl F Conyard**

School of Public Health, Physiotherapy &  
Sports Science,  
University College Dublin, Ireland  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Leanne Coombe**

Honorary Associate Professor  
The University of Queensland, Australia

**Clare Corish**

Professor in Clinical Nutrition and Dietetics  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Musa N Corr**

Chief Public Health Officer  
Gambian Armed Forces,  
Lecturer, Management Development Institute,  
Gambia

**Manuel Correa**

Professor of Applied Economics  
University of Granada, Spain

**Shane Piper Creagh**

ASPHER Young Professional  
Surveillance Scientist, Health Protection  
Surveillance Centre, Ireland

**Colette Cunningham**

Lecturer, University College Cork, Ireland  
Chair of Public Health Emergencies and  
Disasters Committee, WFPHA

**Addiena Luke-Currier**

Trinity College Dublin,  
Department of Sociology, Ireland,  
PhD Scholar

**Katarzyna Czabanowska**

Professor in Public Health Leadership and  
Workforce Development  
Maastricht University, The Netherlands

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Luigi De Angelis**

Public Health Medicine Resident  
Università di Pisa, Italy

**Teodora Dimitrova**

Associate Professor  
Medical University Varna, Bulgaria

**Lorraine Doherty**

National Clinical Director, Strategic Public  
Health  
Health Service Executive, Dublin, Ireland

**Klara Dokova**

Associate Professor, Department of Social  
Medicine and Health Organization,  
Medical University of Varna, Bulgaria

**Luong Duong**

Young Professional in Public Health  
University College Dublin, Ireland

**Kristen Duggan**

Scientific Researcher  
Gesundheitsamt, Frankfurt, Germany

**Mariusz Duplaga**

Head of Department,  
Professor of Health Promotion and e-Health,  
Jagiellonian University, Krakow, Poland

**Benjamin Paul Duncan**

Senior Risk Communication Consultant  
WHO, Infodemic Management, Geneva,  
Switzerland

**Halil İbrahim Durak**

Health Policy Advisor  
WHO Regional Office for Europe, Baku,  
Azerbaijan

**Lakshmi Dwivedi**

Authorised Public Health Officer  
Victorian Department of Health,  
Victoria University, Australia

**Giovana Failla**

Public Health Medicine Specialist  
Università Cattolica del sacro Curoe, Rome,  
Italy

**Shay Fanning**

Professor of Food Safety and Zoonosis  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Thelma Feya**

Young Professional in Public Health  
University College Dublin, Ireland

**Patricia Fitzpatrick**

Professor of Epidemiology and Biostatistics  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Anders Foldspang**

Emeritus Professor of Public Health  
Aarhus University, Denmark

**Kate Frazer**

Associate Professor, School of Nursing,  
Midwifery and Health Systems,  
University College Dublin, Ireland

**Magda Fonseca**

PhD Scholar  
Faculty of Medicine of University of Porto,  
Portugal

**Olatundun Gafari**

Senior Research Assistant  
University of Southampton, UK

**Frederike Garbe**

Consultant in Public Health Medicine  
Public Health, Edinburgh, UK

**Saswati Ghosh**

Project Coordinator and Young Professional in  
Public Health,  
University College Dublin, Ireland

**Ana Catarina P Gomes**

Clinical Lecturer  
Institute for Health Informatics,  
University College London, UK

**David Robert Grimes**

Adjunct Assistant Professor in Public Health  
Trinity College Dublin, Ireland

**Manfred Green**

Head of International Program  
University of Haifa, Israel

**Ana Cecilia Quiroga Gutierrez**

Scientific Associate  
Bern University of Applied Science,  
Switzerland

**Sinead Hegarty**

Infection Control Nurse  
Health Service Executive, Dublin, Ireland

**Paula Herrera**

PhD Scholar, Leibniz Institute for Prevention  
Research and Epidemiology, University of  
Bremen, Germany

**Stephanie Hoffmann**

Project Co-ordinator  
The Lausitz Center for Digital Public Health,  
Brandenburg Technical University, Cottbus-  
Senftenberg, Germany

**Ondrej Holy**

Vice-Dean, Strategic Management and  
Quality,  
Head of Science and Research Centre  
Palacký University Olomouc, Czechia

**Jenny Houston**

Clinical Fellow in Medical Education  
University of Edinburgh, UK

**Rok Hrzič**

ASPHER Fellow, Chair of ASPHER Taskforce  
on Digital Public Health (DiPH),  
Lecturer and Researcher  
Maastricht University, The Netherlands

**Monica Hunsberger**

Associate Professor  
University of Gothenburg, Sweden

**Tiffany Hurtado**

Young Professional in Public Health  
University College Dublin, Ireland

**Reuel Jalal**

Senior House Officer in Medicine  
St. Luke's Hospital, Kilkenny, Ireland

**Parnian Jalili**

PhD Scholar in Public Health  
University College Dublin, Ireland

**Szczepan Jakubowski**

Lecturer and Researcher  
Jagellonian University, Krakow, Poland

**Aashita Jha**

Young Professional in Public Health  
University College Dublin, Ireland

**David Joyce**

Clinical Lead  
Irish Prison Service, Ireland

**Nicole Kamikazi**

Young Professional / Europubhealth+  
University College Dublin, Ireland

**Sherrie Kelly**

Senior Scientist  
Swiss Tropical and Public Health Institute,  
Allschwill, Switzerland

**Robin Van Kessel**

Visiting Fellow  
London School of Economics and Maastricht  
University, The Netherlands

**Patty Kostkova**

Professor of Digital Health  
University College London, UK

**Polychronis Kostoulas**

Assistant Professor Veterinary Epidemiology  
Faculty of Veterinary Medicine, University of  
Thessaly, Greece

**Uma Divya Kudupudi**

Young Professional in Public Health  
University College Dublin, Ireland

**Jwenish Kumawat**

Research Fellow and PhD Scholar  
University College Dublin, Ireland

**Benedict Leonard-Hawkhead**

PhD Scholar  
Queen's University Belfast, Northern Ireland

**Noah Levitin**

Young Professional in Public Health  
University of Edinburgh, UK

**Emer Liddy**

Young Professional in Public Health  
University College Dublin, Ireland

**Daniel Josef Lindegger**

Physician  
University College London, UK

**Carla Lopes**

Full Professor of Epidemiology and Public  
Health  
Instituto de Saúde Pública da Universidade do  
Porto, Portugal

**Nguyen Thanh Luong**

Young Professional in Public Health  
University College Dublin, Ireland

**Karolina Lyubomirova**

Head of Occupational Health Department  
Medical University Sofia, Bulgaria

**Laura Maaß**

PhD Scholar  
SOCIUM Research Center Inequality and  
Social Policy  
University of Bremen, Germany

**Mzwandile Mabhala**

Professor in Public Health Epidemiology  
University of Chester, UK

**Vinod Kumar Majani**

Young Professional in Public Health  
University College Dublin, Ireland

**Maxwell Manning**

Medical Student  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Gregory Martin**

Consultant in Public Health  
National Health Improvement  
Health Service Executive, Dublin Ireland

**Maria de los Llanos Martinez**

Dental Public Health Specialist  
National Health Service, UK

**Piedad Martín-Olmedo**

President, EUPHA HIA Section,  
Professor of Public Health  
Andalusian School of Public Health, Granada,  
Spain

**Arianna Maviglia**

ASPHER Intern (Health Economics)  
European Medicines Agency, The Netherlands

**Nicole Mc Alister**

Young Professional in Humanitarian Action  
University College Dublin, Ireland

**Alison McCallum**

Professor of Public Health, Usher Institute  
The University of Edinburgh, UK

**Rebecca McKenna**

Health and Social Care Lecturer  
Chevron College, Dublin, Ireland

**Sinead Mc Nally**

Associate Professor of Psychology and Early  
Childhood Education, Institute of Education,  
Dublin City University, Ireland

**Barry John McMahon**

Associate Professor  
School of Agriculture and Food Science  
University College Dublin, Ireland

**Hans Olav Melberg**

Professor, Health Economics & Health  
Services Research  
UiT - Arctic University of Norway, Tromsø

**Anjum Memon**

Chair in Epidemiology and Public Health  
Medicine  
Brighton and Sussex Medical School, UK

**John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

**Maisoon Mighari**

Clinical Lecturer  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Martin Mirchev**

Chief Assistant Professor Medical Ethics &  
Law  
Medical University Varna, Bulgaria

**Lorenzo Moja**

WHO Essential Medicines Team,  
Lecturer, University of Milan, Italy

**Dominique Mollet**

PhD Scholar, Global Health Law  
Groningen University, The Netherlands

**Abigail Murfitt**

Young Professional in Public Health  
University College Dublin, Ireland

**Celine Murrin**

Assistant Professor; Director of National  
Nutrition Surveillance Centre, Ireland  
School of Public Health, Physiotherapy and  
Sports Science,  
University College Dublin, Ireland

**Marie Nabbe**

EU Affairs Officer, European Hospital and  
Healthcare Federation,  
ASPHER Young Professional

**Pratiksha Nagar**

Young Professional in Public Health  
University College Dublin, Ireland

**Sindhuja Naidoo**

Medical Student  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Yudit Namer**

Junior Professor, Department of Psychology,  
Bielefeld University, Germany & University of  
Twente, The Netherlands

**Srihari Govind Kaliapuram Narendrakumar**

Young Professional / Europubhealth+  
University College Dublin, Ireland

**Kate Ndocko**

Public Health Medicine Resident  
European Commission, Brussels, Belgium

**Sonya Nedelcheva**

Assistant Professor for Public Health  
Medical University Varna, Bulgaria

**Oanh Nguyen Ngoc**

Young Professional in Public Health  
University College Dublin, Ireland

**Vincent Niger**

Young Professional in Public Health  
University College Dublin, Ireland

**Silviya Nikolova**

Assistant Professor  
Medical University Varna, Bulgaria

**Dorit Nitzan**

Professor  
Ben-Gurion University of the Negev, Israel

**Ugonna Nwankpa**

Public Health Medicine Registrar  
National Health Service, Health Education, UK



**Nikolay Mihaylov**

Chair, Assistant Professor Health Policy  
Medical University Varna, Bulgaria

**Ricardo Ocaña-Riola**

Professor of Statistics  
Andalusian School of Public Health, Spain

**Anna Odone**

Associate Professor of Public Health  
Università di Pavia, Italy

**Carly O'Keefe**

Young Professional in Public Health  
University College Dublin, Ireland

**Mary O'Meara**

Director of Public Health, National TB Lead  
Health Service Executive, Dublin, Ireland

**Eamonn O'Moore**

National Director of Health Protection  
Health Service Executive, Ireland

**Ciaran O' Neill**

Professor, Centre for Public Health  
Queens University, Belfast, Northern Ireland

**Ruzha Pancheva**

Department of Hygiene and Epidemiology  
Medical University Varna, Bulgaria

**Marian Panteleeva**

Ch Assist Professor  
Medical University Varna, Bulgaria

**Martina Parić**

Lecturer of Public Health (Governance and  
Leadership) & PhD Scholar  
Maastricht University, The Netherlands

**Alyssa Pascoe**

Young Professional/Europubhealth  
University College Dublin, Ireland

**David Patterson**

PhD Scholar  
University of Groningen, The Netherlands

**Alena Petrakova**

Associate Professor  
Faculty of Health Sciences  
Palacký University Olomouc, Czechia

**Richard J Pinder**

Senior Clinical Lecturer  
Public Health Physician  
Imperial College London, UK

**Diana Podar**

Research Associate  
Bielefeld University, Germany

**Otalekan Popoola**

ASPHER Young Professional  
University College Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

**Vladimir Prikazsky**

Senior Epidemiologist  
National Institute of Public Health (NIPH),  
Prague, Czechia

**Nilam Prinjha**

Lecturer in Public Health  
University of Bradford, UK

**Gaetano Privitera**

Professor Emeritus  
Medical University of Pisa, Italy

**Raklanna Puangkam**

Young Professional / Europubhealth+  
University College Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

**Milo Puhan**

Director of the Epidemiology & Biostatistics.  
University of Zurich, Switzerland

**Tina Purnat**

Digital Public Health and Infodemic Manager  
Digital Health / Health Equity Working Group,  
WFPHA

**Sue Rackard**

Associate Professor of Veterinary Medicine  
University College Dublin, Ireland

**David Radomski**

Young Professional in Public Health  
University College Dublin, Ireland

**Nikolina Radeva**

Associate Professor  
Medical University Varna, Bulgaria

**Shweta Rao**

AmeriCorps Disaster Preparedness Outreach  
Specialist  
Sewa-Houston AmeriCorps Program, USA

**Oliver Razum**

Full Professor, Head of Department of  
Epidemiology & International Public Health,  
School of Public Health,  
Bielefeld University, Germany

**Ralf Reintjes**

Professor of Epidemiology and Statistics  
Hamburg University of Applied Sciences,  
Germany

**Priscilla Robinson**

Adjunct Associate Professor  
La Trobe University, Australia

**Diana González Rodríguez**

Young Professional / Europubhealth+  
University College Dublin, Ireland

**Maria Rohova**

Associate Professor of Health Economics and  
Management Department  
Medical University Varna, Bulgaria

**Piotr Romaniuk**

Professor, Head and Chair of Public Health  
Policy, Medical University of Silesia, Katowice,  
Poland

**Michael Ryan**

Director of Health Emergencies  
World Health Organization, Geneva,  
Switzerland

**Janet Rymound**

Young Professional in Public Health  
University College Dublin, Ireland

**Emma Schlegel**

Research Associate  
University of Köln, Germany

**Nienke Schutte**

Head of EU Health Information System Unit  
Sciensano, Brussels, Belgium

**Juliet Ugbedeoyo Shaibu**

Programme Support Staff  
WHO Intergovernmental Negotiating Body  
WFPHA, Geneva,  
Technical Advice Connect, Nigeria

**Mohamud M Sheek-Hussein**

Professor of Global Health  
United Arab Emirates University, Al Ain, United  
Arab Emirates

**Darren Shickle**

Professor of Public Health  
University of Leeds, UK

**Miriam Shokralla**

Digital Health Strategist  
Healthcare Information and Management  
System Society, The Netherlands

**Ines Siepman**

ASPHER Young Professional Programme Lead,  
Brussels, Belgium

**Carlo Signorelli**

Full Professor of Hygiene and Public Health  
University Vita-Salute San Raffaele of Milan,  
Italy

**Anabelle Macedo Silva**

Director of Health  
Public Health Institute, Federal University of  
Rio de Janeiro, Brazil

**Judit Simon**

Professor of Health Economics  
Centre for Public Health  
Medical University of Vienna, Austria

**Berta Piqué Smith**

Young Professional / Europubhealth+  
University College Dublin, Ireland

**Penpatra Sripaiboonkij**

Assistant Professor  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Debbi Stanistreet**

Professor of Public Health  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Mary Rose Sweeney**

Executive Vice Dean for Education, Faculty of  
Nursing & Midwifery  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Satria Nur Sya'ban**

Young Professional / Europubhealth+  
University College Dublin, Ireland,  
Ecole des Hautes Études en Santé Publique,  
France

**Shiraz Syed**

Public Health Practitioner,  
National Health Service Trust Surgeon  
Sandwell West Birmingham Hospitals, UK

**Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK

**Muhamad Aleiff Bin Tajuddin**

Young Professional/Europubhealth  
University College Dublin, Ireland,  
Maastricht University, The Netherlands

**Shevaun Teo**

PhD Scholar in Public Health,  
University College Dublin, Ireland

**Nipuna Thamanam**

Assistant Professor  
School of Nursing, Midwifery and Health  
Systems, University College Dublin, Ireland

**Mirjana Kujundžić Tiljak**

Professor  
Andrija Štampar School of Public Health,  
Zagreb, Croatia

**Nataliya Usheva**

Associate Professor,  
Head of the Department  
Medical University of Varna, Bulgaria

**Desislava Vankova**

Associate Professor for Public Health  
Medical University Varna, Bulgaria

**Mariah de Vos**

Young Professional in Public Health  
University College Dublin, Ireland

**Akke Vellinga**

Professor of Public Health  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Nora Veselá**

Education Coordinator,  
PhD Scholar, National Institute of  
Public Health, Prague, Czechia

**Susana Veigas**

Full Professor in Environmental Health  
Universidade Nova de Lisboa, Portugal

**Patrick Wall**

Professor of Public Health  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Lisa Wandshneider**

Former ASPHER Fellow  
Bielefeld University, Germany

**David Weakliam**

Adjunct Professor of Public Health  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Emma Wilson**

Professor of Public Health  
University of Nottingham, UK

**Brian Li Han Wong**

Consultant in Economic and Commercial  
Determinants of Health WHO, Geneva,  
Research Fellow Stockholm School of  
Economics & Karolinska Institute, Sweden

**Hamzeh Al Zabadi**

Full Professor in Public Health and  
Epidemiology  
Al-Najah National University, Nablus,  
Palestine

**Virginia Ziulu**

Nutritional Therapists of Ireland

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## Acronyms

<b>AI</b>	Artificial Intelligence
<b>ASPHER</b>	Associated Schools of Public Health in the European Region
<b>CCAIDE</b>	Core Competencies in Applied Infectious Disease Epidemiology
<b>CAT</b>	Convention Against Torture and other cruel, inhuman or degrading treatment or punishment
<b>CEDAW</b>	Convention on the Elimination of all forms of Discrimination Against Women
<b>CCP</b>	Core Curriculum Programme
<b>CDC</b>	Centre for Disease Prevention and Control
<b>CJD</b>	Creutzfeldt-Jakob Disease
<b>CRC</b>	Convention on the Rights of the Child
<b>CSOs</b>	Civil Society Organisations
<b>CSR</b>	Corporate Social Responsibility
<b>DALYs</b>	Disability-Adjusted Life Years
<b>DDR</b>	Deans' and Directors' Retreat
<b>DON</b>	Disease Outbreak News
<b>EAG</b>	Expert Advisory Group
<b>EB</b>	Executive Board
<b>ECDC</b>	European Centre for Disease Prevention and Control
<b>ECG</b>	Expert Consultative Group
<b>EMRs</b>	Electronic Medical Records
<b>EPHFs</b>	Essential Public Health Functions
<b>EU</b>	European Region
<b>EUPHA</b>	European Public Health Association
<b>FAO</b>	Food and Agricultural Organization of the United Nations
<b>GCCHE</b>	Global Consortium on Climate and Health Education
<b>GDPR</b>	General Data Protection Regulation
<b>GHSA</b>	Global Health Security Agenda
<b>GMOs</b>	Genetically Modified Organisms
<b>GNAPH</b>	Global Network for Academic Public Health
<b>GPS</b>	Global Positioning System
<b>HCWs</b>	Health Care Workers
<b>HERT</b>	Hospital Emergency Response Training
<b>HIV</b>	Human Immunodeficiency Virus
<b>HTA</b>	Health Technology Assessment
<b>ICCPR</b>	International Covenant on Civil and Political Rights
<b>ICERD</b>	International Convention on the Elimination of all forms of Racial Discrimination
<b>ICESCR</b>	International Covenant on Economic, Social and Cultural Rights
<b>ICMRW</b>	International Convention on protection of the rights of all Migrant Workers and members of their families
<b>ICPD</b>	International Conference on Population and Development
<b>IHR</b>	International Health Regulations
<b>KPI</b>	Key Performance Indicator
<b>MDGs</b>	Millennium Development Goals
<b>MDTs</b>	Multidisciplinary Teams
<b>MSF</b>	Médecins Sans Frontières (Doctors Without Borders)
<b>NATO</b>	The North Atlantic Treaty Organization
<b>NCD</b>	Non-Communicable Diseases
<b>NEOH</b>	Network for Evaluation of One Health
<b>NGOs</b>	Non-Governmental Organization
<b>NSPH</b>	Nationell Samverkan för Psykisk Hälsa (The Swedish Partnership for Mental Health)
<b>SDGs</b>	Sustainable Development Goals
<b>SEEEPHI</b>	Sharing European Educational Experience in Public Health for Israel
<b>SPHs</b>	Schools of Public Health
<b>PHN</b>	Public Health Nutrition
<b>QUALYS</b>	Quality-Adjusted Life Years
<b>UHC</b>	Universal Health Coverage
<b>UN</b>	United Nations
<b>UNEP</b>	United Nations Environment Programme
<b>WFPHA</b>	World Federation of Public Health Associations
<b>WGS</b>	Whole genome sequencing
<b>WHO</b>	World Health Organisation
<b>WOAH</b>	World Organisation for Animal Health
<b>YP</b>	Young Professional/s

## Glossary

<b>Anthropometry</b>	Provides the single most portable, universally applicable, inexpensive and non-invasive technique for assessing the size, proportions and composition of the human body. It reflects both health and nutritional status and predicts performance, health and survival. As such, it is a valuable, but currently underused, tool for guiding public health policy and clinical decisions.
<b>Antimicrobial resistance</b>	AMR occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death. As a result, the medicines become ineffective and infections persist in the body, increasing the risk of spread to others.
<b>Bioethics</b>	The study and discipline dealing with ethical, social, and legal issues that arise in biomedicine and biomedical research.
<b>Bioethics</b>	The study of ethical, social, and legal issues that arise in biomedicine and biomedical research.
<b>Biostatistics</b>	The application of statistical techniques to scientific research in health-related fields, including medicine, biology, and public health, and the development of new tools to study these areas.
<b>Bioterrorism</b>	The deliberate release of viruses, bacteria, toxins or other harmful agents to cause illness or death in people, animals or plants.
<b>Competence</b>	The unconscious store of linguistic knowledge which enables us to speak and understand our first language properly without having to think about it, permitting us to utter and comprehend sentences that we may never have heard before.
<b>Competency Framework</b>	A list of the behaviours and skills that are needed to perform a set of tasks to a required standard of performance.
<b>Context</b>	The circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood.
<b>Contextual factors</b>	Refer to the unique features of an individual, group, or society in a certain setting. Contextual factors include gender, age, language, interests, and skill levels. Therefore, contextual factors are essential in categorizing the external factors.
<b>COST</b>	European Cooperation in Science and Technology
<b>Cultural Sensitivity</b>	Is the knowledge, awareness, and acceptance of other cultures and others' cultural identities without assigning them a value – positive or negative, better or worse, right or wrong (also referred to as cross-cultural sensitivity or cultural awareness).
<b>Curriculum</b>	The content and specifications of a programme of study or, in a wider sense, the totality of the specified learning opportunities available in one educational institution.
<b>Curriculum Element</b>	Objectives, Content, Teaching Methods and Evaluation. The process of curriculum development starts with the answering of three questions Why, What and How of curriculum?
<b>Data</b>	Facts and statistics collected together for reference or analysis
<b>Decolonisation</b>	The acquisition of political or economic independence by a former colony.
<b>Demography</b>	The statistical study of human populations using census data, surveys, and statistical models to analyse the size, movement, and structure of populations.
<b>Determinants of Health</b>	The social and economic environment, the physical environment, and the person's individual characteristics and behaviours which determine people's health.
<b>Digital transformation</b>	The incorporation of computer-based technologies into an organization's products, processes and strategies.
<b>Dysbiosis</b>	A microbial compositional imbalance that exerts a net pathobiological effect.

<b>Environmental health</b>	Aspects of human health and diseases that are determined by environmental factors. Environmental health also refers to the assessment and control of environmental factors that can potentially affect health.
<b>Epidemiology</b>	The study of the distribution of diseases and determinants of diseases in populations, including all forms of disease that relate to the environment and ways of life.
<b>Evidence synthesis</b>	Evidence synthesis, sometimes called “systematic reviews”, involves combining information from multiple studies investigating the same topic to comprehensively understand their findings.
<b>Food security</b>	The availability of food in a country and the ability of individuals within that country to access, afford, and source adequate foodstuff. The availability of food irrespective of class, gender or region is another element of food security.
<b>Geneva Convention</b>	The Geneva Conventions and their Additional Protocols is a body of Public International Law (also known as the Humanitarian Law of Armed Conflicts) whose purpose is to provide minimum protections, standards of humane treatment, and fundamental guarantees of respect to individuals who become victims of armed conflicts.
<b>Health Promotion</b>	The process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions.
<b>Integrative learning</b>	Students make connections among ideas and experiences in order to transfer learning to new context, bringing together prior knowledge and experiences to support new knowledge and experiences.
<b>International Court of Justice</b>	The International Court of Justice, also called the World Court, is the only international court that adjudicates general disputes between nations and gives advisory opinions on international legal issues. It is one of the six organs of the United Nations, and is based in The Hague, Netherlands
<b>Intersectionality</b>	A sociological analytical framework for examining the ways in which systems of inequality based on gender, race, ethnicity, sexual orientation, gender identity, disability, class and other forms of discrimination “intersect” to create unique dynamics and effects.
<b>Law for Public Health</b>	The Public Health Law and Policies Team (LAW) assists governments on legal issues, with a focus on modifiable risk factors for noncommunicable disease.
<b>Longitudinal Study</b>	A correlational research method that helps discover the relationship between variables in a specific target population. A longitudinal cohort study is one in which we study people who share a single characteristic over a period of time.
<b>Multidisciplinary</b>	Combining or involving several academic disciplines or professional specializations in an approach to a topic or problem.
<b>Occupational epidemiology</b>	A subdiscipline of epidemiology that focuses on investigations of workers and the workplace and the variety of agents (chemical, biological or physical) to which they may be exposed.
<b>One Health</b>	A collaborative, multisectoral, and transdisciplinary approach — working at the local, regional, national, and global levels — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.
<b>Pandemic Preparedness</b>	The safeguarding of populations against unforeseen crises.
<b>Participatory Research</b>	An approach to action research emphasizing participation and action by members of communities affected by that research. It seeks to understand the world by trying to change it, collaboratively and following reflection.
<b>Public Health Ethics</b>	The focus on a systematic analysis of the moral problems in public health and preventive medicine.

<b>Research methodology</b>	A framework and guidelines for researchers to clearly define research questions, hypotheses, and objectives.
<b>Structural Discrimination</b>	Across the globe, Indigenous Peoples and other ethnic minorities experience stigma, racism and racial discrimination. This situation often increases their exposure and vulnerability to risk factors and reduces their access to quality health services
<b>Subject Area</b>	A field of study or discipline within the CCP which contain curricular elements
<b>Technique</b>	A way of carrying out a particular task, especially the execution or performance of an artistic work or a scientific procedure.
<b>The World Bank</b>	An international financial institution that provides loans and grants to the governments of low- and middle-income countries for the purpose of pursuing capital projects.
<b>Theme</b>	Subject matter
<b>Transgenerational trauma</b>	The psychological and physiological effects that the trauma experienced by people has on subsequent generations in that group.
<b>Vectors</b>	A carrier of disease or of medication
<b>Visual analytics</b>	The use of sophisticated tools and processes to analyse datasets using visual representations of the data
<b>Vienna Declaration</b>	World conference on human rights, declaration and programme of action
<b>Xenophobia</b>	Dislike of or prejudice towards people, cultures, and customs that are foreign, or perceived as foreign.
<b>Zoonosis</b>	An infectious disease that has jumped from a non-human animal to humans. Zoonotic pathogens may be bacterial, viral or parasitic, or may involve unconventional agents and can spread to humans through direct contact or through food, water or the environment.



## Foreword I



I am most grateful for having been invited to contribute this foreword for the ASPHER Core Curriculum for Public Health. The first ASPHER list of core competencies for the public health professional was started in 2006, partly based on a survey among ASPHER members, who were asked to deliver ideas for such a list. About 100 colleagues participated. The main structure of the list was laid down then and kept in succeeding editions with few amendments. The main structure was – and is – simple and thus easily applicable and easy to communicate. It includes the two large basic working fields of public health – the population’s health and man-made organisations, institutions and structures aiming at improving population health, plus chapters on general methodology and ethics.

Thousands of intelligent and fruitful pages have been written and published about what the discipline of public health is. The list of competencies denotes one way of stating that, a very economical way in terms of the number of words applied, one could say. For instance, the published 5<sup>th</sup> Edition in 2018 occupies a total of 52 pages including introduction, background panel and list of contributors as concerns content as well as economy, and the list itself including hundreds of specifications. Thus, writing a list of competencies is precision work in terms of logical structure, concepts and terminology. Its quality shall be stated based on theoretical discussion as well as implementation in public health practice, teaching, research and communication. The list should reflect what public health professionals can be expected to be able to do, both in real life and in scientific work and teaching. It must include a spectrum of concepts spanning across the natural sciences, medicine and nursing and other health sciences, behavioural and social sciences, culture and religion. In terms of methodology, it must include qualitative as well as quantitative technologies. And its value is determined by those who shall use it – thus, basically, developing a list of competencies must be the result of interactive and, of course, most responsible group work among professionals, together fully representing the art and practice of the discipline, not just as such a production consisting of *ex cathedra* statements by individual leaders. Developing a list of competencies is highly specialized and cross-disciplinary group work. It should have the finger on the pulse of the present.

But will it survive once you have made it? ASPHER’s list was started in 2006 and till now has reached five editions. It is, of course, heartwarming for an old list-author and editor to see the torch being taken over by new generations, eager to fulfil gaps and to meet new needs in population health and public health institutions. We want to sustain, not only the existence of our beloved important discipline, but certainly also its development. So we will strive to learn to bind together old and new experience in such a strong manner that it will be vivid in the generations to come. That should be our goal – creating a classic and strong source of insight lasting over generations, continuously open to new inspiration, continuously keeping the strong basis with the experience of generations. That is the perspective.

This present production, the 1<sup>st</sup> Edition of the ASPHER Core Curriculum for Public Health, fulfils that ambition. We are indebted to the ASPHER Executive Board, and most of all, to Professor Mary Codd for her sustained and excellent leadership of this work. I congratulate you on bringing this to fruition for the benefit of current and future generations of public health professionals.

Prof. Emeritus Anders Foldspang

November 2024

## Foreword II



Prof Henrique Barros  
ASPHER President



Prof. Carlo Signorelli  
ASPHER Vice-President

It gives us great pleasure to release this 1<sup>st</sup> Edition of the ASPHER Core Curriculum for Public Health, building as it does on twenty years of engagement by ASPHER in efforts to improve and harmonise the education and training of public health professionals in Europe. This production represents a change in emphasis from public health competencies to public health curricula which reflects the need identified for attention to curricula to underpin the attainment of competencies now expected of public health professionals. This updated curriculum will prompt educators and trainers to examine current public health curricula, retain existing all-important elements and develop or expand areas appropriate to the needs and advances of public health in the 21<sup>st</sup> century.

Subject areas included which may be new to public health, but are relevant to our world and the challenges of our time, include expanded content on law in public health and public health ethics, planetary health and climate change, emergency preparedness, public health in conflict and war, and disaster management. The importance of public health in the criminal justice system, and the increasing emphasis on public health and the built environment are also included.

The extent to which curricula and training programme integrate certain cross-curricular topics are addressed. The multifactorial determinants of health, diversity and intersectionality and the health of vulnerable populations are not stand-alone or optional components of a curriculum, but should be represented wherever possible across a curriculum. Likewise, digital transformations in society and in healthcare need to be identified, tracked and incorporated across a curriculum. Interdisciplinary professional skills have always been a cornerstone of public health practice. In a public health curriculum, while imparting these skills in education and training programme may be challenging, it is at least essential to orientate students and trainees to the skills need, through teaching, practical applications and example. This curriculum is designed to be applicable at multiple levels of education and across a lifetime of learning. Education for research and for the translation of evidence into policy and action are also key components of a public health curriculum which are addressed.

For the monumental task of designing, executing and producing this extensive work we wish to pay special tribute to Professor Mary Codd who led this work on behalf of the ASPHER Executive Board and ASPHER members, and to ASPHER Fellow, Karl Conyard, who worked tirelessly to collate the evidence. To all who contributed and advised on this comprehensive, provocative and ground-breaking work we are truly grateful. We are certain that this will serve the mission of ASPHER to strengthen the education and training of public health professionals for both teaching and research.

Prof. Henrique Barros  
President of ASPHER

Prof. Carlo Signorelli  
Vice-President of ASPHER

November 2024

## Executive Summary

This first edition of the ASPHER Core Curriculum for Public Health has its origins in the innovative work of the Association of Schools of Public Health in the European Region (ASPHER) over two decades on core competencies for public health professionals. Beginning in 2006 led by Professor Anders Foldspang, from 2008 joined by Dr. Christopher Birt, and in 2018 also joined by ASPHER Director, Dr. Robert Otok, a total of five editions of "ASPHER's European List of Core Competences for the Public Health Professional" were published up to 2018, each one reflecting changes in the public health landscape of the time. This was followed in 2020 by the WHO-ASPHER Competency Framework for Public Health Professionals in Europe led by Professor Kasia Czabanoskwa. With the onset of the COVID-19 pandemic, ASPHER was commissioned by the European Centre of Disease Prevention and Control (ECDC) to develop an updated Competency Framework for Applied Infectious Disease Epidemiology (published 2022), the scientific lead for which was Professor Mary Codd.

With the increasing complexity of our time, Public Health is being shaped and reshaped by a myriad of interrelated factors. Climate change, environmental degradation and natural disasters; humanitarian and public health crises in war-torn regions with resultant vulnerable and migrant populations; food and water insecurity; new and emerging infectious diseases; have all contributed to a constantly changing landscape for public health. This 'new normal' calls for re-definition of competencies among the public health workforce, and renewed attention to public health education and training.

ASPHER's mission of *'improving and protecting the public health by strengthening education and training of public health professionals for both practice and research'* is a call to action on the education and training of public health professionals. Building on the previous work of ASPHER, and that of many other organisations in recent years, this work defines a core curriculum for Public Health to support of the attainment of core competencies by public health professionals. In a modified Delphi-like 'bottoms-up' approach, a curricular content survey of ASPHER-member Schools and Institutes of Public Health to ascertain public health programme content and delivery was carried out. Responses were received from 60 Schools with over 500 notifications of areas of interest and expertise relevant to public health. These were collated by Subject Area into curricular concept maps, from which themes within Subject Areas were derived and curricular elements (topics) within themes were identified.

There followed wide consultation on the proposed content within Subject Area through workshops and follow up surveys aligned to the content. Specifically addressed were (a) the levels of agreement of respondents to inclusion of the elements identified; and (b) the educational levels (bachelor, master, doctoral, vocational training, continuing professional development) at which the content should be delivered.

In the next phase of consultation 35 Expert Advisory Groups (EAGs) were constituted from public health experts, academics, young professionals and current students of public health at master and doctoral levels. The EAGs reviewed the consensus thus far on content and its level of delivery, and provided a sounding board for discussion and modifications accordingly. An overarching Expert Consultative Group (ECG) formed in November 2023 and comprising members of the ASPHER Executive Board and ASPHER Task Forces on Public Health Emergencies, War, Diversity and Intersectionality, Digital Transformation in Public Health, and Professionalisation in Public Health, met on six occasions to oversee the structure and content of the final product.

The extensive scoping and consultative processes of this Core Curriculum Programme resulted in the collation of 35 Subject Areas into four Domains overseen and agreed by the ECG (Figure 1) with the following rationale for their designation:

1. **Core Subject Areas in Public Health:** Subject Areas which are critical to all graduates of public health education and training programmes;
2. **Subject-specific Areas in Public Health:** Many of these Subject Areas are represented in general public health programmes or in programmes concentrated on particular contexts. Some are determined by the challenges of our times and identify important orientation and skills for current public health trainees and trainers;
3. **Core cross-curricular Subject Areas in Public Health:** Subject Areas which are increasingly applicable across the entirety of a programme, integrated in so far as possible with core subjects and subject-specific areas; and
4. **Core Interdisciplinary Professional Skills in Public Health:** Areas which emphasise the interdisciplinarity of public health and the pivotal role of public health professionals in effecting change for *improvement and protection of the public health*.

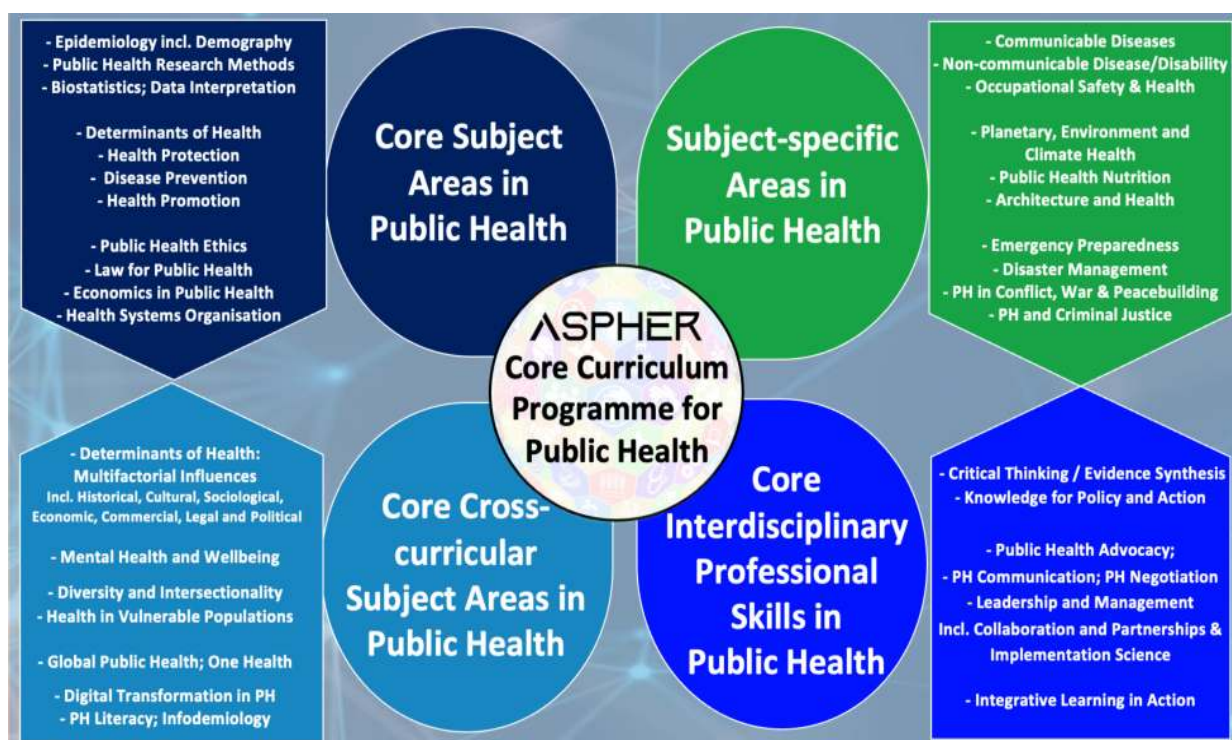


Fig 1.0: ASPHER Core Curriculum Overview

It is recognised that this is a broad-ranging and ambitious proposal for public health curricula. The challenge of delivering such an extensive programme is also recognised. This curriculum is intended to act as a prompt to schools, institutions and training bodies to look critically at their existing programmes, to assess the currency of their content, to identify opportunities to develop and expand offerings within available time and resources, and to consider sharing and collaboration between programmes on content and delivery.

The overall objective is to consider where and how education and training in public health might be improved to best equip current and future public health professionals to contribute maximally to their communities and societies, nationally and internationally.

# Chapter 1

## Background, Scope and Context



## Background

The Association of Schools of Public Health in the European Region (ASPHER) launched the Core Curriculum Programme in July 2022 in response to evolving global health challenges that demand a re-examination of public health education. The driving force behind this initiative was the need to ensure that public health curricula adequately address the “New Normal” in public health, a reality shaped by the COVID-19 pandemic, which highlighted both strengths and vulnerabilities in public health systems. The pandemic underscored the inadequacy of existing preparedness measures and revealed gaps in the knowledge and skills of public health professionals, leading to calls for educational reform.<sup>1</sup>

Beyond COVID-19, the public health landscape continues to be moulded by significant demographic and socioeconomic shifts, climate change, environmental degradation, and political conflicts, which have led to mass migration, increased vulnerabilities, and the displacement of populations.<sup>2</sup> For example, climate change has been linked to extreme weather events, which directly impact public health, including the spread of infectious diseases and food insecurity.<sup>3</sup> These concurrent crises call for a new approach to public health education, one that equips professionals with the skills to address a broader range of threats, from infectious diseases to the social determinants of health, which shape health outcomes in profound ways.<sup>4</sup>

In this context, ASPHER’s mission to “strengthen education and training for public health professionals for both practice and research” has taken on heightened importance. The Core Curriculum Programme builds on ASPHER’s legacy of developing Core Competences for Public Health Professionals in Europe, a body of work led by figures such as Professor Anders Foldspang and Dr. Christopher Birt, who were instrumental in defining the competencies needed for public health practice in the region.<sup>5</sup> Updating the curriculum is crucial to reflect not only new scientific knowledge but also the evolving practical skills required to meet the complex public health challenges of the 21st century.<sup>6</sup>



Fig 1.1: 2011 ECCPHP



Fig 1.2: 2018 CCPHP

## Context

Public health education has long focused on core areas such as epidemiology, biostatistics, health policy, and health promotion, but the COVID-19 pandemic exposed critical gaps in these traditional areas of training. For instance, the pandemic demonstrated the need for improved skills in pandemic preparedness, the use of digital technologies for surveillance, and the management of infodemics—a term the World Health Organization (WHO) uses to describe the overwhelming amount of misinformation during public health emergencies, which complicates effective response efforts.<sup>7</sup> The rapid spread of misinformation about COVID-19 vaccines, for example,



Fig.1.3: Covid-19 Health Promotion

greatly impeded vaccination campaigns worldwide, highlighting the importance of training public health professionals in communication and infodemiology.<sup>8</sup>

In response, ASPHER's curriculum is designed to ensure that public health education is aligned with contemporary needs. Collaboration with over 140 Schools, Institutes centres of public health along with International organizations like the WHO, ECDC, EUPHA and other key stakeholders from young professionals to seasoned experts has been central to this effort, helping to incorporate the lessons learned during the pandemic and align educational standards with the 2024 WHO's 12 Essential Public Health Functions (EPHFs), particularly EPHF 9, which focuses on assuring a competent, ever-developing public health workforce.<sup>9</sup> Moreover, ASPHER has drawn on its existing frameworks, such as the Core Competences for Public Health Professionals in Europe, to guide this curriculum overhaul. These competences, first developed in 2006 and updated regularly, provide a foundational set of skills and knowledge that public health professionals need for effective practice.<sup>10</sup> However, the new curriculum goes beyond these core areas, emphasizing the need for expertise in emerging fields such as climate health, One Health approaches, and digital public health—all areas that are increasingly critical for responding to the interconnected nature of global health threats.<sup>11</sup>



Fig.1.4: Expert Advisory Group Members

## Scope

The scope of the ASPHER Core Curriculum Programme is comprehensive and future-focused, with 35 subject areas across 4 key domains, aiming to address both traditional public health areas and emerging disciplines. The curriculum is broad, so Chapter 3 offers practical tips for program developers to implement it effectively.

Key areas include infodemiology, which studies how misinformation impacts public health and helps professionals develop strategies to combat it. The importance of this area became particularly clear during the COVID-19 pandemic, where public trust in health institutions was undermined by widespread misinformation.<sup>12</sup> Thus, the new curriculum aims to equip public health professionals with the tools to manage communication crises and build public confidence in health interventions.<sup>13</sup>

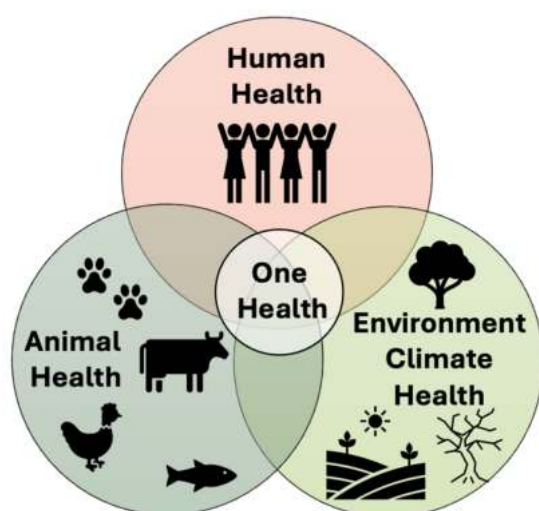


Fig.1.5: One Health Triad

Another significant area within the curriculum is One Health, which emphasizes the interdependence of human, animal, and environmental health. Given the rising number of zoonotic diseases—infectious diseases transmitted from animals to humans, such as COVID-19—this approach is essential for future public health professionals. The curriculum incorporates One Health principles to help understand and address the complex interplay between environmental degradation, animal health, and human health.<sup>14</sup>

Additionally, the curriculum tackles planetary, environmental and climate health as a growing public health concern. The health impacts of climate change, including increased heat-related illnesses, more frequent natural disasters, and shifting patterns of infectious diseases, are becoming more pronounced, necessitating that public health professionals be well-versed in mitigation and adaptation strategies.<sup>15</sup> These issues reflect the broader scope of the curriculum, which integrates new knowledge with practical skills in public health practice.

In line with the WHO's Essential Public Health Functions (EPHFs), the updated curriculum is also competency-based, ensuring that graduates not only acquire theoretical knowledge but are also equipped with the practical skills needed for global health security and health system resilience.<sup>16</sup> The collaboration with the European Centre for Disease Prevention and Control (ECDC) and its core competencies in applied infectious disease epidemiology programme further supports this approach by focusing on continuous professional development and capacity building in the European public health workforce.<sup>17</sup>



## Aim



The primary aim of the revised ASPHER Core Curriculum is to ensure that Europe’s public health professionals are prepared to meet the pressing health challenges of the 21st century. The post-pandemic world is defined by multiple intersecting crises, including climate change, political conflict, food insecurity, and the re-emergence of infectious diseases. These challenges highlight the need for a workforce that is not only competent in traditional public health fields but also equipped with the skills to navigate new and emerging threats.<sup>18</sup>

The curriculum aims to equip public health students and soon to be professionals, to manage both traditional and emerging areas of public health, particularly those arising from recent crises. Importantly, public health education must be mailable to adapt and change to the ever changing public health landscape which surrounds any academic institution. An example, being infodemiology, as seen during the COVID-19 pandemic, misinformation can severely undermine public health interventions, making it essential that professionals are trained in both health communication and misinformation management. This training will be crucial for addressing future public health crises, where rapid and accurate information dissemination will be key to controlling outbreaks and building public trust in health interventions.<sup>19</sup>

Furthermore, the curriculum promotes interdisciplinary collaboration, reflecting the understanding that public health is inherently interconnected with other fields, such as environmental science, social policy, and agriculture. This is particularly relevant in

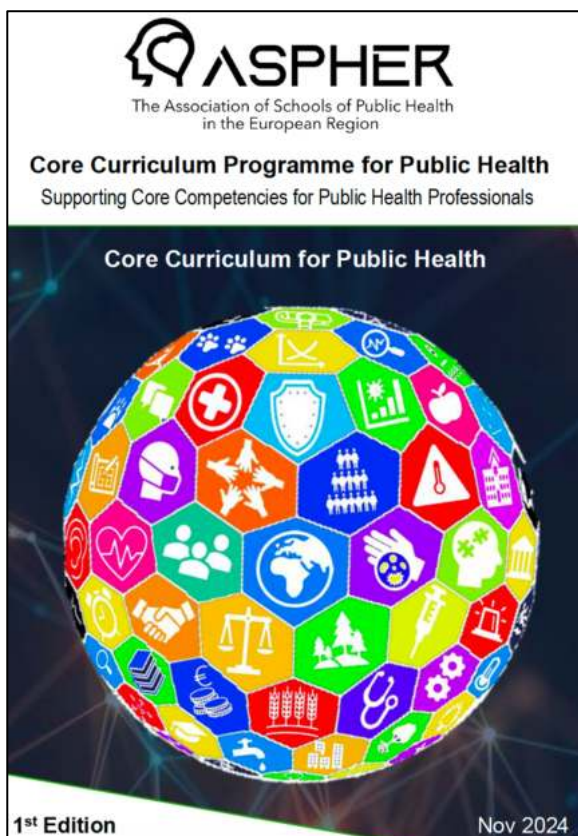


Fig.1.6: 1<sup>st</sup> Ed ASPHER CCPPH

addressing climate change and its health impacts, where solutions require cooperation across multiple sectors.<sup>2</sup> By fostering a holistic approach to public health, the curriculum aims to ensure that public health professionals can work effectively across disciplines to improve health outcomes and enhance global health security.

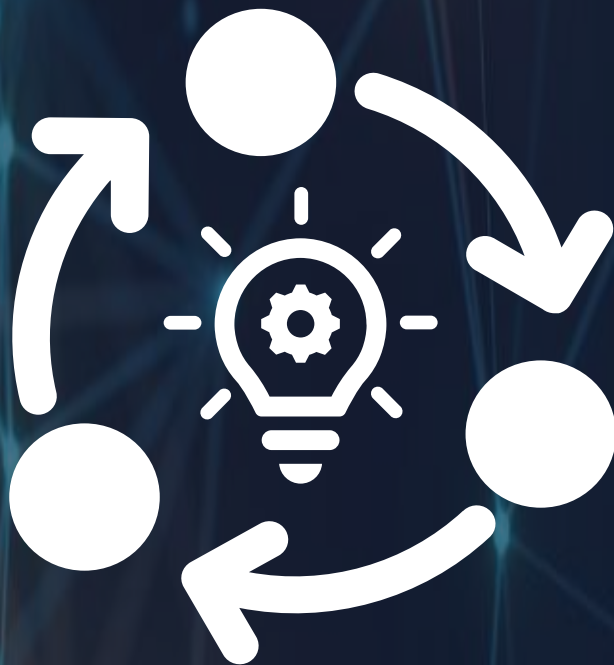
In summary, the revised curriculum is designed to build a resilient, adaptive, and competent public health workforce capable of addressing the complex challenges of the modern world. By updating the curriculum to reflect these evolving needs, ASPHER aims to ensure that public health professionals are well-equipped to protect and promote the health of populations across Europe and beyond.<sup>20</sup>

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# Chapter 2

## Methodology



## Methodology and Process: Introduction

The core curriculum was developed using a bottoms-up approach using Delphi like process to attain expert consensus while also permitting flexibility and adaptability of the programme. The programme employed a multi-phase, structured approach to ensure that the curriculum for public health education is comprehensive, forward-looking, and aligned with the evolving needs of the field. The process involved gathering diverse perspectives from experts across multiple countries and sectors, utilizing both quantitative and qualitative methodologies to capture consensus on curriculum content and structure. The programme was divided into different phases as shown below in **Fig 2.1**.

## Phased Approach to Data Collection and Consensus-Building

The development process was organized into five distinct phases, each building upon the previous to ensure a thorough and inclusive approach to curriculum development.

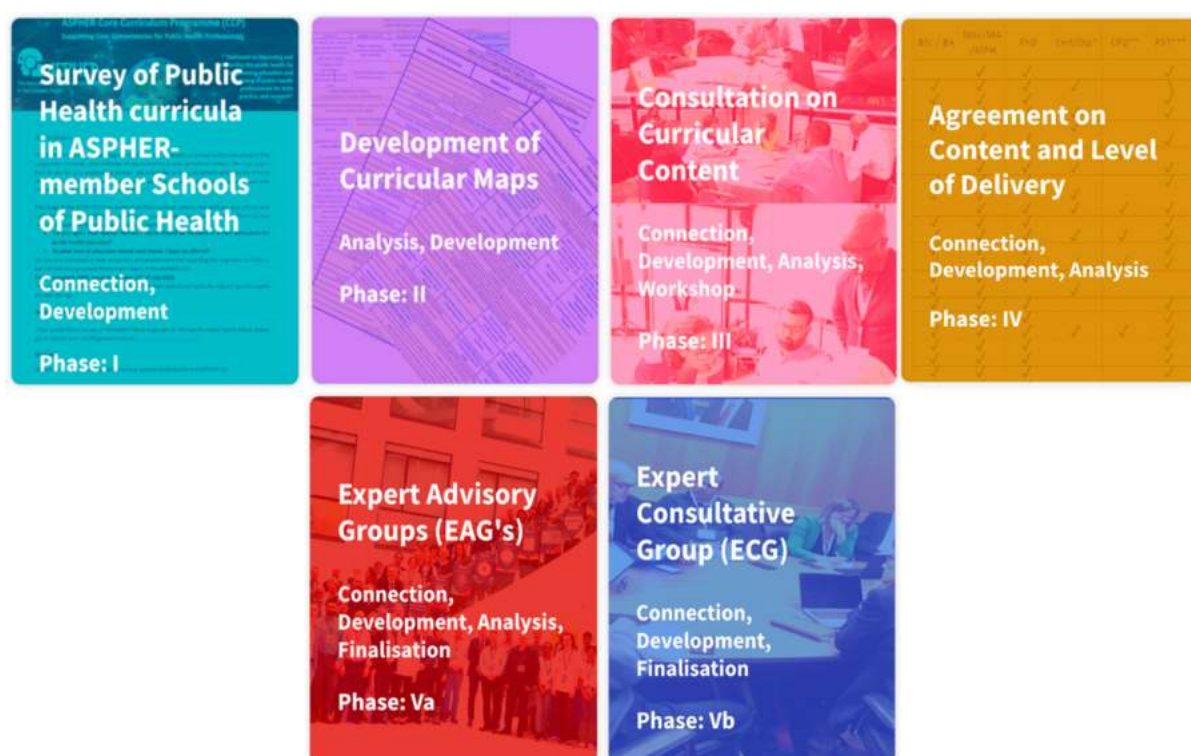


Fig 2.1: ASPHER CCP Methodological Phases

A Delphi-like methodological process was employed throughout the CCP as a structured method to gather expert opinions and build consensus on subject areas through iterative rounds of questions and feedback. Originally developed by the RAND Corporation in the 1950s, the Delphi method has been widely adapted across various fields, including public health, education, and policy planning.<sup>1</sup> The use of a Delphi-like process allowed for structured feedback and iterative improvement, ensuring that the final curriculum aligns with both immediate and future needs in public health education. This collaborative effort showcases the full breadth of expertise across public health disciplines, addressing current needs while preparing for future challenges. **Figure 2.2** presents the Delphi like process and key stakeholders at each phase of the core curriculum programme.

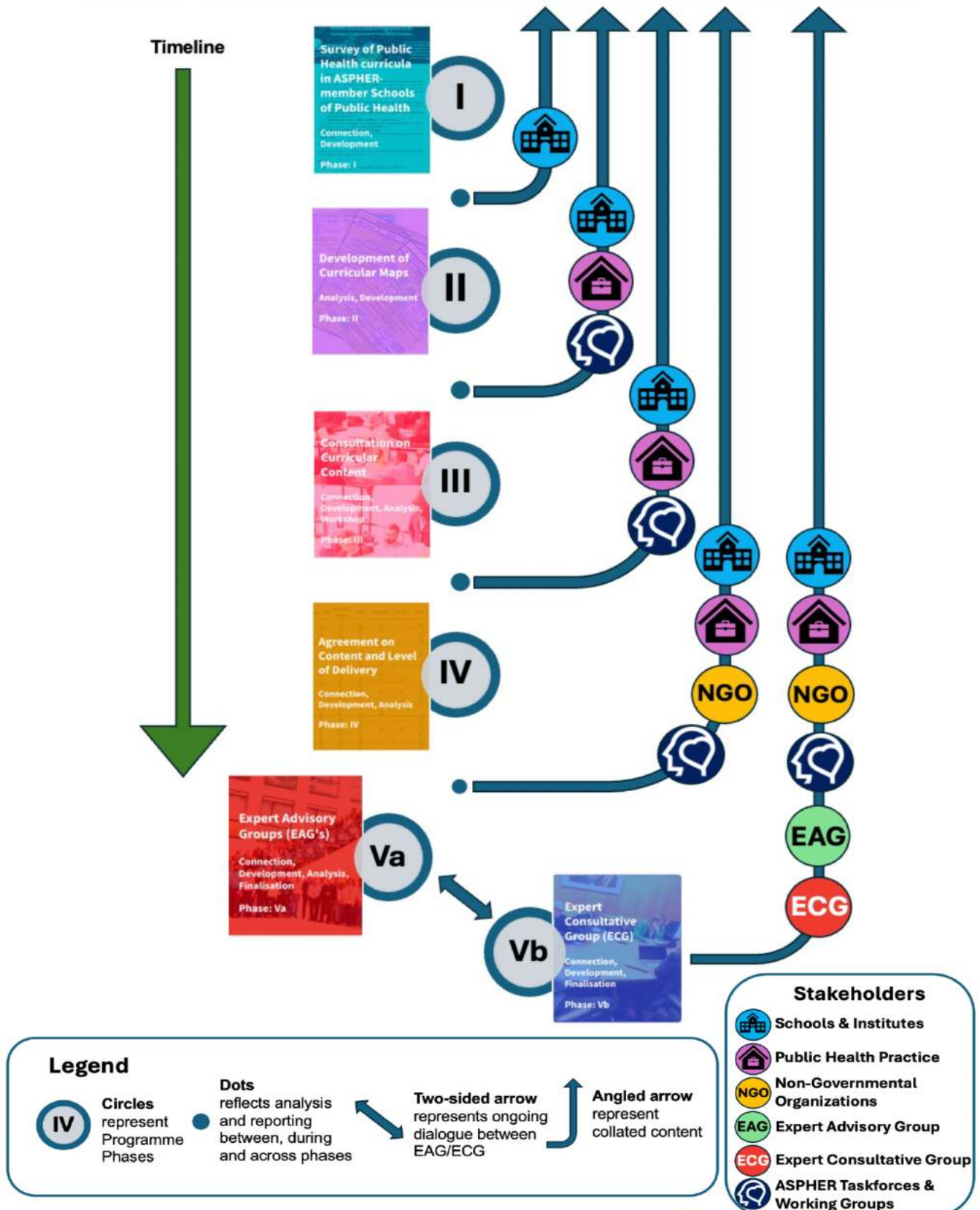


Fig 2.2: ASPHER CCP Delphi-Like Process and Stakeholder Engagement by Phase

## Country Perspectives and Expert Contributions

Given the complexity of global public health challenges, it was essential to incorporate perspectives from multiple countries and a wide range of public health professionals. Contributors ranged from early-career professionals to senior professors and practitioners, ensuring the inclusion of innovative ideas and time-tested expertise. Public health experts from ASPHER-member schools as well as external institutes and public health services across the WHO European Region participated in surveys and workshops, bringing cross-national and cross-sector perspectives.

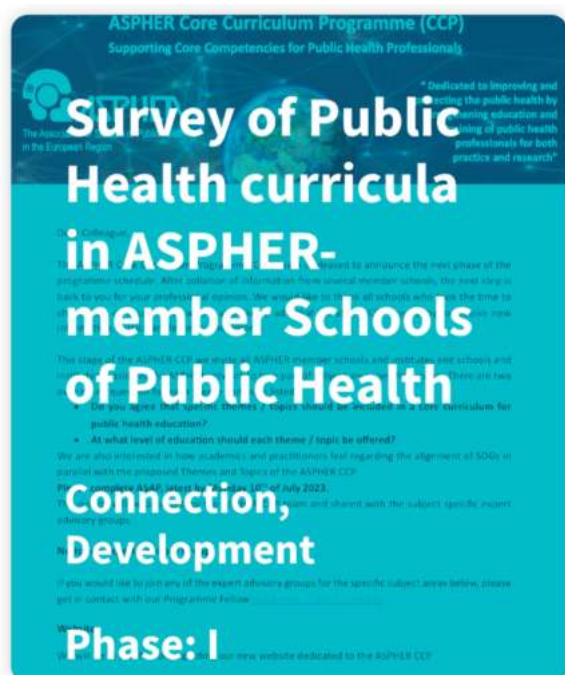
## Bottom up Approach

A bottom-up strategy engages educators, practitioners, and students in the process, reflecting their experiences and insights. This inclusivity ensures that the curriculum is grounded in current public health practices while being adaptable to emerging trends. Involving a diverse range of stakeholders, including young professionals and field experts, allows the curriculum to be more practical and forward-thinking, addressing the complexities of modern public health issues such as climate change, pandemics, and digital health transformation.



Fig 2.3: ASPHER CCP Bottom up Approach

## Phase I



### Stakeholders

- ASPHER Member Schools and Institutes, institutes and public health services across the WHO European Region
- Programme Leads / Directors of Schools and Institutes of Public Health

### Study Phase

- Phase One: Initial Survey Stage

### Objective

- To collect information about current offerings, available expertise, curriculum, and specialist areas in Public Health

### Study type

- Survey (developed and distributed to ASPHER Member Schools and Institutes)
- Subject areas provided with opportunity to specify additional areas of expertise
- Mixed-method survey design

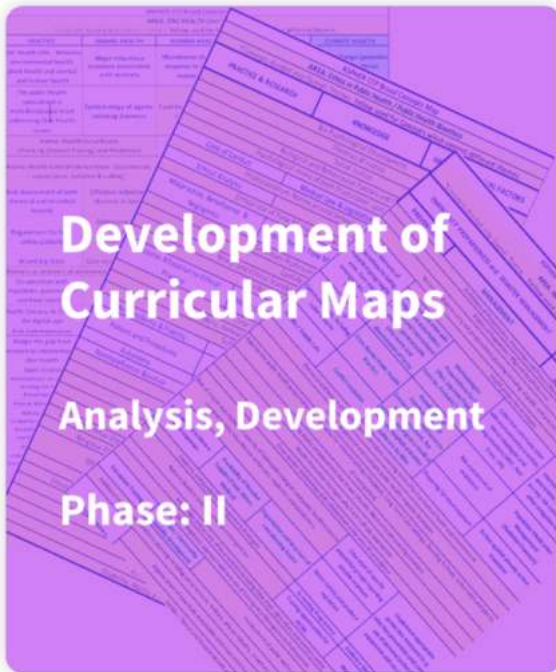
### Results

- 57 responses received from Schools and Institutes
- 32 specialist areas identified
- 485 notifications of expertise reported
- Full report available online

### Process

- Evidence collation to ensure ASPHER CCP remains up-to-date
- Programme Lead and Fellow in continuous contact with Schools and Institutes
- Direct communication established with Programme Leads/Directors

## Phase II



### Stakeholders

- Schools of Public Health and Institutes of Public Health
- Programme Leads/Directors of Public Health Programs
- CCP Team (Programme Lead and Fellow)

### Study Phase

- Phase 2: Ongoing (continuous process of contact and information sharing with Schools & Institutes)

### Objective

- To collect detailed curricular elements from participating institutions for inclusion in the knowledge synthesis process, leading to the development of curricular maps for the CCP.

### Study Type

- Knowledge synthesis and curricular mapping based on submitted curricular elements and guidelines

### Results

- Curricular elements from multiple institutions collected for the synthesis process
- Curricular maps developed using an agreed layout of subject area, theme, and curricular elements

### Process

- Respondents shared detailed curricular elements following completion of the survey by providing copies of current curricula and guidelines.
- CCP team in contact with Schools and Institutes to manage contributions including seeking additional detail and clarification.
- Development of curricular maps based on curricular elements and guidelines received.

ASPHER CCP Broad Concepts Map			
AREA: Communication, Infodemiology, Advocacy and Public Health Literacy			
*Concepts divided into Overall Themes. Yellow used for Concepts which connect different themes and areas.			
COMMUNICATION	INFODEMIOLOGY	ADVOCACY	PUBLIC HEALTH LITERACY
Clear communication strategies targeting groups, communities, settings, and organisations (e.g. workplaces, schools, healthcare facilities)		Investigation of knowledge, attitudes, practices and behaviours of infectious disease within specific population groups	
Targeted audiences, including policy makers and the general public	Collaborate with Infodemiologists to provide credibility to dissemination of PH information	Adaptation of communication content to different levels of health literacy in different groups	
Interdisciplinary approach to communication		Work with associated NGOs	
Social Media Use and Misuse		Continued Professional Education around Advocacy and Literacy	
Knowledge transfer and exchange methodologies			
Traditional media, incl. press releases			
Key public health messages for the particular infectious disease, in order to optimise individual and population			
Press release and engage with health journalists and media to promote public health policy	Identify misinformation patterns on different platforms (e.g. testing hesitancy, vaccine hesitancy, resistance to public health advice during an outbreak)	Advocate effectively in community-based organisations and at community level to enhance commitment to public health interventions	Universal precautions for effective communication (interpersonal and mediated) with low health literacy audiences
Evidence-based and evidence-informed decision making for successful infodemic management			
Principles of risk communication	Ascertain the origin and spread of misinformation	Political commitment, policy support & social acceptance for specific objective / intervention	
Theories in Health communication	Measure and quantify the penetration of infodemics	Quality assurance tools	Autonomy and Paternalism
Cultural and Clinical Sensitivity			
Challenges in communicating risk in public health		Appropriate channels, contexts, materials, and activities	Target group-specific communication, e.g. with cooperation partners and respondents
Risk perception: cognitive biases, heuristics	Techniques of effective communication		

Fig 2.4: Example of Curricular Maps Developed



## Phase III



### Stakeholders

- Public Health Experts (70 participants at the ASPHER Deans' and Directors' Retreat)
- ASPHER Member Schools
- Faculty of Public Health, Medical University Sofia (local hosts)
- SPH Directors, additional academics
- Expert Advisory Groups (experts and young professionals)

### Study Phase

- Phase 3: Workshop at the ASPHER Deans' and Directors' Retreat (DDR) in Sofia, Bulgaria
- 

### Study Type

- Workshop consultation and real-time review of curricular maps

### Study Objective

- To present and consult on defining core public health curricula, and to review and refine curricular maps with expert contributions from public health professionals.

### Results

- 70 public health experts participated in the workshop, divided into specialist subject areas
- Curricular maps reviewed in real time, with expert contributions from the audience
- Expert Advisory Groups began to form, including both experienced professionals and young professionals interested in subject development

### Process

- "Defining Core Public Health Curricula" in-person Workshop
- Communication, workshop development, design, and preparation before the event, followed by evaluation post-event
- Invitation to ASPHER members and SPH directors to participate in the workshop
- Website development to support the process



Fig 2.5: Experts Working at Workshop

## Phase IV



### Stakeholders

- ASPHER Members and non-members (encouraged to participate and share)
- Schools, organizations, institutes, and experts involved in Public Health education
- Expert Advisory Groups (EAG), consisting of seasoned experts, academics, young professionals, and PhD candidates
- Expert Consultative Groups (ECG), including ASPHER Executive Board, ASPHER Secretariat, and members of Task Forces and Working Groups

### Study Phase

- Phase 4: Subject-specific surveys with real-time analysis conducted during survey responses

### Study Type

- Subject-specific surveys to ascertain agreement on the content of each of subject areas, and to determine the appropriate educational level for teaching subject areas, themes, and topics

### Study Objective

- To gather a wide range of opinions on the inclusion and educational level of each subject area, theme, and topic in the CCP curriculum
- To use these results for curriculum development, with further review by the Expert Advisory Group (EAG) and Expert Consultative Group (ECG)

### Results

- 163 total responses received, covering all subject areas
- Educational level curriculum to be developed based on survey results
- 21 subject specific surveys developed and analysed in real time
- A multidisciplinary and multilevel EAG expected, including seasoned experts, young professionals, and PhD candidates

### Process

- Subject-specific surveys sent to ASPHER members, with sharing to non-members encouraged
- Continuous contact maintained between the programme lead, fellow, and relevant stakeholders
- Invitations sent to Expert Advisory Groups (EAGs)
- Expert Consultative Groups (ECGs) formed, including ASPHER Executive Board, Secretariat, and members of Task Forces and Working Groups on specialized areas such as Climate Health, Digital Public Health, Diversity, Economic Evaluation, and Public Health Emergencies
- Continuous website development to support the ongoing process

## Thematic Analysis on Curricular content

Following the surveys to ascertain agreement on the content of each of Subject Area, a thematic analysis on the content was carried out to identify the themes within the content. Themes help to structure teaching into logical areas and to identify specialist expertise. For Subject Areas in this proposed curriculum the themes are presented graphically in each chapter.

Given that Subject Areas do not exist in isolation from each other, and to mitigate against teaching in silos, it is important to identify overlaps between Subject Areas. In this report this phenomenon is referred to connectivity or 'degree of coherence', between subject areas. This is the extent to which subject areas have similar content and are 'coherent' with each other, and was also a result of thematic analysis. Open source software used to generate arc graphs for each subject area (rawgraphs 2.0 and figma) and are presented for the Subject in each chapter. The size of circles and width of the arcs represent the degree of connectivity between the index Subject Area and all other Subject Areas of the Core Curriculum. Graphs are produced in hierarchical order of circle size from largest to smallest, i.e. greater to lesser degrees of connectivity.

## Alignment of curricular content to Competency Frameworks

Alignment of curricular content to existing Competency Frameworks (general and subject-specific) was carried out and is presented for each Subject Area. A Competency Framework Library accompanies this report and is available on the CCP Resource Hub ([ccp.aspher.org](http://ccp.aspher.org)). A total of 54 competency frameworks are included.

## Phase V



### Expert Advisory Groups

Expert Advisory Groups (EAGs) receive subject-specific statistical reports and related documents, followed by a designated review period.

Online review meetings were held with each EAGs to make final decisions for each subject area. During these meetings, the educational framework is assessed in light of statistical analysis and the original curricular map to ensure that subject area themes and topics align with current public health needs and evolving requirements.

The Programme Lead, Fellows, and YPs remain in close communication with the EAGs and attend all meetings. Continuous website updates are managed by the CCP team, while ASPHER Member SPHs actively participate in many EAGs, playing a crucial role in curriculum development. Updates on the progress of each EAG are regularly communicated to the ECG as subject areas are completed.

## Expert Consultative Group

The final phase of CCP development involves the Expert Consultative Group (ECG), comprising ASPHER Executive Board members, ASPHER Subject Specific experts, ASPHER Secretariat, Young Professionals and experts in curricular framework design. The ECG leads the design and presentation of the core curriculum programme, ensuring it is intuitive, visually appealing, and practical for use.

In collaboration with Programme Leads, Fellows, YPs, and EAGs, the ECG reviews the curriculum framework for each subject area and plays a central role in shaping the final product. Continuous website updates are managed by the CCP team, with ASPHER Member SPHs actively contributing to the curriculum's development. The ECG serves as the creative hub,

overseeing final product development and ensuring alignment with the CCP's vision.



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# Chapter 3

# Outcome



 **ASPHER**

Core Curriculum  
for Public Health

## Outcome

The ASPHER Core Curriculum for Public Health is a dynamic, living curriculum, artfully combining traditional subject areas of public health education with novel subject areas which are required to deal with the “New Normal” public health landscape.

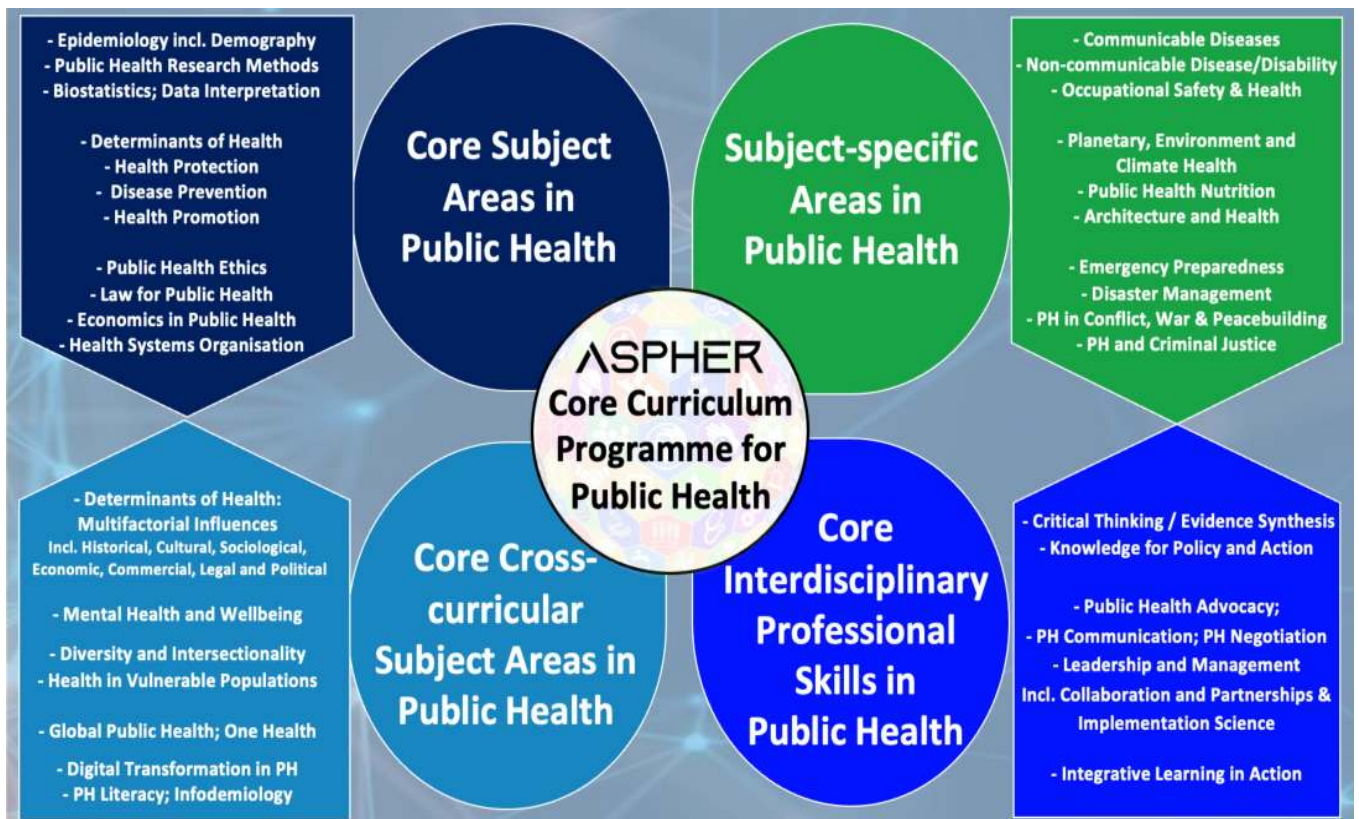


Fig 3.1: ASPHER CCP Curricular Domains and Subject Areas

# Core Subject Areas in Public Health

The following subject areas are core to a public health curriculum because they provide **essential tools and knowledge for addressing population health challenges**.

**Demography** helps public health professionals understand population structures and trends, guiding resource allocation and health planning. **Epidemiology** is fundamental for identifying disease patterns, causes, and risk factors, enabling the design of effective prevention strategies.

**Public Health Research Methods** equip professionals to gather evidence, evaluate interventions, and inform health policies. **Biostatistics** and **Data Interpretation** allow for analysing health data to support decision-making and track health trends.

**Determinants of Health** (social, economic, and environmental) explain the underlying factors affecting health disparities, critical for targeted interventions. **Health Protection** and **Disease Prevention** focus on safeguarding populations from diseases and hazards, the cornerstone of public health practice.

**Health Promotion** emphasizes strategies for encouraging healthier behaviours, preventing chronic diseases, and improving overall well-being. **Public Health Ethics** ensures health interventions are conducted with respect for individuals and fairness.

**Law for Public Health** provides a legal framework to regulate practices, protect public health, and enforce safety measures. **Economics in Public Health** ensures efficient use of resources and cost-effective health interventions. Lastly, **Health Systems Organisation** ensures health services are delivered equitably and effectively.

Together, these subjects equip professionals with the skills to address diverse public health challenges and improve population health.

- Epidemiology, incl. demography
- Public Health Research Methods
- Biostatistics, incl. data Interpretation
  
- Determinants of Health
- Health Protection / Disease Prevention
- Health Promotion
  
- Public Health Ethics
- Law for Public Health
- Economics in Public Health
- Health Systems Organisation

# Subject-specific Areas in Public Health

The following specific subject areas in public health are regarded as specialties or streams because they address distinct and complex health challenges.

**Communicable Disease** focuses on the prevention and control of infectious diseases, critical for managing outbreaks and pandemics that pose global threats. It involves surveillance, vaccination, and public health interventions.

**Non-communicable Disease/Disability** addresses chronic conditions like heart disease, diabetes, and disabilities, which are leading causes of death

and disability globally. Public health efforts in this area focus on prevention and management through behavioural changes and healthcare access. **Occupational Safety & Health** protects workers from hazards in the workplace, preventing injuries, illnesses, and improving overall workforce health and productivity. **Planetary, Environment, Climate Health** examines the impact of environmental factors and climate change on human health. It emphasizes the need for sustainable practices to mitigate health risks from pollution, extreme weather, and ecosystem disruption. **Public Health Nutrition** focuses on the role of diet in promoting health and preventing malnutrition and diet-related diseases. It addresses issues such as food security and nutrition policies. **Architecture and Health** explores how the built environment influences health, emphasizing the design of healthier living spaces to promote physical and mental well-being.

**Emergency Preparedness and Disaster Management** involve planning and responding to health crises, including natural disasters and pandemics, to reduce health impacts and improve resilience. **Public Health in Conflict, War & Peacebuilding** focuses on the unique health challenges faced by populations in conflict zones, addressing trauma, displacement, and rebuilding health systems. **Public Health and Criminal Justice** examines health issues within criminal justice systems, promoting health equity for incarcerated populations and addressing public health concerns related to crime. Together, these specialties allow public health professionals to address a wide range of complex health issues, from global health crises to specific population health needs.

- Communicable Diseases
- Non-communicable Disease/Disability
- Occupational Safety & Health
- Planetary, Environment, Climate Health
- Public Health Nutrition
- Architecture and Health
- Emergency Preparedness
- Disaster Management
- PH in Conflict, War & Peacebuilding
- PH and Criminal Justice



# Core Cross-curricular Subject Areas in Public Health

The following core cross-curricular subject areas in public health are critical for a holistic understanding of health and its influencing factors:

**Determinants of Health: Multifactorial Influences on Health** explores how historical, cultural, sociological, economic, commercial, legal, and political factors shape health outcomes. Understanding these complex, interconnected determinants is crucial for designing effective health interventions and policies that address the root causes of health disparities. **Mental Health and Wellbeing**

emphasizes the importance of mental health as a core aspect of overall public health. It focuses on promoting mental wellness, preventing mental disorders, and ensuring access to mental health services, which are key to improving quality of life. **Diversity and Intersectionality** examines how different social categories (e.g., race, gender, socioeconomic status) intersect to influence health outcomes. Recognizing these intersections helps public health professionals address health inequities and ensure inclusive, culturally sensitive interventions. **Health in Vulnerable Populations** focuses on addressing the unique health challenges faced by marginalized groups, such as refugees, the elderly, and low-income populations. Special attention to these groups is vital for achieving health equity and justice.

**Global Public Health; One Health** connects human, animal, and environmental health, recognizing their interdependence. This approach is essential for tackling global health challenges like pandemics, zoonotic diseases, and environmental degradation. **Digital Transformation in Public Health**

highlights how digital tools and technologies (e.g., health apps, big data, telemedicine) are reshaping public health. It promotes the use of digital innovations for more efficient, equitable, and personalized health interventions. **Public Health Literacy; Infodemiology** focuses on improving the public's understanding of health information and managing the spread of misinformation. In the digital age, promoting health literacy is key to empowering individuals and communities to make informed health decisions. Together, these cross curricular areas enable public health professionals to address

health challenges in a comprehensive, culturally aware, and technologically advanced manner.

**Determinants of Health: Multifactorial Influences (incl. Historical, Cultural, Sociological, Economic, Commercial, Legal and Political)**

**Mental Health and Wellbeing**  
**Diversity and Intersectionality**  
**Health in Vulnerable Populations**

**Global Public Health; One Health**  
**Digital Transformation in Public Health**  
**Public Health Literacy; Infodemiology**

# Core Interdisciplinary Professional Skills in Public Health

The following core interdisciplinary professional skills are essential for effective public health practice, enabling professionals to translate knowledge into impactful action:

**Critical Thinking / Evidence Synthesis** is crucial for analysing complex health data and problems, allowing public health professionals to assess evidence, identify solutions, and make informed decisions. This skill ensures that interventions are based on the best available science.

**Knowledge for Policy and Action** involves translating research and public health evidence into policies and actionable strategies. Professionals

use this skill to influence decision-makers and create policies that improve population health. **Public Health Advocacy** empowers professionals to promote health equity and influence policy changes. It involves actively championing public health issues, ensuring that vulnerable populations and health priorities are addressed. **Communication and Negotiation** are vital for conveying public health messages clearly and persuasively. Effective communication helps professionals engage communities, policymakers, and stakeholders, while negotiation skills are key in building consensus and advancing health initiatives. **Collaboration and Partnerships** are essential in public health, where complex health challenges often require coordinated efforts across sectors. Professionals must work with governments, NGOs, the private sector, and communities to implement effective health strategies.

**Leadership and Management** skills equip professionals to guide teams, manage projects, and drive organizational change. Strong leadership is crucial for navigating challenges and mobilizing resources in public health settings.

**Implementation Science** focuses on turning research into practice by determining the most effective ways to implement and scale health interventions. This skill ensures that public health initiatives are sustainable and achieve real-world impact. **Integrative Learning in Action** encourages professionals to combine knowledge from various disciplines and experiences to address health challenges holistically. This skill is crucial for adapting to complex, evolving public health landscapes.

Together, these interdisciplinary skills enable public health professionals to lead, innovate, and collaborate effectively, ensuring that evidence-based strategies lead to meaningful health improvements.

**Critical Thinking / Evidence Synthesis**  
**Knowledge for Policy and Action**

**Public Health Advocacy;**  
**Communication; Negotiation**  
**Collaboration and Partnerships**

**Leadership and Management**  
**Implementation Science**  
**Integrative Learning in Action**

## ASPHER CCP Chapter Layout

Each chapter within this report is structured to provide a comprehensive guide to the subject areas within the ASPHER Core Curriculum for Public Health. These sections are designed to offer a thorough understanding of the importance, interconnectedness, and competencies required for each subject area in preparing future and current public health professionals. The following outlines the format and purpose of each chapter:

### 1. Rationale and Current Status on the Subject Area

This narrative section provides an overview of each subject area within the framework of contemporary public health challenges, especially considering the ongoing adjustments within the “new normal.” Each narrative explores:

- **Importance in Public Health Education:** The relevance of the subject area to both foundational and advanced public health education is discussed, emphasizing why this knowledge is essential for developing well-rounded, competent public health practitioners.
- **Competency Frameworks:** This section also highlights vital competency frameworks for the subject, ensuring that the chapter aligns with current public health education standards. Specific competencies may draw from established frameworks, ensuring that students acquire skills that are recognized as essential for public health practice.
- **Interconnections with Other Subject Areas:** Public health is inherently interdisciplinary, and this section identifies which other curriculum areas are linked, demonstrating the need for students to have a holistic understanding that spans multiple domains.
- **Skill Importance for Emerging and Current Professionals:** As future public health professionals, students will need a blend of knowledge, skills, and abilities covered in this curriculum to address evolving health needs effectively.

### 2. Competency Framework Reference Table

To ground each chapter in a standards-based approach, this table serves as a quick-reference guide to relevant competency frameworks, standards, and foundational reports aligned with the subject area. By mapping competencies, the table shows how each aspect of the curriculum corresponds to recognized public health standards and provides a foundation for measurable outcomes in student development.

### 3. Connectivity to Other Subject Area Map

The subject area connectivity map illustrates linkages to other topics within the curriculum. Using insights derived from qualitative content analysis, this map visually highlights key interconnections, showing where subjects converge and complement one another. These visualizations underscore the interdisciplinary nature of public health education and the necessity for students to comprehend these interdependencies for comprehensive competency.



Fig 3.3: Example: ASPHER CCP Connectivity Map

### 4. Subject-Specific Curriculum Overview

This section provides an overview of key components within each curriculum. It details subject-specific elements that are critical for students to master, enabling educators to understand the essential areas of focus in each topic. This overview also ensures clarity and consistency in teaching, regardless of delivery level or academic setting.

### 5. Curricular Theme Diagram

To aid in visual learning and structural comprehension, each chapter includes a curricular theme diagram. This diagram represents overarching themes within the subject curriculum, helping students to visualize the core elements and thematic structure of the subject and to understand how these align with broader public health goals.

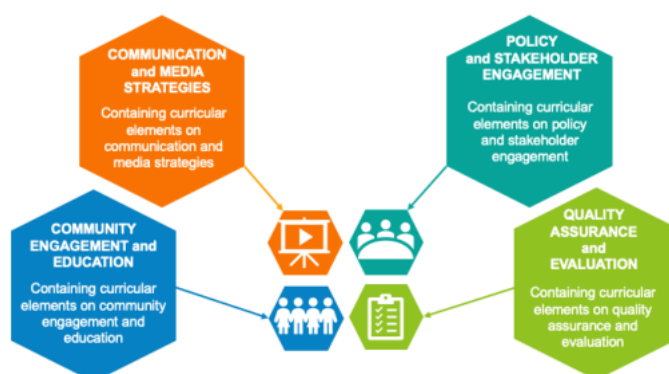


Fig 3.4: Example: ASPHER CCP Theme Diagram

### 6. Curriculum Tables

Each chapter may conclude with curriculum tables that are differentiated by educational level, depending on the subject area. This tiered presentation supports different stages of education, including:

- **Bachelor's:** Foundational competencies and introductory skills.
- **Master's:** Advanced analytical skills, application, and integration of knowledge.
- **Doctorate:** Research-oriented competencies, leadership, and expert-level analysis.
- **Diploma/Certificate:** Specialized knowledge for focused applications.
- **Continuous Professional Development (CPD) and Professional Training (Specialty Training):** Updated, skill-specific training for ongoing professional enhancement.

These curriculum tables facilitate the structured delivery of subject-specific content across varying educational and professional development levels, allowing for flexibility and relevance in diverse public health contexts.

## **Curriculum Use Advisory**

It is acknowledged that the breadth of the curriculum may exceed feasible teaching capacity. In recognition of this, a curated selection of elements is presented, providing academic instructors the flexibility to tailor programmes to align with the specific needs and nuances of their local public health landscapes.

This pick-and-mix methodology empowers educators to craft programs that are finely attuned to the distinct challenges and priorities within their respective contexts, thereby enhancing the relevance and effectiveness of the educational experience. By affording this flexibility, the curriculum ensures that educational programs remain dynamic and responsive to evolving public health developments, while also promoting a culture of adaptability and innovation in pedagogical approaches



# Chapter 4

## Epidemiology

*Incl. Demography*



CORE SUBJECT AREAS IN PUBLIC HEALTH



## Rationale and Current Status: Epidemiology including demography

**Contributors:** *Mary Codd, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos*

Epidemiology is the scientific study of the occurrence, distribution and determinants of health and disease in populations. It serves as the foundational discipline of public health, utilizing statistical analysis and research methodologies to understand the patterns and causes of diseases and health outcomes. The scope of epidemiology encompasses activities from tracking disease outbreaks and studying chronic disease trends to evaluating interventions and informing health policy decisions.

Epidemiology equips students with the critical skills needed to investigate and interpret health data, identify risk factors, and design effective public health interventions. A secondary rationale lies in the fact that epidemiology provides the evidence base for making informed decisions about health policies, resource allocation, and prevention strategies. Thirdly, it fosters a comprehensive understanding of health dynamics across diverse populations, enabling public health professionals to address health disparities and promote health equity. By integrating epidemiology into the curriculum, future public health leaders are better prepared to confront current and emerging health challenges, ultimately contributing to the improvement of population health outcomes and the advancement of global health initiatives.

### Competency Frameworks

Epidemiology, as a pivotal subject area within public health, aligns seamlessly with several established core competency frameworks. These include the WHO-ASPHER Competency Framework 2020<sup>1</sup>, which emphasizes a comprehensive understanding of epidemiological principles and methods. Additionally, it aligns with the WHO's 12 Essential Public Health Functions 2024<sup>2</sup>, ensuring that public health professionals are equipped to perform vital functions such as health surveillance, disease prevention, and health promotion.

Moreover, the European Centre for Disease Prevention and Control 2022 Core Competencies in Applied Infectious Disease Epidemiology<sup>3</sup> underscores the importance of applied epidemiological skills in managing infectious diseases. Furthermore, this subject area is in concordance with the guidelines established by the International Consortium on Teaching Epidemiology based in Switzerland 2023<sup>4</sup>, which promotes excellence and consistency in epidemiological education worldwide.

### Advantages

Incorporating epidemiology into the public health curriculum not only fosters these competencies but also ensures that graduates are adept at navigating and addressing the multifaceted challenges of global health. This alignment with international standards and frameworks reinforces the critical role of epidemiology in advancing public health objectives, thereby preparing future public health leaders to effectively improve population health and respond to emerging health threats.



**Epidemiology is intrinsically linked with every other subject area within the ASPHER Core Curriculum**, this can be seen in the connectivity section of this chapter, due to the linked nature of epidemiology, it in so far creates a unified foundational framework that addresses the multifaceted factors influencing population health.

The subject area biostatistics and epidemiology are intrinsically linked, as statistical methods are essential for analysing data, identifying trends, and making inferences about health outcomes. This relationship ensures that public health professionals can design robust studies and accurately interpret their findings. Knowledge for policy and Action also rely heavily on epidemiology. By identifying the causes and patterns of diseases, epidemiological research informs policy decisions and resource allocation. It helps evaluate the effectiveness of health interventions and programs, guiding evidence-based policymaking to enhance health systems.

Diversity and Intersectionality, Infodemiology and communication subject areas contribute to understanding the determinants of health. Epidemiology examines how social factors, behaviours, and environmental exposures influence disease distribution, aiding in the development of targeted interventions to address these determinants.

The field of planetary, environmental, and climate health is closely tied to epidemiology, making it crucial for students and practitioners alike. Investigating how environmental exposures affect health is becoming more central to epidemiological research, helping identify and reduce risks from environmental hazards—a key focus for those entering public health careers. Understanding vulnerable and displaced populations is also deeply connected to epidemiology, providing essential knowledge for both study and practice. Moreover, global public health relies on epidemiological methods to track and address cross-border health issues, including infectious diseases, health disparities, and the impacts of globalization, all vital areas for emerging professionals.

By understanding key connections between other subject areas, programme planners, developers within schools and institutes of public health can develop more connected and joined up programmes which provide key knowledge and skill attainment for student.

**In conclusion**, epidemiology is a cornerstone of public health, providing essential insights into the distribution, causes, and prevention of health-related issues in populations. Its integration into public health education equips future leaders with the analytical skills to address diverse health challenges and informs evidence-based policymaking. By aligning with international competency frameworks, epidemiology ensures public health professionals are well-prepared to respond to global health threats, promote health equity, and improve population health outcomes through research, policy, and intervention strategies.

## Alignment to Competency Frameworks

The Epidemiology incl. demography subject area of this curriculum is aligned with the following competency frameworks and associated competencies

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 6: Collaboration and Partnership

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 11: Public Health Research, Evaluation and Knowledge

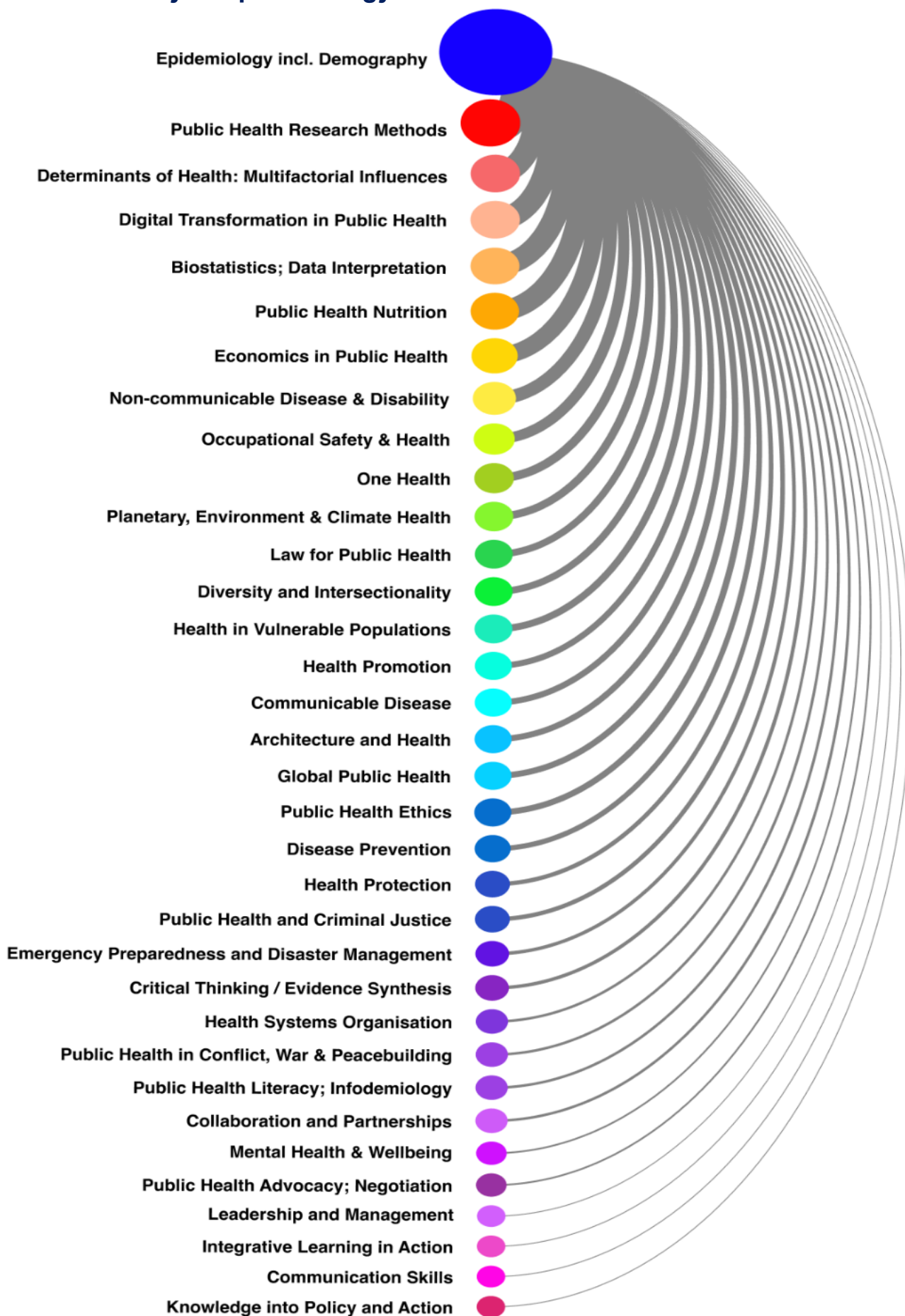
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area A: Essential Methods for Applied Infectious Disease Epidemiology
  - Descriptive Epidemiology
  - Epidemiological Research Methods

### International Consortium on Teaching Epidemiology, Switzerland, 2023

- Domain 1: Development of Scientific Question
  - A. Identification and framing of scientific question (A1-3)
  - B. Review of evidence and context (B1-4)
- Domain 2: Study Planning
  - C. Combining content knowledge and research methods (C1-4)
  - D. Minimizing errors (random error and systematic biases) (D1-3)
- Domain 3: Study conduct and Analysis
  - E. Study conduct (E1-5)
  - F. Analysis (F1-7)
- Domain 4: Communication and Translation
  - Communication (G1)
  - Translation and informing practice (H1)
- Domain 5: Overarching Core Competencies
  - Coordination and leadership (O1-3)

# Connectivity of Epidemiology in Public Health curricula

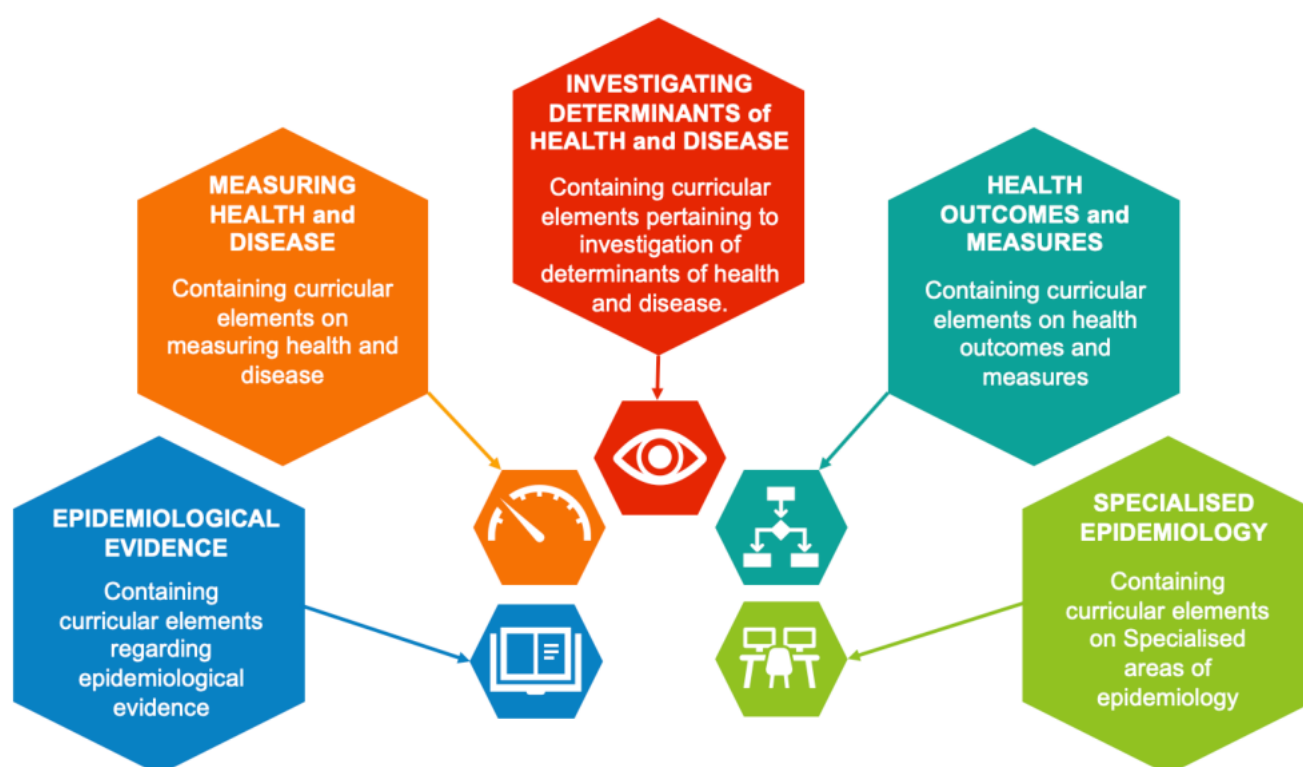


**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Epidemiology incl. Demography Curriculum Overview

Integrating epidemiology into the public health curriculum is essential for preparing students to tackle contemporary health challenges. It provides foundational tools and methodologies to understand disease distribution and determinants, fostering data-driven decision-making and analytical skills. The interdisciplinary nature of epidemiology connects students to biostatistics, health policy, social and behavioural sciences, environmental health and global health, offering a comprehensive view of public health. This integration prepares students for emerging health threats, promotes health equity by identifying and addressing disparities, and instils a global perspective crucial for international health initiatives. Ultimately, epidemiology equips students to improve population health effectively.

## Epidemiology incl. Demography Themes



## Epidemiology incl. Demography Curriculum

Recognizing the range of challenges in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. This inclusive approach equips learners with tools to engage in discourse and practice in the field of epidemiology. Suggested curricular elements are presented for all educational levels.

## Full Curriculum

### EPIDEMIOLOGICAL EVIDENCE

- Historical epidemiology
- Demography
- Vital statistics
- Population pyramids
- Demographic data population pyramids
- Surveillance and early warning systems
- Communicating epidemiological concepts

### MEASURING HEALTH and DISEASE

- Burden of disease
- Health data sources
- Occurrence of health and disease
- Measures of disease frequency
- Rates and trends
- Standardisation of rates
- Distribution of disease by person, place, and time comparison
- Measurement issues in epidemiological investigations
- Etiology and causality
- Disease case definitions
- Classifications and diagnostic criteria

### INVESTIGATING DETERMINANTS of HEALTH and DISEASE

- Observational study designs
- STROBE guidelines
- Experimental study designs
- CONSORT checklist
- Introduction to systematic reviews
- Introduction to meta-analysis
- PRISMA guidelines
- EQUATOR network
- Validity and reliability of measurement instruments
- Sources of bias
- Measurement error
- Confounding and chance in epidemiological investigations
- Populations sampling strategies
- Sample size estimation
- Interpretation of estimates
- Estimation of risk / benefit
- Critical appraisal of scientific evidence
- Health research reporting guidelines
- External validity
- Validity and reliability
- Effect modification

## HEALTH OUTCOMES and MEASURES

- Life expectancy
- Quality of life reports
- COMET initiative
- Patient-reported outcome measures
- Dynamic population frequency
- Continuous measures of health data
- Prognostic research
- Quality of care

## SPECIALISED EPIDEMIOLOGY

- Outbreak epidemiology
- Surveillance and early warning methods
- Genetic epidemiology concepts
- Family-based studies
- Linkage analysis for genetic mutation
- Association multifactorial genetic studies
- Genetic biological pathway studies
- Self-harm and injury epidemiology
- Epidemiological modeling
- Geographic / Spatial analysis

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# Chapter 5

## Public Health Research Methods



CORE SUBJECT AREAS IN PUBLIC HEALTH





## Rationale and Current Status: Public Health Research Methods

**Contributors:** *Mary Codd, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos*

Research in any discipline is the essential foundation of meaningful improvement in practice. In public health, research is essential in the following respects:

**(a)** to map the ever-changing landscape of public health, in recent years described as the ‘New Normal’ for public health <sup>1</sup>; **(b)** to remain current with developments and emerging threats that may impact on the health of populations; **(c)** to design evidence-based interventions aimed at disease prevention, health promotion and health protection; and **(d)** to evaluate the impact of such interventions.

Students of public health at all levels, but especially at Master and Doctoral levels, need to be conversant with the research process and the multifaceted influences on the conduct of and potential contribution of good research. From the research question to the choice of study design and target populations, to the appropriate collection of research data including measurement issues, the collation and analysis of study data, the interpretation and dissemination of results, and the value of data for improvement in practice, advocacy for change and impact on policy, the research process must be an integral component of a public health curriculum. These are the essential tools for systematically investigating health phenomena, identifying trends, evaluating interventions, guiding informed decision-making and promoting positive health outcomes in populations,

Quite apart from the expansion of knowledge and contribution to improvement in services and delivery, the skills acquired in a public health research methods curriculum will endure throughout a professional lifetime.

**Essential components** of a public health research methods curriculum should include:

- Understanding study design (methodological knowledge), from the research question to study design to application.
- Understanding how to use data, how to interpret, apply and present data in a user-friendly manner.
- Understanding historical contexts around public health research design.
- Being able to apply methodological technique in study design, study application and how to report findings in various formats. Skills are best acquired through hands-on practical work

**Delivery** can be challenging, time-consuming but rewarding

**Connectivity with other subject areas**

Not surprisingly, Public Health Research Methods are connected with subject areas throughout a public health curriculum, but most strongly with Biostatistics and Data Interpretation, Public health Ethics, Digital transformation in Public Health and Epidemiology.

**Public Health Frameworks and Educational Significance**

Public Health Research Methods are essential to building evidence for informed decision-making and are closely aligned with key competency frameworks. The WHO-ASPHER Competency Framework<sup>2</sup> emphasizes the importance of research in guiding public health practice, with a focus on data analysis, evidence-informed policy, and ethical research conduct. Similarly, the WHO 12 Essential Public Health Functions<sup>3</sup> highlight the role of research in several core functions, including health surveillance, monitoring health risks, and evaluating health services. Public Health Research Methods play a critical role here by offering the tools necessary to investigate, assess, and improve public health interventions.

Lastly, the ECDC Core Competencies in Applied Infectious Disease Epidemiology<sup>4</sup> emphasize the need for epidemiological research methods in outbreak investigation, data analysis, and risk communication, helping public health professionals respond to infectious disease threats. Together, these frameworks underscore that robust research methods are a fundamental skillset for public health professionals, equipping them to generate evidence, analyse health data, and apply research findings to protect and promote public health.

## Alignment to Competency Frameworks

The Public Health Research Methods subject area of this curriculum is aligned with the following competency frameworks and associated competencies

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 6: Collaboration and Partnership

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 11: Public Health Research, Evaluation and Knowledge

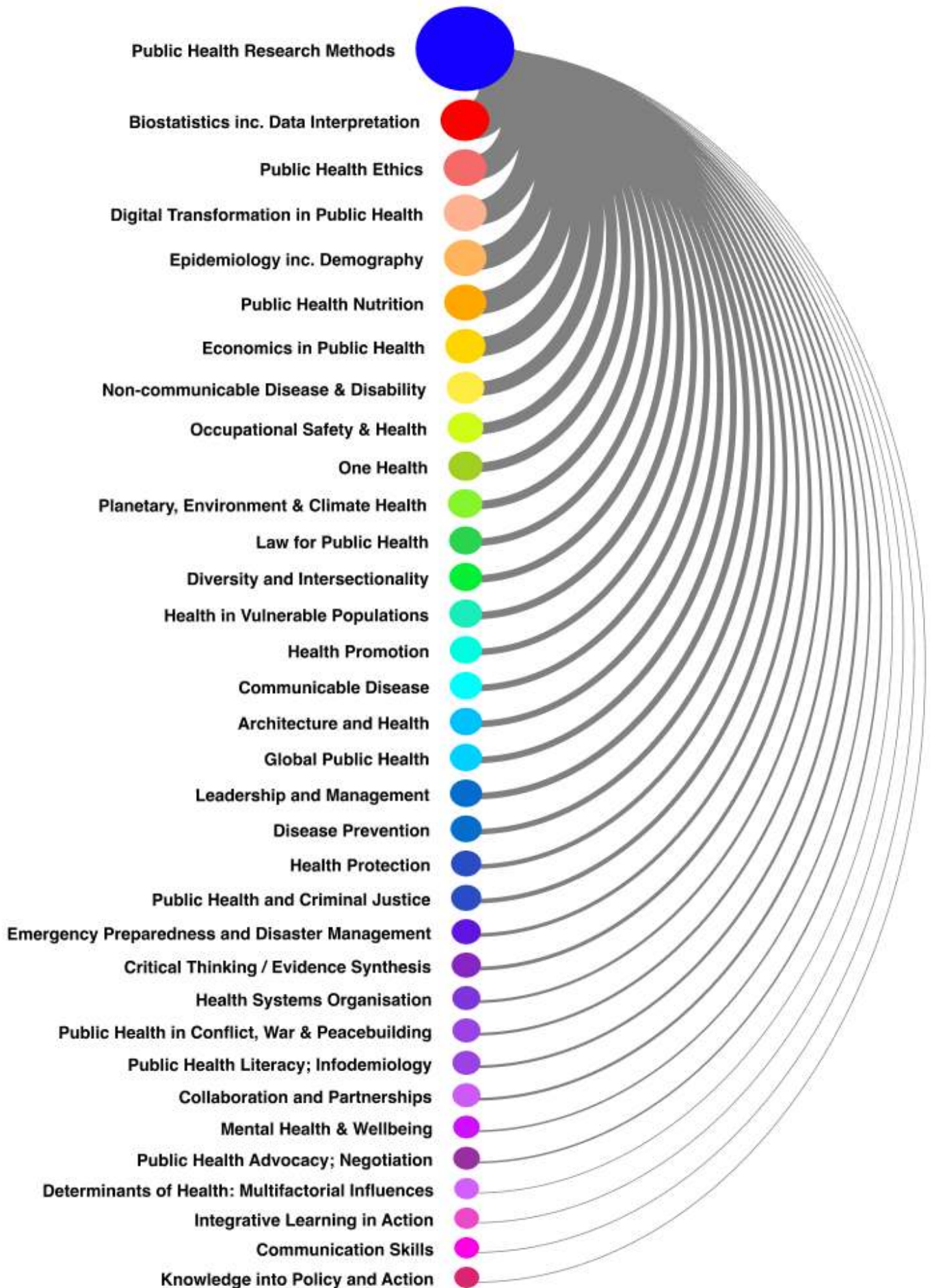
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area A: Essential Methods for Applied Infectious Disease Epidemiology
  - Descriptive Epidemiology
  - Epidemiological Research Methods

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 1: Data Analytics and Assessment skills
- Domain 2: Policy Development and Program Planning Skills
- Domain 6: Public Health Science Skills

### Connectivity of PHR methods in Public Health curricula

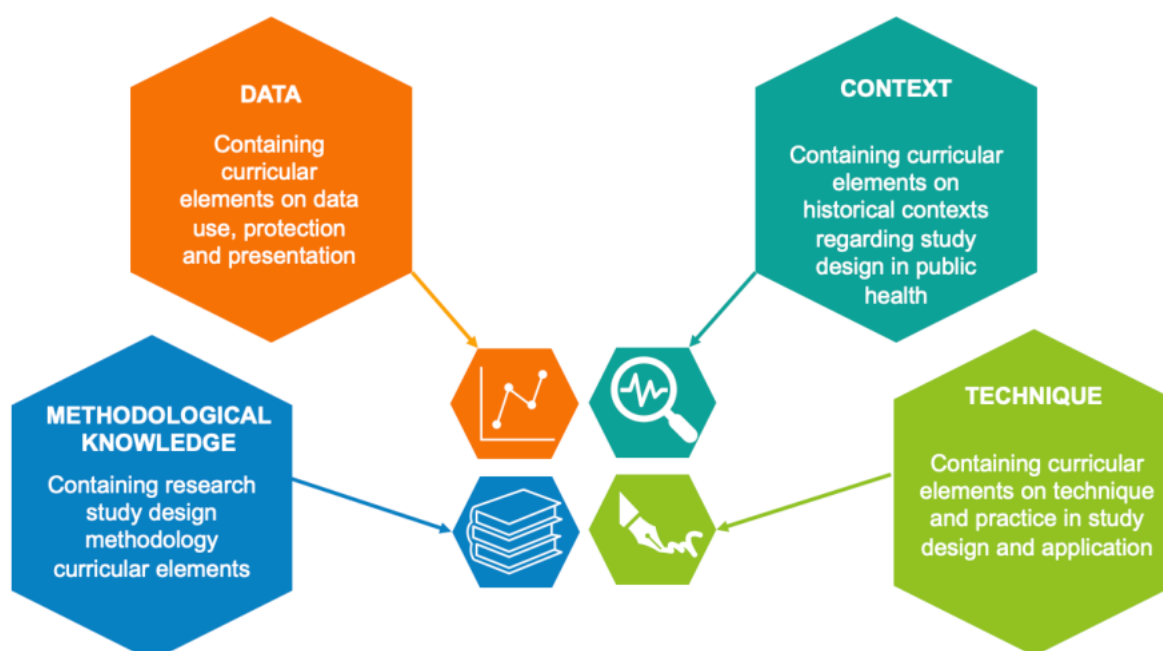


*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Public Health Research Methods Curriculum Overview

At its core, the public health research methods curriculum provides students with a broad understanding to delve into the pivotal role that public health research methods play in shaping the education and training of future public health leaders. By instilling a solid foundation in research methodologies, educational programs empower students to navigate the complexities of contemporary public health challenges with precision, innovation, and efficacy. Ultimately, proficiency in research methods equips students with the essential toolkit needed to drive positive change and advance population health on a global scale.

## Public Health Research Methods Themes



## Public Health Research Methods Curriculum

Suggested curricular elements are presented for the different educational levels, i.e.

- Bachelor
- Master
- Doctorate
- Certificate and/or Diploma
- Continuous Professional Development (CPD)

## Bachelor Degree and Master Degree Levels

### METHODOLOGICAL KNOWLEDGE

- Understand the research process
- Research question development
- PICOT method
- Mixed methods (plural methods)
- Quantitative methods
- Qualitative methods
- Systematic reviews
- Ethics in research methodology
- Epidemiological study design
- Case studies
- Design of study instruments
- including questionnaires, case report forms and data dictionaries
- Participatory research
- Action research
- Observation
- Longitudinal study types
- Directionality of question

### DATA

- Key elements of research protocols
- Collection of research data
- Working with data
- Analysis of visual data
- Database creation
- Types of research data (primary / secondary; individual / aggregate)
  - with advantages and limitations of each
- Data protection
- Clinical data collection

### CONTEXT

- Reflexivity in fieldwork
- Research protocol frameworks
- Openness and communication
- Historical perspectives on public health methods, Dr. John Snow
- Historical perspectives on public health research, Florence Nightingale
- Ethical considerations - culture; vulnerable populations

### TECHNIQUE

- Tabular and graphical representation of research results
- Literature search strategies and use of referencing software
- Ethical review
- Research ethic committee processes
- Sampling methods and recruitment strategies
- Power calculations / sample size estimation appropriate to the study design
- Data cleaning and editing
- Thematic analysis
- Content analysis
- Participant information and consenting procedures
- Data manipulation, and creation of new variables
- Appropriate statistical techniques and statistical analysis
- Design an epidemiological study to be carried out in a clinical, public health or other scientific setting
- Exploratory and reflective interviewing

## Doctoral Degree Level

### METHODOLOGICAL KNOWLEDGE

- Epidemiological study design
- Case studies
- Design of study instruments
  - including questionnaires, case report forms and data dictionaries
- Systematic reviews
- Participatory research
- Action research
- Observation
- Longitudinal study types

### DATA

- Collection of research data
- Working with data
- Analysis of visual data
- Database creation
- Types of research data (primary / secondary; individual / aggregate)
  - with advantages and limitations of each
- Data protection
- Clinical data collection

### CONTEXT

- Research protocol frameworks
- Openess and communication
- Ethical considerations - culture; vulnerable populations

### TECHNIQUE

- Ethical review
- Research ethic committee processes
- Sampling methods and recruitment strategies
- Power calculations / sample size estimation appropriate to the study design
- Thematic analysis
- Participant information and consenting procedures
- Appropriate statistical techniques and statistical analysis
- Design an epidemiological study to be carried out in a clinical, public health or other scientific setting
- Exploratory and reflective interviewing

## Certificate and/or Diploma Level

### METHODOLOGICAL KNOWLEDGE

- Ethics in research methodology
- Epidemiological study design
- Case studies
- Design of study instruments
  - including questionnaires, case report forms and data dictionaries
- Observation
- Longitudinal study types
- Systematic reviews

### DATA

- Key elements of research protocols
- Collection of research data
- Working with data
- Database creation
- Types of research data (primary / secondary; individual / aggregate)
  - with advantages and limitations of each
- Data protection
- Clinical data collection

### CONTEXT

- Reflexivity in fieldwork
- Research protocol frameworks
- Openness and communication
- Historical perspectives on public health methods, Dr. John Snow
- Historical perspectives on public health research, Florence Nightingale
- Ethical considerations - culture; vulnerable populations

### TECHNIQUE

- Tabular and graphical representation of research results
- Literature search strategies and use of referencing software
- Ethical Review
- Sampling methods and recruitment strategies
- Power calculations / sample size estimation appropriate to the study design
- Design an epidemiological study to be carried out in a clinical, public health or other scientific setting



## Continuous Professional Development

### METHODOLOGICAL KNOWLEDGE

- Mixed methods (plural methods)
- Quantitative methods
- Qualitative methods
- Ethics in research methodology
- Epidemiological study design
- Case studies
- Design of study instruments
  - including questionnaires, case report forms and data dictionaries
- Participatory research
- Action research
- Observation
- Longitudinal study types
- Systematic reviews

### DATA

- Key elements of research protocols
- Collection of research data
- Working with data
- Analysis of visual data
- Database creation
- Types of research data (primary / secondary; individual / aggregate)
  - with advantages and limitations of each
- Data protection

### TECHNIQUE

- Tabular and graphical representation of research results
- Literature search strategies and use of referencing software
- Ethical review
- Research ethic committee processes
- Sampling methods and recruitment strategies
- Power calculations / sample size estimation appropriate to the study design
- Data cleaning and editing
- Thematic analysis
- Participant information and consenting procedures
- Data manipulation, and creation of new variables
- Appropriate statistical techniques and statistical analysis
- Design an epidemiological study to be carried out in a clinical, public health or other scientific setting
- Exploratory and reflective interviewing

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# Chapter 6

## Biostatistics

*Incl. Data Interpretation*



## Rationale and Current Status: Biostatistics

**Contributors:** Priscilla Robinson, Monica Hunsberger, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd,

Biostatistics is a fundamental discipline of a public health curriculum.<sup>1</sup> Concentrating on the application of statistics to biomedical and population health data, it should equip students with knowledge and skills to collate, analyse and interpret data relevant to population health.

From its most basic components of understanding data, understanding research design, use of data for estimation, inference and prediction, critical appraisal of research findings, supplemented by computational skills required to manage data and generate results from statistical procedures, basic biostatistics is a core subject area and cornerstone of public health education.

**Understanding data** includes a thorough understanding of types of variables, levels of measurement and statistical distributions to which data map. It extends to knowing and being able to interpret the most appropriate descriptive statistics for data of different types and levels, and competently presenting data in tabular and graphical formats.

**Understanding estimation**, including parameter estimation and estimation of risk, understanding probability distributions and hypothesis testing, provide students with the skills to conduct appropriate statistical procedures on data, and to competently appraise and interpret published research. Data mining / big data

**Understanding research design and statistical inference** allows students to critically appraise published research as well as design and conduct statistical analyses of existing secondary data or primary data collected for specific purposes. The processes and requirement to develop Data Management and Analysis Plans, and to address the ethics of statistical analysis as part of research design, are important skills for students of public health to acquire.

**Using data for modelling and prediction** addresses the potential and real world applications of data gathered in surveillance systems and national repositories to contribute to population health. It may include data mining and use of 'big data' to add credibility to findings.

**Acquiring computational skills in at least one statistical system** empowers students to work both independently and to contribute to collaborative research endeavours.

Biostatistics is intricately connected with subject areas across a public health curriculum. Examples include:

- the interpretation and use of epidemiologic data on health and disease metrics; design of epidemiologic research, analysis of disease patterns, and elucidation of risk factors;
- assessment of the impact of environmental and other exposures on health;
- use of statistics to evaluate health care interventions, cost-effectiveness, patient outcomes and operational efficiencies, and to support decision-making in relation to public health policy and actions;
- understanding health behaviours and social determinants of health, to inform international health initiatives and evaluate their impact; and
- to enhance evidence-based practice across all public health domains.

The ASPHER CCP biostatistics curriculum aligns closely with the following key public health competency frameworks. The 2020 WHO-ASPHER Competency Framework <sup>2</sup> emphasizes data analysis and evidence-based decision-making, both core aspects of biostatistics, supporting the interpretation of health data for effective interventions. The 2023 WHO's 12 Essential Public Health Functions <sup>3</sup> stress surveillance, monitoring, and evaluation, areas where biostatistics is vital for tracking health trends and assessing program impacts.

The ECDC 2022 Core Competencies in Applied Infectious Disease Epidemiology <sup>4</sup> focus on outbreak investigation, surveillance, and disease modelling. Biostatistics provides essential tools for analysing infectious disease patterns and determining control strategies. Lastly, the 2021 Council on Linkages Between Academia and Public Health Practice <sup>5</sup> highlights data analytics and program evaluation as key skills. Biostatistics equips practitioners to assess the effectiveness of health initiatives, bridging the gap between research and practice. Together, these frameworks underline the central role of biostatistics in shaping effective public health practice.

In conclusion, biostatistics stands as a foundational discipline within public health education, interwoven with many other subject areas. It equips students with the ability to analyse and interpret complex health data, which is essential for informed decision-making and effective public health interventions. As public health challenges continue to evolve, the role of biostatistics becomes even more crucial in ensuring that interventions are data-driven and evidence-based. By aligning with key competency frameworks like the WHO-ASPHER and ECDC, biostatistics remains vital for preparing practitioners to address current and emerging global health issues.

## Alignment to Competency Frameworks

The Biostatistics Subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 6: Collaboration and Partnership
- Competency 9: Professional Development and Reflective Ethical Practice

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Intelligence
- EPHF 2: Public Health Emergency Management
- EPHF 11: Public Health Research

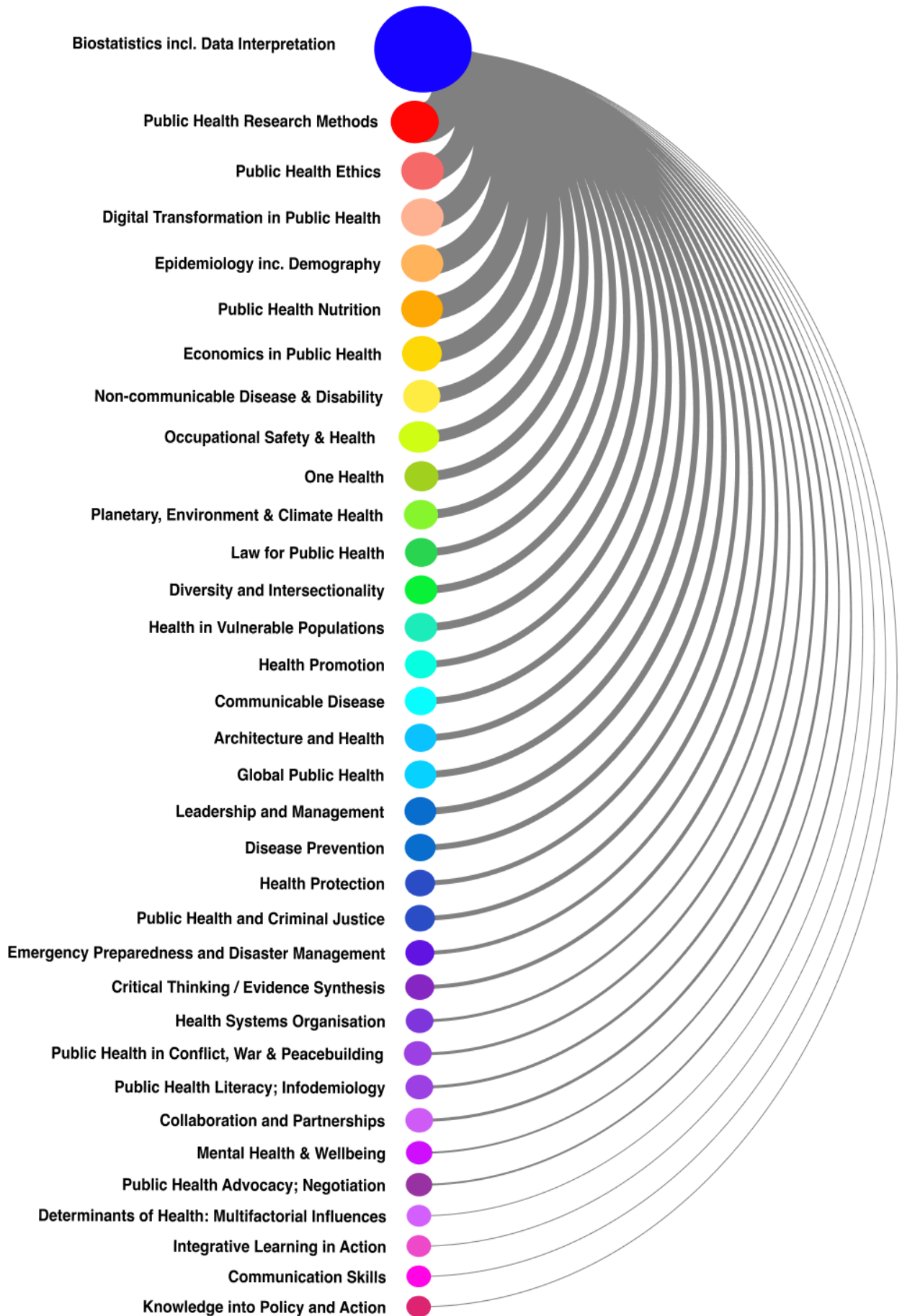
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area A: Essential Methods for Applied Infectious Disease Epidemiology
  - Epidemiological Research Methods
  - Data Management and Biostatistics

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 1: Data Analytics and Assessment Skills
  - 1.2 - Accesses existing quantitative and qualitative data
  - 1.3 - Collects quantitative and qualitative data
  - 1.4 - Analyses quantitative and qualitative data
  - 1.5 Manages quantitative and qualitative data
  - 1.6 Uses quantitative and qualitative data
  - 1.7 Applies Public health informatics in using data, information, and knowledge

# Connectivity of Biostatistics in Public Health curricula



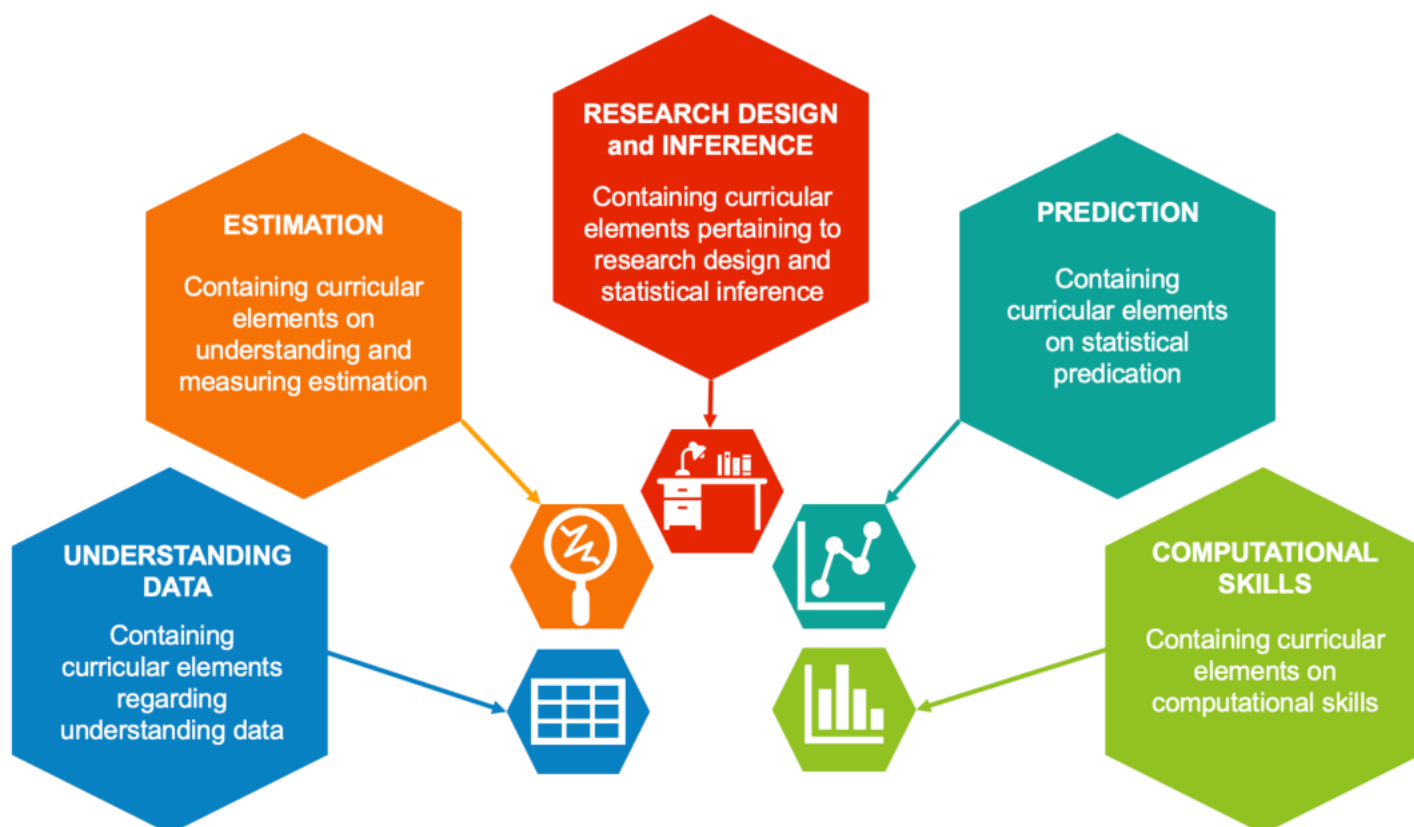
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas



## Biostatistics Curriculum Overview

Additionally, proficiency in biostatistics enables public health practitioners to develop and evaluate interventions, predict outcomes, and allocate resources efficiently, ultimately contributing to the improvement of population health outcomes. In essence, biostatistics is indispensable in equipping public health professionals with the analytical skills necessary to address the complex challenges facing communities worldwide.

## Biostatistics Themes



## Biostatistics Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Speciality Training (PST)

## Full Curriculum

## UNDERSTANDING DATA

- Attributes of variables
- Data visualisation: dot plots, bell curves, bar charts, histograms, frequency polygons
- Frequency distributions
- Levels of measurement - nominal, ordinal, interval, and ratio
- Logs, exponentials and transformations
- Mean deviation and variations
- Mean, median and mode
- Patterns in data
- Quality of data
- Range and interquartile range
- Variables and observations

## ESTIMATION

- Bayesian approach
- Confidence intervals
- Decision trees
- Errors in hypothesis testing
- Hypothesis testing
- Population standard deviation
- Probability
- Probability distributions - binomial, poisson
- Risk, odds and risk reduction
- Sample mean
- Sample variation
- Sensitivity, specificity and predictive values
- Significance levels, including p-values
- Variance

## RESEARCH DESIGN and INFERENCE

- Basic techniques for analysis of numerical data across different groups
- Nonparametric techniques (independent samples t-test, paired samples t-test, one-way ANOVA)
- Parametric techniques (Wilcoxon signed rank test, Mann Whitney U test, Kruskal-Wallis test, and Spearman's coefficient)
- Assumptions underlying statistical tests.
- Basic techniques for analysis of categorical data across different groups
- Bias and confounding
- Clinical trials
- Epidemiological concepts
- Ethics in biostatistics
- Nonparametric tests for differences in distributions/medians
- Paired and longitudinal analyses with ANOVA
- Quantitative research design
- Sample size calculation
- Significance testing for differences in proportions (chi-square tests, McNemar test)

## PREDICTION

- Communicate with disease modelers: infectious disease predictive modeling
- Assessing agreement
- Big data
- Correlations including Rho, Spearman, and Pearson
- Cox proportional hazards regression
- Diagnostic tools
- Different infectious disease models and scenarios: accounting for assumptions
- Kaplan-Meier curves
- Logistic regression
- Multivariate analysis
- Prognostic scoring
- rates and poisson regression
- Regression models using correct and interpretable tables and graphs
- Simple linear regression
- Time-series analysis

## COMPUTATIONAL SKILLS

- Analysis plans
- Data management and statistical analysis with software
- Data management plans
- Orientation to at least one statistical software
- Principles of data management

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# Chapter 7

## Determinants of Health

*Multifactorial influences*



## Rationale and Current Status: Determinants of Health: Multifactorial influences

The determinants of health encompass a wide range of factors influencing an individual's health status, including social, economic, environmental, and genetic elements. These determinants shape health outcomes by affecting the conditions in which people are born, grow, live, work, and age. Key categories include socioeconomic status, education, physical environment, employment, social support networks, and access to healthcare.

Multifactorial influences on health refer to the interplay of various factors, both intrinsic and extrinsic, that collectively impact health. This concept acknowledges that health outcomes are not the result of a single cause but rather a complex interaction of multiple determinants. For instance, chronic diseases like diabetes may arise from genetic predispositions, lifestyle choices, environmental exposures, and social determinants.

Incorporating the study of health determinants and multifactorial influences into a public health curriculum is crucial. It equips future public health professionals with a comprehensive understanding of the complexities underlying health disparities and the necessity for multifaceted intervention strategies. This knowledge is essential for developing effective public health policies and programs aimed at improving population health, reducing inequalities, and promoting a holistic approach to health and well-being.

The subject area of determinants of health and multifactorial influences on health is deeply interconnected with other areas of the ASPHER CCP.<sup>1</sup> Understanding health determinants is crucial for epidemiology, as it helps identify risk factors and causes of diseases within populations, guiding effective interventions and prevention strategies. In health policy and management, knowledge of health determinants informs the development and evaluation of policies aimed at reducing health disparities.

Planetary, environmental and climate health examines how factors like pollution and climate change affect health, contextualized within broader social and economic conditions. Biostatistics provides the tools to analyse data related to health determinants and measure their impact. Diversity and intersectionality explore how social determinants influence health behaviours, essential for designing effective public health interventions. In global public health, the determinants framework addresses challenges such as infectious diseases and health inequities by considering economic, social, and environmental factors on a global scale. Incorporating the study of health determinants and multifactorial influences ensures students understand the complexity of health issues and are prepared to address them from multiple angles, fostering a holistic and integrative approach to public health.

As detailed in the competency framework reference subsection, this subject area aligns with several key core competency sets critical for epidemiology. These include the WHO-ASPHER Competency Framework 2020, which emphasizes essential skills and knowledge for public health professionals.<sup>1</sup> Additionally, it adheres to the WHO's 12 Essential Public Health

Functions 2024, ensuring comprehensive public health education.<sup>2</sup> The ECDC's 2023 Core Competencies in Applied Infectious Disease Epidemiology further supports this alignment by focusing on competencies crucial for managing infectious diseases.<sup>3</sup>

Furthermore, this curriculum is in accordance with the guidelines established by the international consortium on Teaching Epidemiology based in Switzerland, promoting a global standard in epidemiological education.<sup>4</sup> We also align with the Dahlgren-Whitehead Determinants of Health Model, which provides a comprehensive framework for understanding the broad range of factors influencing health.<sup>5</sup> Finally, it corresponds with the Council on Linkages Between Academia and Public Health Practice (2021), bridging academic training and practical public health application.<sup>6</sup> These alignments ensure that our curriculum not only meets but exceeds the standards set by leading public health organizations, preparing students to excel in diverse and dynamic public health environments.

### **Chapter Composition**

Within this curriculum, we have divided the chapter into two sections (A and B): the first focuses on the determinants of health, and the second delves deeper into the multifactorial influences on health.

The determinants of health encompass a wide range of factors influencing an individual's health status, including social, economic, environmental, and genetic elements. These determinants shape health outcomes by affecting the conditions in which people are born, grow, live, work, and age. Key categories include socioeconomic status, education, physical environment, employment, social support networks, and access to healthcare. Understanding these determinants is foundational, providing essential insights into the broad context of health disparities and guiding the development of effective public health interventions.

In the second section, we explore multifactorial influences on health, acknowledging the complex interplay of various factors, both intrinsic and extrinsic. This section highlights that health outcomes result from the interaction of multiple determinants rather than a single cause. For instance, chronic diseases like diabetes may arise from genetic predispositions, lifestyle choices, environmental exposures, and social determinants.

The importance of studying the determinants of health as a foundation cannot be overstated. It equips future public health professionals with a comprehensive understanding necessary for developing effective policies and programs aimed at improving population health, reducing inequalities, and promoting a holistic approach to health and well-being.

## Alignment to Competency Frameworks

The Determinants of Health: Multifactorial Influences Subject Area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- All Competencies

### WHO 12 Essential Public Health Functions, 2024

- All EPHFs 1-12

### ECDC Core Competencies in Applied Infectious Disease, 2022

- All Subject area

### International Consortium on Teaching Epidemiology, Switzerland, 2023

- All Domains 1-5

### ASPHER Climate Health Core Competencies for Education, 2022

- All Competencies

### Laing. G et al. Advancing One Health: Updated core competencies, 2023

- All Domains

### ASPHER Diversity and Intersectionality Syllibi for Public Health Education, 2023

- All Syllibi Elements

### EU CompHP Core Competencies for Health Promotion, European Commission, 2011

- All Competencies

### American College of Lifestyle Medicine, Lifestyle Medicine Core competencies, 2022

- All Competencies

### ISPOR Health Economics and Outcomes Research Competencies Framework, 2002

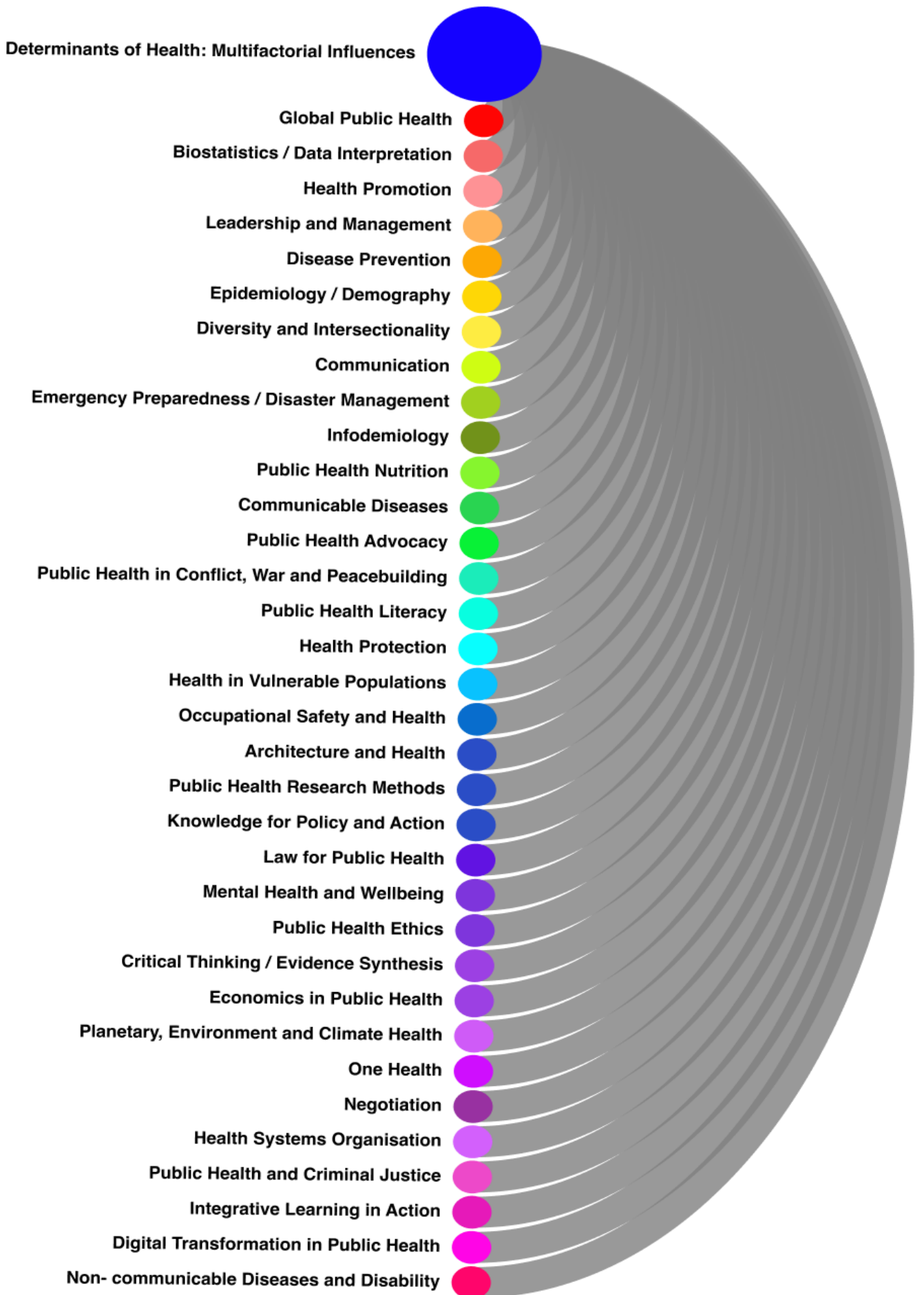
- All Competencies

### Council on Linkages Between Academia and Public Health Practice, 2021

- All Domains



### Connectivity of Determinants of Health in Public Health curricula



*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Determinants of Health: Multifactorial Influences Curriculum Overview

Learning about the determinants of health and multifactorial influences on health is crucial for students for several reasons. Firstly, it provides a comprehensive understanding of the myriad factors that influence health outcomes, ranging from genetic and biological factors to social, economic, and environmental conditions.

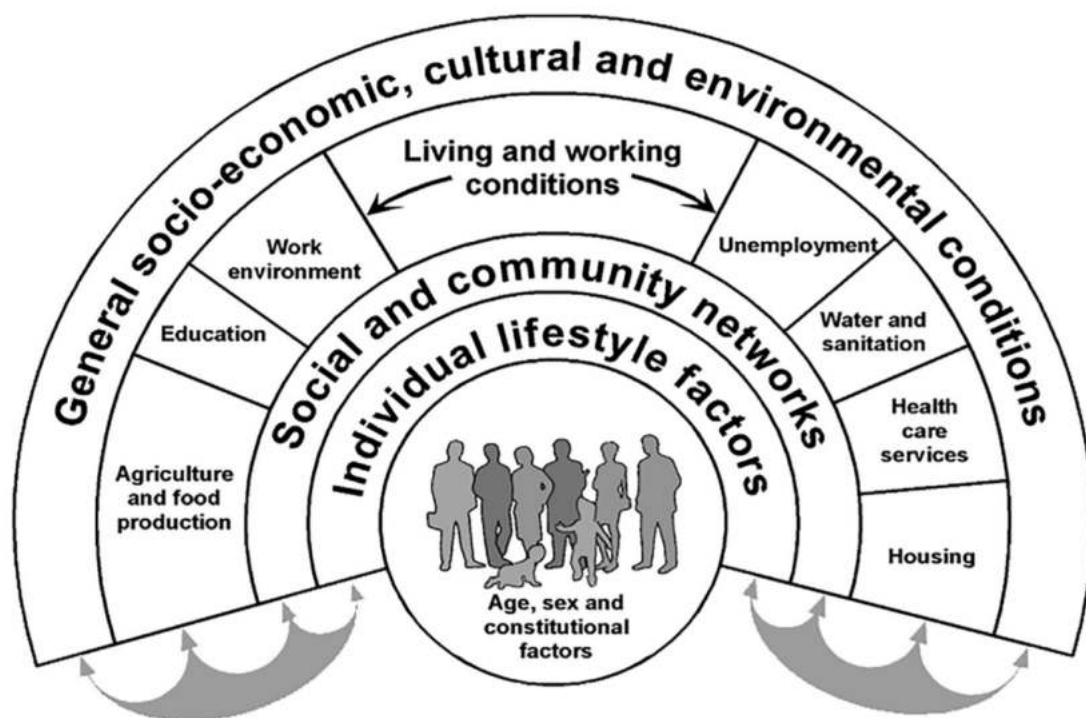
This holistic perspective is essential for identifying and addressing health disparities and for developing effective public health interventions. Secondly, this knowledge equips students with the skills to analyse and interpret complex health data. Understanding how various determinants interact enables students to identify patterns and causal relationships, which are critical for effective disease prevention and health promotion strategies. Thirdly, learning about this subject fosters a multidisciplinary approach to health. Public health issues are inherently complex and require collaboration across different fields such as medicine, sociology, economics, and environmental science. By understanding the multifactorial nature of health, students are better prepared to work in diverse teams and develop integrated solutions.

**Part A:** Determinants of Health

**Part B:** Multifactorial Influences on Health

Overall, understanding the determinants of health and multifactorial influences is fundamental for any public health professional, enabling them to contribute effectively to improving population health and reducing health inequities.

## Determinants of Health: Multifactorial Influences Themes: Part A



Source: adapted from Dahlgren and Whitehead, 1991

## Determinants of Health: Multifactorial Influences Themes: Part B



### Determinants of Health: Multifactorial Influences Curriculum

Understanding determinants of health is crucial for future public health experts to develop effective interventions, address health disparities, and promote equitable health outcomes by recognizing the complex interplay of biological, social, economic, environmental, and cultural factors.

Part A should be known by all students regardless of course level, perfectly taught or reviewed at any level of education.

## Part A – Full Curriculum

**INDIVIDUAL LIFESTYLE FACTORS**

- Personal behaviour
- Diet and nutrition
- Physical activity
- Smoking and alcohol consumption
- Risk-taking behaviours

**SOCIAL and COMMUNITY NETWORKS**

- Family and friends
- Social support
- Social networks
- Community engagement

**LIVING and WORKING CONDITIONS**

- Work environment
- Employment status
- Workplace safety
- Job satisfaction
- Housing
- Quality of housing
- Overcrowding
- Housing stability
- Education
- Access to education
- Educational attainment
- Lifelong learning
- Health care services
- Availability of health care
- Accessibility of health services
- Quality of care
- Water and sanitation
- Access to clean water
- Sanitation facilities
- Hygiene practices
- Unemployment
- Impact of unemployment on health
- Economic stability
- Job training and support services

**GENERAL SOCIOECONOMIC, CULTURAL and ENVIRONMENTAL CONDITIONS**

- Economic policies
- Income distribution
- Economic stability
- Poverty alleviation
- Social policies
- Welfare systems
- Social protection
- Community development
- Environmental conditions
- Air and water quality
- Pollution control
- Climate change impact
- Cultural factors
- Cultural norms and values
- Discrimination and social inclusion
- Cultural competence in health care

## Part B – Bachelor; Master; Doctorate, Certificate / Diploma and Professional Specialist Training Curriculum

### HISTORICAL INFLUENCE

- Colonialism and health
- Historical epidemics and pandemics
- Industrialization and urbanization
- Slavery and health
- War and health
- Socioeconomic policies and health
- Historical health policies and reforms
- Migration and health
- Technological advancements
- Cultural and religious influences on health

### SOCIAL INFLUENCE

- Economic stability - families, communities and populations
- Quality education access and availability
- Local healthcare access and quality
- Equitable access to healthcare
- Continuity of care
- The built environment and architecture
- Safe neighbourhoods
- Quality and safe police and law enforcement
- Unbias access to social services
- Green spaces
- Employment and working conditions
- Job / career security

### CULTURAL INFLUENCE

- Postcolonial theory
- Dehumanisation
- Religious practice
- Autonomy; equity; diversity and inclusion
- Health as human right and health literacy
- Case study: mental health practices
- Caregivers and family carers
- Anti-prejudice, anti-discrimination and anti-racism programmes and interventions
- Transgenerational trauma and injustice
- Gender norms (bias) / gender discrimination
- Health related practice in religion
- Indigenous knowledge and respectful collaboration

### ECONOMIC INFLUENCE

- Critical reflection on political, ethical and economic dimensions in the application of different allocation mechanisms
- Knowledge of connected areas of diversity and intersectionality
- Demographic groups and engagement with organizations
- Health technology assessment and technology
- Programmes to allow cheaper and easier access to healthy food
- Derivation of incremental cost-benefit ratios
- Fairness of allocation
- Fairness of prioritization based on scientific fact
- Equal rationing
- Social security
- Improved law abiding law enforcement
- Non-discriminatory approach

## Part B – Bachelor; Master; Doctorate, Certificate / Diploma and Professional Specialist Training Curriculum Continued

### COMMERCIAL INFLUENCE

- Healthcare supplies trading and accessibility in times of crises
- Alcohol minimum unit pricing (UK & Ireland)
- Sugar tax (Ireland & UK)
- EU laws on tobacco minimum unit packaging
- Globalisation, corporate micro-politics
- Strategic priorities of the organisation and the system
- Fossil fuel use reduction - policymakers
- Greenhouse effect and its associated gases - industry regulation
- Environmental protection which is economically viable to food producers
- Green health care

### LEGAL INFLUENCE

- Advancing policy and implementation change
- Health equity protecting populations
- Social justice
- Socioeconomic changes and the role of government
- Political influence
- Case study: home care accessibility, the trade, unification and the future
- Safe care pharmaceutical regulation / technology regulation
- Litigation as a tool for public health

### POLITICAL INFLUENCE

- Health policy actors and conflicts
- Legal bases for health promotion and prevention
- International cooperation and integration (especially EU and WHO) on prevention and health promotion
- Effect of war or international emergency
- Democracy and voting
- Government investment value
- Commercial interests
- Negotiation
- Direct action
- Governance
- Social mobilisation for health

**Part B – Continuous Professional Development Curriculum****HISTORICAL INFLUENCE**

- Colonialism and health
- Historical epidemics and pandemics
- Industrialization and urbanization
- Slavery and health
- War and health
- Socioeconomic policies and health
- Historical health policies and reforms
- Migration and health
- Technological advancements
- Cultural and religious influences on health

**SOCIAL INFLUENCE**

- Quality education access and availability
- The built environment and architecture
- Safe neighbourhoods
- Quality and safe police and law enforcement

**CULTURAL INFLUENCE**

- Religious practice
- Autonomy; equity; diversity and inclusion
- Health as human right and health literacy
- Case study: mental health practices
- Caregivers and family carers
- Gender norms (bias) / gender discrimination
- Indigenous knowledge and respectful collaboration

**ECONOMIC INFLUENCE**

- Demographic groups and engagement with organizations
- Programmes to allow cheaper and easier access to healthy food
- Fairness of prioritization based on scientific fact
- Social security
- Improved law abiding law enforcement

## Part B – Continuous Professional Development Curriculum Continued

### COMMERCIAL INFLUENCE

- Healthcare supplies trading and accessibility in times of crises
- Alcohol minimum unit pricing (UK & Ireland)
- Sugar tax (Ireland & UK)
- EU laws on tobacco minimum unit packaging
- Globalisation, corporate micro-politics
- Strategic priorities of the organisation and the system
- Fossil fuel use reduction - policymakers
- Greenhouse effect and its associated gases - industry regulation
- Environmental protection which is economically viable to food producers

### LEGAL INFLUENCE

- Advancing policy and implementation change
- Social justice
- Socioeconomic changes and the role of government
- Safe care pharmaceutical regulation / technology regulation
- Litigation as a tool for public health

### POLITICAL INFLUENCE

- Legal bases for health promotion and prevention
- Effect of war or international emergency
- Commercial interests
- Direct action

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# Chapter 8

# Health Protection



## Rationale and Current Status: Health Protection

Health protection, specifically focusing on exposures and exposure management, encompasses the strategies and practices aimed at safeguarding populations from harmful environmental and biological agents. This field addresses the identification, assessment, and control of various hazards, including chemical, biological, radiological, and physical agents, that pose risks to human health. Key components include risk assessment, preventive measures, emergency preparedness, and response strategies.

The inclusion of health protection in a public health curriculum is essential due to its critical role in preventing disease and promoting well-being. Understanding exposures and how to manage them equips public health professionals with the knowledge to mitigate risks effectively. This expertise is vital in preparing for and responding to public health emergencies, such as chemical spills, infectious disease outbreaks, and environmental disasters. Lessons learned during the global coronavirus 19 pandemic, have launched this important subject area into the public eyes where there is now an even more pronounced onus on the public health community to be ready and protect health by all its available methodologies and means.

Incorporating health protection into the curriculum ensures a comprehensive education that emphasizes the importance of proactive measures and timely interventions. By learning about exposure pathways, risk communication, and the implementation of protective measures, future public health practitioners can better protect communities and enhance public health resilience. This holistic approach is crucial for addressing contemporary and emerging health threats in an increasingly interconnected and industrialized world.

As highlighted in the competency framework reference subsection below, the subject area of health protection, particularly in the context of exposures and exposure management, aligns seamlessly with critical core competency sets in epidemiology. These include the WHO-ASPHER Competency Framework 2020<sup>1</sup>, which underscores the essential skills and knowledge required for effective public health practice. Additionally, the WHO 12 Essential Public Health Functions 2024<sup>2</sup> provide a comprehensive blueprint for public health systems to safeguard and enhance population health, emphasizing the importance of preparedness, prevention, and rapid response to health threats.

The ECDC's 2022 Core Competencies in Applied Infectious Disease Epidemiology<sup>3</sup> highlight the expertise necessary for managing infectious disease risks, highlighting the crucial role of exposure assessment and management. By integrating these competency frameworks, the curriculum ensures that future public health professionals are well-equipped to address complex health challenges with a robust, evidence-based approach.

This alignment not only strengthens the educational foundation of public health practitioners but also ensures they are prepared to meet contemporary and emerging health threats with competence and confidence. Emphasizing these core competencies in the curriculum fosters a proactive and resilient public health workforce capable of protecting and promoting health in diverse and dynamic environments.

Health protection, particularly focusing on exposures and exposure management, aligns seamlessly with several core subject areas in ASPHER CCP, creating a comprehensive framework essential for addressing complex health challenges. It intersects with epidemiology through exposure assessment, risk analysis, and outbreak investigation, enabling the identification and control of health threats. In planetary, environmental and climate health, health protection strategies such as chemical hazard management, pollution control, and water safety are crucial for mitigating environmental impacts on health. Health promotion and education play a vital role in informing and empowering communities about exposure risks and preventive measures, fostering a culture of health and safety.

Additionally, health protection is integral to public health emergency preparedness and response, ensuring swift and effective action during chemical spills, infectious disease outbreaks, and other emergencies. Public health policy and management underpin these efforts by creating regulatory frameworks and strategic plans that address occupational health, environmental regulations, and public health laws. This interdisciplinary alignment within the public health curriculum equips practitioners with the necessary skills and knowledge to comprehensively tackle multifaceted health issues, ensuring a robust and effective public health infrastructure capable of protecting and promoting community health.

In conclusion, the integration of health protection, particularly focusing on exposures and exposure management, within the public health curriculum is indispensable. It not only aligns with critical competency frameworks but also interconnects with core subject areas such as epidemiology, planetary, environmental and climate health, health promotion, emergency preparedness, and policy management. This comprehensive approach equips public health professionals with the skills and knowledge needed to effectively safeguard communities from a wide range of health threats, thereby enhancing the overall resilience and responsiveness of public health systems.

## Alignment to Competency Frameworks

The Public Health Protection subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 8: Governance and Resource Management
- Competency 9: Professional Development and Reflective Ethical Practice
- Competency 10: Organizational Literacy and Adaptability

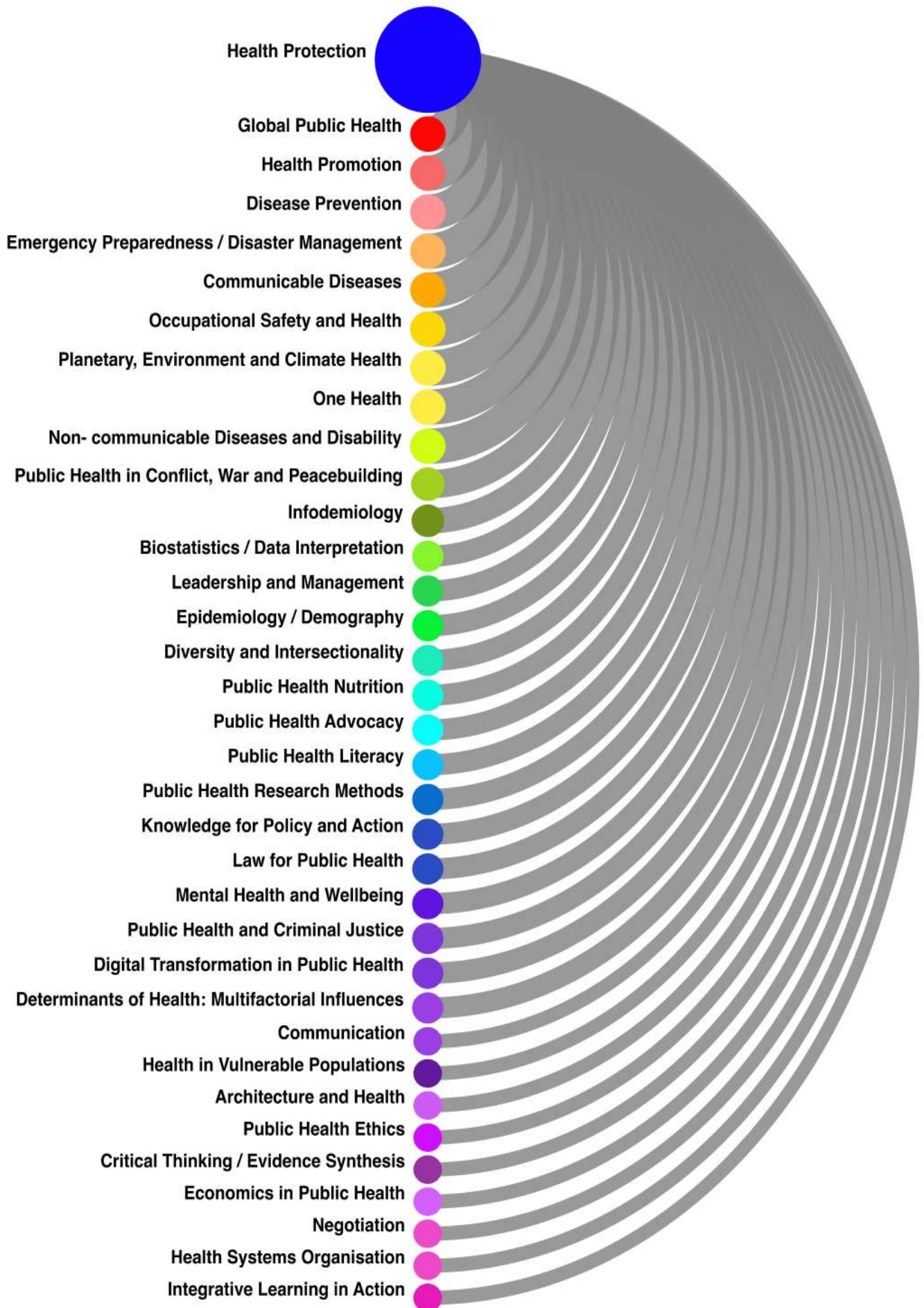
### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

### ECDC Core Competencies in Applied Infectious Disease, 2022

- Subject Area B: Preparedness, Surveillance and Response to Infectious Disease Outbreaks
- Subject Area D: Practice of Infectious Disease Epidemiology

### Connectivity of Health Protection in Public Health curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Health Protection Curriculum Overview

It is important for students to learn about health protection, particularly exposures and exposure management, because it equips them with the essential skills and knowledge to identify, assess, and mitigate various health threats. Understanding these concepts enables future public health professionals to prevent disease, promote health, and respond effectively to emergencies such as chemical spills, infectious disease outbreaks, and environmental disasters.

By learning about exposure pathways, risk communication, and protective measures, students are prepared to safeguard communities, enhance public health resilience, and contribute to a robust public health infrastructure capable of addressing contemporary and emerging health challenges. This education fosters a proactive and informed public health workforce dedicated to protecting and promoting health in diverse and dynamic environments.

## Health Protection Themes



## Health Protection Curriculum

Suggested curricular elements are presented for all educational levels.i.e

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Speciality Training (PST)

It is suggested for Professional Speciality Training (PST) that the entire curriculum should be used for best public health outcomes. Recognizing the range of health protection challenges in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels.

Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex terrain with insight and compassion, ensuring equitable and ethical public health practice for all.



## Full Curriculum

### PUBLIC HEALTH EXPOSURE PREVENTION

- Definitions of preparedness, prevention, and project management
- Health promotion strategies which are culturally appropriate
- Chemical and biological hazards, their immediate and long-term effect on human health and environment
- Non-pharmacological interventions incl. contact tracing, quarantine, isolation, restricted access, and other mitigation strategies
- Risk communication
- Education of specific population groups regarding possible exposure
- Workforce planning (proactive basis)
- Training opportunities for HCWs

### CROSS-BOARDER HEALTH and MANGEMENT of DISPLACED POPULATIONS

- Displaced population / migrant health access
- Managing displaced populations due to war (health, mental health, and organization)
- Cross-border relationships and collaboration in the area of surveillance
- Knowledge and access of local systems including education, agriculture, and animal control
- Community and minority group engagement

### PREPAREDNESS PLANNING and STAKEHOLDER INVOLVEMENT

- Necessary steps to carry out preparedness planning including all public and private stakeholders
- Multi-disciplinary approach with key use of emergency management professionals
- Additional services and workforce planning including social services, military, private industry, as well as civic, social, and faith-based organizations
- Appreciation of how multi-stakeholder processes enrich emergency and exposure response
- Involvement of public works and utilities

### PUBLIC HEALTH RESPONSE and MANAGEMENT

- Design, implement, and evaluate public health response strategies
- Appropriate public health preparedness and response for relevant settings (hospitals, long-term care settings, boarding schools, universities, and places of congregation)
- Public health management in the time of a public health emergency
- Action against already active exposures
- Implement appropriate protective measures (e.g. infection prevention and control, use of personal protective equipment, and vaccination)
- Screening programs

### PUBLIC HEALTH DECISION MAKING, COMPLIANCE and ETHICS

- Knowledge of compliance, completeness, feasibility, adequacy
- Responsibility for action
- Timely decision making and their repercussions
- Resource management before, during, and after emergency situations
- Population threats and hazards aetiology and their relevant impacts
- Bioethical considerations
- Evidence-based decision making
- Collective communication with environmental scientists, microbiologists, and organizations (Médecins Sans Frontières, Red Cross, United Nations)
- Risk assessment of exposures
- Preparing for novel exposure
- Water safety and produce regulation
- Workforce resilience
- Evidence-based interventions

## Bachelor Degree Level

### PUBLIC HEALTH EXPOSURE PREVENTION

- Definitions of preparedness, prevention, and project management
- Chemical and biological hazards, their immediate and long-term effect on human health and environment
- Non-pharmacological interventions incl. contact tracing, quarantine, isolation, restricted access, and other mitigation strategies
- Training opportunities for HCWs

### CROSS-BOARDER HEALTH and MANGEMENT of DISPLACED POPULATIONS

- Displaced population / migrant health access
- Community and minority group engagement

### PREPAREDNESS PLANNING and STAKEHOLDER INVOLVEMENT

- Necessary steps to carry out preparedness planning including all public and private stakeholders
- Multi-disciplinary approach with key use of emergency management professionals
- Appreciation of how multi-stakeholder processes enrich emergency and exposure response

### PUBLIC HEALTH RESPONSE and MANAGEMENT

- Design, implement, and evaluate public health response strategies
- Appropriate public health preparedness and response for relevant settings (hospitals, long-term care settings, boarding schools, universities, and places of congregation)
- Implement appropriate protective measures (e.g. infection prevention and control, use of personal protective equipment, and vaccination)
- Screening programs

### PUBLIC HEALTH DECISION MAKING, COMPLIANCE and ETHICS

- Knowledge of compliance, completeness, feasibility, adequacy
- Responsibility for action
- Timely decision making and their repercussions
- Population threats and hazards aetiology and their relevant impacts
- Bioethical considerations
- Evidence-based decision making
- Preparing for novel exposure
- Evidence-based interventions

## Master Degree Level

## PUBLIC HEALTH EXPOSURE PREVENTION

- Definitions of preparedness, prevention, and project management
- Health promotion strategies which are culturally appropriate
- Chemical and biological hazards, their immediate and long-term effect on human health and environment
- Education of specific population groups regarding possible exposure
- Non-pharmacological interventions incl. contact tracing, quarantine, isolation, restricted access, and other mitigation strategies
- Training opportunities for HCWs

## CROSS-BOARDER HEALTH and MANGEMENT of DISPLACED POPULATIONS

- Displaced population / migrant health access
- Managing displaced populations due to war (health, mental health, and organization)
- Cross-border relationships and collaboration in the area of surveillance
- Community and minority group engagement

## PREPAREDNESS PLANNING and STAKEHOLDER INVOLVEMENT

- Necessary steps to carry out preparedness planning including all public and private stakeholders
- Multi-disciplinary approach with key use of emergency management professionals
- Additional services and workforce planning including social services, military, private industry, as well as civic, social, and faith-based organizations
- Appreciation of how multi-stakeholder processes enrich emergency and exposure response

## PUBLIC HEALTH RESPONSE and MANAGEMENT

- Design, implement, and evaluate public health response strategies
- Appropriate public health preparedness and response for relevant settings (hospitals, long-term care settings, boarding schools, universities, and places of congregation)
- Public health management in the time of a public health emergency
- Action against already active exposures
- Implement appropriate protective measures (e.g. infection prevention and control, use of personal protective equipment, and vaccination)
- Screening programs

## PUBLIC HEALTH DECISION MAKING, COMPLIANCE and ETHICS

- Knowledge of compliance, completeness, feasibility, adequacy
- Responsibility for action
- Timely decision making and their repercussions
- Population threats and hazards aetiology and their relevant impacts
- Bioethical considerations
- Evidence-based decision making
- Workforce resilience
- Preparing for novel exposure
- Evidence-based interventions

## Doctoral Degree Level

### PUBLIC HEALTH EXPOSURE PREVENTION

- Definitions of preparedness, prevention, and project management
- Health promotion strategies which are culturally appropriate
- Chemical and biological hazards, their immediate and long-term effect on human health and environment
- Non-pharmacological interventions incl. contact tracing, quarantine, isolation, restricted access, and other mitigation strategies
- Risk communication
- Education of specific population groups regarding possible exposure
- Workforce planning (proactive basis)

### CROSS-BOARDER HEALTH and MANGEMENT of DISPLACED POPULATIONS

- Displaced population / migrant health access
- Managing displaced populations due to war (health, mental health, and organization)
- Cross-border relationships and collaboration in the area of surveillance
- Knowledge and access of local systems including education, agriculture, and animal control

### PREPAREDNESS PLANNING and STAKEHOLDER INVOLVEMENT

- Necessary steps to carry out preparedness planning including all public and private stakeholders
- Multi-disciplinary approach with key use of emergency management professionals
- Additional services and workforce planning including social services, military, private industry, as well as civic, social, and faith-based organizations
- Involvement of public works and utilities

### PUBLIC HEALTH RESPONSE and MANAGEMENT

- Design, implement, and evaluate public health response strategies
- Appropriate public health preparedness and response for relevant settings (hospitals, long-term care settings, boarding schools, universities, and places of congregation)
- Public health management in the time of a public health emergency
- Action against already active exposures
- Screening programs

### PUBLIC HEALTH DECISION MAKING, COMPLIANCE and ETHICS

- Responsibility for action
- Timely decision making and their repercussions
- Resource management before, during, and after emergency situations
- Population threats and hazards aetiology and their relevant impacts
- Bioethical considerations
- Evidence-based decision making
- Risk assessment of exposures
- Preparing for novel exposure

## Certificate and / or Diploma Level

### PUBLIC HEALTH EXPOSURE PREVENTION

- Definitions of preparedness, prevention, and project management
- Health promotion strategies which are culturally appropriate
- Non-pharmacological interventions incl. contact tracing, quarantine, isolation, restricted access, and other mitigation strategies
- Risk communication
- Education of specific population groups regarding possible exposure
- Workforce planning (proactive basis)
- Training opportunities for HCWs

### CROSS-BOARDER HEALTH and MANGEMENT of DISPLACED POPULATIONS

- Displaced population / migrant health access
- Managing displaced populations due to war (health, mental health, and organization)
- Cross-border relationships and collaboration in the area of surveillance
- Community and minority group engagement

### PREPAREDNESS PLANNING and STAKEHOLDER INVOLVEMENT

- Multi-disciplinary approach with key use of emergency management professionals
- Additional services and workforce planning including social services, military, private industry, as well as civic, social, and faith-based organizations
- Appreciation of how multi-stakeholder processes enrich emergency and exposure response
- Involvement of public works and utilities

### PUBLIC HEALTH RESPONSE and MANAGEMENT

- Design, implement, and evaluate public health response strategies
- Public health management in the time of a public health emergency
- Action against already active exposures
- Implement appropriate protective measures (e.g., infection prevention and control, use of personal protective equipment, and vaccination)
- Screening programs

### PUBLIC HEALTH DECISION MAKING, COMPLIANCE and ETHICS

- Responsibility for action
- Timely decision making and their repercussions
- Resource management before, during, and after emergency situations
- Population threats and hazards aetiology and their relevant impacts
- Bioethical considerations
- Evidence-based decision making

## Continuous Professional Development

### PUBLIC HEALTH EXPOSURE PREVENTION

- Definitions of preparedness, prevention, and project management
- Health promotion strategies which are culturally appropriate
- Non-pharmacological interventions incl. contact tracing, quarantine, isolation, restricted access, and other mitigation strategies
- Risk communication
- Education of specific population groups regarding possible exposure
- Workforce planning (proactive basis)
- Training opportunities for HCWs

### CROSS-BOARDER HEALTH and MANGEMENT of DISPLACED POPULATIONS

- Displaced population / migrant health access
- Managing displaced populations due to war (health, mental health, and organization)
- Cross-border relationships and collaboration in the area of surveillance
- Community and minority group engagement

### PREPAREDNESS PLANNING and STAKEHOLDER INVOLVEMENT

- Multi-disciplinary approach with key use of emergency management professionals
- Additional services and workforce planning including social services, military, private industry, as well as civic, social, and faith-based organizations
- Appreciation of how multi-stakeholder processes enrich emergency and exposure response
- Involvement of public works and utilities

### PUBLIC HEALTH RESPONSE and MANAGEMENT

- Design, implement, and evaluate public health response strategies
- Public health management in the time of a public health emergency
- Action against already active exposures
- Implement appropriate protective measures (e.g., infection prevention and control, use of personal protective equipment, and vaccination)
- Screening programs

### PUBLIC HEALTH DECISION MAKING, COMPLIANCE and ETHICS

- Responsibility for action
- Timely decision making and their repercussions
- Resource management before, during, and after emergency situations
- Population threats and hazards aetiology and their relevant impacts
- Bioethical considerations
- Evidence-based decision making

## References

1. World Health Organization. WHO-ASPHER competency framework for the public health workforce in the European region. World Health Organization. Regional Office for Europe; 2020.
2. World Health Organization. Application of the essential public health functions: an integrated and comprehensive approach to public health. World Health Organization; 2024 Jan 30.
3. Plymoth A, Codd MB, Barry J, Boncan A, Bosman A, Conyard KF, Czabanowska K, Davidovitch N, Filipe R, Gonzalez L, Leighton L. Core competencies in applied infectious disease epidemiology: a framework for countries in Europe. *Eurosurveillance*. 2023 Feb 9;28(6):2200517.

# Chapter 9

## Disease Prevention



CORE SUBJECT AREAS IN PUBLIC HEALTH





**Note:**

This chapter is split into two sections Part A and Part B, Part A observes the importance of public health development and Infection, prevention and control in public health education while Part B will focus on applied public health Vaccinology.

## **Rationale and Current Status: Disease Prevention**

### **Part A: Public Health Development and IPC (Infection Prevention and Control)**

Public health development and infection prevention and control (IPC) encompass a wide range of strategies and measures aimed at improving population health and preventing the spread of infectious diseases. Public health development focuses on establishing policies, implementing programs, and promoting practices that enhance health outcomes, reduce health disparities, and ensure access to healthcare services. It involves understanding the social, economic, and environmental determinants of health and addressing them through evidence-based interventions. The subject of disease prevention not only encompasses communicable diseases but also non-communicable diseases.

IPC, a critical component of public health, aims to prevent and control infections in healthcare settings and the broader community. It includes measures such as hand hygiene, vaccination, antimicrobial stewardship, and outbreak management. IPC practices are essential for reducing the transmission of infectious diseases, improving patient safety, and ensuring the effective use of healthcare resources.

Incorporating public health development and IPC into the public health curriculum is crucial for several reasons. First, it equips future public health professionals with the knowledge and skills to design, implement, and evaluate interventions that address the root causes of health disparities and improve health outcomes. Understanding IPC principles is essential for preventing healthcare-associated infections and managing infectious disease outbreaks, which are vital for safeguarding public health.

Second, the curriculum fosters a comprehensive understanding of the interconnectedness of social determinants and health, preparing students to develop holistic approaches to health promotion and disease prevention. By learning about the legal, ethical, and policy aspects of public health and IPC, students can advocate for effective health policies and practices.

Overall, education in public health development and IPC prepares students to tackle current and emerging health challenges, ensuring a healthier future for all communities.

The subject area of Public Health Development and Infection Prevention and Control is inherently interdisciplinary, linking with various other fields. Epidemiology is fundamental, focusing on disease distribution and determinants, which is crucial for understanding health patterns and implementing control measures. Biostatistics is vital for designing studies, analysing data, and interpreting results in public health research. Health Policy and

Management encompasses the organization, financing, and delivery of public health services, addressing policy formulation, health economics, and administration.

Planetary, environmental and climate health examines environmental factors impacting human health, such as pollution and occupational hazards. Global Health addresses health issues transcending national boundaries, emphasizing collaborative efforts to tackle worldwide health challenges. Additionally, subjects like Behavioural Science, which explores health behaviours and interventions, and infectious diseases, which provides insights into the pathogens causing infections, are integral to a comprehensive understanding of public health development and IPC. These interconnected disciplines collectively equip public health professionals with the knowledge and skills to effectively prevent and control infections and improve population health.

In accordance with the competency framework reference subsection, this subject area seamlessly aligns with pivotal core competency sets, epitomized by prestigious frameworks such as the WHO-ASPHER Competency Framework 2020<sup>1</sup>. This framework, a beacon of excellence, illuminates the essential skills and knowledge requisite for addressing contemporary public health challenges with finesse and efficacy. Additionally, the WHO 12 Essential Public Health Functions 2024<sup>2</sup>, a cornerstone in the edifice of global health initiatives, outlines a comprehensive roadmap for orchestrating public health endeavours with precision and foresight.

Furthermore, the ECDC's 2022 Core Competencies in Applied Infectious Disease Epidemiology<sup>3</sup>, a testament to scholarly rigor and practical acumen, delineates the intricate skill set essential for navigating the complex landscape of infectious disease surveillance and control. In tandem, the Council on Linkages Between Academia and Public Health Practice (2021)<sup>4</sup>, an embodiment of collaborative synergy, underscores the vital nexus between academic scholarship and real-world public health practice, fostering a dynamic ecosystem of knowledge exchange and innovation. Together, these frameworks and guidelines form a tapestry of expertise, guiding public health professionals towards excellence in their endeavours to safeguard global health and foster resilient communities.

In conclusion, the interdisciplinary nature of Public Health Development and Infection Prevention and Control, as reflected in alignment with esteemed competency frameworks, underscores its pivotal role in shaping a healthier and more resilient world.

## Alignment to Competency Frameworks

The Disease Prevention Subject Area (**Part A & B**) of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Copmetency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy

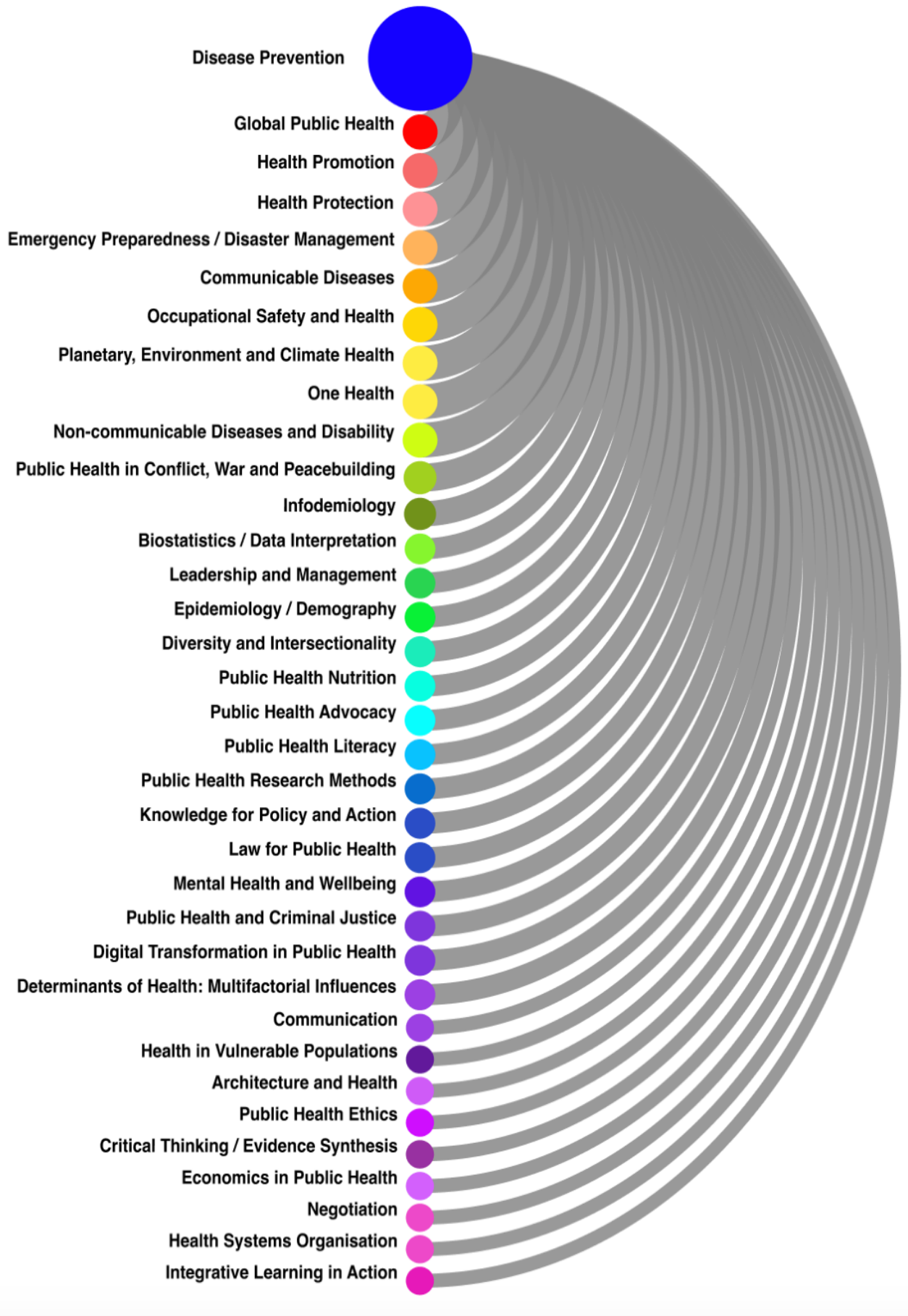
### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain2: Policy Development and Program Planning Skills
- Domain 3: Communication Skills
- Domain 4: Health Equity Skills
- Domain 5: Community Partnership Skills
- Domain 6: Public Health Science Skills

### Faculty Of Public Health UK Curriculum, 2022

- All Domains

### Connectivity of Disease Prevention in Public Health curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

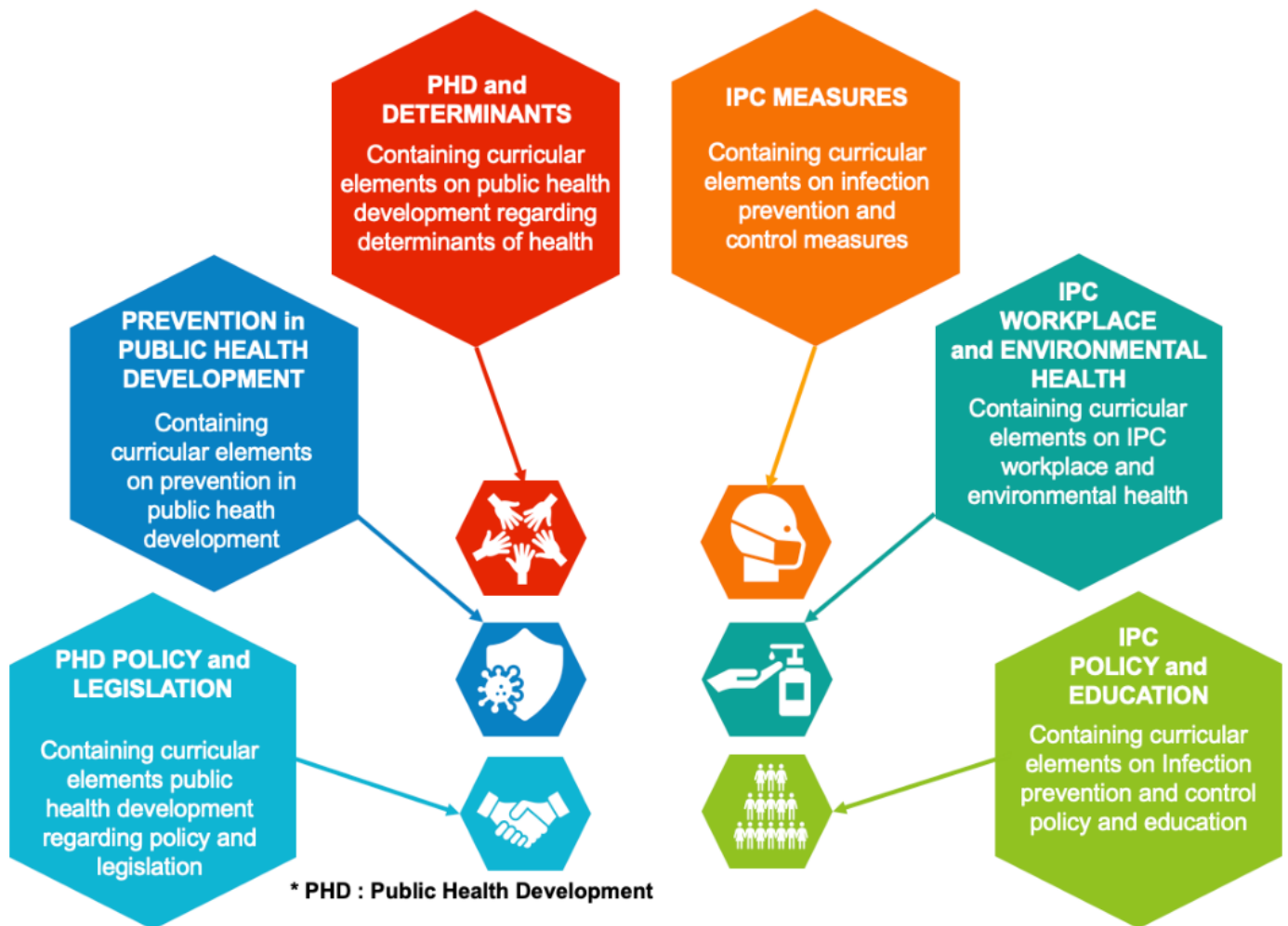
## Disease Prevention: Part A Curriculum Overview

Learning about Infection Prevention and Control (IPC) and Public Health Development is crucial for students as it equips them with the knowledge and skills necessary to address pressing global health challenges. In an interconnected world where infectious diseases can spread rapidly, understanding IPC strategies is paramount for preventing disease transmission within communities and healthcare settings.

Moreover, studying public health development enables students to contribute to efforts aimed at reducing health disparities and promoting equitable access to healthcare services, thereby fostering health equity and social justice. The interdisciplinary nature of IPC and public health development exposes students to various fields providing them with a holistic understanding of health issues and preparing them to tackle complex public health challenges.

Proficiency in IPC and public health development also opens up diverse career opportunities in healthcare, government, non-profit organizations, research institutions, and international agencies, where students can apply their expertise to disease prevention, outbreak response, health promotion, policy development, and more. Overall, learning about IPC and public health development empowers students to play an active role in improving population health and addressing global health threats effectively.

## Disease Prevention Part A Themes



## Disease Prevention Curriculum – Part A

Recognizing the range of disease prevention challenges in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex terrain with insight and compassion, ensuring equitable and ethical public health practice for all.

Suggested curricular elements are presented for all educational levels.i.e

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Speciality Training (PST)

## Full Curriculum

### PUBLIC HEALTH DEVELOPMENT - POLICY and LEGISLATION

- Evidence-based legislation and social policy
- Basic minimum standards: sustainable development goals
- Legal basis of public health law
- Policymakers and academic research - synergistic outcomes
- Research funding for policy
- Advocacy in the interests of public health

### PUBLIC HEALTH DEVELOPMENT - PREVENTION

- Preventative medicine - context and practicalities
- Health screening and its review
- Health promotion activities throughout the life-cycle and transition periods
- Healthy aging - concept, interventions and measurement
- Holistic practice
- Quality of life and wellness through holistic lens
- Applications of lifestyle medicine on a population-wide level - programme access and practice in all areas of patient contact
- Patients' rights and safety of the establishment of a healthy lifestyle
- Avoidance of knee-jerk reaction and focus on timely change
- Confidence, social cohesion, and the healthy lifestyle's role in social stability
- Inclusion for all at all levels

### PUBLIC HEALTH DEVELOPMENT - DETERMINANTS

- Maternal health development
- Continued efforts on poverty, sanitation, hygiene - improvement
- Social sustainability
- Appreciate the role and possible mechanisms by which genetic and environmental risk factors can interact to increase risk of disease
- Public health development in wartime / environments in war

### INFECTION PREVENTION and CONTROL (IPC) MEASURES

- Critical evaluation of infectious disease prevention through IPC measures
- Implementation of IPC measures
- Management of infection risk
- Early detection of disease
- Hand hygiene in theory and practice
- Epidemiology of antimicrobial resistant organisms
- Impact and management of antimicrobial resistance
- Healthcare-associated infection (HCAI)
- Transmission-based precautions (TBP)
- Management of invasive devices
- Methodology for outbreak management
- Staff vaccination drives

### IPC WORKPLACE and ENVIRONMENTAL HEALTH

- Workplace health and safety
- Healthcare supplies trading and accessibility in times of crises
- The built healthcare environment
- Continued efforts on improved working conditions

### IPC POLICY and EDUCATION

- Quality improvement initiatives
- Continuous staff education

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1. World Health Organization. WHO-ASPHER competency framework for the public health workforce in the European region. World Health Organization. Regional Office for Europe; 2020.
2. WHO. 12 Essential Public Health Functions 2024. Geneva: World Health Organization; 2024. Available from: <https://www.who.int/publications/i/item/9789240088306>
3. Barry J, Boncan A, Bosman A, Codd M, Conyard KF, Czabanowska K, Davidovitch N, Filipe R, Gonzalez L, Leighton L, Ndirangu M. Core competencies in applied infectious disease epidemiology in Europe. European Centre for Disease Prevention and Control; 2022 Apr.
4. The Council on Linkages Between Academia and Public Health Practice. Core Competencies for Public Health Professionals. Washington D.C.: Public Health Foundation; 2021. Available from: [https://www.phf.org/resourcestools/Documents/Core\\_Competencies\\_for\\_Public\\_Health\\_Professionals\\_2021October.pdf](https://www.phf.org/resourcestools/Documents/Core_Competencies_for_Public_Health_Professionals_2021October.pdf)



## Rationale and Current Status: Disease Prevention

### Part B: Vaccinology

**Contributors:** *The ASPHER CCP Vaccinology Pillar Group*

Vaccinology was previously defined as the science and engineering of developing vaccines to prevent infectious disease<sup>1</sup>. Thus, Masters courses in vaccinology emphasise basic sciences and vaccination design [<https://masterlive-vaccinology.eu/program-structure/>]<sup>2</sup>. Many existing MPH courses cover vaccination-related topics in disease prevention or health protection modules, often as electives. However, the combination of vaccines for non-infectious and emerging diseases, global vaccine inequity, and gaps in vaccine literacy means that all public health professionals will encounter vaccine-related issues. An updated, more inclusive definition of public health vaccinology is required.

#### Scope

This report draws on examples of ASPHER's current work, expert documents and peer reviewed publications to illustrate the role of public health vaccinology and opportunities for all students to be exposed to the core principles, knowledge and skills.

#### Rationale for inclusion within a public health curriculum

While the updated Core Curriculum Programme locates vaccination primarily within the disease prevention core subject area, elements of the subject are central to all domains, core subject-specific areas, cross-curricular subject areas and core interdisciplinary professional skills. Vaccination offers the potential to provide the foundations for career-long learning in public health during the limited time available during an MPH. In addition, the ability to design and deliver planned and emergency vaccination programmes in collaboration with was created within the Core Curriculum Programme.

We analysed the findings of the consultation exercises and Expert Advisory Group reports. We clustered the topics within the Vaccinology Pillar into themes that could be addressed at different career stages, creating the potential for spiral learning and evidence in support of transferrable knowledge and skills. We then identified and prioritised overarching questions that could be linked to the acquisition of key knowledge, skills and behaviours and demonstrated by completion of specific educational activities designed to engage students, tutors, stakeholders and external experts as required.

### Subject-specific Competency frameworks: Existing and Evolving

In addition to studies of individual curricula and improvements in learning methods in public health, the following overarching documents were considered in addition to the competency frameworks reviewed earlier in this chapter:

- WHO/ IANPHI 2024 Essential Public Health Functions, Global competency and outcomes framework for the essential public health functions. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO <https://www.who.int/teams/primary-health-care/health-systems-resilience/essential-public-health-functions>  
<https://www.who.int/teams/primary-health-care/health-systems-resilience/essential-public-health-functions>  
<https://iris.who.int/bitstream/handle/10665/375864/9789240088306-eng.pdf?sequence=1>
- Core Competencies for Public Health Professionals Revised and Adopted by the Council on Linkages Between Academia and Public Health Practice: October 21, 2021 Available from: [phf.org/corecompetencies](http://phf.org/corecompetencies) (full url Core Competencies for Public Health Professionals (phf.org))
- The Essential Public Health Functions in the Americas: A Renewal for the 21st Century. Conceptual Framework and Description. Washington, D.C.: Pan American Health Organization; 2020. License: CC BY-NC-SA 3.0 IGO.

### The vaccinology pillar in practice

As the ability to address vaccine-related questions drawn on themes from all domains of public health, it can be integrated into the curriculum in many different ways. Our Expert Advisory Group developed a suggested plan for delivery through the use of a collaborative whiteboard, as detailed in Table 1, which highlights areas of vaccinology to focus on early in the students' learning, how these can be built on within and beyond the MPH and examples of teaching activities through which particular subjects could be taught.

In terms of pedagogical theory underlying the delivery of vaccinology teaching, it is presumed that students will deepen their cognitive skills as they progress through their

public health education and training in a comparable way to that classified within Bloom's taxonomy, as shown in Figure 3<sup>3</sup>.

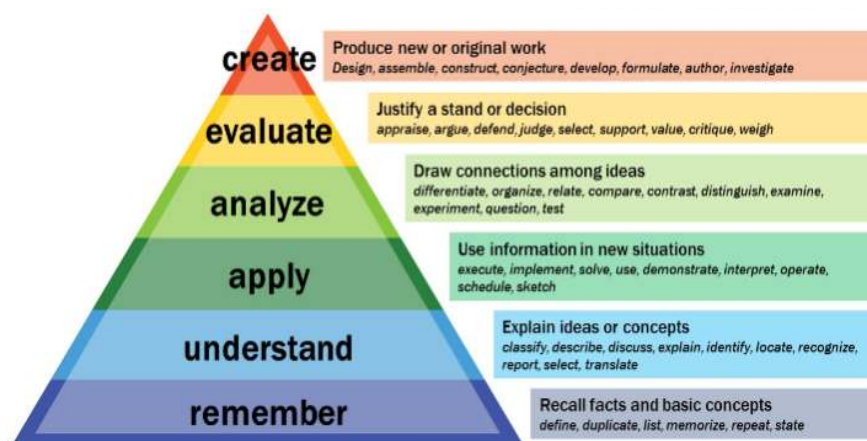


Fig 9.1: Bloom's Taxonomy

This describes a hierarchy of cognitive skills in relation to learning and includes six levels. These are the ability to ‘remember’, ‘understand’, ‘apply’, ‘analyse’, ‘evaluate’ and ‘create’<sup>4,5</sup>. It is also important to incorporate student-centred teaching into the delivery of subject areas. Here, where learning is less passive, the student has greater autonomy and an increased level of responsibility for their learning<sup>6</sup>.

One of the difficulties in ensuring all vaccinology competencies within the curriculum are met will be the limited face-to-face time students have throughout programmes and this being just one of many subject areas required to be taught. Clustering learning outcomes around key public health questions and challenges provides an opportunity for students to develop their learning in several areas at the same time, for students to work collaboratively, with each allocated lead and support roles for different aspects of the investigation of the question/challenge and helps integrate their learning of key skills and concepts across public health domains<sup>7-9</sup>.

The ‘flipped classroom’ method provides a practical approach that can be adapted for individual, group, face to face or virtual learning. Here, work is completed by students before the physical or virtual face-to-face session with the teacher, enabling time spent in class to focus on consolidation and integration of learning. Advantages of this method include increased learner satisfaction and motivation; however it can be more time consuming in the short term compared to traditional methods<sup>10</sup>.

Taking one of the examples from Table 1, ‘historical setbacks in relation to vaccine uptake’, students could be given learning objectives in relation to vaccine hesitancy around the MMR vaccine, ensuring they are aligned with the level of learning that the students are to achieve. They would then be directed to online resources (e.g. text, videos) to help them achieve these objectives.

Class time with the teacher would be spent discussing their findings and exploring the topic in more depth as a group. Through collaboration and in class activities, the limited time spent in class is thought to be more effective using a flipped classroom approach, as it can focus on the more challenging parts of the subject, allowing for a higher level of learning<sup>11</sup>. Following this, the option of a formative assessment, where the focus is an ‘assessment for learning’, would provide useful feedback on this teaching approach and whether it has proven useful in the particular setting<sup>12</sup>.

Case scenarios have been created below, to outline how different vaccinology-related topics and concepts could be taught within public health programmes. An example of how a flipped-classroom approach could be used to help teach one of these will be explained.

## Case Scenario 1: Live Births and Vaccination Access in a European Country

### Background Information

**The extent to which access to vaccination is universal and achievable varies between countries. This case is given as an exemplar to help you investigate the situation in your own country, the role of public bodies, including the health system, non-governmental and community organisations.**

In a European country, two mothers give birth in the same public hospital: Maria, a national citizen, and Amina, an undocumented immigrant. You will explore their experiences with the vaccination process for their newborns, Anna and Amal respectively, highlight the disparities in access to healthcare and the outcomes. You will examine the risk that Amal, their family and local community have reduced protection against vaccine-preventable and modifiable disease in infancy and childhood.

You will consider the extent to which their right to health is protected, explore the action taken to ensure that the mother has sufficient knowledge about how to reduce the risk of disease, the role of vaccination and their access to health care. You are expected to consider factors from individual to structural level such as prior levels of health knowledge, access to healthcare, universal availability of services required to ensure rights can be realised, the impact of the wider determinants of health (e.g. housing, income, precarious, potentially illegal employment) and discrimination in health service delivery.

**Maria's Experience (National Citizen)****Profile:**

- Name: Maria
- Citizenship: National citizen
- Socioeconomic Status: Middle-income
- Health Knowledge: High, due to education and regular interaction with the healthcare system during the antenatal period and own childhood
- Access to Healthcare: Full access to national healthcare services

**Vaccination Process:**

1. Birth Registration and Initial Care:
  - Anna is registered at birth without any issues. Anna is added to the health service register, including the vaccination register automatically

Maria receives a comprehensive guide on support and services available to new parents including information about well child clinics, the national immunization schedule, which includes detailed information on each vaccine, the diseases they prevent, and the recommended timeline.

2. First Vaccination Appointment:
  - At the first well child health appointment, Anna receives her first set of vaccines in line with the national schedule, here: Hepatitis B, DTaP (Diphtheria, Tetanus, Pertussis), IPV (Inactivated Poliovirus), and Hib (Haemophilus influenzae type b) (the 6 in one).
  - Maria is informed about potential side effects and given a contact number for any concerns.
3. Follow-up and Continued Care:
  - Maria receives automated reminders for Anna's upcoming vaccination appointments.
  - She has access to online health records to track Anna's immunization status.
  - Regular well child visits ensure Anna is up to date with the vaccination schedule, including MMR (Measles, Mumps, Rubella) at 12 months.
4. Health Outcomes:
  - Anna is fully vaccinated according to the national schedule, providing her with robust protection against vaccine-preventable diseases.
  - Maria's high health knowledge and easy access to healthcare resources contribute to timely and complete immunization.

This is the textbook scenario – what barriers might Maria and Anna face in the real world? What support might they access?

Amina's Experience (Undocumented migrant) The experience of Amina, Amal, the communities and situations they represent will vary between countries across WHO European Region. What is the situation in your country?

**Maria's Experience (Undocumented Migrant)****Profile:**

- Name: Amina
- Citizenship: Undocumented migrant
- Socioeconomic Status: Low-income, precarious/illegal employment
- Health Knowledge: Limited, due to lack of support regarding language barriers and limited antenatal care
- Access to Healthcare: Limited and often reliant on emergency services or NGO support

**Vaccination Process:**

1. Birth Registration and Initial Care:
  - Amal's birth registration may be delayed due to Amina's undocumented status, complicating access to regular healthcare services as they are not automatically included in health service registers including the vaccination register.
  - Amina receives minimal information about the national immunization schedule due to language barriers and lack of translated materials.
2. First Vaccination Appointment:
  - Amina struggles to navigate the healthcare system and misses Amal's first vaccination appointment.
  - She eventually learns about a free clinic run by an NGO, where Amal receives some vaccines, but this is later than recommended and is less comprehensive than the national schedule recommends.
3. Follow-up and Continued Care:
  - Amina does not receive automated reminders and lacks access to online health records.
  - She relies on irregular visits to the free clinic, leading to missed and delayed vaccinations.
  - Language barriers and fear of deportation deter her from seeking regular medical advice.
  - Some of Amina's advice comes from family members in her country of origin
4. Health Outcomes:
  - Amal is partially vaccinated, missing critical vaccines such as the MMR.
  - Amina's lack of support and access to healthcare result in suboptimal immunization, increasing Amal's risk of contracting vaccine-preventable diseases.
  - Discrimination and health equity issues exacerbate these challenges, with Amina often facing longer wait times and less comprehensive care compared to citizens.

## Comparative Analysis

1. **How universal is the health system? Is there a gap between theory and lived experience?**
2. **Which infants and communities are at increased risk of vaccine preventable and modifiable diseases?**
3. **What role does the design of the Vaccine Registration and Immunization Schedule play?:**

- **Maria:** Receives detailed information and automated reminders and has few barriers to ensuring that Anna receives her immunisations on time and in line with the national immunization schedule.
- **Amina:** Receives minimal support and relies on approaching an NGO, Amal and other infants from the same community are incompletely vaccinated.

### 2. What roles do prior Health Knowledge and Access to Healthcare play?:

- **Maria:** High health literacy, full access to healthcare facilitates timely vaccinations.
- **Amina:** Limited health literacy and irregular access to healthcare hinder complete vaccination.

### 3. What is the impact of Health Inequity and Discrimination:

- **Maria:** Benefits from access to support and interventions to address potential barriers results in equitable healthcare services without her facing discrimination.
- **Amina:** Faces health equity issues and discrimination, impacting Amal's vaccination outcomes.

### 4. Illustrate the application of the basic principles of Public Health Ethics:

- **Equity:** The scenario highlights the ethical imperative for equitable healthcare access, regardless of documentation status.
- **Justice:** Ensuring all children, irrespective of their parents' status, receive necessary vaccinations to protect public health.
- **Beneficence:** Healthcare professionals and organisations have a duty to act in the best interest of all children, providing comprehensive immunization services.

## Conclusion

This case scenario illustrates the significant impact that other social and economic determinants of health have on access to immunisation and vaccination outcomes. Ensuring equitable healthcare access and addressing health equity issues are crucial to achieving comprehensive immunization coverage and protecting public health.

The case scenario also highlights several important aspects of vaccinology and vaccine programmes such as vaccine registration, national immunisation schedule, scheduled reminders, vaccine literacy, adverse effects following immunisation and vaccine advocacy and communication.

The flipped classroom approach could be used to teach the important topics within this case scenario, with many benefits for both student and teacher, as previously described. Initially, learning objectives would be created that the students are expected to meet by the end of the teaching session e.g. 'describe the impact of health inequity and discrimination on vaccination outcomes'. These would be sent out to students ahead of the face-to-face session, alongside a range of resources that could be used to help achieve these learning objectives, including the profiles of the two women and their respective experiences within the healthcare system. When the students come together with the teacher for their in-class session, they could be split into groups to discuss their pre-class learning, with each group then being given the opportunity to feedback about one learning objective to the rest of the class. Whole class discussion could then take place, concepts clarified, and learning deepened with the help of a public health professional acting as both teacher and facilitator of peer learning during this session. Assessments could be developed to ensure the learning objectives have been met and delivered either pre- and post-class or simply post-class, with the timing of these dependent on the teacher and students' preferences, resources available and practicalities of delivery.

## Case Scenario 2: Adverse Event Following Vaccination and the Impact on Vaccine Hesitancy

### Background

A well-documented case that illustrates the mishandling of an adverse event following vaccination (AEFI) involves the COVID-19 vaccines. In this scenario, a patient experienced severe side effects post-vaccination, which were not appropriately managed by the healthcare providers, leading to significant vaccine hesitancy within their community.

### The Incident

A 45-year-old woman received the COVID-19 vaccine and subsequently developed severe neurological symptoms, including persistent headaches, dizziness, and numbness. These symptoms appeared within days of the vaccination and worsened over time. The patient reported these symptoms to her primary care physician, who



initially dismissed them as unrelated to the vaccine. The physician failed to report the adverse event to the Vaccine Adverse Event Reporting System (VAERS), the public health authorities, or their team, therefore no further investigation was conducted to determine the cause of her symptoms.

### Escalation and Community Impact

As the patient's condition deteriorated, she sought help from multiple healthcare providers, each providing different and often conflicting advice. The lack of a coordinated response and the failure to acknowledge the potential link to the vaccine led to the patient and her family becoming increasingly distrustful of medical advice. This mistrust was exacerbated when her story gained attention on social media, where it was shared widely, often with misinformation and exaggerated claims about the dangers of the vaccine. The mishandling of this case significantly fuelled vaccine hesitancy in the patient's community. Many individuals, already wary of the new COVID-19 vaccines, saw this case as confirmation of their fears, leading to a noticeable decline in vaccination rates.

### Strategies for Better Handling

1. **Prompt Reporting and Investigation:** Healthcare providers should be trained to recognize and report all AEFIs to VAERS or similar national systems and to the responsible public health authority immediately, regardless of the perceived severity or connection to the vaccine. This ensures that potential safety signals are identified early and investigated thoroughly and systematically.
2. **Transparent Communication:** Authorities must communicate transparently about the risks and benefits of vaccines. Providing clear, consistent information about potential side effects and how they are managed can help maintain public trust. Detailed information on reporting procedures and follow-up actions and findings for AEFIs should be made widely available to professionals and public.
3. **Support for Affected Individuals:** Patients experiencing AEFIs should receive prompt and compassionate care. Enabling patients to access specialized clinics or support systems for vaccine-related side effects can ensure patients feel heard and supported, reducing anxiety and mistrust. Where there is potential for a vaccination-related incident, formal public health incident management arrangements (starting with problem assessment) should be put in place.
4. **Public Education Campaigns:** Implementing robust public education campaigns to counter misinformation is crucial. These campaigns should focus on explaining the safety monitoring processes in place and the importance of reporting adverse events. Engaging with community leaders, using various media platforms and co-designing content and dissemination with local communities can help disseminate accurate information more effectively.
5. **Policy and Protocol Development:** Governments and health organizations should develop and enforce clear policies and protocols for handling AEFIs. These protocols should include guidelines for timely reporting, investigation

procedures, and communication strategies to ensure a coordinated and effective response.

6. **Integrated learning:** By implementing these strategies, healthcare providers and governments can better manage AEFIs, thereby maintaining public trust in vaccination programs and reducing vaccine hesitancy.

## Conclusion

This scenario aims to highlight to the reader and/or students the importance of being able to recognise AEFIs, promptly report them to the right channels, document them, appropriately address them, reassure the client and follow up. It also introduces the student to principles and practice of public health problem assessment and incident management as well as the importance of constructive relationships with local professionals, communities and community leaders. The mishandling of AEFIs can have severe consequences for public health by undermining trust in vaccines. Through prompt reporting, transparent communication, support for affected individuals, investigation and feedback, public education, and clear policies, the negative impact of such events can be mitigated, ensuring higher vaccination uptake and better health outcomes for the community.

This topic can also link directly to student learning on evaluation of new medicines and health technologies, public health ethics and governance and to wider consideration of other public health topics.

## Conclusions and Recommendations

### The vaccinology pillar approach:

- Provides an integrated approach to learning that is more closely related to the challenges that public health researchers, practitioners and specialists will face, and the competencies required to address them.
- Builds on current and developing evidence on learner development and creating the foundations for T shaped<sup>13</sup> and deep learning.
- Provides greater opportunity to address the learning needs of students in different settings and with varied support needs.
- Provides a more sustainable, flexible and potentially more equitable approach to curriculum delivery.
- Recognises that student-led and multi-institutional on-line learning are not less teacher intensive than traditional classroom approaches but enable less rigid timetabling, providing opportunities to increase the pool of people from students can learn and places where learning is offered.

## Assessment

In addition to traditional forms of summative assessment currently required by professional bodies and examination boards, this approach enables a greater range of assessments that are more closely aligned to assessing the application of learning in practice. These include:

- Presentations -traditional, posters, pitches, workshops, movies etc. shared with and evaluated by the whole class
- Simulation exercises linked to scenarios and case studies
- Written work – formative assessment methods such as blogs, case study reports, development of mock problem assessment, incident management plan, quality improvement charter
- Peer review of development, contribution and participation to team project (presentation, report workshop) by team members
- Contribution to creation of shared on-line resources

### Accreditation

Including: ‘sign-off’ as having achieved/evidence towards various competencies and learning outcomes, participation in a students as partners learning programme

Evidence for graduate teaching assistant role (see link to University College Dublin programme here:

[https://hub.ucd.ie/usis!/W\\_HU\\_MENU.P\\_PUBLISH?p\\_tag=MODULE&MODULE=PHPS50010](https://hub.ucd.ie/usis!/W_HU_MENU.P_PUBLISH?p_tag=MODULE&MODULE=PHPS50010)

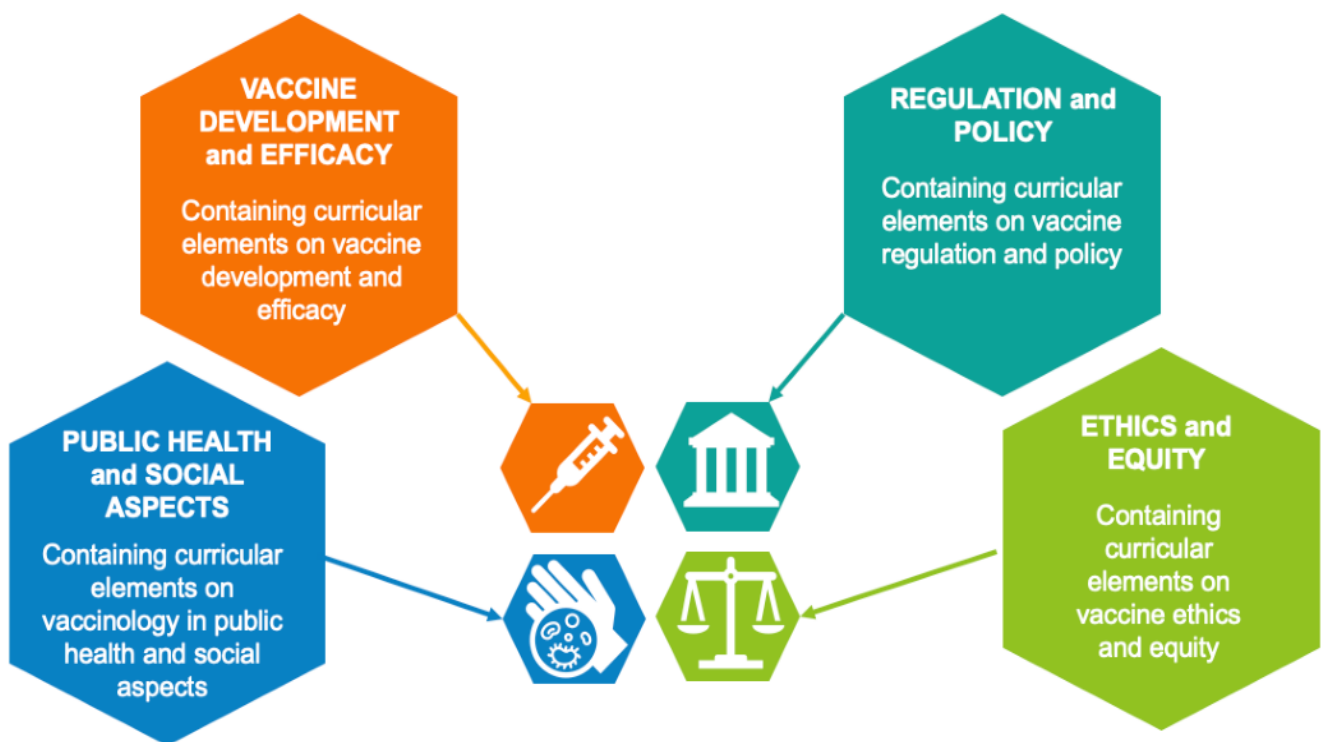
## Disease Prevention: Part B Curriculum Overview

In an era marked by emerging infectious diseases and global health threats, such as the COVID-19 pandemic, the importance of vaccinology cannot be overstated. It is through the collective efforts of students and public health professionals that vaccination remains a cornerstone of disease prevention and public health promotion, ultimately saving lives and improving population health on a global scale.

Vaccinology holds paramount importance for both students and public health professionals due to its profound impact on global health outcomes. Understanding vaccinology equips individuals with the knowledge and skills necessary to combat infectious diseases effectively, preventing morbidity, mortality, and the socioeconomic burden associated with outbreaks.

Moreover, vaccines play a pivotal role in protecting vulnerable populations, including infants, elderly individuals, and those with weakened immune systems, safeguarding their health and well-being. Furthermore, vaccination is a key element of preventive medicine and public health, offering a cost-effective strategy for disease control and reducing the need for costly treatment and healthcare interventions. By learning about vaccinology, students and professionals can contribute to vaccine development, evaluation, and implementation, ensuring the continued success of immunization programs worldwide. Additionally, understanding the social, cultural, and ethical dimensions of vaccination is essential for addressing vaccine hesitancy and fostering trust in immunization efforts.

## Disease Prevention Part B Themes



## Disease Prevention Curriculum – Part B

Recognizing the range of vaccinology challenges in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex terrain with insight and compassion, ensuring equitable and ethical public health practice for all.

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Speciality Training (PST)

## Full Curriculum

### PUBLIC HEALTH and SOCIAL ASPECTS

- Rationale, context, and history of immunization
- Herd immunity
- Confidence, social cohesion, and the healthy lifestyle's role in social stability
- Resilience, as a means to disease prevention and delayed disease progression
- Re-emergence of vaccine-preventable disease
- Behavioural science relevant to vaccine uptake and hesitancy within different population sub-groups
- Vaccination communication and advocacy
- Vaccination's role within cancer prevention
- Difference between a side-effect vs allergy
- Vaccination & pregnancy

### VACCINE DEVELOPMENT and EFFICACY

- Vaccine development including quality
- Efficacy of vaccination
- Efficiency of vaccination
- Pharmaco-vigilance (after authorization) and clinical trial information
- Understand basic immunology and vaccine immunology and immunopathology
- Peptide cell-based vaccine methodologies
- Randomized control trials (RCTs)
- Vaccine effectiveness and vaccine efficacy
- Vaccine development, regulation, safety, and efficacy of vaccines & RCTs
- Vaccine registration (registry)

### REGULATION and POLICY

- Legislation
- State medication management
- Regional and national vaccination programs incl. Logistical aspects
- Implement appropriate protective measures (e.g. Infection prevention and control, use of personal protective equipment, and vaccination)

### ETHICS and EQUITY

- Bioethics and its application
- Ethics of vaccination
- Discrimination of unvaccinated
- Economics of vaccination
- Availability and equity of vaccination

#### Note:

The above presents a broad view vaccinology curriculum, **Table 1: The Whiteboard**, presents a deeper dive and more encompassing curriculum which answered fundamental questions like:

- Where do we start?
- How can this initial learning be deepened within master level programmes?
- Examples of possible delivery

## References

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Table 1 – The Whiteboard

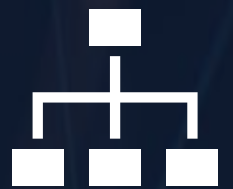
Where do we start?	How can this initial learning be deepened within master level programmes?	Examples of possible delivery
<ul style="list-style-type: none"> <li>• Why vaccinate? Why not?</li> <li>• Current issues in relation to vaccinology</li> <li>• Horizon scanning</li> <li>• Rationale, history and context (incl. examples from Arts &amp; humanities)</li> <li>• Eradication of particular diseases</li> <li>• Understanding scientific information and its interpretation</li> <li>• Understanding basic terminology</li> <li>• Is vaccination an investment or a cost?</li> <li>• Who pays?</li> <li>• Legal issues</li> <li>• Impact of vaccine preventable and modifiable diseases on people, communities and the global population</li> <li>• Who is exposed?</li> <li>• Who is affected?</li> <li>• People, places and populations at particular risk</li> <li>• Impact of vaccines</li> <li>• How do vaccines work?</li> <li>• How do we know they work?</li> <li>• Who is protected?</li> <li>• How do we do it safely? Consider live vaccinations and contraindicated groups</li> <li>• Safe people, places and programmes</li> <li>• Addressing potential ethical and human rights issues</li> <li>• Prevention and control of adverse events</li> <li>• How do people know about vaccination?</li> <li>• Communication and advocacy, including communication with journalists and health professionals</li> <li>• Optimising inclusion and acceptance - designing in partnership</li> <li>• Who are the stakeholders in a successful vaccination programme (including how the roles are shared and the importance of local, national and global organisations)?</li> <li>• Consider aspects that most from healthcare backgrounds will already know - workplace health and safety, side effect vs allergy, IPC/PPE and vaccination</li> <li>• Basic immunology/vaccine immunology/immunopathology</li> <li>• Herd immunity</li> <li>• Pharmacoepidemiology</li> <li>• Number Needed to Treat</li> </ul>	<ul style="list-style-type: none"> <li>• Move on to more practical aspects such as to designing, implementing and evaluating public health response strategies</li> <li>• Health protection strategies</li> <li>• Role of major stakeholders in responding to outbreaks, epidemics and pandemics</li> <li>• Epidemic/pandemic management strategies</li> <li>• Role of living conditions (AK Modelling), lifestyle and behaviour in infection dissemination and prevention</li> <li>• Vaccine registration</li> <li>• Vaccine hesitancy within different population sub-groups; discrimination of unvaccinated</li> <li>• Ethics of vaccination and bioethical considerations</li> <li>• Healthcare supplies, trading and accessibility in times of crises, including a discussion of examples from pandemics</li> <li>• Infectious disease and public health law</li> <li>• Basic science of vaccine discovery and licensure</li> <li>• Vaccine research methods: vaccine studies, clinical trials and epidemiological research</li> <li>• Vaccine schedule and immunization programs: understanding the recommended vaccination schedules and national immunization programs. Include types, planning, monitoring and evaluation of programmes</li> <li>• Vaccine supply chain management: understanding the logistical challenges and strategies involved in maintaining vaccine supply chains, including storage and distribution.</li> <li>• Vaccine modelling and simulation: proficiency in using mathematical models to predict vaccine impact and optimize vaccination strategies.</li> <li>• Understanding how to interpret vaccine dashboard data to steer decision-making for immunisation programmes</li> <li>• How to use (in an impactful way) vaccine dashboard data to manage coverage, supply chain and stock pile of vaccines</li> <li>• The role of visualised vaccine data in dashboards to communicate progress of immunisation programmes on all governance level</li> <li>• Role of vaccine dashboards in monitoring equity of vaccines regionally/nationally and display of vaccine hesitancy rates per region/communities (enable easier visual analysis of values influencing hesitancy which can be more complex in nature)</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise to find out what the vaccination programmes are in your home country, which could be compared with neighbouring country</li> <li>• Investigate the journey of a vaccine from particle to person/vial to a jab</li> <li>• Comparative case study of human papillomavirus (HPV)</li> <li>• Design a vaccination programme e.g. migrant population/other targeted groups</li> <li>• Develop and simulate implementation of a programme to prevent and counter misinformation</li> <li>• Develop an impact evaluation plan for a new or revised vaccination programme/delivery strategy</li> <li>• Undertake an economic evaluation of a new vaccine/changed vaccination schedule</li> <li>• Investigate how vaccines are regulated and approved</li> <li>• Simulate investigation, reporting lessons learned from vaccine-related adverse events</li> <li>• Investigate the role of vaccines in cancer prevention and treatment</li> <li>• Varicella vaccine - explain differences in immunisation schedules e.g. Canada vs UK, and the reason behind such differences</li> <li>• Reflect on historical setbacks in relation to vaccine uptake e.g. MMR vaccine, and highlight the importance of vaccine communication and advocacy</li> <li>• Discussion around human herpesviruses (HHV) for which no vaccine exists - discuss reasons behind this, current research and whether this could change in the future</li> <li>• Discussion of how screening programmes can be influenced by vaccination e.g. no rubella screening in pregnancy due to contraindications</li> <li>• Dissertation presentations as a learning tool(peer-peer learning)</li> <li>• Discuss some of the foremost vaccine controversies over the past century starting from the COVID-19 vaccine</li> <li>• Not everyone gets the vaccines they need everywhere: discuss why this is, what factors mediate this and possible solutions and recommendations</li> <li>• Historical cases in relation to vaccine development e.g. rubella vaccine &gt; MMR</li> <li>• Develop the implementation of a programme that demonstrates the impactful use of vaccine dashboard data in decision-making (Nigerian case study -DP3/Polio/measles containing vaccine)</li> <li>• Undertaking projects using case-study data to visualise vaccine data in dashboard through R-studio/Power BI</li> <li>• Investigate how vaccine hesitancy themes (e.g. safety concerns, communication, accessibility) can be applied to dashboard at community, regional or national level to help steer decision making in priority areas</li> <li>• Immunocompromised and pregnant patients considering vaccination</li> <li>• Adverse event process</li> <li>• Practice collaboration with other professionals</li> <li>• Discuss the global aspect of vaccination e.g. not available. Think about this in relation to core interprofessional skills; addressing vaccine inequity; living with uncertainty and how to manage this professionally and ethically</li> <li>• Vaccine diplomacy: understanding the geopolitical aspects of vaccine distribution and international cooperation in vaccination efforts</li> <li>• Vaccine immunogenicity: advanced understanding of factors influencing vaccine-induced immune responses</li> <li>• Vaccine collaboration and partnerships: skills in fostering collaborations between government, industry, academia, and NGOs to advance vaccine research and implementation</li> <li>• Consider student-led teaching, Q+A sessions, additional courses to complete outside of class-time or the use of a flipped classroom approach</li> </ul>





# Chapter 10

## Health Promotion



CORE SUBJECT AREAS IN PUBLIC HEALTH



## Rationale and Current Status: Health Promotion

**Contributors:** *Kate Frazer, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd*

As we approach the fortieth anniversary of the publication of the World Health Organization Ottawa Charter<sup>1</sup>, remind us that this was the blueprint for health promoters and policymakers to build policies and create supportive environments to promote the health and well-being of communities and societies<sup>2</sup>. The relevance continues in the 21st century, acknowledged recently by in consideration of a tobacco-free world<sup>3,4</sup>. The continued progress of the actions of the Ottawa Charter framework<sup>1</sup> are critical to achieving the 2030 Sustainable Development Goals<sup>5</sup> notable environmental health, healthy public policies, reorientating health systems and enabling preventative and responsible services that are universally accessible. The improvements and developments globally may be explained in terms of life expectancy, acknowledging the impact of genetics, gender, lifestyle, and the determinants of health<sup>6</sup>. In 2023, the UN reported a global life expectancy of 70.8 years for males and 76.0 years for females and an average of 73.4 years; life expectancies varied within regions and countries, reporting a low of 57.7 years in Western Africa to a high of 82.7 years in Western Europe<sup>7</sup>. Also presents the widening gap in life expectancy, increased deprivation and poorer health outcomes over ten years and notes the focus of governments was inconsistent on the targets developed in 2010 and advocating that government policies must focus on more comprehensive approaches that impact the broader context of people's lives<sup>8</sup>. Note that changing behaviour requires an approach from policy makers at local, national and international levels working with local communities<sup>9</sup>.

In their review of WHO health promotion conferences over the past four decades, highlight that health promotion not only underpins primary healthcare systems but also forms the core of public health initiatives. By addressing these determinants, health promotion works to optimise their positive effects on both public and personal health, underscoring its critical role in the health sector (p.91). Specifically reminds us that multi-sectoral collaboration, including healthcare, education, and the economy, is fundamental to addressing public health challenges. This is the critical context for presenting the subject of health promotion in this curriculum so that students and interdisciplinary professionals can develop knowledge, expertise, and competence. The subject themes emphasise the theoretical basis, lifestyle approaches, prevention, and societal factors of health promotion. Adopting a systems lens approach, they are explicitly interconnected to more comprehensive public health domains impacting global health and well-being, including one health, advocacy, mental health and health literacy<sup>10</sup>.

The subject areas are underpinned by essential core competencies in epidemiology, as highlighted in several prestigious frameworks. The WHO-ASPHER Competency Framework 2020<sup>11</sup> underscores the importance of health promotion in strengthening public health education and practice. Similarly, the WHO's 12 Essential Public Health Functions 2024<sup>12</sup> emphasise the critical role of preventive medicine and lifestyle interventions in maintaining and enhancing population health. The ECDC's 2022 Core Competencies in Applied Infectious Disease Epidemiology<sup>13</sup> outline the necessity of integrating comprehensive health promotion strategies to manage and mitigate infectious diseases effectively. These

frameworks, along with the Council on Linkages Between Academia and Public Health Practice (2021)<sup>14</sup>, the EU CompHP Core Competencies for Health Promotion (2011)<sup>15</sup> and the American College of Lifestyle Medicine's Lifestyle Medicine Core Competencies (2022)<sup>16</sup>, all collectively endorse health promotion embeddedness in global public health curricula. It is accepted that future public health professionals must be well-equipped to tackle global health challenges and understand the impact of the social determinants on health inequity and inequalities on individuals and communities. Thus, public health professionals must adopt holistic, evidence-based approaches to address and foster collaborative change.

The acknowledged importance of planetary, environmental and climate health within this curriculum emphasises the Sustainable Development Goals (UN 2016) agenda and the importance of green and blue spaces<sup>17</sup>. The WHO (2023) reports the necessity of biodiversity for health, and the growing body of evidence demonstrating the benefits of green and blue spaces linked to human health and well-being, including carbon capture, improved water quality, improved physical health, reduced stress, reduced air pollution and enhanced social and cultural outcomes<sup>18</sup>. Health professionals knowledge and understanding of the growing evidence base and developing their curiosity and skills in critical thinking are fundamental to health promotion. The balance of theoretical knowledge of epidemiology and biostatistics in interpreting zoonotic and environmental data is essential in advocating and communicating public health messages and developing public health policies and interventions. Leadership and management are also vital as they shape the implementation of effective health promotion programmes and ensure the allocation of resources to support preventive measures.

Diversity and intersectionality provide insights into the social and structural determinants of health that impact behaviours and lives. Understanding cultural context and demonstrating cultural humility is essential in designing effective health promotion campaigns. Schiavo (2023) acknowledges the critical need for building trust and connecting with those using health systems to contribute positive experiences, improve health outcomes and ultimately strengthen health systems. Again, this highlights the ethos of the Ottawa Charter<sup>19,1</sup>. What is critical in the 21st century is to engage in health promotion actions and activities with individuals, groups and communities and co-design and develop interventions, using the growing evidence base of behaviour change wheel framework<sup>20</sup>. A one-size-fits-all approach to health promotion will not address the wider social determinants of health challenges that impact those most at risk globally. Health professionals in public health must reflect and embed shared learning from and with communities to tailor programmes and responsive policies<sup>21</sup>. This is leadership in action.

In conclusion, the subject of health promotion is paramount for students and professionals in public health. It instils a holistic perspective on health, encompassing physical, mental, and social well-being and commits us to devise more comprehensive and practical interventions with and for individuals and communities locally and in influencing governments and policy makers. The emphasis on prevention as a cornerstone of addressing global health challenges and reducing future risks is evident.

## Alignment to Competency Frameworks

The Health Promotion subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Security
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 8: Governance and Resource Management
- Competency 9: Professional Development and Reflective Ethical Practice
- Competency 10: Organizational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

### ECDC Core Competencies in Applied Infectious Disease, 2022

- Subject Area B: Preparedness, Surveillance and Response to Infectious Disease Outbreaks

### ACLM Lifestyle Medicine Core Competencies, 2022

- All Domains

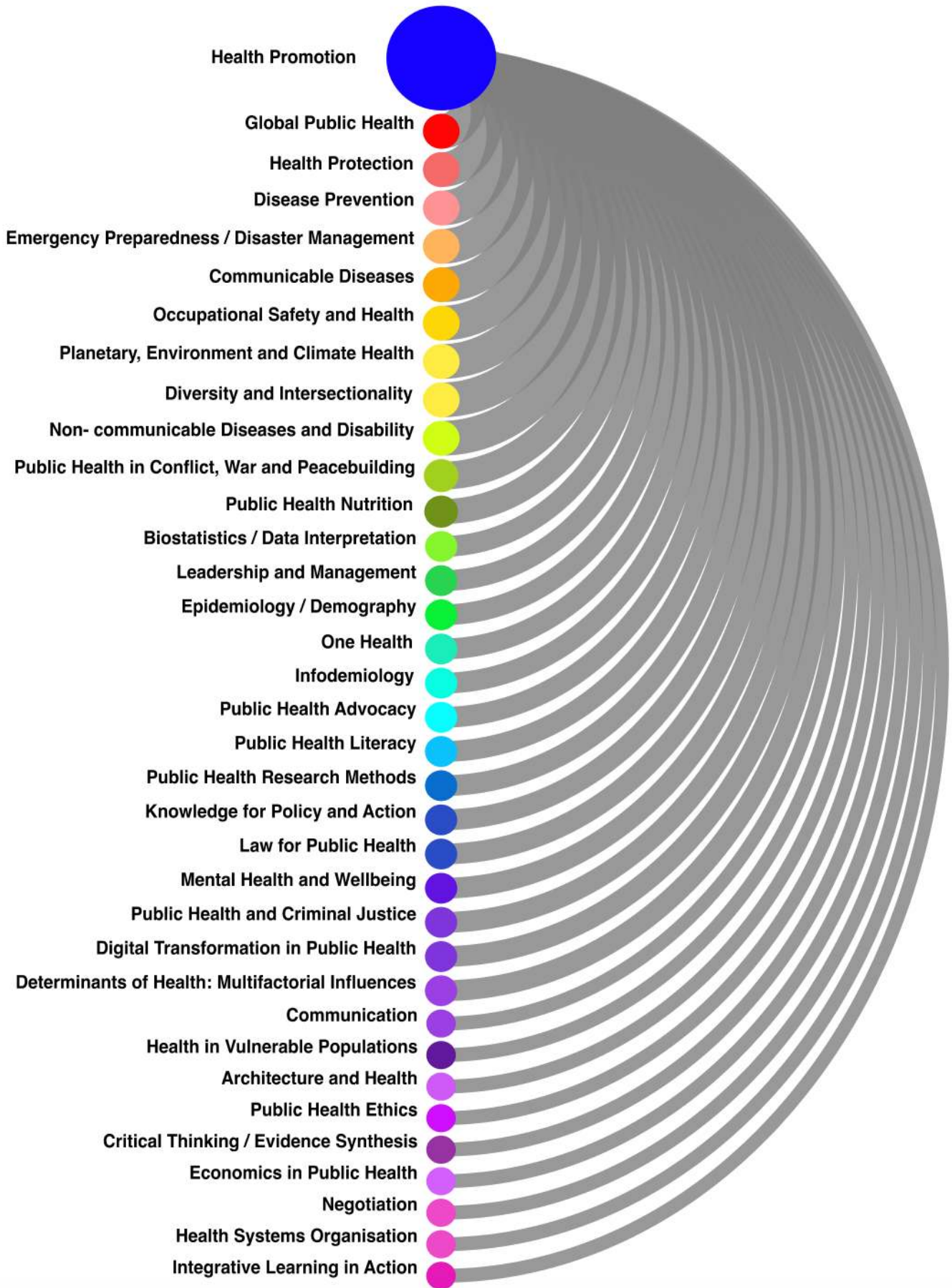
### Council on Linkages Between Academia and Public Health Practice, 2021

- All Domains

### EU CompHP Core Competencies for Health Promotion, 2011

- All Domains

### Connectivity of Health Promotion in Public Health Curricula



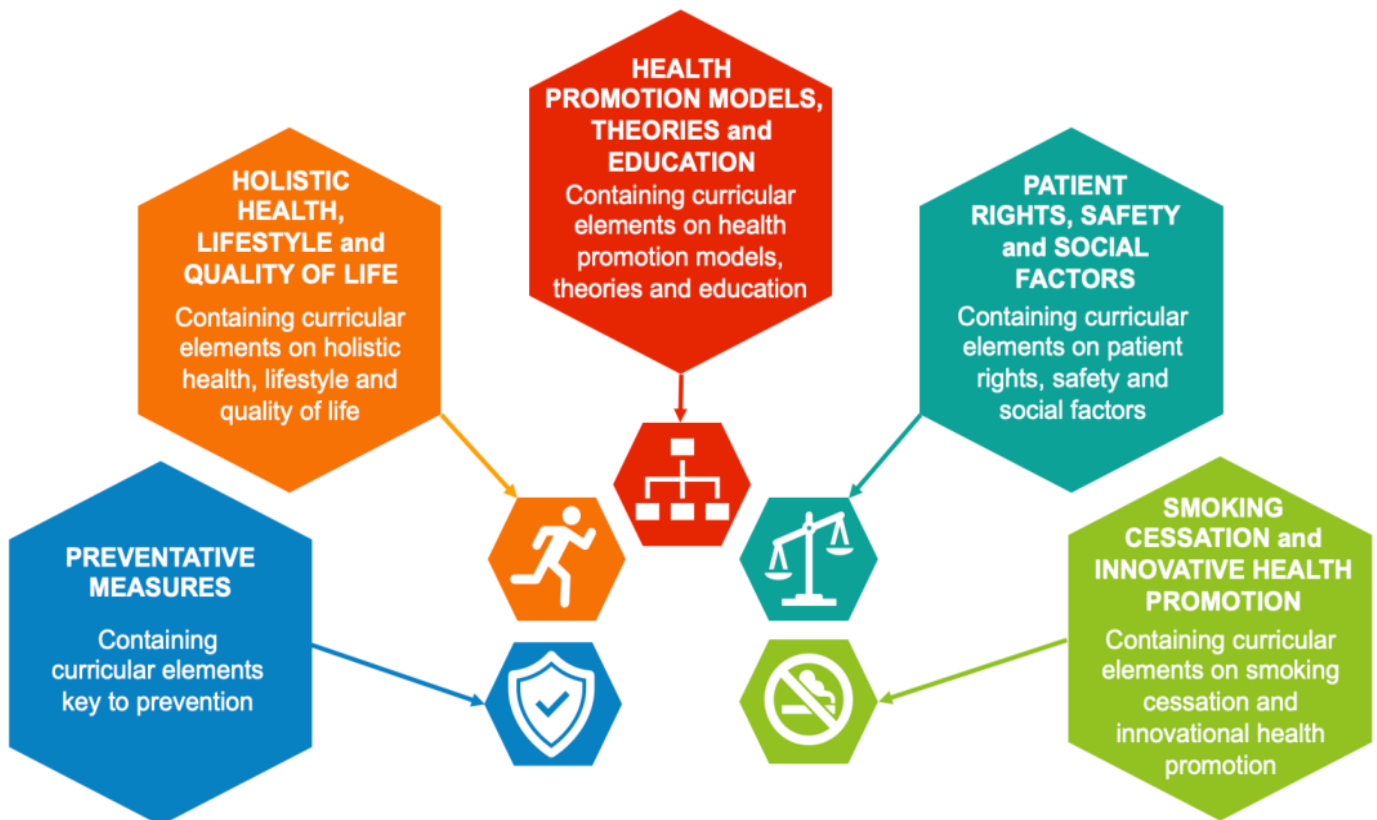
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Health Promotion Curriculum Overview

Health promotion holds paramount importance for students and professionals in the realm of public health. Its emphasis on prevention rather than treatment stands as a cornerstone, offering a proactive approach to reducing the burden of chronic diseases and improving overall health outcomes, while holding synergistic preventative methodologies for communicable diseases. Moreover, health promotion instils a holistic perspective on health, encompassing physical, mental, and social well-being, thereby enabling professionals to devise more comprehensive and effective interventions.

Aligned with essential public health competencies and promoting adaptability and innovation, expertise in health promotion not only opens diverse career opportunities but also cultivates a proactive and preventive mindset essential for navigating modern healthcare systems effectively.

## Health Promotion Themes



## Health Promotion Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Speciality Training (PST)

It is suggested for **Professional Speciality Training (PST)** that the **full curriculum** should be used for best public health outcomes. Recognizing the range of health promotional challenges in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex terrain with insight and compassion, ensuring equitable and ethical public health practice for all.

## Full Curriculum

### PREVENTATIVE MEASURES

- Rationale, context and history of immunization
- Understand basic immunology and vaccine immunology and immunopathology
- Vaccination communication and advocacy
- Preventative medicine - context and practicalities
- Early detection of disease
- Chronic disease screening - applications and limitations
- Anti-parasite/antibiotic management
- Difference between a side-effect vs allergy
- Knowledge on telomere theory
- Epigenetic changes and the role of health promotion
- Applications of lifestyle medicine on a population-wide level if required - programme access and practice in all areas of patient contact
- Applications of health promotion on a population-wide level - programme access and practice in all areas of patient contact

### HOLISTIC HEALTH, LIFESTYLE and QUALITY of LIFE

- Holistic practice
- Workplace health and safety
- Quality of life and wellness through holistic lens
- Healthy lifestyles
- Healthy aging - concept, interventions and measurement
- Health promotion activities throughout the life-cycle and transition periods
- Physical activity for all ages
- Healthy diet, physical activity, restorative sleep, stress management, avoidance of risky substances, and positive social connections (the six pillar approach)
- Resilience, as a means to disease prevention and delayed disease progression
- Emotional well-being

### HEALTH PROMOTION MODELS, THEORIES and EDUCATION

- Rosenstock health belief model
- PRECEDE-PROCEED model
- Health promotion models (population applicable)
- Behavioural science
- Bioethics and its application
- Education for all from student of healthcare to policymakers

### PATIENT RIGHTS, SAFETY and SOCIAL FACTORS

- Patients' rights and safety of the establishment of a healthy lifestyle
- Confidence, social cohesion, and the healthy lifestyle's role in social stability
- Promotion of women's physical and mental health
- Promotion of men's physical and mental health
- Social factors in health promotion
- Workplace health and safety

### SMOKING CESSATION and INNOVATIVE HEALTH PROMOTION

- Smoking cessation methodologies and practice
- Access to nicotine replacement therapy
- Apply innovative and socially sensitive methods to promote healthy lifestyles
- Health coaching
- Inspirational interviewing
- Access to multidisciplinary professions
- Psychotherapy as a tool for health promotion



## Bachelor Degree Level

### PREVENTATIVE MEASURES

- Rationale, context and history of immunization
- Early detection of disease
- Chronic disease screening - applications and limitations
- Smoking cessation
- Preventative medicine - context and practicalities
- In all areas of patient contact

### HOLISTIC HEALTH, LIFESTYLE and QUALITY of LIFE

- Holistic practice
- Quality of life and wellness through holistic lens
- Healthy lifestyles
- Healthy aging - concept, interventions and measurement
- Health promotion activities throughout the life-cycle and transition periods
- Physical activity for all ages
- Healthy diet, physical activity, restorative sleep, stress management, avoidance of risky substances, and positive social connections (the six pillar approach)
- Resilience, as a means to disease prevention and delayed disease progression
- Emotional well-being

### HEALTH PROMOTION MODELS, THEORIES and EDUCATION

- Rosenstock health belief model
- PRECEDE-PROCEED model
- Health promotion models (population applicable)
- Behavioural science
- Bioethics and its application
- Education for all from student of healthcare to policymakers

### PATIENT RIGHTS, SAFETY and SOCIAL FACTORS

- Patients' rights and safety of the establishment of a healthy lifestyle
- Confidence, social cohesion, and the healthy lifestyle's role in social stability
- Promotion of women's physical and mental health
- Promotion of men's physical and mental health
- Social factors in health promotion
- Workplace health and safety

### SMOKING CESSATION and INNOVATIVE HEALTH PROMOTION

- Smoking cessation methodologies and practice
- Access to nicotine replacement therapy
- Apply innovative and socially sensitive methods to promote healthy lifestyles

## Master Degree Level

### PREVENTATIVE MEASURES

- Rationale, context and history of immunization
- Understand basic immunology and vaccine immunology and immunopathology
- Vaccination communication and advocacy
- Preventative medicine - context and practicalities
- Early detection of disease
- Chronic disease screening - applications and limitations
- Anti-parasite/antibiotic management
- Difference between a side-effect vs allergy
- Knowledge on telomere theory
- Epigenetic changes and the role of health promotion
- Applications of lifestyle medicine on a population-wide level if required - programme access and practice in all areas of patient contact
- Applications of health promotion on a population-wide level - programme access and practice in all areas of patient contact

### HOLISTIC HEALTH, LIFESTYLE and QUALITY of LIFE

- Holistic practice
- Workplace health and safety
- Quality of life and wellness through holistic lens
- Healthy lifestyles
- Healthy aging - concept, interventions and measurement
- Health promotion activities throughout the life-cycle and transition periods
- Physical activity for all ages
- Healthy diet, physical activity, restorative sleep, stress management, avoidance of risky substances, and positive social connections (the six pillar approach)
- Emotional well-being

### HEALTH PROMOTION MODELS, THEORIES and EDUCATION

- Rosenstock health belief model
- PRECEDE-PROCEED model
- Health promotion models (population applicable)
- Behavioural science
- Bioethics and its application
- Education for all from student of healthcare to policymakers

### PATIENT RIGHTS, SAFETY and SOCIAL FACTORS

- Patients' rights and safety of the establishment of a healthy lifestyle
- Confidence, social cohesion, and the healthy lifestyle's role in social stability
- Promotion of women's physical and mental health
- Promotion of men's physical and mental health
- Social factors in health promotion
- Workplace health and safety

### SMOKING CESSATION and INNOVATIVE HEALTH PROMOTION

- Smoking cessation methodologies and practice
- Access to nicotine replacement therapy
- Apply innovative and socially sensitive methods to promote healthy lifestyles
- Access to multidisciplinary professions

## Doctoral Degree Level

### PREVENTATIVE MEASURES

- Rationale, context and history of immunization
- Understand basic immunology and vaccine immunology and immunopathology
- Vaccination communication and advocacy
- Preventative medicine - context and practicalities
- Early detection of disease
- Chronic disease screening - applications and limitations
- Epigenetic changes and the role of health promotion

### HOLISTIC HEALTH, LIFESTYLE and QUALITY of LIFE

- Workplace health and safety
- Healthy aging - concept, interventions and measurement
- Health promotion activities throughout the life-cycle and transition periods
- Physical activity for all ages
- Resilience, as a means to disease prevention and delayed disease progression
- Emotional well-being

### HEALTH PROMOTION MODELS, THEORIES and EDUCATION

- Rosenstock health belief model
- PRECEDE-PROCEED model
- Health promotion models (population applicable)
- Behavioural science
- Bioethics and its application
- Education for all from student of healthcare to policymakers

### PATIENT RIGHTS, SAFETY and SOCIAL FACTORS

- Patients' rights and safety of the establishment of a healthy lifestyle
- Confidence, social cohesion, and the healthy lifestyle's role in social stability
- Promotion of women's physical and mental health
- Promotion of men's physical and mental health
- Social factors in health promotion
- Workplace health and safety

## Certificate and / or Diploma Level

### PREVENTATIVE MEASURES

- Rationale, context and history of immunization
- Understand basic immunology and vaccine immunology and immunopathology
- Vaccination communication and advocacy
- Preventative medicine - context and practicalities
- Early detection of disease
- Chronic disease screening - applications and limitations
- Difference between a side-effect vs allergy
- Knowledge on telomere theory
- Epigenetic changes and the role of health promotion
- Applications of lifestyle medicine on a population-wide level if required - programme access and practice in all areas of patient contact
- Applications of health promotion on a population-wide level - programme access and practice in all areas of patient contact

## Continuous Professional Development

### PREVENTATIVE MEASURES

- Rationale, context and history of immunization
- Understand basic immunology and vaccine immunology and immunopathology
- Vaccination communication and advocacy
- Early detection of disease
- Chronic disease screening - applications and limitations
- Difference between a side-effect vs allergy
- Knowledge on telomere theory
- Applications of lifestyle medicine on a population-wide level if required - programme access and practice in all areas of patient contact
- Applications of health promotion on a population-wide level - programme access and practice in all areas of patient contact

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# Chapter 11

## Public Health Ethics



CORE SUBJECT AREAS IN PUBLIC HEALTH



# Rationale and Current Status: Public Health Ethics

*Contributors: Farhang Tahzib*

## Background

The ASPHER Core Curriculum Project expert working group noted that: “Public health ethics stands as an essential component of this curriculum but also of public health education as a whole, providing a framework for navigating complex moral dilemmas, guiding decision-making, and ensuring the equitable and ethical practice of public health initiatives and practitioners are at internationally accepted expectations. Rooted in public health mission and values, public health ethics serves as a compass for addressing ethical challenges inherent in public health practice, research and policy.”<sup>1</sup>

Furthermore, public health ethics encourages reflection on the values and biases that shape public health practice, fostering cultural humility and sensitivity to diverse perspectives. Ultimately, integrating public health ethics into public health education equips students with the ethical principles, critical thinking skills, and moral reasoning necessary to navigate the complexities of public health practice responsibly and ethically. By prioritizing ethics in education, institutions contribute to the development of ethical leaders who are committed to promoting health equity, social justice, and the well-being of populations worldwide.”<sup>1</sup>

## Introduction

The professional discipline of public health is driven by its values. Public health is not just a technical discipline concerned with statistics or facts. Our norms, values, beliefs and the way we see the world, as individuals, communities and institutions which serve us, do matter and fundamentally affect our decisions, behaviours, policies, and practice.

The WHO / ASPHER roadmap for professionalisation of public health has highlighted public health ethics as a key pillar for professionalisation and a core cross cutting competency for good public health practice and policies. Ethics is thus an essential component of public health expertise.<sup>2</sup>

Yet despite the need and demand for education and training in public health ethics by public health practitioners and policy makers, there is evidence that it is highly variable in quantity and content, often inadequate, and defaults to clinical ethics rather than considering population perspectives and issues of social justice. There is also evidence of moral distress and injury in the public health workforce and the need for education and training to support the public health workforce.<sup>3-4</sup>

Professor James Thomas, a significant researcher on the issue, reflecting on ethics education in US schools of public health in 2003, noted that: “Public health and its component disciplines are irretrievably enmeshed in ethical concerns. Ethics is not a topic that can be separated from the teaching of technique. Nearly every technical task is carried out in an ethically charged context. Viewed in this way, technique is not morally neutral. Rather, all technique is an outgrowth of a particular world view or philosophy; it is the flesh on the philosophical bones. The question, then, is not whether ethics should be taught, but rather whether it will be taught accidentally or intentionally.”<sup>5</sup>



Professor Thomas also observed that when considering questions of resources needed in relation to public health ethics—such as course materials, ethics codes, a clear identification of relevant competencies—that: “Perhaps the most important resource for teaching ethics is a teacher. Few of the current faculty in schools of public health have had any training in ethics. One of the critical needs, then, is means of preparing faculty to teach ethics.”<sup>6</sup>

There have been similar observations in Europe and elsewhere. For example, a survey of undergraduate and postgraduate programme of schools that are members of The Association of Schools of Public Health in the European Region (ASPHER), undertaken in 2010/11, found widespread inconsistency, and “their studies revealed that there is a high degree of variability in how SPHs integrate ethics into their bachelor and master programmes (core course, elective course, or across modules). Variability was also seen in the frequency of ethics content taught across modules and whether specifically trained academics were involved in teaching ethics in PH programmes.”<sup>7</sup>

Recent studies and surveys over the past two decades have consistently reported similar findings. A report on Variability in public health ethics education across Europe in 2020 found that “Of the 31 ASPHER institutions with at least one master’s degree, 39% had one or more master’s degree in which no ethics was taught, whilst only 47% of institutions had someone who was formally qualified to teach ethics by virtue of holding a PhD, master’s and/or further academic role in ethics. Fifty-one percent of EUPHA respondents had not received any ethics education or training in the past five years, and 21% had never had any education or training in ethics.” Key messages from these surveys were that 1) ethics is an optional extra for some Schools of Public Health, 2) there is an ethics training gap in continuing professional development, 3) public health ethics education is a poorly defined field, 4) there is a lack of ethics expertise and support, but 5) public health professionals perceive they have a good understanding of, and response to ethical dilemmas in their professional lives.”<sup>3</sup>

## Purpose of education and training in public health ethics

Public health ethics is not just ‘a matter of opinion’; nor a question of ‘subjective’ perspective. Public health curricula should provide solid underpinning in professional expertise in public health ethics as with the other competencies. Professors Angus Dawson and Ross Upshur have noted that: “Curricula in public health ethics are designed not to improve the moral character of students but rather to provide them with the conceptual abilities and decision-making skills they will need to deal successfully with ethical issues in their own research and practice.”<sup>8</sup>

It has been suggested by various scholars that education and training in public health ethics and law, support good public health practice by offering:

- “[A] foundation for critical reflection and ethical judgment on the part of public health professionals, students, and researchers, so that they can be better equipped to deal with the various challenges and dilemmas that they will face in their practice.”<sup>9</sup>
- The capacity for public health professionals and policy makers “to deal with difficult ethical questions in a systematic and reflective manner”.<sup>10</sup>
- “A more modest goal of moral formation [than trying to ‘make people moral’] is equipping students of public health to operate within the ethics structures of the field. This entails teaching them what the structures and policies are, their importance, and how to function within them. It also entails teaching students how to reason through ethical problems, appealing to various ethical theories when needed.”<sup>11</sup> and to inculcate ethical reflection as a habit.

- “The teaching of ethics from a public health perspective provides the language, content, and context for recognizing value-laden choices and practices in public health.”<sup>12</sup>
- “Studying public health law allows for the students to explore the various trade-offs inherent in designing and implementing health policy.”
- “An important outcome of teaching and learning in public health ethics is the capacity to make reasoned evaluations of the range of normative beliefs and values at work in the field.”<sup>13</sup>
- Ethics is about identifying and attempting to agree the importance of particular values. Enabling professionals to systematically explicitly identify, analyse and consider ethical issues inherent in public health practice and research through application of principles, norms and tools to guide practice

## Skills and knowledge

Professor Thomas has emphasised the need to focus both on substantive knowledge and practical skills. In *indicative* lists of what might be covered, he outlines substantive points of knowledge base. In terms of basic information, Thomas lists<sup>14</sup>:

- *The values and beliefs inherent to a public health perspective.*
- *Ethical principles that follow from the values and beliefs.*
- *Public health mandates and powers.*
- *Ethical tensions within public health.*
- *Historical ethical failures and triumphs.*
- *The history and purposes of research ethics institutions.*
- *The application of ethics to topics such as informatics and genomics.*

And in regard to skills, he enumerates the following indicative issues:

- *Discerning an ethical question.*
- *Reasoning through an ethical question.*
- *Implementing standard ethical practices in research on human subjects.*

Recent work by Professor Thomas and the Joint working group on public health ethics and law has updated his work and highlighted key principles, public health professional and institutional competencies and skills for ethical practice.

## Public Health Skills and Knowledge Framework

The UK-wide *Public Health Skills and Knowledge Framework (PHSKF) 2016*,<sup>15</sup> specifically includes a section on “Professional and ethical underpinnings” which applies to all public health workforce and the issues which need to be considered in curricula and education and training activities (see fig. 11.1)



**Fig 11.1 Public Health England, *Public Health Skills and Knowledge Framework*, p. 9.**

The framework gives five specific functions in relation to professional and ethical underpinnings:

- i. understand and apply the principles underpinning public service
- ii. adhere to professional codes of conduct, occupational membership codes, employer behaviour frameworks and practice standards
- iii. ensure compliance with statutory legislation and practice requirements, including mandatory training
- iv. promote ethical practice with an understanding of the ethical dilemmas that might be faced when promoting population health and reducing health inequalities
- v. identify and apply ethical frameworks when faced with difficult decisions when promoting the public's health and reducing inequalities

The remainder of the framework focuses on distinct functions—under the headings, respectively, of technical, context, and delivery—that overall contribute to public health. Within each activity, there are sub-functions that might be categorised as entailing public health ethics and law skills and knowledge, some of them to significant degrees. Some of the examples from across the different Functions, which relate to specialisms across public health practice.

### Specialist PHE knowledge includes:

- Understanding of different concepts and theories related to ethics and law: e.g., distinct understandings of justice;
- Understanding of different modes and sources of governance and regulation: e.g. to understand statutory and common law rules, public and private policy, etc.

**Specialist PHEL skills include:**

- Capacities for reflection and deliberation: the ability to consider and critically engage with different problems, for example to identify and engage with ethical tensions in a policy that might improve the public's health overall whilst exacerbating health inequalities;
- Scrutiny of reasons: the ability to identify and evaluate the strength, for example, of ethical as compared with economic rationales for a particular policy position;
- Clarity in conceptual understanding: the ability to appreciate, for example, different concerns regarding different concepts of justice;
- Strength in argument and critical reasoning: the ability to formulate and advance persuasive and coherent arguments, recognising different forms of reason (ethical, legal, political, economic, prudential, etc.), and being able to deploy these effectively;
- The capacity to apply ethical and legal reasons to practical situations and questions.

**Concluding remarks**

All public health professionals must be able to recognise and practise within the ethical, legal and regulatory boundaries that apply to their area of public health practice, whilst serving the public health goals of protecting and promoting the public's health and well-being and reducing health inequalities. The curriculum therefore need to work towards and ensuring public health professionals learn about and reflect on ethical dimensions across public health practice.

Public health Curricula should recognise the distinct nature of public health ethics.<sup>16</sup> There is need for distinct time and space for education of and training in public health ethics. Modules should be mandatory, rather than voluntary / elective modules, in all undergraduate, masters and postgraduate programmes, and other educational /training programmes.

Public health training programmes should consider specific dedicated sessions on ethics, as well as embedding ethical considerations in all the various areas of practice.

There is need for public health bodies to ensure the development of a Code of ethics and professional conduct for public health professionals and institutions, and that there is education and training around the issue in public health curriculum at all levels and in CPD activities.

There is need for sufficient balance in professional education and training between appreciation and understanding of theory and practical applications. At one extreme, there are concerns that education/training in ethics is reduced to encouraging the uncritical application of say a framework, formulae, algorithms and recipes to be blindly applied to public health problems. At the other extreme, there are concerns about failures to be clear on the practical applications, that is being too abstract, and for ethics to be considered as navel gazing and mere armchair philosophical exercise.

Public health should be taught by those with some specific expertise in public health ethics. There is need to consider effective CPD activities for public health professionals. Further information contact [PHELnetwork@gmail.com](mailto:PHELnetwork@gmail.com)

## Alignment to Competency Frameworks

The Public Health Ethics subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 3: Law, Policies and Ethics
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 9: Professional Development and Reflective Ethical Practice

### WHO 12 Essential Public Health Functions, 2024

- EPHF 3: Public Health Governance and Legislation
- EPHF 4: Public Health Emergency Management
- EPHF 8: Health Protection
- EPHF 9: Prevention and Early Detection
- EPHF 10: Quality of and Access to Health Services
- EPHF 11: Public Health Research
- EPHF 12: Equitable Access to and Rational Use of Medical Products and Health Technologies

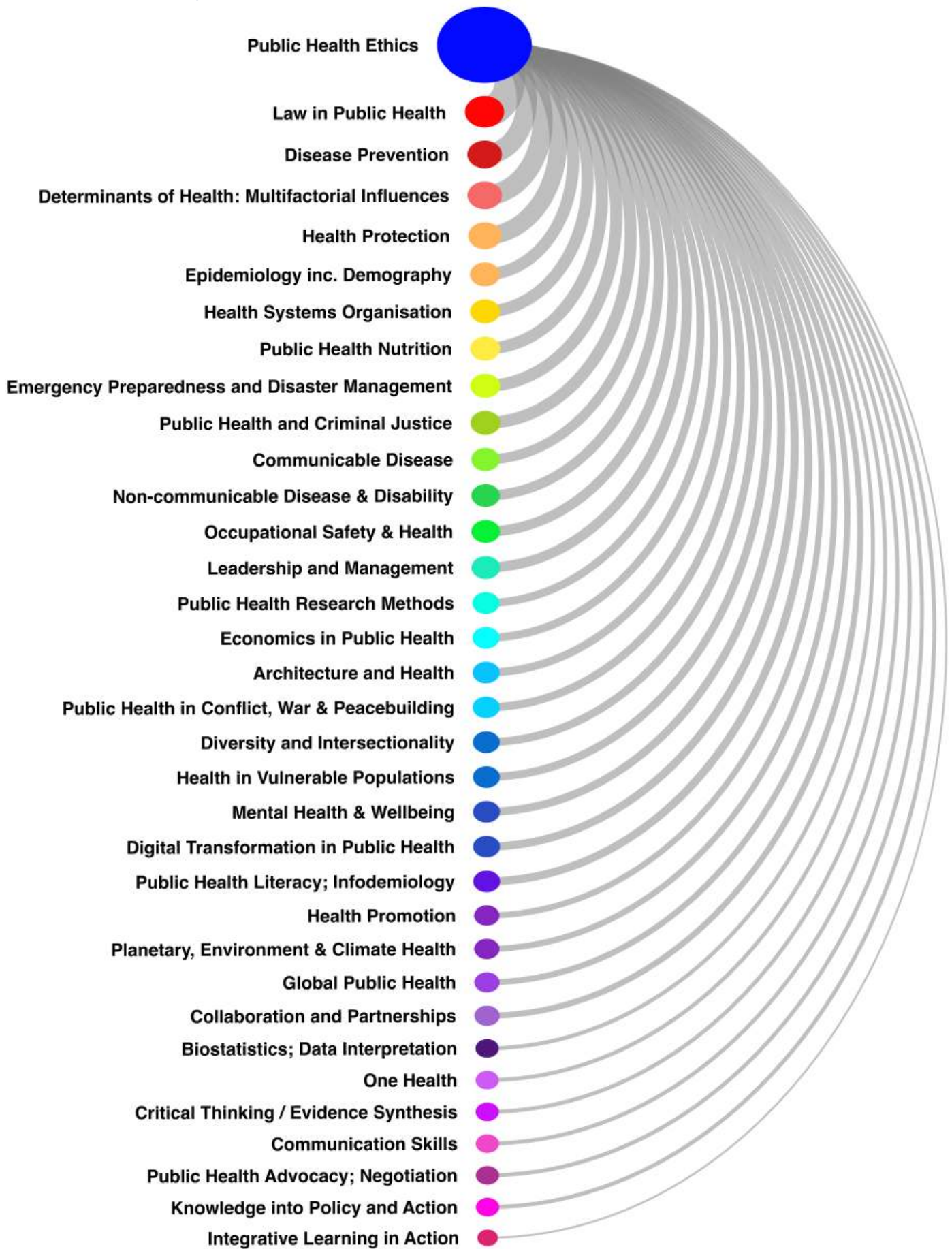
### NHS HE England & FPH UK, Public Health Ethics Programme, 2020

- An introduction to public health ethics
- Some basic theoretical underpinnings
- Frameworks and case studies

### Public Health England, Public Health Skills and Knowledge Framework, 2016

- All professional and ethical underpinnings

### Connectivity of Public Health Ethics in Public Health curricula

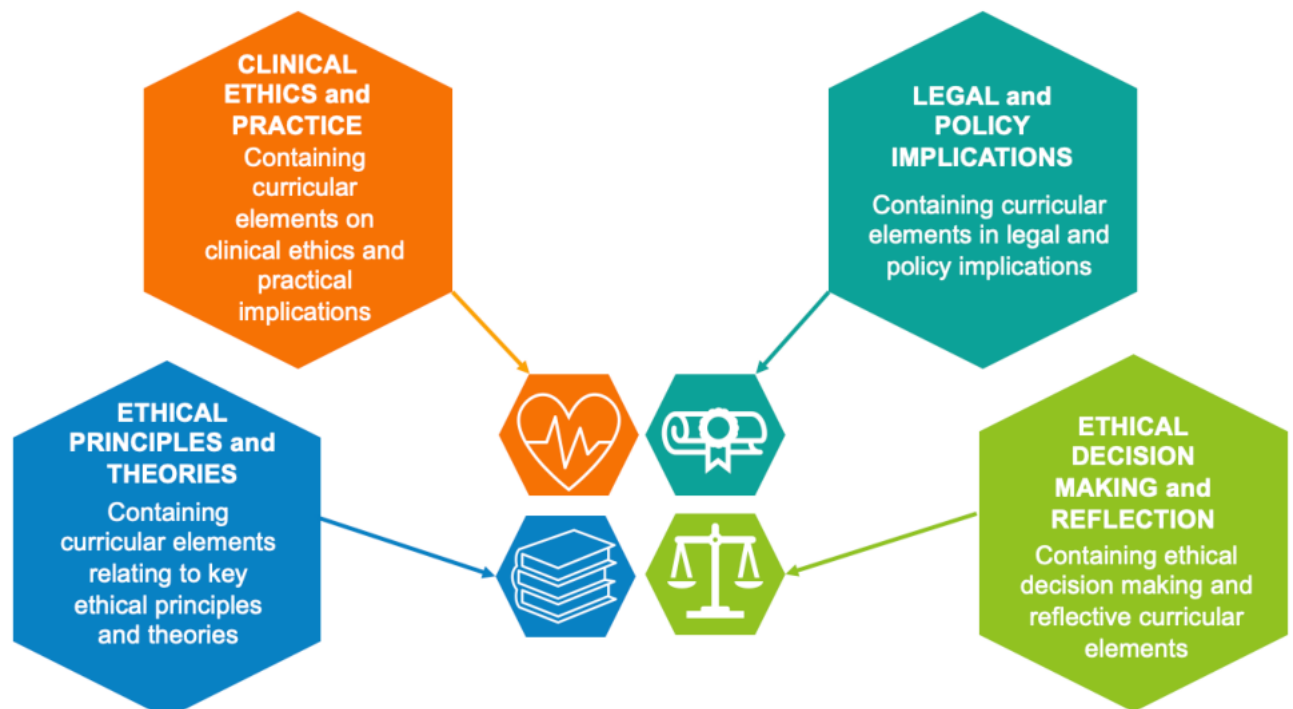


**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Public Health Ethics Curriculum Overview

By incorporating public health ethics into education, future and current public health professionals gain a deeper understanding of the ethical considerations surrounding issues such as resource allocation, health disparities, informed consent, privacy, and the balance between individual rights and the collective good. This understanding is essential for promoting ethical decision-making and fostering trust between public health practitioners, policymakers, and the populations they serve.

## Public Health Ethics Themes



## Public Health Ethics Curriculum

Recognizing the range of ethical challenges in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. This inclusive approach equips learners with tools to engage in ethical discourse and address pressing issues like resource allocation and informed consent.

Integrated case studies foster critical thinking, preparing students to navigate complex ethical dilemmas in practice and policy, cultivating ethical leaders for the future of public health. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex ethical terrain with insight and compassion, ensuring equitable and ethical public health practice for all.

Full Curriculum

**ETHICAL PRINCIPLES and THEORIES**

- Autonomy
- Deontology
- Ethical theories and tools
- Utilitarianism
- Nonmaleficence & justice
- Moral conflict & ethical dilemmas
- Obligation of devotion and justice
- Responsibility & fidelity
- Role of primary care
- Solidarity

**CLINICAL ETHICS and PRACTICE**

- Access to care
- Assistance in law & policy development
- Birth control & abortion
- Code of clinical conduct
- Confidentiality
- Continues professional development
- Cultural ethical complications in clinical care: FGM
- Disability; ability and decision making
- Do not resuscitate orders
- Ethical dilemmas organ transplantation
  - (including religious and clinical dilemmas; and black-market organs)
- Ethical dilemmas: tools of genetic engineering: CRISPR
- Ethics in psychiatry
- Ethics of vaccination
- Euthanasia
- Health screening programmes
- Historical dilemmas: HIV/AIDS
- Infertility treatments
- Informed consent & battery
- Malpractice, beneficence & negligence
- Personhood
- Psychological stress of both practitioner, patient and families
- Professionalism: norms around behaviour and clinical practice
- Screening and contact tracing of stis
- Stem cell usage in clinical arena - legal/religious ethical dilemmas

**NOTES**






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# Chapter 12

## Law for Public Health



## Rationale and Current Status: Law for Public Health

*Contributors: Carlo Signorelli, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd*

**Law in public health serves as a fundamental subject area** within the core curriculum, as it refers to the legal framework that governs the protection and promotion of the health of populations. It encompasses the statutes, regulations, and case law that empower public health authorities, regulate health-related behaviours, and protect communities from health risks. In the context of public health education, understanding law for public health is crucial for future public health professionals, enabling them to navigate and influence the legal landscape effectively to advance public health objectives while ensuring compliance with legal standards.

**The scope of law for public health** is expansive, covering areas such as infectious disease control, environmental health, emergency preparedness, health equity, and health care regulation. Law for public health intersects with ethics, human rights, and policy analysis, making it a multidisciplinary field essential for comprehensive public health education.

The **primary purposes** of law for public health include protecting and promoting public health, establishing the legal basis for interventions aimed at preventing disease and improving health across populations. Law for public health also plays a crucial role in balancing individual rights with the needs of the community, ensuring that public health measures respect individual freedoms while safeguarding communal health. Additionally, law for public health provides the legal guidance necessary for health practitioners and public health officials to implement health programs effectively. It also ensures accountability and equity, holding public health authorities responsible and promoting policies and practices that do not discriminate.

Including law for public health in the curriculum is vital for several reasons. It equips students with the knowledge to understand the legal implications of public health interventions and the legal tools available to support public health goals. It fosters critical thinking about the balance between public health needs and individual rights, an essential skill in addressing contemporary public health challenges. Furthermore, law for public health education prepares students to advocate for effective laws and policies that promote health equity and protect vulnerable populations.

**Human rights conventions**, such as the Universal Declaration of Human Rights and the International Covenant on Economic, Social, and Cultural Rights, play a vital role in shaping law for public health. Additionally the European Convention on Human Rights (ECHR) is a critical legal instrument in the context of law for public health in Europe. These conventions enshrine the right to health as a fundamental human right, guiding the development and implementation of public health policies that are equitable and non-discriminatory. Law for public health education emphasizes the importance of these conventions, ensuring that public health professionals understand their obligations to protect and promote human rights within the context of public health initiatives.

Understanding the **legal framework at local, national, and EU levels is crucial**. Knowledge of these laws enables professionals to navigate jurisdictional complexities, as health laws vary significantly across different levels of governance. This broad understanding is essential for effectively implementing public health measures within the appropriate legal contexts. Additionally, familiarity with specific laws ensures that public health interventions comply with relevant regulations, avoiding legal pitfalls that could undermine health initiatives. Moreover, aligning public health practices with the legal context enhances health outcomes by ensuring that interventions are legally sound and effective in achieving desired results.

An illustrative example of public health's role in legal change is the amendment of the Irish Equal Status Act to combat racism. Public health professionals were instrumental in advocating for this change by highlighting the adverse health effects of racism and discrimination. Racism is recognized as a social negative determinant of health, contributing to health disparities and poor health outcomes among marginalized groups. By providing evidence on the public health impact of racism, professionals influenced the legal framework to include stronger protections against racial discrimination. This legal change not only contributed to a more equitable society but also demonstrated the power of public health advocacy in shaping laws that directly impact public health.

The inclusion of law for public health as a subject area within this core curriculum is **aligned with several key competency frameworks**. The WHO-ASPHER Competency Framework (2020) emphasizes the importance of legal and ethical competencies in public health education, directly relating to policy development, ethical decision-making, and the implementation of public health policies and programs. Similarly, the WHO's 12 Essential Public Health Functions (2024) include the formulation of public health policies and the enforcement of regulations that protect public health, both of which require a strong foundation in law for public health. The ECDC Core Competencies in Applied Infectious Disease Epidemiology (2023) highlight the need for legal and ethical understanding in controlling infectious diseases. Law for public health is vital in areas such as quarantine enforcement, vaccination mandates, and regulating international health threats. Furthermore, the Council on Linkages Between Academia and Public Health Practice (2021) underscores the importance of policy development and program planning, areas that necessitate a solid understanding of law for public health. These competencies also stress the need for advocacy skills, which are strengthened through a thorough grasp of legal frameworks.

For students and professionals in public health, understanding law for public health is indispensable. It provides the tools necessary to design and implement interventions that are effective, legally sound, and ethically justified. In a world where public health challenges are increasingly complex and global, knowledge of law for public health enables professionals to navigate the legal constraints and opportunities that shape public health practice. Furthermore, law for public health is crucial for addressing issues such as health disparities, access to care, and the protection of vulnerable populations. By understanding the legal context, public health professionals can better advocate for

policies that promote health equity and protect public health interests. For students, this knowledge prepares them to engage with policymakers, contribute to legislative processes, and lead public health initiatives informed by a comprehensive understanding of the legal public health landscape.

## Alignment to Competency Frameworks

The Law for Public Health subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 3: Law, Policies and Ethics
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 9: Professional Development and Reflective Ethical Practice

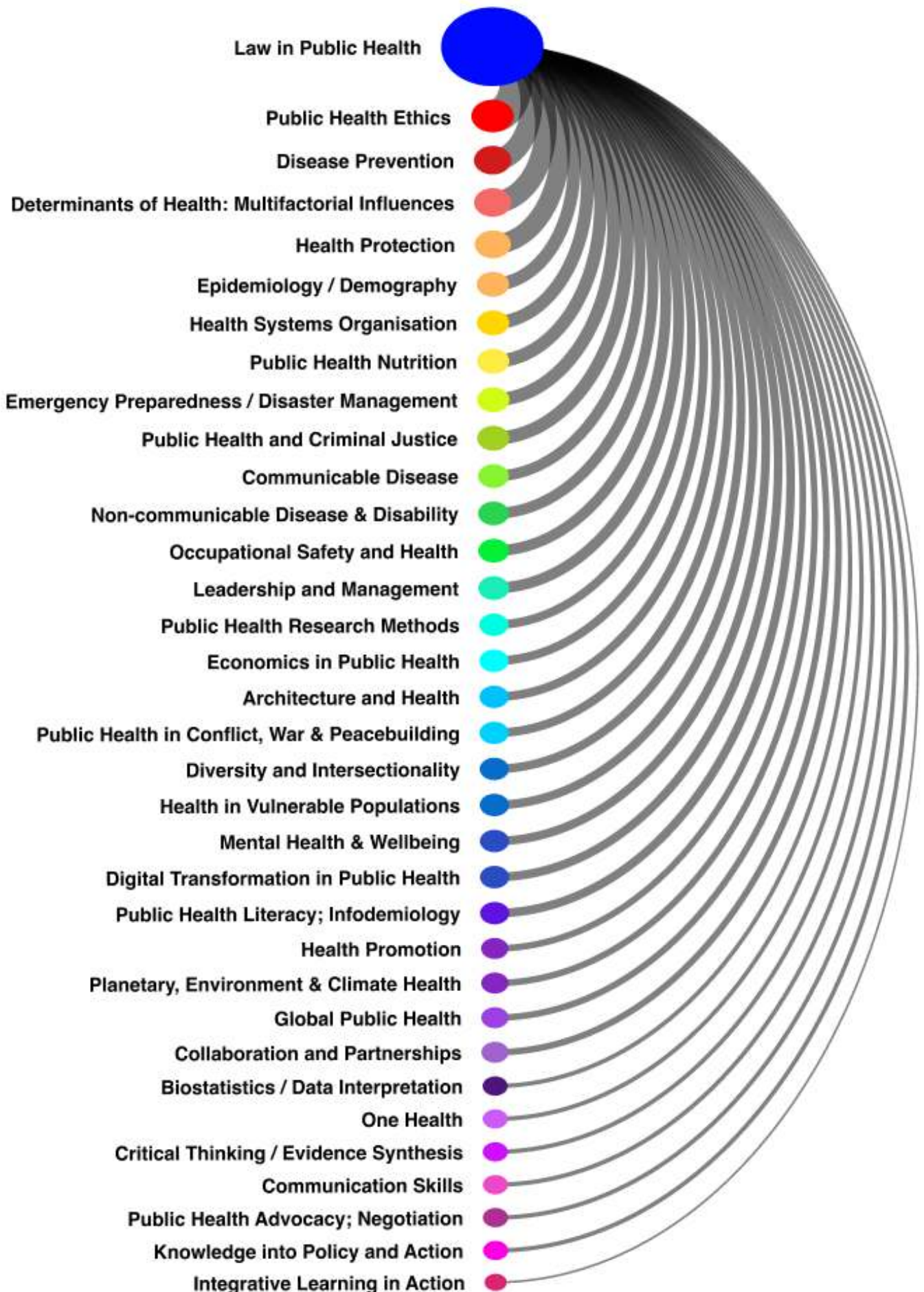
### WHO 12 Essential Public Health Functions, 2024

- EPHF 3: Public Health Governance and Legislation
- EPHF 4: Public Health Emergency Management
- EPHF 7: Health Promotion
- EPHF 8: Health Protection
- EPHF 9: Prevention and Early Detection
- EPHF 10: Quality of and Access to Health Services
- EPHF 11: Public Health Research
- EPHF 12: Equitable Access to and Rational Use of Medical Products and Health Technologies

### Public Health Ethics Programme (2020, NHS HE England & FPH UK)

- An introduction to public health ethics
- Some basic theoretical underpinnings
- Frameworks and case studies

# Connectivity of Law for Public Health in Public Health Curricula

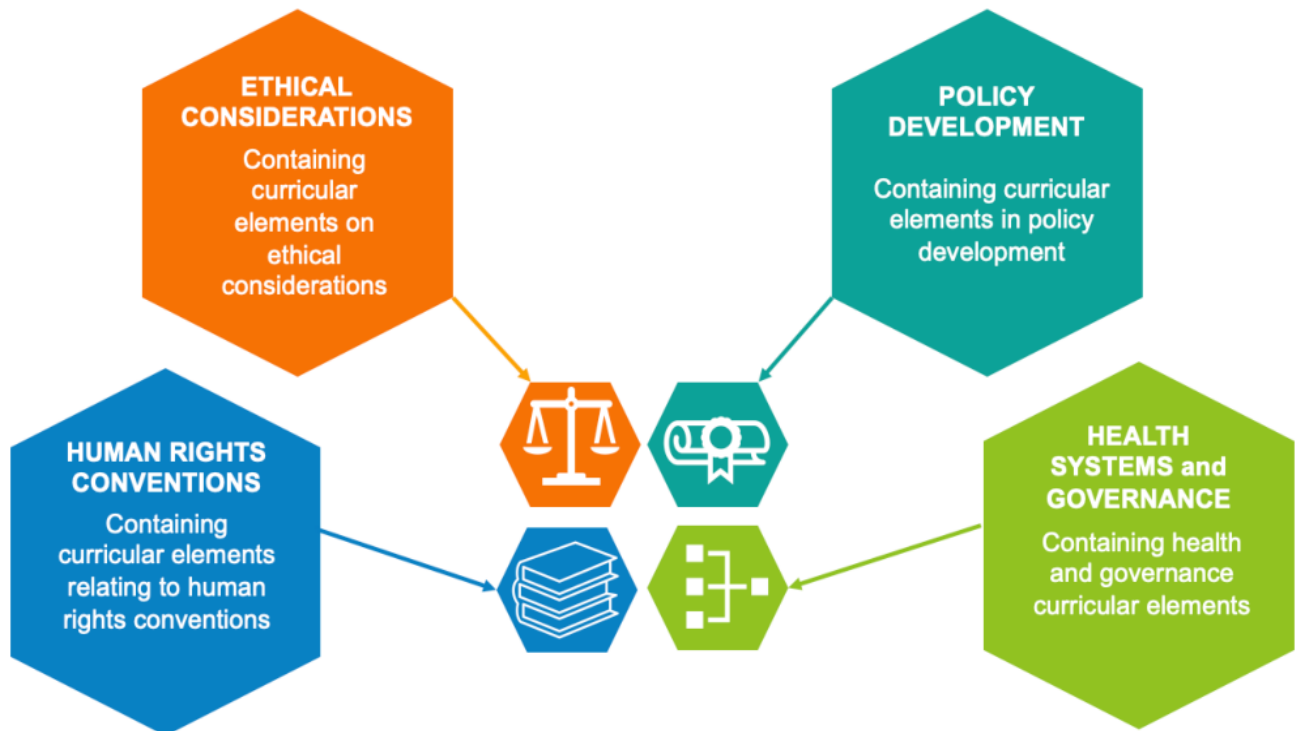


*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Law for Public Health Curriculum Overview

Through integrating law into public health education, future and current public health professionals gain insights into the legal foundations, regulations and policies which underpin public health practice. This knowledge enables students and professionals to navigate ethical dilemmas, address health disparities and advocate for evidence-based interventions within legal boundaries.

## Law for Public Health Themes



## Law for Public Health Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training



## Bachelor Degree Level

**HUMAN RIGHTS CONVENTIONS**

- Universal declaration of human rights
- Convention on the rights of the child (CRC) 1989, 1990
- International convention on protection of the rights of all migrant workers and members of their families (ICMRW) 1991, 1992
- International convention on the elimination of all forms of racial discrimination (ICERD) 1965

**ETHICAL CONSIDERATIONS**

- Bioethical considerations
- Ethics of population intervention decision making
- Ethics of vaccination
- Ethical border of forced behaviour change
- Implementation vs. enforcement
- Right of freedom
- Role of democracy
- Role of UN
- Solidarity

**POLICY DEVELOPMENT**

- Assistance in law & policy development
- Clean Indoor Act (Smoking Ban); EU laws on tobacco: minimum unit packaging
- Sugar tax (Ireland & UK)
- Laws on alcohol: minimum unit pricing (Ireland, Scotland, Wales)
- Legal bases for health promotion and prevention
- Legislation review
- Public health law
- Public health policy

**HEALTH SYSTEMS and GOVERNANCE**

- Cross-border health
- Health screening programmes
- Healthcare supplies trading and accessibility in times of crises
- Humanitarian law
- Inter-country reporting
- International regulations
- Phasing out risk factor by regulation
- Political influence
- Prevention
- Public health law and its relevance to scope of practice development for the public health workforce
- Role of state bodies in prevention of harm
- Safe care: patient safety; pharmaceutical safety; technology safety
- Social determinants of health
- Topic of diversity and intersectionality
- UN world conference against racism 2001, 2002, 2003

## Master Degree Level

## HUMAN RIGHTS CONVENTIONS

- Convention on the rights of the child (CRC) 1989, 1990
- International convention on protection of the rights of all migrant workers and members of their families (ICMRW) 1991, 1992
- International convention on the elimination of all forms of racial discrimination (ICERD) 1965
- Universal declaration of human rights

## ETHICAL CONSIDERATIONS

- Bioethical considerations
- Ethics of population intervention decision making
- Ethics of vaccination
- Ethical border of forced behaviour change
- Glen cove + 5: application of human rights to sexual and reproductive health 2001, 2002, 2003
- Implementation vs. enforcement
- Right of freedom
- Role of democracy
- Role of UN
- Solidarity

## POLICY DEVELOPMENT

- Assistance in law & policy development
- Clean Indoor Act (Smoking Ban); EU laws on tobacco: minimum unit packaging
- Sugar tax (Ireland & UK)
- Laws on alcohol: minimum unit pricing (Ireland, Scotland, Wales)
- Legal bases for health promotion and prevention
- Legislation review
- Public health law
- Public health policy

## HEALTH SYSTEMS and GOVERNANCE

- Cross-border health
- Health screening programmes
- Healthcare supplies trading and accessibility in times of crises
- Humanitarian law
- Inter-country reporting
- International regulations
- Millennium declaration and development goals 2000, 2001, 2002
- Phasing out risk factor by regulation
- Political influence
- Prevention
- Public health law and its relevance to scope of practice development for the public health workforce
- Role of state bodies in prevention of harm
- Safe care: patient safety; pharmaceutical safety; technology safety
- Social determinants of health
- State forced isolation
- Topic of diversity and intersectionality
- UN world conference against racism 2001, 2002, 2003
- World conference on human rights, declaration and programme of action ('vienna declaration') 1994, 1995

## Doctoral Degree Level

## HUMAN RIGHTS CONVENTIONS

- Convention against torture and other cruel, inhuman or degrading treatment or punishment (CAT) 1984, 1985, 1986
- Convention on the elimination of all forms of discrimination against women (CEDAW) 1979, 1980
- Convention on the rights of the child (CRC) 1989, 1990
- International convention on protection of the rights of all migrant workers and members of their families (ICMRW) 1991, 1992
- International convention on the elimination of all forms of racial discrimination (ICERD) 1965
- International covenant on civil and political rights (ICCPR) 1966
- International covenant on economic, social and cultural rights (ICESCR) 1966
- Universal declaration of human rights

## ETHICAL CONSIDERATIONS

- Bioethical considerations
- Ethics of population intervention decision making
- Ethics of vaccination
- Ethical border of forced behaviour change
- Glen cove + 5: application of human rights to sexual and reproductive health 2001, 2002, 2003
- Glen cove meeting: human rights approaches to women's health with a focus on sexual and reproductive health and rights 1996, 1997, 1998
- Implementation vs. enforcement
- Right of freedom
- Role of democracy
- Role of UN
- Solidarity

## POLICY DEVELOPMENT

- Assistance in law & policy development
- Clean Indoor Act (Smoking Ban); EU laws on tobacco: minimum unit packaging
- Sugar tax (Ireland & UK)
- Laws on alcohol: minimum unit pricing (Ireland, Scotland, Wales)
- Legal bases for health promotion and prevention
- Legislation review
- Public health law
- Public health policy

## HEALTH SYSTEMS and GOVERNANCE

- Cross-border health
- Health screening programmes
- Healthcare supplies trading and accessibility in times of crises
- Humanitarian law
- Inter-country reporting
- International regulations
- Millennium declaration and development goals 2000, 2001, 2002
- Phasing out risk factor by regulation
- Political influence
- Prevention
- Public health law and its relevance to scope of practice development for the public health workforce
- Role of state bodies in prevention of harm
- Safe care: patient safety; pharmaceutical safety; technology safety
- Social determinants of health
- State forced isolation
- The second interagency workshop on implementing a human rights-based approach in the context of UN reform 2003, 2004, 2005
- Topic of diversity and intersectionality
- UN world conference against racism 2001, 2002, 2003
- World conference on human rights, declaration and programme of action ('vienna declaration') 1994, 1995

## Certificate and/or Diploma Level

**ETHICAL CONSIDERATIONS**

- Bioethical considerations
- Ethics of population intervention decision making
- Ethics of vaccination
- Ethical border of forced behaviour change
- Glen cove + 5: application of human rights to sexual and reproductive health 2001, 2002, 2003
- Implementation vs. enforcement
- Right of freedom
- Role of democracy
- Role of UN
- Solidarity

**POLICY DEVELOPMENT**

- Assistance in law & policy development
- Clean Indoor Act (Smoking Ban); EU laws on tobacco: minimum unit packaging
- Sugar tax (Ireland & UK)
- Laws on alcohol: minimum unit pricing (Ireland, Scotland, Wales)
- Legal bases for health promotion and prevention
- Legislation review
- Public health law
- Public health policy

**HEALTH SYSTEMS and GOVERNANCE**

- Cross-border health
- Health screening programmes
- Healthcare supplies trading and accessibility in times of crises
- Humanitarian law
- Inter-country reporting
- International regulations
- Millennium declaration and development goals 2000, 2001, 2002
- Phasing out risk factor by regulation
- Political influence
- Prevention
- Public health law and its relevance to scope of practice development for the public health workforce
- Role of state bodies in prevention of harm
- Safe care: patient safety; pharmaceutical safety; technology safety
- Social determinants of health
- State forced isolation
- Topic of diversity and intersectionality
- UN world conference against racism 2001, 2002, 2003

## Continuous Professional Development (CPD) Level

### HUMAN RIGHTS CONVENTIONS

- Universal declaration of human rights

### ETHICAL CONSIDERATIONS

- Bioethical considerations
- Ethics of population intervention decision making
- Ethics of vaccination
- Ethical border of forced behaviour change
- Implementation vs. enforcement
- Right of freedom
- Role of democracy
- Role of UN
- Solidarity

### POLICY DEVELOPMENT

- Assistance in law & policy development
- Clean Indoor Act (Smoking Ban); EU laws on tobacco: minimum unit packaging
- Sugar tax (Ireland & UK)
- Laws on alcohol: minimum unit pricing (Ireland, Scotland, Wales)
- Legal bases for health promotion and prevention
- Legislation review
- Public health law
- Public health policy

### HEALTH SYSTEMS and GOVERNANCE

- Cross-border health
- Health screening programmes
- Healthcare supplies trading and accessibility in times of crises
- Humanitarian law
- Inter-country reporting
- International regulations
- Millennium declaration and development goals 2000, 2001, 2002
- Phasing out risk factor by regulation
- Political influence
- Prevention
- Public health law and its relevance to scope of practice development for the public health workforce
- Role of state bodies in prevention of harm
- Safe care: patient safety; pharmaceutical safety; technology safety
- Social determinants of health
- State forced isolation
- Topic of diversity and intersectionality
- UN world conference against racism 2001, 2002, 2003
- World conference on human rights, declaration and programme of action ('vienna declaration') 1994, 1995

## Professional Specialised Training (PST) Level

**HUMAN RIGHTS CONVENTIONS**

- Convention against torture and other cruel, inhuman or degrading treatment or punishment (CAT) 1984, 1985, 1986
- Convention on the elimination of all forms of discrimination against women (CEDAW) 1979, 1980
- Convention on the rights of the child (CRC) 1989, 1990
- International convention on protection of the rights of all migrant workers and members of their families (ICMRW) 1991, 1992
- International convention on the elimination of all forms of racial discrimination (ICERD) 1965
- International covenant on civil and political rights (ICCPR) 1966
- International covenant on economic, social and cultural rights (ICESCR) 1966
- Universal declaration of human rights

**ETHICAL CONSIDERATIONS**

- Bioethical considerations
- Ethics of population intervention decision making
- Ethics of vaccination
- Ethical border of forced behaviour change
- Implementation vs. enforcement
- Right of freedom
- Role of democracy
- Role of UN
- Solidarity

**POLICY DEVELOPMENT**

- Assistance in law & policy development
- Clean Indoor Act (Smoking Ban); EU laws on tobacco: minimum unit packaging
- Sugar tax (Ireland & UK)
- Laws on alcohol: minimum unit pricing (Ireland, Scotland, Wales)
- Legal bases for health promotion and prevention
- Legislation review
- Public health law
- Public health policy

**HEALTH SYSTEMS and GOVERNANCE**

- Cross-border health
- Health screening programmes
- Healthcare supplies trading and accessibility in times of crises
- Humanitarian law
- Inter-country reporting
- International regulations
- Millennium declaration and development goals 2000, 2001, 2002
- Phasing out risk factor by regulation
- Political influence
- Prevention
- Public health law and its relevance to scope of practice development for the public health workforce
- Role of state bodies in prevention of harm
- Safe care: patient safety; pharmaceutical safety; technology safety
- Social determinants of health
- State forced isolation
- Topic of diversity and intersectionality
- UN world conference against racism 2001, 2002, 2003
- World conference on human rights, declaration and programme of action ('vienna declaration') 1994, 1995

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# Chapter 13

## Economics in Public Health



CORE SUBJECT AREAS IN PUBLIC HEALTH



## Rationale and Current Status: Economics in Public Health

**Contributors:** *Judit Simon, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos*

Economics concerns the production, distribution and consumption of goods and services and plays a pivotal role in shaping public health policies, practices, and interventions, which makes the subject area an essential component of public health education. Understanding the economic principles underlying health systems, resource allocation, and decision-making processes is crucial for effectively addressing health disparities, promoting population health, and achieving health equity.

Within the broad discipline of health economics<sup>1</sup>, the complex and multi-directional connection between economics and public health led to the emergence of an applied subdiscipline often referred to as ‘public health economics’<sup>2</sup> Relevant areas of interest include:

1. Socioeconomic determinants of health and related distributional inequalities
2. Economic burden of diseases
3. Financing, management and governance of health systems
4. Public health consequences of economic measures
5. Economic consequences of public health measures
6. Demand for public health services/interventions
7. Supply of public health services/interventions
8. Economic evaluation of public health services/interventions
9. Economic evidence in public health policy, decision making and resource allocation
10. Behavioural economics in public health

In the realm of public health, economic factors influence the availability, accessibility, affordability, sustainability and quality of services for the promotion and protection of health and the prevention of ill-health. Understanding the wider economic impacts of diseases and public health measures and the economic tools available to drive public health policies is essential for public health professionals.

Students of public health must comprehend concepts such as value assessment through economic evaluation (e.g. cost-effectiveness analysis) including related methodological issues for public health services/interventions, health system financing mechanisms, and the impact of socioeconomic factors on physical and mental health and their distribution. By integrating economic perspectives into their education, future public health professionals can develop strategies that optimize resource allocation by maximizing health and well-being from available resources and mitigate financial barriers to good value health and care access. Furthermore, new emerging economic evaluation methods (e.g. distributional cost-effectiveness analysis)<sup>3</sup> that actively

address the central economic concern of equity can help tackle systematic differences between advantaged and disadvantaged population groups.

Moreover, economics provides valuable insights into the broader socioeconomic determinants of health, including income inequality, employment opportunities, and access to education. By examining these factors through an economic lens, public health practitioners can formulate evidence-based interventions that address the root causes of health disparities and foster sustainable improvements in population health often in collaboration and partnership with multiple sectors of the economy. For this, however, it is important to comprehend the distinction between need and demand for public health services, the causes of mismatch between these and supply <sup>4</sup> linked behavioural economics topics, and the broader ethical and legal frameworks of public health policies.

To provide robust evidence-based information to the above points, economic research in public health applies many different quantitative and qualitative research methods, and evidence synthesis tools beyond gold standard economic evaluation and econometric methods <sup>5-8</sup>. Public health professionals, therefore, should be familiar with the different public health research tools available, their multi- and cross-disciplinary applications linked to economics (e.g. biostatistics, epidemiology) <sup>9</sup> and possess required levels of analytical skills that allow the proper understanding, interpretation and critical appraisal of such evidence for economic analysis, Health Technology Assessment (HTA), and implementation and policy evaluations of often complex public health interventions <sup>10</sup>.

In conclusion, the integration of economics into public health is essential for addressing health disparities, promoting equitable access to healthcare, and optimizing resource allocation. By understanding key economic principles and employing tools such as cost-effectiveness analysis and economic evaluation, public health professionals can design more effective interventions that consider both financial constraints and the broader socioeconomic determinants of health. With a strong foundation in public health economics, future professionals will be equipped to tackle the complex challenges of modern healthcare systems and contribute to more equitable, efficient, and sustainable health outcomes.

## Alignment to Competency Frameworks

The economics in public health subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 3: Law, Policies and Ethics
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 8: Governance and Resource Management

### WHO 12 Essential Public Health Functions, 2024

- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral planning, financing and management for public health
- EPHF 9: Public health workforce development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

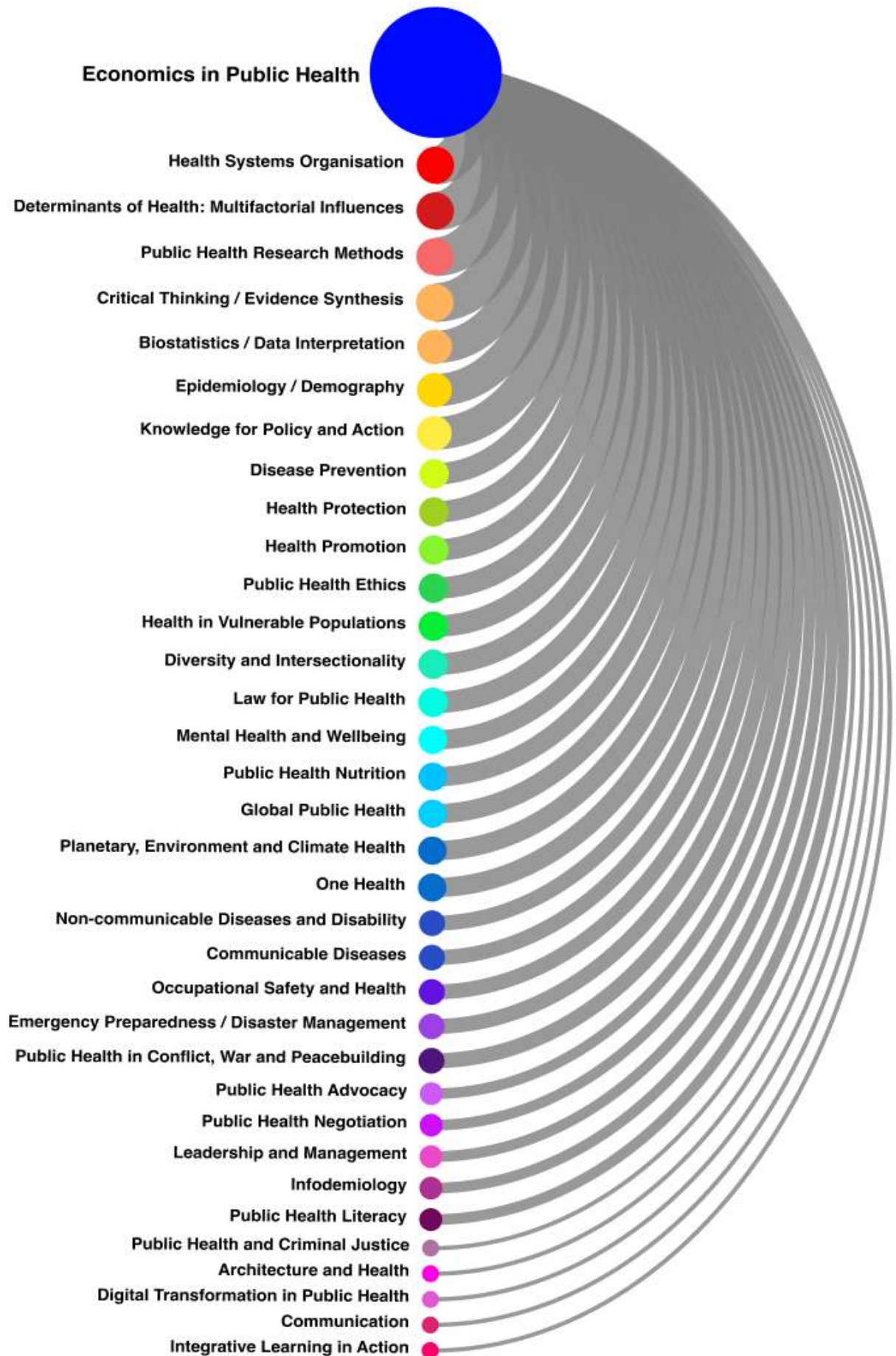
### ISPOR Health Economics and Outcomes Research Competencies Framework, 2020

- Competency 1: Business Management
- Competency 2: Career Development
- Competency 3: Clinical Outcomes
- Competency 4: Communication and Influence
- Competency 5: Economic Evaluation
- Competency 6: Epidemiology and Public Health
- Competency 7: Health Policy and Regulation
- Competency 8: Health Service Delivery and Processes of Care
- Competency 9: Health Technology Assessment
- Competency 10: Methodological and Statistical Research
- Competency 11: Organizational Practices
- Competency 12: Patient-Centered Research
- Competency 13: Study Approaches

### Hrzic et al. Competency Framework: Simulation Modelling-supported Decision-making, 2023

- Phase 1: Project Planning and Stakeholder Engagement
- Phase 2: Participatory Model Building and Model Calibration
- Phase 3: Consensus Building for Policy Action

# Connectivity of Economics in Public Health in Public Health Curricula



*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Economics in Public Health Curriculum Overview

In essence, the incorporation of economics into public health education equips students with the analytical tools and interdisciplinary perspectives needed to navigate the complex landscape of healthcare delivery, policy development, and health promotion initiatives, ultimately enhancing their capacity to contribute meaningfully to the advancement of public health goals.

### Economics in Public Health Themes



### Economics in Public Health Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Full Curriculum

### ECONOMIC ANALYSIS and EVALUATION

- Economic implications of healthcare access, capacity & sustainability
- Economic and political perspectives on healthcare funding
- Understanding economic synergies in different sectors
- Economic importance of health care
- Economic evaluation, health technology assessment (HTA): case studies
- Association of benefit and cost-effectiveness studies
- Trade off health equity issues in a thoughtful and balanced way
- Effective decision models including markov models and decision trees
- Probabilistic sensitivity analyses

### HEALTH SYSTEM MANAGEMENT and GOVERNANCE

- Structural characteristics, principles and function of healthcare
- Governance in health care; stakeholders, structures, processes
- Assess and improve structures and processes to mitigate market failure effects in health care
- Practice of healthcare management
- Governance issues
- Gap-finding and propose reforms
- Set-up suitable monitoring and regulatory frameworks for population health improvement

### PUBLIC HEALTH POLICY and SOCIOECONOMIC FACTORS

- Socioeconomic determinants of health
- Economic consequences of public health measures
- Public health impacts of economic measures
- Value / efficiency of public health services / measures / interventions
- Financing of public health services / measures / interventions
- Demand for public health services / measures / interventions
- Supply of public health services / measures / interventions
- Distribution of public health services / measures / interventions

### DECISION MAKING IN PUBLIC HEALTH

- Logics of professionalism
- Behaviour economics of public health
- Interpret key indicators : technology and whole-system level
- Strategies for developing evidence-based knowledge
- Actors of change - health political specialization - professionalism
- Awareness of diversity and intersectionality
- Data sources for knowledge about the spread of health impairments and their informative value

This whole curriculum can be used as a basis of knowledge and skill set, by use of the Dublin Descriptors which denote the required expectations by education levels:

#### **Bachelor Degree Level:**

only knowledge and understanding

#### **Masters Degree Level:**

skills for application, also to new areas

#### **PhD Degree Level:**

previous broad knowledge and skills with added expertise in the given specialist topic area

The Curriculum has also been divided into separate levels for ease of use.

## Bachelor's Degree Level

**ECONOMIC ANALYSIS and EVALUATION**

- Economic and political perspectives on healthcare funding
- Economic importance of health care
- Economic evaluation, health technology assessment (HTA): case studies
- Association of benefit and cost-effectiveness studies
- Effective decision models including markov models and decision trees
- Probabilistic sensitivity analyses

**HEALTH SYSTEM MANAGEMENT and GOVERNANCE**

- Governance issues

**PUBLIC HEALTH POLICY and SOCIOECONOMIC FACTORS**

- Socioeconomic determinants of health
- Public health impacts of economic measures
- Value / efficiency of public health services / measures / interventions
- Financing of public health services / measures / interventions
- Demand for public health services / measures / interventions
- Supply of public health services / measures / interventions

**DECISION MAKING IN PUBLIC HEALTH**

- Behaviour economics of public health
- Interpret key indicators : technology and whole-system level
- Data sources for knowledge about the spread of health impairments and their informative value



## Master Degree Level

**ECONOMIC ANALYSIS and EVALUATION**

- Economic implications of healthcare access, capacity & sustainability
- Economic and political perspectives on healthcare funding
- Understanding economic synergies in different sectors
- Economic importance of health care
- Economic evaluation, health technology assessment (HTA): case studies
- Association of benefit and cost-effectiveness studies
- Trade off health equity issues in a thoughtful and balanced way
- Effective decision models including markov models and decision trees
- Probabilistic sensitivity analyses

**HEALTH SYSTEM MANAGEMENT and GOVERNANCE**

- Structural characteristics, principles and function of healthcare
- Governance in health care; stakeholders, structures, processes
- Assess and improve structures and processes to mitigate market failure effects in health care
- Practice of healthcare management
- Governance issues
- Gap-finding and propose reforms
- Set-up suitable monitoring and regulatory frameworks for population health improvement

**PUBLIC HEALTH POLICY and SOCIOECONOMIC FACTORS**

- Socioeconomic determinants of health
- Economic consequences of public health measures
- Public health impacts of economic measures
- Value / efficiency of public health services / measures / interventions
- Financing of public health services / measures / interventions
- Demand for public health services / measures / interventions
- Supply of public health services / measures / interventions
- Distribution of public health services / measures / interventions

**DECISION MAKING IN PUBLIC HEALTH**

- Logics of professionalism
- Behaviour economics of public health
- Interpret key indicators : technology and whole-system level
- Strategies for developing evidence-based knowledge
- Actors of change - health political specialization - professionalism
- Awareness of diversity and intersectionality
- Data sources for knowledge about the spread of health impairments and their informative value

## Doctoral Degree Level

**ECONOMIC ANALYSIS and EVALUATION**

- Economic implications of healthcare access, capacity & sustainability
- Economic and political perspectives on healthcare funding
- Understanding economic synergies in different sectors
- Economic importance of health care
- Association of benefit and cost-effectiveness studies
- Trade off health equity issues in a thoughtful and balanced way
- Probabilistic sensitivity analyses

**HEALTH SYSTEM MANAGEMENT and GOVERNANCE**

- Structural characteristics, principles and function of healthcare
- Governance in health care; stakeholders, structures, processes
- Assess and improve structures and processes to mitigate market failure effects in health care
- Gap-finding and propose reforms
- Set-up suitable monitoring and regulatory frameworks for population health improvement

**PUBLIC HEALTH POLICY and SOCIOECONOMIC FACTORS**

- Socioeconomic determinants of health
- Economic consequences of public health measures
- Public health impacts of economic measures
- Value / efficiency of public health services / measures / interventions
- Financing of public health services / measures / interventions

**DECISION MAKING IN PUBLIC HEALTH**

- Behaviour economics of public health

## Continuous Professional Development

### ECONOMIC ANALYSIS and EVALUATION

- Economic implications of healthcare access, capacity & sustainability
- Economic and political perspectives on healthcare funding
- Economic importance of health care
- Economic evaluation, health technology assessment (HTA): case studies
- Trade off health equity issues in a thoughtful and balanced way
- Effective decision models including markov models and decision trees
- Probabilistic sensitivity analyses

### HEALTH SYSTEM MANAGEMENT and GOVERNANCE

- Assess and improve structures and processes to mitigate market failure effects in health care
- Governance issues
- Gap-finding and propose reforms
- Set-up suitable monitoring and regulatory frameworks for population health improvement

### PUBLIC HEALTH POLICY and SOCIOECONOMIC FACTORS

- Socioeconomic determinants of health
- Economic consequences of public health measures
- Public health impacts of economic measures
- Value / efficiency of public health services / measures / interventions
- Financing of public health services / measures / interventions
- Demand for public health services / measures / interventions
- Supply of public health services / measures / interventions
- Distribution of public health services / measures / interventions

### DECISION MAKING IN PUBLIC HEALTH

- Behaviour economics of public health
- Interpret key indicators : technology and whole-system level
- Strategies for developing evidence-based knowledge
- Actors of change - health political specialization - professionalism
- Data sources for knowledge about the spread of health impairments and their informative value

## References

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# Chapter 14

## Health Systems Organisation



## Rationale and Current Status: Health Systems Organisation

Health systems organisation refers to the structured framework of institutions, resources, and people whose primary purpose is to promote, restore, or maintain health. This subject area encompasses the governance, financing, service delivery, workforce management, and the integration of information systems within health care systems. It examines how health policies are formulated and implemented, the regulatory environment, and the strategic allocation of resources. The scope also includes quality of care, access and equity, public health initiatives, and the adoption of innovations and technology.

Understanding health systems organisation is crucial for public health professionals as it provides the foundation for effective health service delivery and policy-making. By studying this area, students gain insights into how health systems operate and how to address systemic challenges such as inequities, inefficiencies, and barriers to access. It equips future public health leaders with the skills to design, implement, and evaluate health policies and programs that improve population health outcomes. Furthermore, knowledge of health systems organisation fosters interdisciplinary collaboration and prepares students to navigate and influence complex health environments, ensuring that they can contribute to the development of sustainable and resilient health systems.

As highlighted in the competency framework reference subsection, the study of health systems organisation aligns seamlessly with essential core competencies in epidemiology. This alignment is evident in several key frameworks and guidelines. Notably, the WHO-ASPHER Competency Framework 2020<sup>1</sup> emphasizes the importance of effective health systems for epidemiological practice. Similarly, the WHO 12 Essential Public Health Functions 2024<sup>2</sup> outline critical functions such as monitoring health status, diagnosing and investigating health problems, and developing policies and plans that support individual and community health efforts, all of which rely on a well-organized health system. The European Centre for Disease Prevention and Control (ECDC) 2023 Core Competencies in Applied Infectious Disease Epidemiology<sup>3</sup> also reflect this alignment by highlighting the necessity of well-organized health systems for managing and preventing infectious diseases.

Furthermore, the principles set forth by the International Consortium on Teaching Epidemiology (Switzerland, 2023)<sup>4</sup> reinforce the importance of health systems organisation in epidemiological education and practice. Additionally, this subject area fits with the Council on Linkages Between Academia and Public Health Practice (2021)<sup>5</sup> by bridging theoretical knowledge and practical application, fostering the development of skilled public health professionals adept at navigating and improving complex health systems. Collectively, these frameworks emphasize that a deep understanding of health systems organisation is integral to the training and development of proficient epidemiologists, ensuring they are equipped to address contemporary public health challenges effectively.

Health system organisation is a foundational element within public health, inherently linked with numerous other subject areas within the ASPHER-WHO CCP. This interconnectedness ensures a holistic approach to promoting, protecting, and improving population health. In epidemiology, organized health systems provide the infrastructure for data collection, surveillance, and accurate tracking of disease patterns, essential for outbreak response and prevention strategies. In leadership and management, robust health system organisation supports evidence-based policy-making and ensures effective implementation through strong leadership and governance. Public health in economics is deeply influenced by health system organisation, as it affects resource allocation, cost-efficiency, and the equitable distribution of services. Policy-making is shaped by health system organisation, as effective system design fosters improvements in health system performance and drives policy innovation. Global public health initiatives rely on organized health systems to ensure access and equity, addressing health disparities and collaborating on international health challenges.

Planetary, environmental and climate health subject area and occupational safety and health subject area benefit from regulatory frameworks and emergency preparedness mechanisms that organized health systems provide. Finally, health promotion and disease prevention efforts are supported by the delivery of preventive services, social care services and health education programs within a well-structured health system. By integrating health system organisation with these various domains, public health professionals can develop comprehensive strategies that enhance the delivery of effective, equitable, and sustainable health solutions, ultimately improving population health outcomes.

Health system organisation is crucial subject area and is core for the effective functioning of public health systems, interlinking with numerous domains to form a cohesive strategy for health promotion, protection, and improvement. It provides the necessary infrastructure for many key functions of public health including and not limited too epidemiological data collection, supports evidence-based policy-making through robust governance, and ensures efficient resource allocation in health economics. Organized health systems facilitate access and equity in community and global health settings, underpin regulatory frameworks in environmental and occupational health, and enable the delivery of preventive services and health education. This interconnectedness allows public health professionals to develop and implement comprehensive, equitable, and sustainable health solutions.

In conclusion by fostering integration across these various domains, health system organisation enhances the capacity to address complex health challenges, ultimately leading to improved health outcomes for populations worldwide. This synergy is essential for achieving holistic and resilient health systems that can adapt to and mitigate emerging public health threats.

## Alignment to Competency Frameworks

The Health Systems Organisation subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 9: Professional Development and Reflective Ethical Practice
- Competency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 5: Health Protection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area F: Leadership and Management
  - Organisational Management and Strategic Planning

### International Consortium on Teaching Epidemiology, Switzerland, 2023

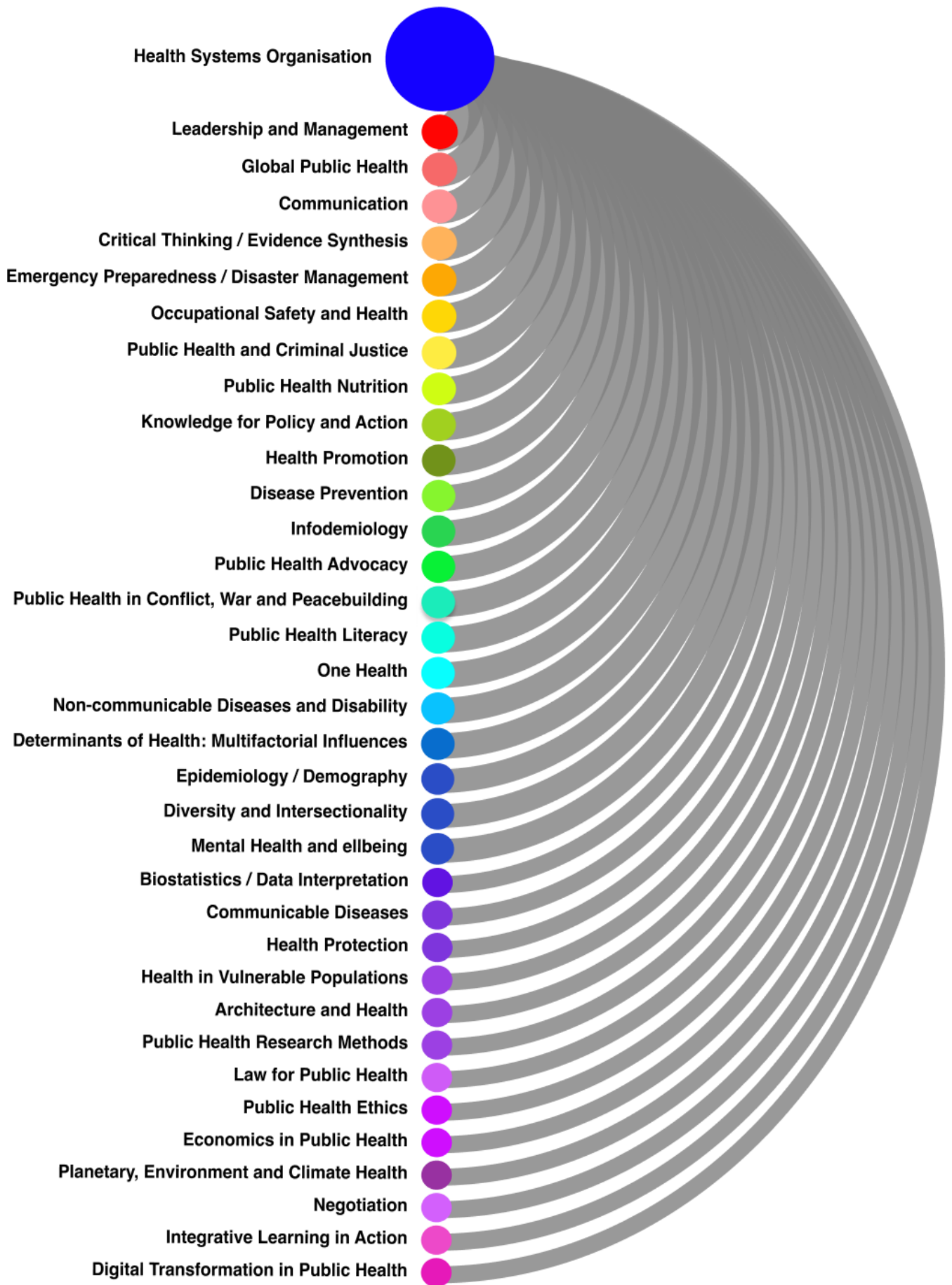
- Domain 4: Communication and Translation
  - G: Communication
  - H: Translation and Informing Practice
- Domain 5: Overarching Core Competencies
  - O: Coordination and Leadership

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 2: Policy Development and Program Planning Skills
- Domain 5: Community Partnership Skills
- Domain 6: Public Health Science Skills
- Domain 7: Management and Finance Skills
- Domain 8: Leadership and Systems Thinking Skills



# Connectivity to Health Systems Organisation in Public Health curricula

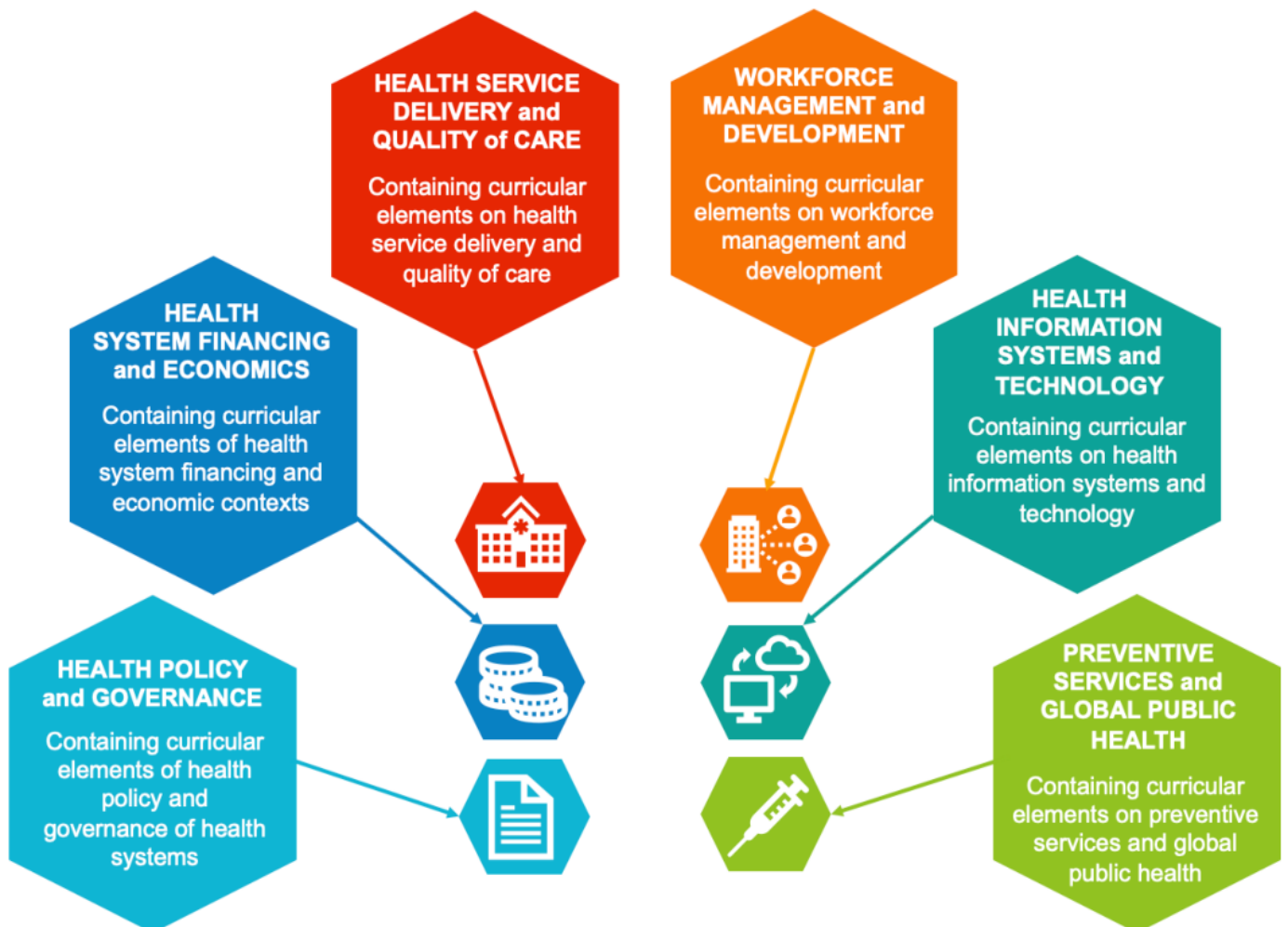


**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Health Systems Organisation Curriculum Overview

Health system organisation is crucial for public health students as it equips them with the knowledge and skills to design, implement, and manage effective health systems. This subject provides a comprehensive understanding of how governance, financing, service delivery, workforce management, and information systems interact. It is essential for informed policy making and advocacy, enabling students to contribute to health reforms. Insights into resource management ensure equitable access to services, while quality improvement knowledge enhances care and patient safety. Additionally, understanding health system organisation is vital for emergency preparedness and building resilient systems. It fosters interdisciplinary collaboration across public health domains like epidemiology, health policy, and community health, enhancing the effectiveness of public health initiatives

### Health Systems Organisation Themes



## Health Systems Organisation Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Speciality Training (PST)

Regarding Master, Certificate and/or Diploma, Continuous Professional Development (CPD) and Professional Speciality Training (PST) levels, the EAG has noted that access to the whole curriculum for these levels would be beneficial for best integration into already attained programmes.

## Full Curriculum

### HEALTH POLICY and GOVERNANCE

- Policy formulation and implementation
- Stakeholder engagement
- Policy analysis
- Governance structures
- Health ministries, regulatory bodies, and public health agencies
- Regulatory environment
- Laws and regulations governing health care delivery and services
- Compliance requirements
- Enforcement mechanisms
- Health system accountability
- Mechanisms to ensure transparency, accountability, and integrity in health systems
- Leadership and management within health organizations

### HEALTH SYSTEM FINANCING and ECONOMICS

- Healthcare funding sources: public, private and international aid
- Financial sustainability of health systems
- Financial health of the system, including budgeting and fiscal management
- Cost control and efficiency
- Control costs while maintaining quality
- Cost-effectiveness analyses and efficiency

### HEALTH SERVICE DELIVERY and QUALITY of CARE

- Primary, secondary, and tertiary care
- Organization and coordination of different levels of care
- Referral systems and service delivery models
- Integrated care
- Care coordination and patient pathways
- Access and equity of services
- Addressing barriers to access and promoting health equity
- National care and clinical standards and guidelines
- Performance measurement and continuous improvement
- Metrics and indicators to assess the quality of care, continuous quality

### WORKFORCE MANAGEMENT and DEVELOPMENT

- Human resources: recruitment, training, and retention of healthcare professional
- Workforce planning
- Skill mix which addresses case mix
- Professional development
- Continuous medical and skills development training
- Workforce well-being
- Mental health of healthcare workers
- Work-life balance
- Occupational health and safety

## Full Curriculum Continued

### HEALTH INFORMATION SYSTEMS and TECHNOLOGY

- Data collection and management
- Systems for gathering, managing, and utilizing health data
- Electronic health records (EHRs)
- Utilization of ehers, interoperability and data integration
- Data privacy and security
- GDPR patient / population data context
- Compliance with data protection regulations
- Confidentiality
- Health informatics
- Decision support systems and data analytics in health systems
- Telehealth and telemedicine

### PREVENTIVE SERVICES and GLOBAL PUBLIC HEALTH

- Health promotion programs
- Lifestyle modifications for patients and healthcare workers
- Community outreach
- Disease prevention
- Vaccination programs, health screenings, and preventive care
- Epidemiology and surveillance
- Public health surveillance systems
- Outbreak response
- Global public health initiatives
- International collaborations
- Health diplomacy
- Emergency and disaster preparedness
- Disaster management strategies
- Resilience building

**Bachelor Degree Level****HEALTH POLICY and GOVERNANCE**

- Policy analysis
- Governance structures
- Health ministries, regulatory bodies, and public health agencies
- Regulatory environment
- Laws and regulations governing health care delivery and services
- Compliance requirements
- Enforcement mechanisms
- Health system accountability
- Mechanisms to ensure transparency, accountability, and integrity in health systems

**HEALTH SYSTEM FINANCING and ECONOMICS**

- Healthcare funding sources: public, private and international aid
- Financial sustainability of health systems
- Financial health of the system, including budgeting and fiscal management
- Cost control and efficiency
- Control costs while maintaining quality

**HEALTH SERVICE DELIVERY and QUALITY of CARE**

- Primary, secondary, and tertiary care
- Organization and coordination of different levels of care
- Referral systems and service delivery models
- Integrated care
- Care coordination and patient pathways
- Access and equity of services
- Addressing barriers to access and promoting health equity

**WORKFORCE MANAGEMENT and DEVELOPMENT**

- Workforce planning
- Skill mix which addresses case mix
- Professional development
- Continous medical and skills development training
- Workforce well-being

**HEALTH INFORMATION SYSTEMS and TECHNOLOGY**

- Data collection and management
- Electronic health records (ehrs)
- Data privacy and security
- GDPR patient / population data context
- Compliance with data protection regulations
- Confidentiality

**PREVENTIVE SERVICES and GLOBAL PUBLIC HEALTH**

- Health promotion programs
- Lifestyle modifications for patients and healthcare workers
- Community outreach
- Disease prevention
- Global public health initiatives
- Resilience building

## Doctoral Degree Level

### HEALTH POLICY and GOVERNANCE

- Policy formulation and implementation
- Stakeholder engagement
- Leadership and management within health organizations

### HEALTH SYSTEM FINANCING and ECONOMICS

- Cost control and efficiency
- Control costs while maintaining quality
- Cost-effectiveness analyses and efficiency

### HEALTH SERVICE DELIVERY and QUALITY of CARE

- National care and clinical standards and guidelines
- Performance measurement and continuous improvement
- Metrics and indicators to assess the quality of care, continuous quality

### WORKFORCE MANAGEMENT and DEVELOPMENT

- Human resources: recruitment, training, and retention of healthcare professional
- Workforce planning
- Mental health of healthcare workers
- Work-life balance
- Occupational health and safety

### HEALTH INFORMATION SYSTEMS and TECHNOLOGY

- Systems for gathering, managing, and utilizing health data
- Utilization of ehars, interoperability and data integration
- Health informatics
- Decision support systems and data analytics in health systems
- Telehealth and telemedicine

### PREVENTIVE SERVICES and GLOBAL PUBLIC HEALTH

- Epidemiology and surveillance
- Outbreak response
- International collaborations
- Health diplomacy
- Emergency and disaster preparedness
- Disaster management strategies

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1. Czabanowska K, Shickle D, Burazeri G, Gershuni O, Otok R, Azzopardi-Muscat N. WHO-ASPHER competency framework for the public health workforce in the European Region.
2. World Health Organization. Application of the essential public health functions: an integrated and comprehensive approach to public health. World Health Organization; 2024 Jan 30
3. Plymoth A, Codd MB, Barry J, Boncan A, Bosman A, Conyard KF, Czabanowska K, Davidovitch N, Filipe R, Gonzalez L, Leighton L. Core competencies in applied infectious disease epidemiology: a framework for countries in Europe. *Eurosurveillance*. 2023 Feb 9;28(6):2200517.
4. International Meeting on Teaching Epidemiology. Swiss Learning Health System. 2023 Jan 11-12. Available at: <https://www.slhs.ch/en/latest-news/posts/3rd-international-meeting-on-teaching-epidemiology/>
5. The Council on Linkages Between Academia and Public Health Practice. Core Competencies for Public Health Professionals. Washington D.C.: Public Health Foundation; 2021. Available at: [https://www.phf.org/resourcestools/Documents/Core\\_Competerencies\\_for\\_Public\\_Health\\_Professionals\\_2021October.pdf](https://www.phf.org/resourcestools/Documents/Core_Competerencies_for_Public_Health_Professionals_2021October.pdf)



# Chapter 15

## Communicable Diseases



## Rationale and Current Status: Communicable Diseases

**Contributors:** Mary Codd, Karl F. Conyard, Uma Divya Kudupudi and Mariah De Vos on behalf of the ASPHER UCCAIDE Working Group

### Introduction

In the realm of global health, communicable diseases stand as a persistent and evolving challenge. With the ability to rapidly spread across regions and nations, these diseases not only pose significant health risks but also disrupt social, economic, and environmental stability. From emerging infectious diseases like COVID-19 to ongoing threats such as tuberculosis and malaria, the study of communicable diseases remains critical to safeguarding public health worldwide. In a globalized world where pathogens can transcend borders within hours, public health professionals must be equipped with the knowledge and skills to address these challenges.

Incorporating the study of communicable diseases into public health education is essential for developing the necessary competency among students and professionals. They must understand the mechanisms of disease transmission, develop strategies for surveillance and outbreak response, and design interventions that mitigate these threats. As communicable diseases impact diverse populations, often exacerbating health disparities, integrating this subject within public health curricula ensures the preparation of a well-rounded and competent workforce. This rationale aims to discuss the importance of communicable diseases education, the role of competency frameworks, and how curricula can align to these needs in producing future leaders in public health.

### Importance of Competency Frameworks

Competency frameworks guide the development of public health curricula by outlining the skills, knowledge, and attitudes necessary for effective public health practice. In the realm of communicable diseases, several frameworks have been established to provide clear guidance for the competencies required by public health professionals. These frameworks help shape the curriculum and ensure that future public health professionals are equipped to tackle complex disease control challenges.

1. **WHO-ASPHER Competency Framework (2020)**<sup>1</sup>: Developed through collaboration between the World Health Organization (WHO) and the Association of Schools of Public Health in the European Region (ASPHER), this framework provides a comprehensive outline of core competencies in public health. It emphasizes the need for expertise in disease surveillance, epidemiology, and public health communication, all of which are crucial for managing communicable diseases (WHO-ASPHER, 2020).
2. **WHO 12 Essential Public Health Functions (2024)**<sup>2</sup>: This updated framework highlights key public health functions, including monitoring, outbreak response, and emergency preparedness, which are vital for preventing and controlling communicable diseases (WHO, 2024).

3. **ECDC Core Competencies in Applied Communicable Diseases (2022)**<sup>3</sup>: This framework, developed by a joint working agreement between ASPHER and the European Centre for Disease Prevention and Control (ECDC), provides a comprehensive guide for the competencies required in applied communicable disease control. It emphasizes practical skills for disease prevention, surveillance, outbreak investigation, and emergency response (ECDC, 2023).
4. **ASPHER Climate Health Core Competencies (2022)**<sup>4</sup>: With the rise of climate-related health threats, this framework focuses on the intersection of climate change and health, including its impact on infectious diseases. Public health professionals are increasingly called upon to address diseases that are influenced by environmental and climatic factors (ASPHER, 2022).
5. **Advancing One Health: Updated Core Competencies (2023)**<sup>5</sup>: The One Health framework recognizes the interconnectedness of human, animal, and environmental health. This competency framework emphasizes cross-sectoral collaboration to manage zoonotic diseases and prevent outbreaks that threaten both human and animal populations (Laing et al., 2023).
6. **IUHPE Core Competencies and Professional Standards for Health Promotion (2016)**<sup>6</sup>: This framework, even though originally developed more for chronic disease health promotion still contains useful techniques and skills which can be used for all formats of health conditions, developed by the European Commission, the document stresses the importance of health promotion as a key strategy for preventing communicable diseases. It encourages the development of public health programs that focus on health education, vaccination campaigns, and the promotion of healthy behaviours (European Commission, 2011).
7. **Council on Linkages Between Academia and Public Health Practice (2021)**<sup>7</sup>: This framework connects academic public health training with real-world practice, ensuring that public health graduates are equipped with practical skills in data analysis, policy development, and program management, all of which are critical for controlling communicable diseases (Council on Linkages, 2021).

### Specific Publications and Frameworks

Several key publications provide further guidance on training public health professionals in communicable disease control:

- **European Centre for Disease Prevention and Control. European Public Health Microbiology Training Programme (2013)**<sup>8</sup>: This publication outlines the core competencies required for microbiologists working in public health. It emphasizes the role of microbiology in understanding and controlling communicable diseases, highlighting the importance of laboratory skills in disease surveillance and response.
- **WHO, Competencies for One Health Field Epidemiology (COHFE) Framework (2024)**<sup>9</sup>: This framework, set to be published in 2024, outlines the core competencies required for field epidemiologists working within the One Health approach. It emphasizes interdisciplinary collaboration to address the human-animal-environment interface, which is critical for controlling zoonotic and other communicable diseases.

- **European Centre for Disease Prevention and Control. Vaccine-Preventable Diseases and Immunisation – Core Competencies (2017)<sup>10</sup>:** This publication provides a comprehensive set of competencies related to vaccine-preventable diseases and immunization strategies. It underscores the need for public health professionals to be proficient in vaccination program design, implementation, and communication to prevent disease outbreaks.
- **Public Health Informatics Institute, Applied Public Health Informatics Competency Model (2021)<sup>11</sup>:** This model emphasizes the growing importance of informatics in public health. In the context of communicable diseases, it highlights the need for skills in data management, digital surveillance, and health information systems to track and control disease spread

### Alignment of Public Health Curriculum with Communicable Diseases

Incorporating communicable diseases into public health curricula ensures that students are well-prepared to respond to current and future public health challenges. The following subject areas align with competency frameworks and are essential in a public health curriculum:

- **Epidemiology and Biostatistics:** These subjects provide students with the skills to analyse disease patterns, evaluate interventions, and model transmission dynamics.
- **Health Protection, Disease Prevention:** Training in surveillance and outbreak response is crucial for identifying and managing disease outbreaks in real-time.
- **Environmental and Occupational Health:** Public health professionals need to understand the impact of environmental factors on the transmission of communicable diseases.
- **Health Promotion and Education:** Public health communication strategies are essential for educating populations on disease prevention, vaccination, and hygiene.
- **Global Public Health:** Understanding international health policies and collaborations is critical in controlling diseases that cross national borders.
- **Ethics in Public Health:** Ethical decision-making is key when balancing individual rights and public safety during disease outbreaks and vaccination campaigns.

### Importance for Students and Future Public Health Professionals

Educating students about communicable diseases is essential for several reasons. First, it equips them with practical skills and knowledge to respond effectively to public health emergencies. Secondly, students learn how to address the health inequities that contribute to disease vulnerability in marginalized populations. Finally, it aids students' understanding emerging threats such as antimicrobial resistance and climate-related disease transmission ensures that public health professionals are prepared for the evolving landscape of global health challenges.

**Conclusion**

The study of communicable diseases is essential to public health education, equipping future professionals with the competencies needed to manage disease outbreaks, protect public health, and promote health equity. By aligning educational curricula with established competency frameworks, institutions can ensure their graduates are prepared to meet the complex challenges posed by infectious diseases. Publications such as the ECDC Core Competencies in Applied Infectious Disease Epidemiology, European Public Health Microbiology Training Programme and the WHO Competencies for One Health Field Epidemiology Framework provide invaluable guidance for ensuring public health professionals are well-trained in the skills needed for effective communicable disease control.

**NOTE:**

Throughout this chapter the terms communicable disease and infectious disease are used interchangeably.

## Alignment to Competency Frameworks

The Communicable Diseases subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

### ECDC Core Competencies in Applied Communicable Diseases, 2022

- Subject area A: Essential methods for applied communicable disease epidemiology
- Subject area B: Preparedness, surveillance and response to communicable disease outbreaks
- Subject area C: Communication and advocacy
- Subject area D: Practice of communicable disease epidemiology
- Subject area E: Contextual influences on communicable disease management
- Subject area F: Leadership and management

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 2: Policy Development and Program Planning Skills
- Domain 3: Communication Skills
- Domain 4: Health Equity Skills
- Domain 5: Community Partnership Skills
- Domain 6: Public Health Sciences Skills
- Domain 7: Management and Finance Skills
- Domain 8: Leadership and System Thinking Skills

In addition

ASPHER Climate Health Core Competencies, 2022

IUHPE Core Competencies and Professional Standards for Health Promotion, 2016

Laing et al. Advancing One Health: Updated Core Competencies, 2023

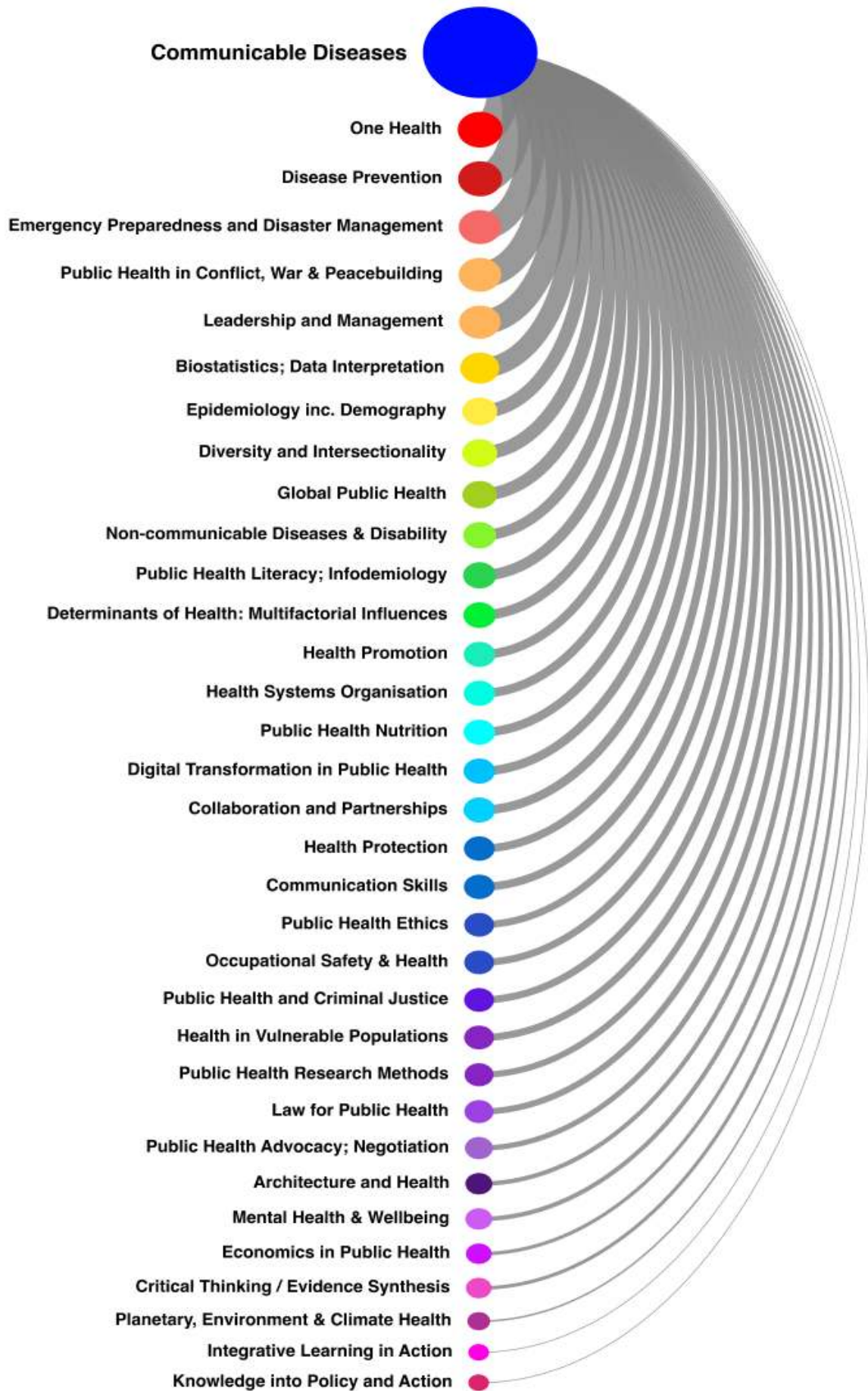
WHO, Competencies for One Health Field Epidemiology (COHFE) Framework, 2024

ECDC European Public Health Microbiology Training Programme, 2013

ECDC Vaccine-Preventable Diseases and Immunisation – Core Competencies, 2017

PHII, Applied Public Health Informatics Competency Model, 2021

## Connectivity of Communicable Diseases in Public Health curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Communicable Diseases Curriculum Overview

A robust understanding of Communicable Diseases not only strengthens public health systems but also contributes to global efforts in disease prevention, control, and ultimately, the improvement of health outcomes for communities worldwide.

### Communicable Diseases Themes





## Communicable Diseases Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

### Bachelor Degree Level

#### PREPAREDNESS, SURVEILLANCE & RESPONSE

- PREPAREDNESS FOR COMMUNICABLE DISEASE OUTBRAKES
  - List the necessary steps to carry out preparedness planning
  - Basic elements of preparedness
  - Exposure: chemical and biological hazards
- SURVEILLANCE FOR COMMUNICABLE DISEASE
  - Case & cluster identification and management
  - Protecting vulnerable groups and settings
- OUTBREAK INVESTIGATION & RESPONSE to COMMUNICABLE DISEASE
  - Transmission patterns and vectors

#### COMMUNICABLE DISEASES PRACTICE

- COMMUNICABLE DISEASE OVERVIEW
  - Threat of new and emerging communicable disease epidemics and pandemics and actively engage in contingency planning
  - Sources of infection (e.g. food-borne, water-borne, air-borne, blood-borne, vector-borne, zoonotic, and travel-related infections)
- INFECTION PREVENTION, CONTROL and TREATMENT
  - Healthcare-associated infections, antimicrobial agents and antimicrobial resistance
- DISEASE SPECIFIC KNOWLEDGE and SKILLS
  - Disease-specific critical time periods (e.g. incubation, communicable & contagious period)
- VACCINOLOGY
  - behavioural science relevant to vaccine uptake and hesitancy within different population sub-groups
- ONE HEALTH, ENVIRONMENT and CLIMATE CHANGE
  - Effects of climate change; changes to ecosystems, SDGs 2015 present and future

## Master Degree Level

## PREPAREDNESS, SURVEILLANCE &amp; RESPONSE

- **PREPAREDNESS FOR COMMUNICABLE DISEASE OUTBRAKES**
  - Design, implement and evaluate public health response strategies
  - Appropriate public health preparedness and response for relevant settings
  - Health protection strategies
  - Health promotion messages
- **SURVEILLANCE FOR COMMUNICABLE DISEASE**
  - Surveillance data needed for risk assessment; action
  - Case & cluster identification and management
  - Broad knowledge of data types
  - Value / limitations of working with data
  - Laws and declarations and reporting at national, EU and international level (International Health Regulations)
- **OUTBREAK INVESTIGATION & RESPONSE to COMMUNICABLE DISEASE**
  - Case definitions and revise as needed
  - Public health risk assessments
  - Transmission patterns and vectors
  - Implement appropriate protective measures (e.g. infection prevention and control, use of personal protective equipment and vaccination)
  - Non-pharmacological interventions, contact tracing, quarantine, isolation, restricted access, risk communication and other mitigation strategies
  - Interdisciplinary, cross-sectoral, and multi-sectoral collaborations

## COMMUNICABLE DISEASES PRACTICE

- **COMMUNICABLE DISEASE OVERVIEW**
  - Global, regional and local distribution of Communicable Diseases
  - Role of relevant agencies responsible for monitoring Communicable Diseases regionally, nationally and internationally (e.g. ECDC, CDC, WHO)
  - Apply the relevant communicable disease legislation
  - Threat of new and emerging communicable disease epidemics and pandemics and actively engage in contingency planning
  - Sources of infection (e.g. food-borne, water-borne, air-borne, blood-borne, vector-borne, zoonotic, and travel-related infections)
- **INFECTION PREVENTION, CONTROL and TREATMENT**
  - Role of living conditions (e.g. hygiene, sanitation, waste disposal, burial practices, ventilation and environmental contamination)
  - Role of lifestyle and behaviour in infection dissemination and prevention
  - Disease control measures relating to food, air, water, travel and other vectors
  - Role of personal behaviour incl. the adherence to guidelines and use of personal protective equipment.
  - Healthcare-associated infections, antimicrobial agents and antimicrobial resistance
  - Explain the evolution and implications of antimicrobial resistance (AMR)
- **DISEASE SPECIFIC KNOWLEDGE and SKILLS**
  - Disease-specific critical time periods (e.g. incubation, communicable & contagious period)
  - Transmissibility and dynamics, including reproductive number
  - Uses of public health microbiology
- **VACCINOLOGY**
  - Regional and national vaccination programmes incl. logistical aspects
  - Vaccine development, regulation, safety, and efficacy of vaccines & rates
  - Behavioural science relevant to vaccine uptake and hesitancy within different population sub-groups
- **ONE HEALTH, ENVIRONMENT and CLIMATE CHANGE**
  - Zoonosis; evolution, prevention and management
  - Effects of climate change; changes to ecosystems, SDGs 2015 present and future

## Doctoral Degree Level

### PREPAREDNESS, SURVEILLANCE & RESPONSE

- **PREPAREDNESS FOR COMMUNICABLE DISEASE OUTBRAKES**
  - **Exposure: chemical and biological hazards**
  - **Multi-sectoral evidence-based responses**
- **SURVEILLANCE FOR COMMUNICABLE DISEASE**
  - **Early warning systems - Accuracy of data capture**
  - **Broad knowledge of data types**
  - **Value / limitations of working with data**
- **OUTBREAK INVESTIGATION & RESPONSE to COMMUNICABLE DISEASE**
  - **Geographical distribution - spatial / geographical information system mapping**
  - **Case definitions and revise as needed**
  - **Whole genome sequencing (WGS), and metagenomics**

### COMMUNICABLE DISEASES PRACTICE

- **COMMUNICABLE DISEASE OVERVIEW**
  - **Global, regional and local distribution of Communicable Diseases**
- **DISEASE SPECIFIC KNOWLEDGE and SKILLS**
  - **Genomic analysis and disease-specific molecular epidemiology**
- **VACCINOLOGY**
  - **Behavioural science relevant to vaccine uptake and hesitancy within different population sub-groups**
- **ONE HEALTH, ENVIRONMENT and CLIMATE CHANGE**
  - **Zoonosis; evolution, prevention and management**
  - **Effects of climate change; changes to ecosystems, SDGs 2015 present and future**

## Certificate and / or Diploma (Cert / Dip.) Level

## PREPAREDNESS, SURVEILLANCE &amp; RESPONSE

- PREPAREDNESS FOR COMMUNICABLE DISEASE OUTBRAKES
  - List the necessary steps to carry out preparedness planning
  - Basic elements of preparedness
- SURVEILLANCE FOR COMMUNICABLE DISEASE
  - Value / limitations of working with data
  - Laws and declarations and reporting at national, EU and international level (International Health Regulations)
- OUTBREAK INVESTIGATION & RESPONSE to COMMUNICABLE DISEASE
  - Case definitions and revise as needed
  - Public health risk assessments
  - Transmission patterns and vectors
  - Implement appropriate protective measures (e.g. infection prevention and control, use of personal protective equipment and vaccination)
  - Non-pharmacological interventions, contact tracing, quarantine, isolation, restricted access, risk communication and other mitigation strategies

## COMMUNICABLE DISEASES PRACTICE

- COMMUNICABLE DISEASE OVERVIEW
  - Role of relevant agencies responsible for monitoring Communicable Diseases regionally, nationally and internationally (e.g. ECDC, CDC, WHO)
  - Apply the relevant communicable disease legislation
  - Sources of infection (e.g. food-borne, water-borne, air-borne, blood-borne, vector-borne, zoonotic, and travel-related infections)
- INFECTION PREVENTION, CONTROL and TREATMENT
  - Role of living conditions (e.g. hygiene, sanitation, waste disposal, burial practices, ventilation and environmental contamination)
  - Role of lifestyle and behaviour in infection dissemination and prevention
  - Disease control measures relating to food, air, water, travel and other vectors
  - Role of personal behaviour incl. the adherence to guidelines and use of personal protective equipment.
  - Healthcare-associated infections, antimicrobial agents and antimicrobial resistance
  - Explain the evolution and implications of antimicrobial resistance (AMR)
- DISEASE SPECIFIC KNOWLEDGE and SKILLS
  - Disease-specific critical time periods (e.g. incubation, communicable & contagious period)
  - Transmissibility and dynamics, including reproductive number
  - Uses of public health microbiology
- VACCINOLOGY
  - Regional and national vaccination programmes incl. logistical aspects
  - Vaccine development, regulation, safety, and efficacy of vaccines & rates
  - Behavioural science relevant to vaccine uptake and hesitancy within different population sub-groups

## Continuous Professional Development (CPD) Level

### PREPAREDNESS, SURVEILLANCE & RESPONSE

- PREPAREDNESS FOR COMMUNICABLE DISEASE OUTBRAKES
  - Design, implement and evaluate public health response strategies
  - Appropriate public health preparedness and response for relevant settings
  - Health protection strategies
  - Health promotion messages
  - Role of major stakeholders: capacity of field epidemiologists and public health teams to respond to communicable disease outbreaks, epidemics and pandemics.
  - Epidemic and pandemic management strategies
- SURVEILLANCE FOR COMMUNICABLE DISEASE
  - Operate routine surveillance systems
  - Surveillance data needed for risk assessment; action
  - Case & cluster identification and management
  - Broad knowledge of data types
  - Cross-border relationships and collaboration in the area of surveillance
- OUTBREAK INVESTIGATION & RESPONSE to COMMUNICABLE DISEASE
  - Geographical distribution - spatial / geographical information system mapping
  - Non-pharmacological interventions, contact tracing, quarantine, isolation, restricted access, risk communication and other mitigation strategies
  - Whole genome sequencing (WGS), and metagenomics
  - Interdisciplinary, cross-sectoral, and multi-sectoral collaborations

### COMMUNICABLE DISEASES PRACTICE

- COMMUNICABLE DISEASE OVERVIEW
  - Global, regional and local distribution of Communicable Diseases
  - Role of relevant agencies responsible for monitoring Communicable Diseases regionally, nationally and internationally (e.g. ECDC, CDC, WHO)
  - Sources of infection (e.g. food-borne, water-borne, air-borne, blood-borne, vector-borne, zoonotic, and travel-related infections)
  - Applicable legal and statutory obligations in relation to the monitoring and notification of Communicable Diseases, including the country-specific notifiable diseases
- INFECTION PREVENTION, CONTROL and TREATMENT
  - Healthcare-associated infections, antimicrobial agents and antimicrobial resistance
  - Explain the evolution and implications of antimicrobial resistance (AMR)
- DISEASE SPECIFIC KNOWLEDGE and SKILLS
  - Diagnostic Tests, applications, properties, diagnostic accuracy, reliability and predictive values
  - Genomic analysis and disease-specific molecular epidemiology
- VACCINOLOGY
  - Regional and national vaccination programmes incl. logistical aspects
  - Vaccine registration (Registry)
- ONE HEALTH, ENVIRONMENT and CLIMATE CHANGE
  - Collaborative, multisectoral and transdisciplinary approach between human, animal, and environmental health sectors
  - Food safety, security and the food chain (Farm-to-fork approach)
  - Effects of climate change; changes to ecosystems, SDGs 2015 present and future

## Professional Specialised Training (PST) Level

## PREPAREDNESS, SURVEILLANCE &amp; RESPONSE

- **PREPAREDNESS FOR COMMUNICABLE DISEASE OUTBRAKES**
  - Design, implement and evaluate public health response strategies
  - Appropriate public health preparedness and response for relevant settings
  - Health protection strategies
  - Health promotion messages
- **SURVEILLANCE FOR COMMUNICABLE DISEASE**
  - Operate routine surveillance systems
  - Case & Cluster Identification and management
  - Broad knowledge of data types
  - Value / limitations of working with data
  - Laws and declarations and reporting at national, EU and international level (International Health Regulations)
  - Cross-border relationships and collaboration in the area of surveillance
- **OUTBREAK INVESTIGATION & RESPONSE to COMMUNICABLE DISEASE**
  - Geographical distribution - spatial / geographical information system mapping
  - Case definitions and revise as needed
  - Public health risk assessments
  - Implement appropriate protective measures (e.g. infection prevention and control, use of personal protective equipment and vaccination)
  - Non-pharmacological interventions, contact tracing, quarantine, isolation, restricted access, risk communication and other mitigation strategies
  - Interdisciplinary, cross-sectoral, and multi-sectoral collaborations

## COMMUNICABLE DISEASES PRACTICE

- **COMMUNICABLE DISEASE OVERVIEW**
  - Global, regional and local distribution of communicable diseases
  - Effects of climate change; changes to ecosystems, SDGs 2015 present and future diseases
  - Apply the relevant communicable disease legislation
  - Threat of new and emerging communicable disease epidemics and pandemics and actively engage in contingency planning
  - Sources of infection (e.g. food-borne, water-borne, air-borne, blood-borne, vector-borne, zoonotic, and travel-related infections)
  - Applicable legal and statutory obligations in relation to the monitoring and notification of Communicable Diseases, including the country-specific notifiable diseases
- **DISEASE SPECIFIC KNOWLEDGE and SKILLS**
  - Disease-specific critical time periods (e.g. incubation, communicable & contagious period)
  - Uses of public health microbiology
  - Diagnostic tests, applications, properties, diagnostic accuracy, reliability and predictive values
  - Genomic analysis and disease-specific molecular epidemiology
- **VACCINOLOGY**
  - Regional and national vaccination programmes incl. logistical aspects
  - Vaccine registration (registry)
- **ONE HEALTH, ENVIRONMENT and CLIMATE CHANGE**
  - Zoonosis; evolution, prevention and management
  - Collaborative, multisectoral and transdisciplinary approach between human, animal, and environmental health sectors
  - Food safety, security and the food chain (Farm-to-fork approach)
  - Effects of climate change; changes to ecosystems, SDGs 2015 present and future

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# Chapter 16

## Non-communicable Diseases and Disability



## Rationale and Current Status: Non-Communicable Diseases and Disability

Non-communicable diseases (NCDs) encompass a range of chronic conditions, such as cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes, that are not transmissible from person to person. NCDs account for 74% of all deaths globally<sup>1</sup>, these diseases are driven by modifiable risk factors, including unhealthy diets, physical inactivity, tobacco use, and excessive alcohol consumption. Disabilities refer to physical, mental, intellectual, or sensory impairments which hinders or challenges populations regarding their activities of daily living or independence. The area of disabilities presents a full plethora of different presentations thus public health should adapt its activities to be in alignment with their populations of interest.

The scope of studying NCDs and disabilities in public health includes understanding their epidemiology, risk factors, preventive strategies, management, and policy implications. This also involves addressing health inequities, promoting healthy lifestyles, and developing inclusive environments for individuals with disabilities. The inclusion of NCDs and disability in the public health curriculum is imperative for several reasons. First, it equips future health professionals with the knowledge to address and manage the growing burden of these conditions. Second, it fosters a comprehensive understanding of prevention, early detection, and management strategies. Third, it emphasizes the importance of creating inclusive health systems that accommodate individuals with disabilities, thereby promoting health equity and improving population health outcomes.

As underscored in the competency framework reference subsection below, this subject area harmonizes with crucial core competency sets pertinent to the epidemiology of non-communicable diseases (NCDs) and disability. It resonates with the WHO-ASPHER Competency Framework 2020<sup>2</sup>, delineating the essential proficiencies requisite for navigating the multifaceted landscape of NCDs and disability within public health practice.

Moreover, it mirrors the principles elucidated in the WHO's 12 Essential Public Health Functions (EPHFs) 2024<sup>3</sup>, tailored to address the unique challenges posed by NCDs and disability on a global scale. Aligned with the European Centre for Disease Prevention and Control's (ECDC) 2022 Core Competencies in Applied Infectious Disease Epidemiology<sup>4</sup>, it empowers public health professionals to adeptly address the intersectionality of infectious and non-communicable conditions, thereby fostering holistic approaches to health management.

Furthermore, this subject area resonates with the standards upheld by the International Consortium on Teaching Epidemiology, based in Switzerland (2023)<sup>5</sup>, which advocates for comprehensive educational initiatives that encompass the epidemiological nuances inherent in NCDs and disability.

It also aligns with the Council on Linkages Between Academia and Public Health Practice (2021)<sup>6</sup>, emphasizing the importance of bridging academia and real-world public health

practice to address the pressing challenges posed by NCDs and disability. By integrating these frameworks into the public health curriculum, we ensure that graduates emerge equipped with the requisite expertise to confront the complex challenges posed by NCDs and disability, thereby advancing health equity and enhancing population well-being.

NCDs and disabilities are inherently linked to various subject areas within the ASPHER-WHO CCP. Epidemiology explores the distribution and determinants of NCDs and disabilities, aiding in their prevention and control. Health promotion and behaviour change interventions address modifiable risk factors, such as tobacco use and sedentary lifestyles, associated with NCDs and disability onset. Health policy and management tackle systemic barriers to access and equitable care for individuals living with disabilities, advocating for inclusive healthcare systems. Environmental health examines environmental determinants that exacerbate NCDs, like air pollution, and accessibility issues affecting individuals with disabilities. Global health initiatives target the growing burden of NCDs and disabilities in low-resource settings, emphasizing prevention and capacity-building efforts. Thus, NCDs and disabilities intersect with multiple facets of public health, necessitating a comprehensive, interdisciplinary approach to address their complex challenges effectively.

**In conclusion, the interconnectedness of NCDs and disabilities with various subject areas within public health underscores the necessity for a clear and key multifaceted approach to address these complex health challenges within our populations.** From epidemiology to health promotion, policy, environmental health, and global public health initiatives, each domain plays a crucial role in understanding, preventing, and managing NCDs and disabilities. By integrating these subject areas into public health curriculum and programs, we can so the seeds of comprehensive understanding of the determinants and impacts of NCDs and disabilities, as well as equip future public health professionals with the skills and knowledge necessary to implement effective interventions. Ultimately, fostering collaboration across disciplines and embracing an interdisciplinary, cross curricular approach is essential in advancing public health efforts aimed at reducing the burden of NCDs, promoting health equity, and enhancing the well-being of individuals living with disabilities worldwide.

## Competency Framework Reference

The Non-communicable Diseases and Disabilities Subject Area of this curriculum has been aligned with the following competency frameworks with associated competencies outlined.

### WHO-ASPHER Competency Framework, 2020

- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 11: Public Health Research, Evaluation and Knowledge

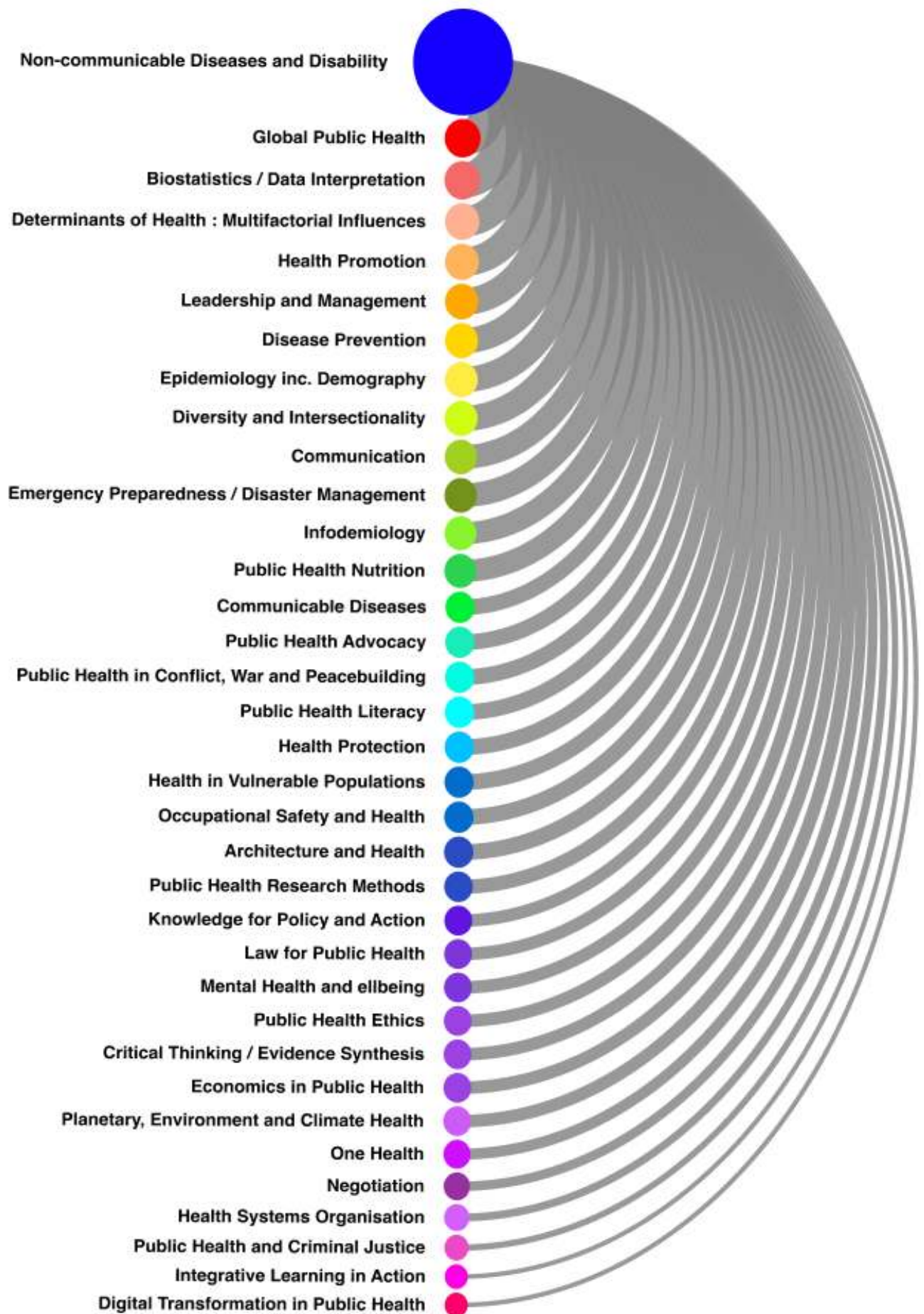
### ECDC Core Competencies in Applied Communicable Disease Epidemiology, 2022

- Subject area A: Essential methods for applied communicable disease epidemiology
- Subject area B: Preparedness, surveillance and response to communicable disease outbreaks
- Subject area C: Communication and advocacy
- Subject area D: Practice of communicable disease epidemiology
- Subject area E: Contextual influences on communicable disease management
- Subject area F: Leadership and management

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 1: Data Analytics and Assessment Skills
- Domain 2: Policy Development and Programme Planning Skills
- Domain 3: Communication Skills
- Domain 4: Health Equity Skills
- Domain 5: Community Partnership Skills
- Domain 6: Public Health Sciences Skills

### Connectivity of NCD and Disability in Public Health curricula



*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Non-communicable Diseases and Disabilities Curriculum Overview

It is crucial for students to understand the interconnectedness and transdisciplinarity of non-communicable diseases (NCDs) and disabilities within the public health curriculum for several reasons. Firstly, NCDs are the leading causes of global morbidity and mortality, requiring a comprehensive understanding of their risk factors, prevention, and management strategies. Secondly, disabilities significantly impact individuals' quality of life and societal participation, necessitating inclusive health policies and practices. Understanding these connections equips students with the skills to design and implement effective public health interventions that address both NCDs and disabilities. It also fosters a holistic approach to health promotion, emphasizing the importance of social determinants of health and the need for equitable healthcare systems. Moreover, this knowledge prepares students to address emerging public health challenges and to advocate for policies that enhance health equity and improve overall population health outcomes. By integrating these concepts, students become well-rounded public health professionals capable of making significant contributions to global health.

## Non-communicable Diseases and Disabilities Themes



## Non-communicable Diseases and Disabilities Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and / or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Full Curriculum

## NCD METHODS and DATA ANALYSIS

- Demographic profiles of populations
- Registration methods
- Age-specific rates
- Data standardisation procedures
- Incidence, prevalence, case fatality rates and trends over time
- Time series analyses
- Systematic reviews, rapid and long-term risk assessments, randomized controlled trials, cohort studies, case-control studies, economic evaluations, diagnostic studies, and qualitative studies
- Investigate disease burden in a population and sampling strategy
- Investigate determinants of disease, ascertain associations and/or disease causation
- Design qualitative studies that are informed by behavioral sciences
- Design, test and evaluate data collection methods including case report forms
- Validity, reliability, and cross-cultural applicability
- Concepts of correlation and association
- Inferring causation - observational studies
- Sources of bias, confounding, interaction, and effect modification

## NCD and DISABILITY SPECIFIC EPIDEMIOLOGY

- Cancer prevention
- Neuro - epidemiology including epilepsy, alzheimer's disease, cerebrovascular disease, congenital neurological conditions, and neurodegenerative disorders
- Community initiatives for finding hypertension
- Cancer epidemiology inclusive of local epidemiology
- Importance of cancer registration
- Human papillomavirus and cancer risk and education
- Respiratory epidemiology including asthma, COPD, pulmonary disease, occupational lung diseases
- Obesity and diabetes mellitus
- Cardiovascular disease epidemiology including coronary heart diseases (CHD), peripheral arterial diseases (PAD), stroke, and rheumatic heart disease
- Epidemiology of older age including dementia, parkinson's disease, polypharmacy, and cognitive decline
- Early years programs for neurodivergency
- Gastrological epidemiology including inflammatory bowel disease, ulcerative colitis, and peptic ulceration
- Maternal and child health epidemiology including postnatal depression, hemorrhagic events, sudden unexpected (cot) mortality
- Country-specific registries i.E. Ireland's cystic fibrosis registry
- Injury epidemiology including road traffic accidents, suicide, homicide, firearms, drowning, boating accidents, occupational (farming, domestic violence, falls, and intentional childhood injury)
- Congenital disability epidemiology

## Full Curriculum Continued

### NCD and DISABILITY POPULATION INTERVENTIONS

- Health promotion campaigns
- Screening programs - best standards, international criteria, and controversies
- State medication management
- Vaccination's role within cancer prevention
- Fortified food products i.E. Folic acid
- Educational programs on specific conditions through charity organizations
- Child health screening programs
- Modifiable risk factor management

### COMMUNICATION and ADVOCACY

- Risk communication
- Culturally sensitive health promotion knowledge and intervention
- Advocacy groups on rare diseases
- Social media
- Traditional media, including press releases
- Targeted audiences, including policymakers and the general public
- Clear communication strategies targeting groups, communities, settings, and organizations (e.G., Workplaces, schools, healthcare facilities)
- Interdisciplinary approach to communication
- Knowledge transfer and exchange methodologies
- Key public health messages for the particular chronic condition, to optimize individual and population protection

### PUBLIC HEALTH POLICIES and MANAGEMENT

- Quality assurance guidelines
- Identification of information sources
- Vaccine registration (registry)
- Vaccine effectiveness and vaccine efficacy
- Role of personal behaviour including the adherence and use of medications and lifestyle changes
- Role of living conditions on condition (e.g. hygiene, sanitation, waste disposal, burial practices, ventilation, and environmental contamination)
- Behavioral science relevant to vaccine uptake and hesitancy within different population sub-groups
- Immunocompromised populations and healthcare-associated infections, antimicrobial agents, and antimicrobial resistance
- Health belief patterns
- Concept of healthy aging
- Healthcare delivery
- Key stakeholders
- Relevant professional body/bodies
- Scope of practice specific to the healthcare setting or service
- Legal basis and legislation for the operation of public health
- Appropriate advocacy in the interests of public health
- Political system, electoral processes, advocacy, and political decision-making



## Bachelor Degree Level

## NCD METHODS and DATA ANALYSIS

- Demographic profiles of populations
- Registration methods
- Age-specific rates
- Data standardisation procedures
- Incidence, prevalence, case fatality rates and trends over time
- Systematic reviews, rapid and long-term risk assessments, randomized controlled trials, cohort studies, case-control studies, economic evaluations, diagnostic studies, and qualitative studies
- Investigate disease burden in a population and sampling strategy
- Investigate determinants of disease, ascertain associations and/or disease causation
- Concepts of correlation and association
- Inferring causation - observational studies
- Sources of bias, confounding, interaction, and effect modification

## NCD and DISABILITY SPECIFIC EPIDEMIOLOGY

- Cancer prevention
- Neuro - epidemiology including epilepsy, alzheimer's disease, cerebrovascular disease, congenital neurological conditions, and neurodegenerative disorders
- Community initiatives for finding hypertension
- Cancer epidemiology inclusive of local epidemiology
- Importance of cancer registration
- Human papillomavirus and cancer risk and education
- Respiratory epidemiology including asthma, COPD, pulmonary disease, occupational lung diseases
- Obesity and diabetes mellitus
- Cardiovascular disease epidemiology including coronary heart diseases (CHD), peripheral arterial diseases (PAD), stroke, and rheumatic heart disease
- Epidemiology of older age including dementia, parkinson's disease, polypharmacy, and cognitive decline
- Early years programs for neurodivergency
- Gastrological epidemiology including inflammatory bowel disease, ulcerative colitis, and peptic ulceration
- Maternal and child health epidemiology including postnatal depression, hemorrhagic events, sudden unexpected (cot) mortality
- Country-specific registries i.e. Ireland's cystic fibrosis registry
- Injury epidemiology including road traffic accidents, suicide, homicide, firearms, drowning, boating accidents, occupational (farming, domestic violence, falls, and intentional childhood injury)
- Congenital disability epidemiology

**Bachelor Degree Level Continued****NCD and DISABILITY POPULATION INTERVENTIONS**

- Health promotion campaigns
- Screening programs - best standards, international criteria, and controversies
- State medication management
- Vaccination's role within cancer prevention
- Fortified food products i.E. Folic acid
- Educational programs on specific conditions through charity organizations
- Child health screening programs
- Modifiable risk factor management

**COMMUNICATION and ADVOCACY**

- Culturally sensitive health promotion knowledge and intervention
- Advocacy groups on rare diseases
- Social media
- Traditional media, including press releases

**PUBLIC HEALTH POLICIES and MANAGEMENT**

- Quality assurance guidelines
- Identification of information sources
- Vaccine registration (registry)
- Vaccine effectiveness and vaccine efficacy
- Role of personal behaviour including the adherence and use of medications and lifestyle changes
- Role of living conditions on condition (e.g. hygiene, sanitation, waste disposal, burial practices, ventilation, and environmental contamination)
- Behavioral science relevant to vaccine uptake and hesitancy within different population sub-groups
- Immunocompromised populations and healthcare-associated infections, antimicrobial agents, and antimicrobial resistance
- Health belief patterns
- Concept of healthy aging
- Healthcare delivery

## Master Degree Level

## NCD METHODS and DATA ANALYSIS

- Demographic profiles of populations
- Registration methods
- Age-specific rates
- Data standardisation procedures
- Incidence, prevalence, case fatality rates and trends over time
- Systematic reviews, rapid and long-term risk assessments, randomized controlled trials, cohort studies, case-control studies, economic evaluations, diagnostic studies, and qualitative studies
- Investigate disease burden in a population and sampling strategy
- Investigate determinants of disease, ascertain associations and/or disease causation
- Design qualitative studies that are informed by behavioral sciences
- Design, test and evaluate data collection methods including case report forms

## NCD and DISABILITY SPECIFIC EPIDEMIOLOGY

- Neuro - epidemiology including epilepsy, alzheimer's disease, cerebrovascular disease, congenital neurological conditions, and neurodegenerative disorders
- Community initiatives for finding hypertension
- Cancer epidemiology inclusive of local epidemiology and prevention
- Importance of cancer registration
- Human papillomavirus and cancer risk and education
- Respiratory epidemiology including asthma, COPD, pulmonary disease, occupational lung diseases
- Obesity and diabetes mellitus
- Cardiovascular disease epidemiology including coronary heart diseases (CHD), peripheral arterial diseases (PAD), stroke, and rheumatic heart disease
- Epidemiology of older age including dementia, parkinson's disease, polypharmacy, and cognitive decline
- Early years programs for neurodivergency
- Gastrological epidemiology including inflammatory bowel disease, ulcerative colitis, and peptic ulceration
- Maternal and child health epidemiology including postnatal depression, hemorrhagic events, sudden unexpected (cot) mortality
- Country-specific registries i.e. Ireland's cystic fibrosis registry
- Injury epidemiology including road traffic accidents, suicide, homicide, firearms, drowning, boating accidents, occupational (farming, domestic violence, falls, and intentional childhood injury)
- Congenital disability epidemiology

## NCD and DISABILITY POPULATION INTERVENTIONS

- Health promotion campaigns
- Screening programs - best standards, international criteria, and controversies
- State medication management
- Vaccination's role within cancer prevention
- Fortified food products i.e. Folic acid
- Educational programs on specific conditions through charity organizations
- Child health screening programs
- Modifiable risk factor management

## Master Degree Level Continued

### COMMUNICATION and ADVOCACY

- Culturally sensitive health promotion knowledge and intervention
- Targeted audiences, including policymakers and the general public
- Clear communication strategies targeting groups, communities, settings, and organisations
- Interdisciplinary approach to communication
- Knowledge transfer and exchange methodologies
- Key public health messages for the particular chronic condition, to optimize individual and population protection

### PUBLIC HEALTH POLICIES and MANAGEMENT

- Quality assurance guidelines
- Identification of information sources
- Vaccine Registration (Registry)
- Vaccine effectiveness and vaccine efficacy
- Role of personal behaviour including the adherence and use of medications and lifestyle changes
- Role of living conditions on condition (e.g. hygiene, sanitation, waste disposal, burial practices, ventilation, and environmental contamination)
- Behavioral science relevant to vaccine uptake and hesitancy within different population sub-groups
- Immunocompromised populations and Healthcare-associated infections, antimicrobial agents, and antimicrobial resistance
- Health belief patterns
- Concept of Healthy Aging
- Healthcare Delivery

## Continuous Professional Development

### NCD METHODS and DATA ANALYSIS

- Demographic profiles of populations
- Registration methods
- Age-specific rates
- Data standardisation procedures
- Incidence, prevalence, case fatality rates and trends over time
- Systematic reviews, rapid and long-term risk assessments, randomized controlled trials, cohort studies, case-control studies, economic evaluations, diagnostic studies, and qualitative studies
- Investigate disease burden in a population and sampling strategy
- Investigate determinants of disease, ascertain associations and/or disease causation
- Design qualitative studies that are informed by behavioral sciences
- Design, test and evaluate data collection methods including case report forms

### NCD and DISABILITY SPECIFIC EPIDEMIOLOGY

- Neuro - epidemiology including epilepsy, alzheimer's disease, cerebrovascular disease, congenital neurological conditions, and neurodegenerative disorders
- Community initiatives for finding hypertension
- Cancer epidemiology inclusive of local epidemiology and prevention
- Importance of cancer registration
- Human papillomavirus and cancer risk and education
- Respiratory epidemiology including asthma, COPD, pulmonary disease, occupational lung diseases
- Obesity and diabetes mellitus
- Cardiovascular disease epidemiology including coronary heart diseases (CHD), peripheral arterial diseases (PAD), stroke, and rheumatic heart disease
- Epidemiology of older age including dementia, parkinson's disease, polypharmacy, and cognitive decline
- Early years programs for neurodivergency
- Gastrological epidemiology including inflammatory bowel disease, ulcerative colitis, and peptic ulceration
- Maternal and child health epidemiology including postnatal depression, hemorrhagic events, sudden unexpected (cot) mortality
- Country-specific registries i.e. Ireland's cystic fibrosis registry
- Injury epidemiology including road traffic accidents, suicide, homicide, firearms, drowning, boating accidents, occupational (farming, domestic violence, falls, and intentional childhood injury)
- Congenital disability epidemiology

## Continuous Professional Development Continued

### NCD and DISABILITY POPULATION INTERVENTIONS

- Health promotion campaigns
- Screening programs - best standards, international criteria, and controversies
- State medication management
- Vaccination's role within cancer prevention
- Child health screening programs
- Modifiable risk factor management

### COMMUNICATION and ADVOCACY

- Culturally sensitive health promotion knowledge and intervention
- Interdisciplinary approach to communication
- Knowledge transfer and exchange methodologies
- Key public health messages for the particular chronic condition, to optimize individual and population protection

### PUBLIC HEALTH POLICIES and MANAGEMENT

- Quality assurance guidelines
- Identification of information sources
- Vaccine registration (registry)
- Vaccine effectiveness and vaccine efficacy
- Behavioral science relevant to vaccine uptake and hesitancy within different population sub-groups
- Immunocompromised populations and healthcare-associated infections, antimicrobial agents, and antimicrobial resistance
- Health belief patterns
- Concept of healthy aging
- Healthcare delivery

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3. World Health Organization. WHO 12 essential public health functions. Geneva: WHO; 2024. Available from: <https://www.who.int/publications/i/item/9789240060710>
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# Chapter 17

## Occupational Safety and Health



## Rationale and Current Status: Occupational Safety and Health

**Contributors:** Gaetano Privitera, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd

Occupational Safety and Health (OSH) is the area of Public health aimed at promoting and maintaining the highest degree of physical, mental and social well-being of workers in all occupations.

### Its objectives are:

- the maintenance and promotion of worker's health and working capacity;
- the improvement of working conditions and the working environment to promote safety and health;
- the development of work organisation and working cultures that include effective managerial systems, personnel policy, principles for participation of workers and quality-oriented practices to improve occupational safety and health.

Moreover, safety and occupational health contributes to the broader field of environmental health by elucidating the occupational contributions to environmental exposures and their health effects on workers and surrounding communities. This interdisciplinary approach highlights the interconnectedness of occupational health with broader public health concerns, such as environmental justice and social determinants of health.

Integrating occupational epidemiology into public health education enriches students with the knowledge and skills to assess occupational health risks, conduct surveillance, and develop interventions that promote safer and healthier work environments. By prioritizing this aspect of public health education, institutions can empower future young and mid-career professionals to address occupational health disparities, advocate for worker rights, and contribute to creating sustainable and equitable workplaces. Key areas of focus should include interdisciplinary training, integrating knowledge from fields such as epidemiology, industrial hygiene, and behavioural science to provide a comprehensive understanding of OSH.

Practical experience through internships and fieldwork allows students to apply theoretical knowledge in real-world settings. Continuous professional development encourages lifelong learning and staying updated with the latest OSH research, regulations, and best practices.

The WHO-ASPHER Competency Framework 2020 and the WHO's 12 Essential Public Health Functions 2024 highlight the significance of occupational safety and health.<sup>1,2</sup> These frameworks emphasize the need for public health professionals to conduct risk assessments, develop safety programs, ensure regulatory compliance, and promote worker health. The ECDC's 2023 Core Competencies in Applied Infectious Disease Epidemiology also recognize the role of OSH in preventing workplace-related disease transmission.<sup>3</sup> Public health professionals must be prepared to address infectious disease risks in the workplace, ensuring that safety measures are in place to protect workers.

Occupational safety and health interlinks with other subject areas in the CCP, enhancing the overall educational experience. For instance, understanding the principles of epidemiology is crucial for identifying and controlling workplace-related disease outbreaks. Knowledge of environmental health helps in assessing and mitigating hazards such as exposure to toxic substances. Diversity and intersectionality subject area and the leadership and management subject area provides insights into promoting safe practices and fostering a culture of safety

among workers. Additionally, public health policy and management skills are essential for developing and implementing effective OSH programs and policies. By integrating OSH with these and other areas of public health, professionals are better equipped to address the complex and multifaceted nature of workplace health and safety issues.

In conclusion, occupational safety and health are vital components of public health, essential for protecting workers and promoting societal well-being. Through robust education and training, public health professionals can develop the competencies necessary to create safe workplaces, advocate for effective OSH policies, and contribute to the overall health and productivity of the workforce. By prioritizing OSH, we can ensure a healthier, safer, and more productive society for all.

### Competency Framework Reference

The Occupational Safety and Health Subject Area of this curriculum has been aligned with the following competency frameworks with associated competencies outlines.

#### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 4: One Health and Health Security

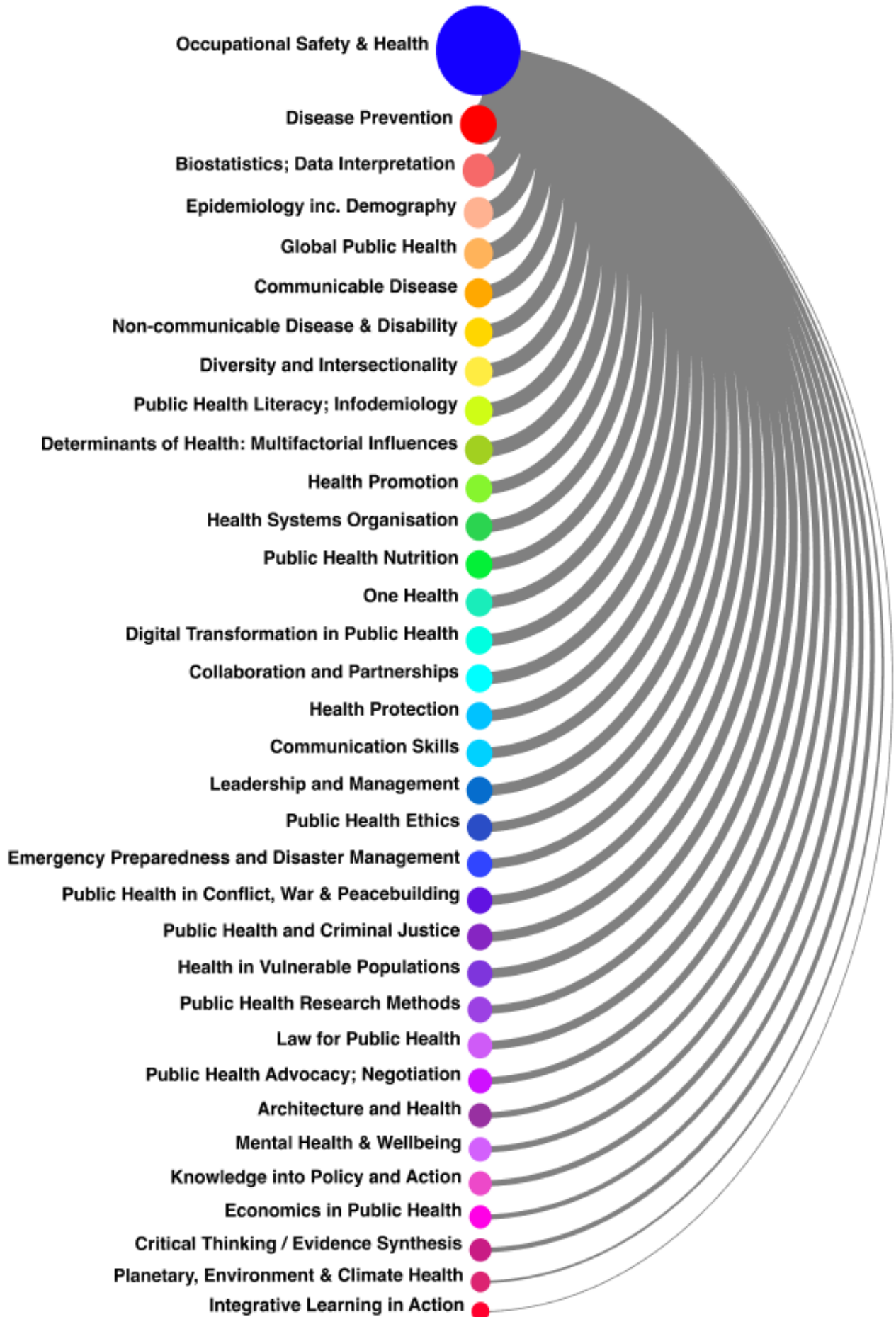
#### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Health Systems and Multisectoral Planning and Finance
- EPHF 5: Health Protection
- EPHF 6: Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 11: Public Health Research, Evaluation and Knowledge

#### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2023

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
- Subject area D: Practice of infectious disease epidemiology
- Subject area F: Leadership and management

## Connectivity of Occupational Safety & Health in Public Health Curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Occupational Safety and Health Curriculum Overview

Through the study of Occupational Safety and Health, public health professionals gain insights into the identification and assessment of occupational hazards, including chemical, physical, biological, and psychosocial factors.

The tools and guidelines below play a crucial role in shaping the CCP Curriculum in OSH, these resources are instrumental in guiding policies, practices, and educational curricula aimed at safeguarding health workers and responders, promoting a safe and healthy working environment, and ensuring that professionals in the field are equipped with the necessary skills and knowledge.

### **IOSH Competency Framework (2019)<sup>4</sup>**

The Institute of Occupational Safety and Health Competency Framework outlines the skills, knowledge, and behaviours required for effective OSH practice. For public health education, this framework is an invaluable tool for aligning with industry standards. It ensures that graduates are not only knowledgeable but also competent in applying OSH principles in real-world settings. The framework emphasizes continuous professional development, encouraging educators to instil a mindset of lifelong learning in their students. By adhering to this framework, public health education programs can produce professionals who are well-equipped to address the ever-evolving challenges in occupational safety and health, ultimately contributing to safer workplaces and healthier communities.

### **Occupational Safety and Health in Public Health Emergencies (2018)<sup>5</sup>**

This manual, published by the World Health Organization (WHO) and the International Labour Office (ILO), is essential for preparing health workers and responders to face public health emergencies. In situations such as pandemics, natural disasters, or chemical spills, the risks to these individuals increase significantly. For public health education, this document is indispensable as it provides a framework for training programs that emphasize emergency preparedness, resilience, and response strategies. Educators can use this resource to teach future health workers and responders about the complexities of emergency scenarios and the importance of maintaining safety and health standards even under extreme conditions.

By analysing occupational exposures and their association with various health conditions such as occupational injuries, respiratory diseases, musculoskeletal disorders, and cancers, epidemiologists can inform evidence-based interventions to prevent work-related illnesses and injuries.

## Occupational Safety and Health Themes



## Occupational Safety and Health Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training (PST)

## Bachelor Degree Level

## EPIDEMIOLOGY

- Vaccinology
- Farming relating occupational hazards

## ENGINEERING

- Calculation, analysis and interpretation of epidemiologic measures of association, frequency and impact.
- Prevent and control hazards that pose risks to human health and safety
- Air surveillance : particulate, quality and action
- Record keeping
- Risk management - assessment and action
- Mental health in the workplace - prevalence and action
- Observational epidemiological studies

## ENFORCEMENT

- Muscularskeletal injury : prevention, training and surveillance
- Infection, prevention and control : action, surveillance and mitigation strategies
- Isolation of infectious disease cases : practice, guidelines and prevention of further spread
- Occupational safety laws
- Political and legal framework of prevention
- National and international prevention policy - learnings and actions
- Prior exposure to chemical and physical hazards

## EDUCATION

- Personal protective equipment
- Sign posting - prevention posters
- Follow up of any infectious disease close contacts
- Screening programmes : Covid-19; hypertension; lung function
- Health surveillance : hearing and vision
- Continuous professional training
- Physiotherapy access
- On-site testing

## Master Degree Level

## EPIDEMIOLOGY

- Occupational medicine
- Immunology knowledge
- Vaccinology
- Basic concepts, principles and methods of risk estimation
- Ergonomics
- Fine particles and their consequences to human health
- Infectious disease
- Farming relating occupational hazards
- Pesticides - regulation, use and effects to human health, environment and water safety
- Health issues associated with specific industries e.g. physical and chemical exposures

## ENGINEERING

- Calculation, analysis and interpretation of epidemiologic measures of association, frequency and impact.
- Prevent and control hazards that pose risks to human health and safety
- Air surveillance : particulate, quality and action
- Legionella and standing water regulations (hospitality and healthcare)
- Record keeping
- Risk management - assessment and action
- Mental health in the workplace - prevalence and action
- Observational epidemiological studies

## ENFORCEMENT

- Muscularskeletal injury; prevention, training and surveillance
- Infection, prevention and control : action, surveillance and mitigation strategies
- Isolation of infectious disease cases : practice, guidelines and prevention of further spread
- Occupational safety laws
- Political and legal framework of prevention
- National and international prevention policy - learnings and actions
- Trends of occupational exposure
- Hazard analysis
- Periodic check on workforce
- Prior exposure to chemical and physical hazards

## EDUCATION

- Personal protective equipment
- Follow up of any infectious disease close contacts
- Screening programmes : Covid-19; hypertension; lung function
- Health surveillance : hearing and vision
- Continuous professional training
- Physiotherapy access
- Required adaptations to work environment based on ergonomic assessment
- Social prescriptions for health protection
- Linkage to other health professionals (GP / family medicine doctors, specialist nurses etc.)



## Doctoral Degree Level

### EPIDEMIOLOGY

- Occupational medicine
- Immunology knowledge
- Vaccinology
- Fine particles and their consequences to human health
- Farming relating occupational hazards
- Pesticides - regulation, use and effects to human health, environment and water safety

### ENGINEERING

- Calculation, analysis and interpretation of epidemiologic measures of association, frequency and impact.
- Prevent and control hazards that pose risks to human health and safety
- Air surveillance : particulate, quality and action
- Legionella and standing water regulations (hospitality and healthcare)
- Record keeping
- Risk management - assessment and action
- Mental health in the workplace - prevalence and action
- Observational epidemiological studies

### ENFORCEMENT

- Muscularskeletal injury; prevention, training and surveillance
- Infection, prevention and control : action, surveillance and mitigation strategies
- Isolation of infectious disease cases : practice, guidelines and prevention of further spread
- Occupational safety laws
- Political and legal framework of prevention
- National and international prevention policy - learnings and actions
- Trends of occupational exposure
- Hazard analysis
- Periodic check on workforce
- Prior exposure to chemical and physical hazards

### EDUCATION

- Personal protective equipment
- Follow up of any infectious disease close contacts
- Screening programmes : Covid-19; hypertension; lung function
- Health surveillance : hearing and vision
- Continuous professional training
- Physiotherapy access

**Certificate and/or Diploma (Cert/Dip.) / Continuous Professional Development (CPD) and Professional Specialised Training (PST) Levels**

**EPIDEMIOLOGY**

- Occupational medicine
- Immunology knowledge
- Vaccinology
- Basic concepts, principles and methods of risk estimation
- Ergonomics
- Fine particles and their consequences to human health
- Infectious disease
- Farming relating occupational hazards
- Pesticides - regulation, use and effects to human health, environment and water safety
- Health issues associated with specific industries e.g. physical and chemical exposures

**ENGINEERING**

- Calculation, analysis and interpretation of epidemiologic measures of association, frequency and impact.
- Prevent and control hazards that pose risks to human health and safety
- Air surveillance: particulate, quality and action
- Legionella and standing water regulations (hospitality and healthcare)
- Record keeping
- Risk management - assessment and action
- Mental health in the workplace - prevalence and action
- Observational epidemiological studies

**ENFORCEMENT**

- Muscularskeletal injury; prevention, training and surveillance
- Infection, prevention and control : action, surveillance and mitigation strategies
- Isolation of infectious disease cases : practice, guidelines and prevention of further spread
- Occupational safety laws
- Political and legal framework of prevention
- National and international prevention policy - learnings and actions
- Trends of occupational exposure
- Hazard analysis
- Periodic check on workforce
- Prior exposure to chemical and physical hazards

**EDUCATION**

- Personal protective equipment
- Sign posting - prevention posters
- Follow up of any infectious disease close contacts
- Screening programmes: covid-19; hypertension; lung function
- Health surveillance: hearing and vision
- Continuous professional training
- Physiotherapy access
- Required adaptations to work environment based on ergonomic assessment
- On-site testing
- Social prescriptions for health protection
- Linkage to other health professionals (GP / family medicine doctors, specialist nurses etc.)

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# Chapter 18

## Planetary, Environment and Climate Health



## Rationale and Current Status: Planetary, Environment and Climate Health

**Contributors:** Marie Nabbe, Kirsten Duggan, Tara T Chen, Laurent Chambaud, Hamzeh Al Zabadi, Ana-Catarina Pinho-Gomes, Susana Viegas, David Patterson, Nadav Davidovitch, Hazem Agha, Frederike Garbe, Virginia B. Arjona, & ASPHER's Climate-Health Working Group with support : Karl F. Conyard, Uma Divya Kudupudi & Mariah De Vos

Climate change is a growing concern in Europe and worldwide. Repeated headlines of record-breaking temperatures are becoming increasingly common as one of the observed multidimensional impacts of human activity on the environment.<sup>1</sup> The 2024 Europe Report of the Lancet Countdown on Health and Climate Change describing the imminent concern as a “not a far-in-the-future scenario”.<sup>2</sup> The Anthropocene is a period where human activity makes significant changes to our natural systems, to an unknown extent.<sup>3</sup> The human changes to the natural environment, from air, water, ecosystems, food and soil pollution to the destruction or drastic remodelling of habitats and the interruption of natural cycles, have profound impacts on peoples' and the planet's health and wellbeing. Climate change is not only a fundamental threat to human health but acts as a threat multiplier as it is able to negate or even reverse decades of progress in public health. Factors such as air and water quality, climate patterns and exposure to pollutants significantly impact human health, influencing disease prevalence, threat of emerging diseases, mortality rates and overall wellbeing.

Recognising the critical intersection of environmental and public health, educational institutions and public health programs are integrating broader environmental health principles into their curricula, moving to a more holistic One Health. This underscores the importance of integrating planetary, environment, and climate-health as a cross-curricular subject area to equip future public health professionals with the knowledge and skills necessary to address complex environmental health challenges.

Presently, public health professionals are increasingly facing challenges caused by the impact of climate change in their work. The rise in vector-borne diseases, increased risk for heat-related morbidity and mortality, water scarcity and quality or the aftermath of environmental catastrophes, pose new demands to public health functions. Public health professionals have a critical role to play in protecting the public and the health workforce from the short and long-term impacts of climate change. This includes responding to acute public health hazards and evolving towards climate-resilient health systems. Therefore, public health professionals need to acquire new competencies, skills and knowledge to tackle the new challenges posed by the changing environment.

The complex relationship between humans and nature calls for a transdisciplinary approach. Planetary, environmental and climate health are closely linked and are essential aspects to add to the training of public health professionals. While traditional environmental aspects are present in training, there is a need to connect them to the socio-political context, including economic analysis, community based participatory research and knowledge translation from evidence to policy, to have impact.<sup>4</sup>

Several public health education programs in the European Region are increasingly focusing on particular aspects of climate change and health. In 2020, ASPHER and the WHO released the WHO-ASPHER Competency Framework for the Public Health Workforce in the European Region.<sup>5</sup> Although not explicitly an independent competency, environmental determinants of health were included in parallel topics in ‘One Health’ and ‘Health Security’ chapters. The framework also emphasized the responsibility of public health to the natural environment, featuring the ecological determinants of health, the connections between environmental protection, social justice and public health policy, as well as the main features of the climate change process. The interconnectedness of the topics require cross-fertilisation with other fields to help the public health workforce fully understand the relationship between climate hazards and health outcomes. However, current educational structures in public health training are not meeting the demand for health and climate education, leaving an unprepared public health workforce.<sup>6</sup>

In 2021, competencies related to climate-health were released in ASPHER’s 2021 Climate and Health Competencies for Public Health Professionals in Europe, expanded from the Global Consortium of Climate and Health Education (GCCHE) framework to the EU context.<sup>7</sup> In 2023, GCCHE launched an update of the competency framework, categorizing the domains of climate and health education to be targeted at the wider health workforce.<sup>8</sup> Interlinked topics such as planetary health are included as important drivers of climate and health literacy.

The WHO recently released the Essential Public Health Functions (EPHF) Framework which supports the guidance on training in health protection.<sup>9</sup> This includes the means, processes and actions required to protect population health from various natural, human-induced and environmental hazards.<sup>10</sup> The emergence of planetary, environmental, and climate health topics within guiding frameworks in leading health organisations demonstrates the importance of updating public health curricula.

Current efforts in climate-health education have been encouraged by ASPHER’s joint statement through the EU Health Policy Platform initiative, “Moving towards the right to ‘health for all’ by training the public health and wider health workforce on climate change and health”.<sup>11</sup> With the endorsement of over 80 institutions and organisations, the urgency for action to integrate the climate conversation in education is at the forefront of the agenda.<sup>11</sup> In the classroom, educators are beginning to feature concepts of planetary health and impact of climate change on health more prominently within the curriculum.

Across Europe, examples of integration of planetary health, sustainable health, and climate change into different courses and curriculum highlight growing importance of subject specific competencies:

- University of Amsterdam (Netherlands) – module on planetary health into everyday clinical practice.<sup>12</sup>
- The German Project “Planetary Health - Curriculum for Sustainable Healthcare Facilities” – 12-month training course across all professional groups.<sup>13</sup>
- London School of Hygiene and Tropical Medicine (UK) - MSc on Climate Change and Planetary Health.<sup>14</sup>
- NOVA (Portugal)- developed first course on Climate Change and Public Health.<sup>15</sup>
- EHESP (France)- “ChanCES- Climate Change, Transitions, and Health” Short Course for health professionals.<sup>16</sup>
- ASPHER/GCCHE – launch of the European Responder Course (online).<sup>17</sup>

While there is increasing attention directed at the inclusion of planetary health in medical schools and other health professions’ curricula, there is a lack of cohesive integration in curricula, particularly within public health courses.<sup>18</sup>

In today’s world, there exists a shared responsibility to integrate these elements into public health functions. Climate change is a public health emergency, and its effects will remain a reality for the public health professionals entering the workforce. There is a demand for guidance from public health educators on how, where, what, and when to train these concepts in the programmes they offer. Recognising these varied levels and demands is essential for the concept of core competency, which will provide an introductory level for everyone, whilst also offering the possibility of specialization. Importantly, climate and health education should include an understanding of how better to collaborate among different disciplines within as well as outside the subject of public health.



## Alignment to Competency Frameworks

The Planetary, Environment and Climate Health subject area of this curriculum is aligned with the following competency frameworks and associated competencies

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 8: Governance and Resource Management
- Competency 10: Organizational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 2: Public Health Emergency Management
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 11: Public Health Research, Evaluation, and Knowledge

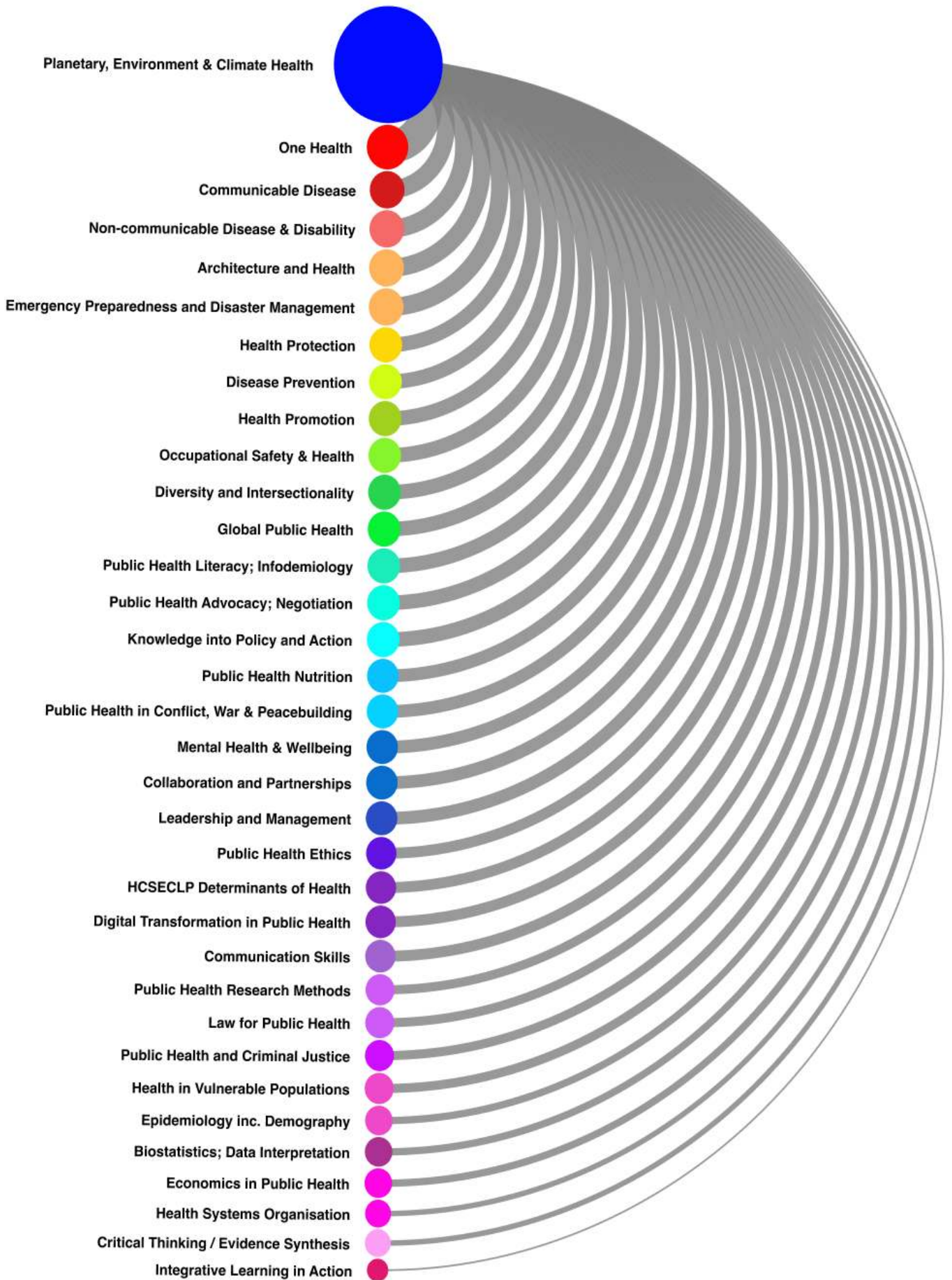
### ASPHER Climate and Health Competencies for Public Health Professionals in Europe, 2021

- All Domains

### GCCHE: Climate & Health Core Concepts for Health Professionals, 2023

- Domain 1: Knowledge and Analytic Skills
- Domain 2: Communication and Collaboration
- Domain 3: Policy
- Domain 4: Public Health Practice
- Domain 5: Clinical Practice

# Connectivity of Planetary, Environment & Climate Health in curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Planetary, Environment and Climate Health Curriculum Overview

In this context, integrating environmental and climate health into public health education is not merely a choice but a necessity. By equipping future public health professionals with a comprehensive understanding of environmental determinants of health, we empower them to enact meaningful change, promote health equity, and safeguard the health of current and future generations.

Moreover, fostering an understanding of environment and climate health within public health education not only prepares students to confront present-day environmental health issues but also cultivates a proactive mindset towards future challenges.

By emphasizing interdisciplinary approaches, community engagement, and evidence-based practices, public health programs play a pivotal role in promoting environmental stewardship and advancing the health and well-being of populations worldwide.

### Planetary, Environment and Climate Health Themes



## Planetary, Environment and Climate Health Curriculum

The planetary, environment and climate health curriculum suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and / or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

Understanding the pressing nature of environmental and climate issues affecting populations across the European region, the CCP environment and climate health expert advisory group emphasizes the necessity of this comprehensive curriculum to encompass various educational levels. Unlike other subject areas within the curriculum limited by specific educational tiers / levels, this specific subject area must be accessible across all educational delivery levels.

## Full Curriculum

### POLICY FRAMEWORKS and GOVERNANCE

- Challenges: climate scepticism and special interest lobbying
- Civil society organizations (CSOs) initiatives
- COP – the conference of the parties
- COP outcomes
- European green deal
- Incorporating health in climate agreements
- National, european, and global policy frameworks and governance structures
- Political commitment, policy support, and social acceptance for climate action
- Sectoral policies at the european and national level
- Strategic alliances, coalitions, professional networks, and partnerships
- The paris agreement
- WHO ostrava declaration

### CLIMATE CHANGE IMPACTS and RISKS

- Climate change impacts on waterborne diseases
- Confirmation of recent years as the warmest on record
- Deforestation and soil erosion
- Differential impacts between populations due to acclimatization and susceptibility factors
- Drivers of climate change (both natural and human-induced)
- Fossil fuel use reduction
- Global temperature rise compared to pre-industrial levels
- Health impacts and epidemiology of climate change-related diseases
- Health risks associated with low and high temperatures, including cardiovascular and respiratory
- Impact of extreme temperatures on human health
- Increase in heat-related deaths and years of healthy life lost
- Vulnerability factors and vulnerable groups
- Water quality; contamination of ecosystems and food chains
- Wildfire smoke and public health
- Wildfires and climate change

### HEALTH SECTOR RESPONSE and RESILIENCE

- Adaptation strategies and early warning systems
- Climate change and disease spread
- Health benefits of climate action
- Health sector's role in climate response
- Injuries, death, and mental health impacts from severe weather
- Integrated approach and conclusion
- Managing climate health risks
- Measures to provide health security and foster climate resilience
- Mental health resilience
- Migrant health
- Policy and risk reduction
- Social justice and climate health equity
- Tackling extreme heat in the context of climate-resilient health systems
- Urban health and climate resilience

### ENVIRONMENTAL IMPACT and MITIGATION STRATEGIES

- Artificial environmental hygiene
- Challenges: climate scepticism and special interest lobbying
- Climate resilience
- Deliver and improve local health services
- Emergency planning/preparedness
- Environmental protection economically viable to food producers
- Free carbon sequestration
- Knowledge of resources to guide action in response to health impacts of climate change
- Light and noise pollution
- Mitigation and adaptation policies
- Near-term health co-benefits (e.g. Improved air quality) risk of fine particulates
- Radon gas exposure
- Reduce greenhouse gas emissions and improve health
- Risk communication
- Risk management
- Risk prevention

**Full Curriculum Continued****COMMUNICATION and ENGAGEMENT**

- Civil engagement: activism as a response to environmental challenges
- Communication with stakeholders about climate and health topics
- Communication: climate health lessons learned case study increasing temperatures and cardiovascular health
- Institutional engagement: role of climate diplomacy
- Nationally determined contributions
- Public support and framing
- Stakeholder engagement: importance of collaboration

**PUBLIC HEALTH and CLIMATE HEALTH ETHICS**

- Barriers to policy change
- Challenges: climate scepticism and special interest lobbying
- Collaboration interdisciplinary collegial partnership for strategic research and programme developments
- Environmental justice
- Equitable transition
- Ethical, professional, and legal obligations relevant to climate and health
- Evidence and data gaps
- Health co-benefits of GHG mitigation
- Healthy diet initiatives
- Incorporating health in climate agreements
- Public support and framing
- Social responsibility of populations, corporate bodies, state agencies, and policymakers
- Theories of collective ethics, transgenerational ethics, and ethical obligations in more individual-oriented, present-oriented, and human-centered frameworks of climate and health ethics

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# Chapter 19

## Public Health Nutrition





## Rationale and Current Status: Public Health Nutrition

**Contributors:** *Carla Lopes, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd*

Public Health Nutrition is a cornerstone of public health education, playing a crucial role in shaping the health and well-being of populations. It focuses on the promotion of healthy eating patterns, the prevention of nutrition-related diseases, disease modification through dietary interventions and the creation of food policies that ensure equitable access to nutritious foods. In the context of public health education, understanding Public Health Nutrition is essential for developing strategies that address the complex interplay between diet, lifestyle and chronic diseases such as obesity, diabetes, cardiovascular diseases and cancer.

Education in Public Health Nutrition equips health professionals with the knowledge and skills necessary to analyse dietary patterns, assess nutritional needs, and implement community-based interventions that promote healthier food environments. It also involves the study of food systems and their impact on public health, emphasizing the importance of sustainable practices and food safety and security. By integrating Public Health Nutrition into public health education, future health professionals are better prepared to advocate for policies that support healthy eating, address food deserts, and reduce health disparities. This comprehensive approach ensures that public health initiatives are grounded in a solid understanding of nutrition science, ultimately contributing to the development of healthier communities and the reduction of diet-related health burdens.

Public health nutrition is a crucial subject area within these frameworks, given its direct role in preventing chronic diseases, reducing malnutrition, and promoting health equity across diverse populations. The WHO-ASPHER Competency Framework (2020)<sup>1</sup> integrates public health nutrition within broader competencies like health promotion and management of noncommunicable diseases, aiming to foster a well-rounded public health workforce that understands nutrition's impact on population health, especially among vulnerable groups. The WHO's 12 Essential Public Health Functions (2024)<sup>2</sup> also includes public health nutrition as part of its goals for health promotion, recognizing nutrition as foundational to reducing health inequities and managing diet-related diseases.

This emphasizes nutrition education, community health programs, and policy interventions to support nutrition-based health improvements. Furthermore, the ECDC Core Competencies in Applied Infectious Disease Epidemiology (2022)<sup>3</sup> underscore nutrition's importance in resilience against infectious diseases, especially in emergency and outbreak contexts where malnutrition exacerbates health risks. Integrating public health nutrition into the curriculum aligns with these competencies, preparing professionals to assess nutritional status, address diet-related health issues, and implement nutrition policies that support broader health

goals. By embedding public health nutrition across these frameworks, training institutions can better equip students to address global health challenges holistically, bridging the gap between nutrition, disease prevention, and health equity.

Incorporating public health nutrition as a dedicated subject in health education equips future professionals with essential skills to address nutritional challenges that significantly impact population health. Understanding the socio-economic, cultural, and environmental factors that affect nutrition helps students develop interventions to reduce malnutrition, obesity, and diet-related diseases. Emphasized by frameworks like the WHO-ASPHER Competency Framework, public health nutrition education fosters skills in nutrition policy, dietary assessment, and program planning, preparing students to manage and prevent nutrition-related health issues on both community and population levels.

A public health nutrition curriculum enhances career development for health professionals by providing practical skills in program implementation and evaluation, supported by frameworks such as the ECDC Core Competencies. These competencies allow students to conduct dietary surveillance, analyse nutritional epidemiology, and engage in policy development. By focusing on nutrition's role in health promotion and disease prevention, students are prepared for diverse roles in public health agencies, NGOs, and governmental bodies, contributing to health equity and improved nutritional standards.

## Alignment to Competency Frameworks

The Public Health Nutrition subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 11: Public Health Research, Evaluation and Knowledge

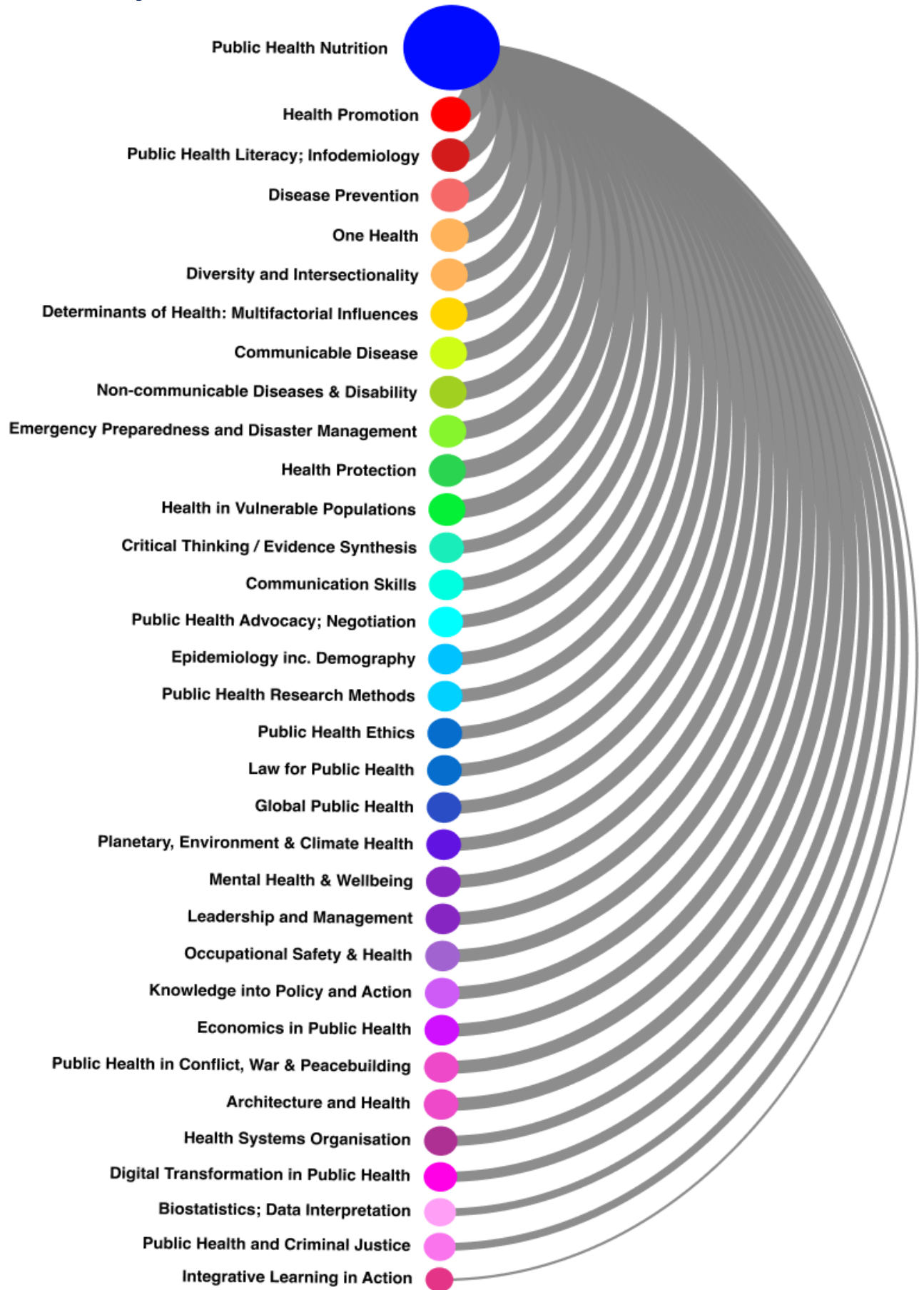
### Global Nutrition Cluster TA - Competency Framework for Nutrition in Humanitarian Contexts, 2021

- All Domains

### WPHNA Competency Framework for Global Public Health Nutrition Workforce Development, 2011

- All Domains

### Connectivity of Public Health Nutrition in Public Health curricula



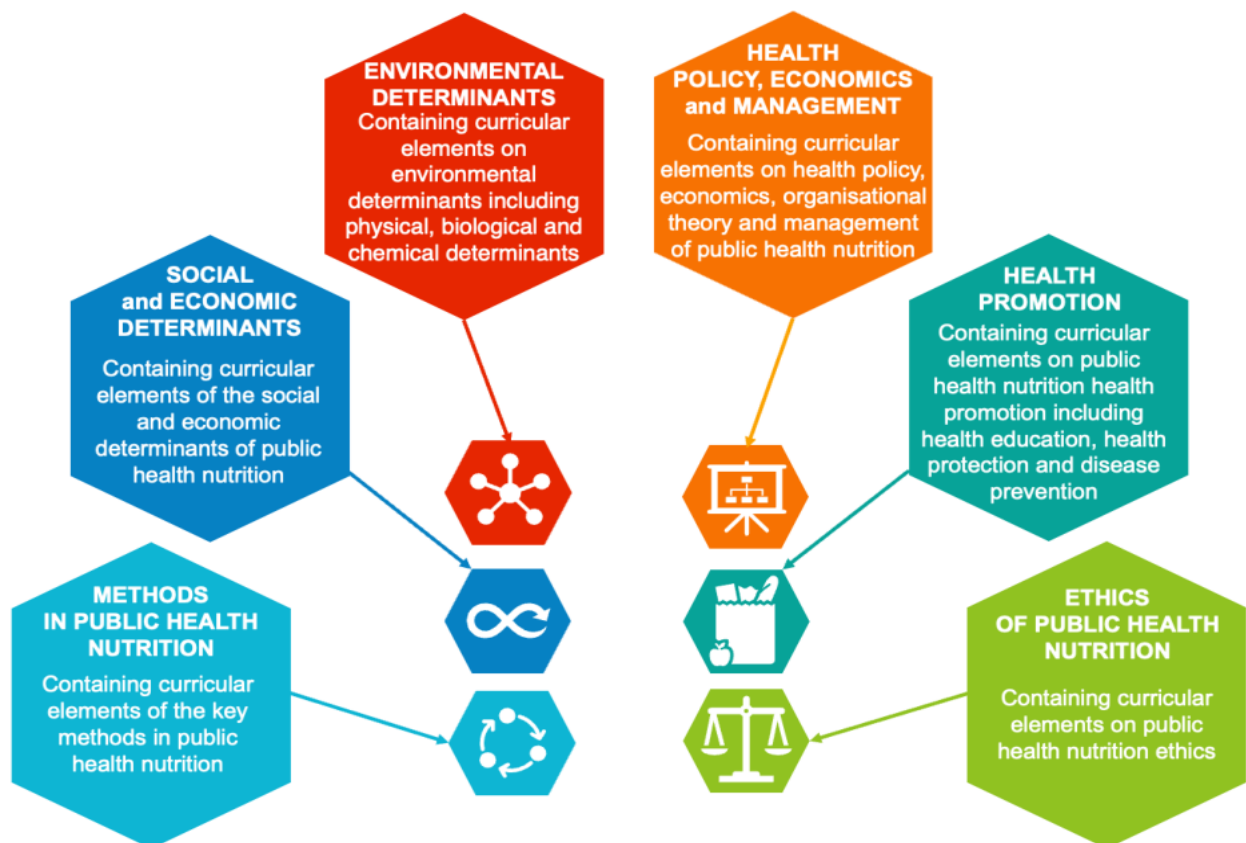
*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Public Health Nutrition Curriculum Overview

Incorporating Public Health Nutrition into public health education also fosters interdisciplinary collaboration among health professionals. By understanding the nutritional aspects of public health, professionals from diverse fields can work together more effectively to create comprehensive health promotion strategies. This collaborative approach is essential for tackling complex health issues that require multifaceted solutions, such as addressing the behavioural and social determinants of health and also mitigating the impacts of food systems on climate change.

Moreover, Public Health Nutrition education emphasizes the importance of culturally sensitive approaches to dietary recommendations and interventions. Recognizing and respecting cultural diversity in dietary practices enables health professionals to design more effective and acceptable nutrition programs for different communities. This cultural competence helps ensure that public health initiatives are inclusive and equitable, ultimately leading to better health outcomes across diverse populations. Thus, Public Health Nutrition is not only about individual dietary choices but also about fostering a supportive environment for healthier living at the community and population levels.

### Public Health Nutrition Themes



### Educational level

Understanding the pressing nutrition related outcomes affecting populations across the European region, the CCP public health nutrition expert advisory group emphasizes the necessity of this comprehensive curriculum to encompass various educational levels. Suggested curricular elements are presented for all educational levels.

## Full Curriculum

## METHODS in PUBLIC HEALTH NUTRITION

- Basic definitions, models and concepts of health, public health and PHN
- Basic concepts and determinants of various mental and somatic diseases and their global burden on PHN
- Significant aspects of the history of public health and PHN theory and practice
- PHN essential philosophy
- Essentials of study designs used in PHN including determinants
- Basics on food classification systems, international classification of diseases (ICD)
- International classification of functioning, disability and health (ICF)
- Interventions used in PHN
- Concepts, methods and determinants of epidemiological and nutrition monitoring and surveillance, including examples relevant from the European perspective
- Appropriate dietary assessment methods (including collection of the data, analysis and interpretation)
- Statistics, data analysis used in PHN studies and their presentation and interpretation
- Determinants of health needs, nutritional requirements and potential adverse or serious events
- Knowledge of food composition to relevant aspects of practice
- Validity and reliability in PHN research
- Measurement errors in nutritional epidemiology and dietary assessment i.e. Bias and confounding
- Nutritional status such as anthropometrics and body composition
- Attenuate measurement errors in nutritional epidemiology such as calibration
- Attenuation of the dose-response relationship, triads method, adjustment for energy intake, over and under-reporting of dietary intake
- Demographic, epidemiologic and nutrition transition
- Qualitative methods frequently applied in PHN concerning population groups as well as organisations
- Qualitative methods, methodologies, determinants, data collection methods and methods for data analysis
- Methods to assure the validity of qualitative research e.g., Triangulation.
- Sociological and anthropological science in relation to PHN
- IT data handling in PHN
- Internet and social media in PHN
- Data sources, and important literature for PHN including specific purpose and quality assessment

## SOCIAL and ECONOMIC DETERMINANTS

- At risk groups: migrant access to health, funding and housing
- Level and trends of main population health indicators related to nutrition (disability and mortality)
- Health indicators related to nutrition, including non-communicable and infectious diseases (relevant to the updated global indicators of disease burden)
- Definition and indicators relevant to health indicators (incidence, prevalence, duration)
- Socio-economic determinants and their importance in the context of PHN
- Concepts, principles and methods of food security including altering determinants
- Health and nutritional inequality
- Food security and war
- Nutrition and war
- Basic concepts and determinants of lifestyle and behaviour
- Models concerning social determinants of health
- Burden of nutrition related diseases, associated with social and economic determinants in national and European populations
- Consumer behaviour, e.g. Healthy lifestyle, food selection determinants
- Material pathways, e.g. Poverty, income inequality, neighbourhood deprivation
- Psycho-social pathways (social stressors and protective factors e.g. Social work, social cohesion, social anomie, social support)
- The level and trends of associations in Europe between population's nutritional indicators and nutrition-related diseases and various background indicators (e.g. Socio-economic status, social environment)
- Basic concepts of social and economic PHN implications of globalisation
- Legislation support regarding access to nutritious food
- Dietary supplementation: limitations and access
- Dysbiosis and its socio-economic association
- Access to nutrition professionals across all social devices
- Sustainability of PHN practice in complex environments

## ENVIRONMENTAL DETERMINANTS

- Significant aspects of the history of environmental health
- Basic concepts of the natural sciences, including chemistry, physiology, genetics, toxicology, microbiology and immunology
- Basic concepts of analysis of the impact of various altering /environmental agents (e.g. Chemical, biological) related to nutrition on health, including variations according to age, gender, SES and other background (including identification of population groups at risk)
- Built environment and PHN (including urbanization, urban planning, demographic indicators like migrations, etc.)
- Carcinogens and PHN
- Basic concepts, principles and methods of environmental risk estimation (with examples important from the european perspective), including altering determinants
- Basic concepts, principles and methods of food safety (with examples important from the european perspective), including altering determinants
- Basic concepts and determinants relevant for dietary risk assessment, including important altering environmental agents
- Genetic, physiological and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards
- Environmental impacts of diets and nutrition interventions and PHN (including major stakeholders, main drivers, prevention and control of environmental hazards)
- Management of food systems from farm to fork - water management - infectious disease association
- Water safety and hydration in health and disease states
- Management of malnutrition (population level)
- Basic concepts of disease modification via nutrition based interventions- immunological and inflammatory considerations (examples: PCOS, endometriosis, NAFLD)
- Awareness of state bodies for exposure interventions
- Surveillance of nutrition along the lifecycle (newborn to old age)
- Climate change barriers and considerations to PHN practice

## HEALTH POLICY, ECONOMICS and MANAGEMENT

- Significant aspects of the modern history of the disciplines of nutrition policy, health economics, organisational theory and management
- Basic concepts and determinants of market (including prices and taxes, supply and demand), economic indicators, policy, cost analyses (effectiveness, utility, benefit)
- Organization and functioning of the health services and social services oriented towards PHN (with examples relevant for europe)
- The role of national and international organizations in the development of PHN (e.g. WHO, EU), including basic concepts of building effective partnerships (especially with the industry and stakeholders involved in food supply chain)
- The basic concepts and determinants related to the evaluation of specific PHN policies, strategies and programmes
- The basic concepts and determinants of SMART objectives, effectiveness analysis (with special emphasis on potential setbacks), follow-up methods from the aspect of PHN policies/strategies/interventions
- Main principles underlying health impact assessment
- Important national, european and international PHN strategies
- Specific dietary requirements and legislation: access and cost barriers in populations of interest
- Continued surveillance of health policy relating to PHN
- Advocacy for PHN at policymaking level

## HEALTH PROMOTION

- Significant historical aspects related to health promotion and prevention via nutrition
- Definitions of health education, health literacy
- Health protection, including preparedness against acute and emerging public health threats and levels of disease prevention (infectious and non-communicable)
- Food and nutrition systems knowledge
- Contemporary and evidence based food guidance devices and nutritional education to promote optimal population dietary behaviour
- Concepts of leadership in PHN, decision making process
- Articulation of the PHN needs of vulnerable groups
- Levels of disease prevention: primordial, primary, secondary, tertiary and quaternary prevention concepts. Specificities of every level, planning, main targets, obstacles and long-term effects
- Communication in PHN (effective communication (written and oral) with individuals, across various social groups (e.g. Families, communities), leaders and major stakeholders in a range of contexts related to PHN, while considering cultural sociology)
- Central concepts applied in PHN (including their down-sides and potential obstacles) like behavioural change, health promotion, motivational interviewing, empowerment, community development, participation, social marketing and health literacy
- Major social behavioural and biomedical theories and models
- Connection to lifestyle medicine
- Basic concepts of the learning process, strategic communication and social marketing
- Importance of individual and societal health promotion policies on nutrition
- Major health promotion policies and strategies on nutrition in at least one European country
- The effectiveness and cost-effectiveness of major health promotion programmes on nutrition as documented by scientific methods (evidence of effect and costs)
- The existence and developmental trends of major health promotion programmes on community nutrition, targeting specific population groups (e.g. Children, elderly; socially disadvantaged groups, ethnic groups, migrants) and specific settings (e.g. The workplace, hospitals)
- Major national and international organisations and their cultures and resources to bring about health improvement activity
- Population safety; food safety and security (including risk assessment and dietary exposure methods)
- Plan and analyse different levels of prevention programmes related to nutrition, including effect and cost-effectiveness evaluation

## ETHICS of PUBLIC HEALTH PROMOTION

- Significant aspects of the history of ethics, including historical examples of misuse of public health principles for political ends
- Major ethical theories and concepts relevant for PHN
- Good epidemiological practice and good public health practice ('best practice') in relation to PHN, including ethical aspects of data handling, confidentiality, security, privacy and disclosure
- Ethics committee systems and requirements for ethical approval of public health research in at least one European country (including being familiarized with preparation of a basic application to the ethics committee)
- Application of bioethics to PHN practice
- The ethical aspects of individual versus societal intervention policies in, e.g. Health promotion.



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4. Czabanowska K, Shickle D, Burazeri G, Gershuni O, Otok R, Azzopardi-Muscat N. WHO-ASPHER competency framework for the public health workforce in the European Region.
5. World Health Organization. Application of the essential public health functions: an integrated and comprehensive approach to public health. World Health Organization; 2024 Jan 30.
6. Plymoth A, Codd MB, Barry J, Boncan A, Bosman A, Conyard KF, Czabanowska K, Davidovitch N, Filipe R, Gonzalez L, Leighton L. Core competencies in applied infectious disease epidemiology: a framework for countries in Europe. *Eurosurveillance*. 2023 Feb 9;28(6):2200517.
7. Global Nutrition Cluster Technical Alliance. *Competency Framework for Nutrition in Humanitarian Contexts*. 2021.
8. WPHNA Competency Framework for Global Public Health Nutrition Workforce Development, 2011



# Chapter 20

## Architecture and Health



## Rationale and Current Status: Architecture and Health

In the realm of public health education, understanding the intersection of architecture and public health is paramount. Architecture, beyond its aesthetic appeal, plays a crucial role in shaping the health and well-being of communities. From the design of healthcare facilities to urban planning and infrastructure development, architectural choices directly influence factors such as accessibility to healthcare, exposure to environmental hazards, and opportunities for physical activity.

Incorporating public health principles into architectural design and planning processes enables professionals to mitigate health risks, promote equitable access to resources, and foster environments that support healthy lifestyles. Integrating the study of architecture within public health education equips future practitioners with the interdisciplinary knowledge and skills necessary to address complex health challenges within the built environment. This synergy between architecture and public health underscores the vital importance of collaborative approaches in creating environments that promote the holistic well-being of individuals and communities alike.

### The Importance of Competency Frameworks

To ensure that students and future professionals are adequately equipped to address the challenges at the nexus of architecture and public health, competency frameworks play a pivotal role. These frameworks offer structured, evidence-based guidelines that shape curricula, ensuring learners acquire the skills needed to respond to current and emerging health threats within the built environment. Key competency frameworks relevant to this field include:

1. **WHO-ASPHER Competency Framework, 2020<sup>1</sup>**: This framework provides a detailed list of competencies needed by public health professionals to respond to global health needs, including designing health-supporting environments.
2. **WHO 12 Essential Public Health Functions, 2024<sup>2</sup>**: The updated framework emphasizes the role of public health in ensuring environments support population health, with functions related to health promotion, disease prevention, and environmental health protections.
3. **ASPHER Climate Health Core Competencies for Education, 2022<sup>3</sup>**: With growing awareness of the health impacts of climate change, this framework outlines the core skills and knowledge necessary for addressing health risks associated with climate, which are deeply tied to urban planning and architectural decisions.
4. **Advancing One Health: Updated Core Competencies 2023<sup>4</sup>**: This framework highlights the interconnectedness of human, animal, and environmental health, stressing the need for interdisciplinary approaches—including those related to architecture and land-use planning—to foster resilient, health-promoting environments.

5. **EU CompHP Core Competencies for Health Promotion, European Commission, 2011<sup>5</sup>**: This European framework underscores the importance of creating health-promoting environments through policies, systems, and community-based strategies, which intersect with architectural and urban planning decisions.

6. **Council on Linkages Between Academia and Public Health Practice, 2021<sup>6</sup>**: This U.S.-based framework offers a bridge between academic training and public health practice, emphasizing competencies that enhance public health services and environmental health protections, including those shaped by the built environment.

7. **American College of Lifestyle Medicine, Lifestyle Medicine Core Competencies, 2022<sup>7</sup>**: These competencies focus on creating environments that support healthy living, underscoring the role of urban design and accessible, health-supporting infrastructure in promoting lifestyle changes such as increased physical activity.

### **Aligning Public Health Curriculum with Architecture and Health**

To fully integrate the principles of architecture into public health education, it is critical to align curriculum content with these competency frameworks. Subject areas that bridge architecture and public health include:

- **Environmental Health:** Understanding the ways that built environments affect air quality, exposure to hazardous substances, and overall ecological health.
- **Health Promotion and Prevention:** Examining how architectural choices can promote physical activity, mental well-being, and access to health services in diverse populations.
- **Urban Planning and Public Health:** Focusing on how city planning, transportation systems, and infrastructure design influence public health outcomes such as rates of chronic diseases, injuries, and mental health issues.
- **Disaster Preparedness and Resilience:** Training students on how to design and retrofit buildings to be resilient in the face of natural disasters and climate change, minimizing health risks during emergencies.
- **Equity and Health in the Built Environment:** Ensuring students are trained to address health inequities by designing inclusive, accessible environments for marginalized populations.
- **Climate Change and Health:** Understanding the role of architecture in mitigating climate impacts, from energy-efficient building design to the creation of green spaces that improve community health.

For students and future public health professionals, it is essential to develop the interdisciplinary competencies needed to address complex health issues tied to the built environment. Understanding the role of architecture in shaping health outcomes equips professionals to:

- **Mitigate health risks:** Design and advocate for environments that reduce exposure to environmental hazards, prevent injuries, and promote safety.

- **Promote equity in access:** Address social determinants of health by creating environments that ensure all communities—regardless of socioeconomic status—have access to health-promoting infrastructure.
- **Adapt to climate change:** Implement strategies that reduce the health impacts of climate change through sustainable design and urban planning that promote resilience.
- **Support healthy lifestyles:** Advocate for and design built environments that encourage physical activity, mental well-being, and healthier living through the creation of walkable cities, accessible green spaces, and safe public areas. By equipping future public health professionals with these interdisciplinary skills, we can foster a new generation of leaders capable of addressing the diverse health challenges posed by urbanization, climate change, and the evolving needs of communities.

### **Conclusion: A Path Forward for Public Health Education**

The integration of architectural principles within public health education reflects a necessary shift toward interdisciplinary approaches in tackling the world’s most pressing health challenges. As we face increasing global urbanization, climate change, and growing health inequities, public health professionals must be prepared to design and advocate for environments that support the holistic well-being of all individuals. Through the adoption of competency frameworks and alignment with key subject areas, public health education can play a transformative role in shaping healthier, more equitable built environments.

## Alignment to Competency Frameworks

The Architecture and Health subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and Systems Thinking
- Competency 6: Collaboration and Partnership
- Competency 7: Communication, Culture and Advocacy
- Competency 8: Governance and Resource Management
- Competency 10: Organizational Literacy and Adaptability

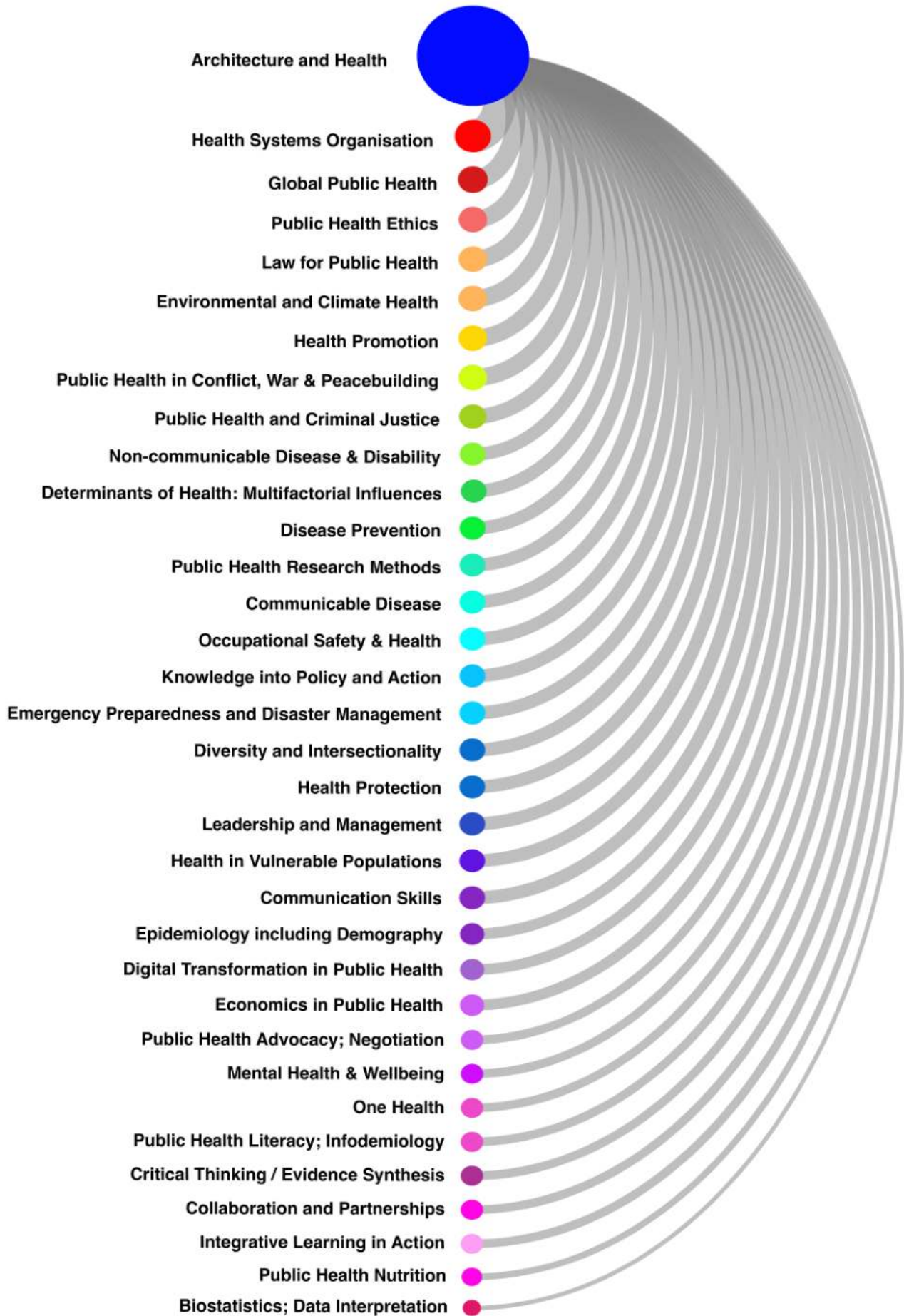
### WHO 12 Essential Public Health Functions. 2024

- EPHF 5: Health Protection
- EPHF 7: Communication and Partnerships
- EPHF 8: Public Health Stewardship
- EPHF 11: Public Health Research, Evaluation and Knowledge

### WHO Hospitals of the Future: Technical Brief,2022

- Outside the hospital: integrating the new hospital building with the community, natural and social environments
- Inside the hospital: interventions needed for hospitals in relation to technical, structural and operational aspects

# Connectivity to Architecture and Health in Public Health curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas



## Architecture and Health Curriculum Overview

In an era marked by rapid urbanization, climate change and evolving health needs, the synergy between architecture and public health becomes increasingly critical. Recognizing the profound impact of architectural decisions on public health outcomes underscores the necessity for holistic education that bridges these disciplines, ensuring that future public health leaders are equipped to address the multifaceted challenges of contemporary society.

Through interdisciplinary collaboration and innovative approaches, individuals trained at this intersection can drive transformative change, creating environments that promote health equity and well-being for all.

## Architecture and Health Themes



## Architecture and Health Curriculum

Suggested curricular elements are presented for all educational levels, i.e.

- Bachelor
- Master
- Doctoral
- Certificate and / or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Full Curriculum

**HEALTHCARE INFRASTRUCTURE PLANNING and MANAGEMENT**

- Support re-thinking hospital projects for environmental sustainability
- Factor in epidemiological risks and work stress for better healthcare systems
- Planners, designers, technical directors, facility managers of healthcare infrastructures
- Strategic location selection
- Healthcare network synergy
- Healing environments & universal design strategies
- Departmental distribution & clear signage
- Functionality balance & contamination prevention
- Sustainability & resilience
- Healthy working areas & safety/security measures
- Infection prevention & control (IPC) measures
- Empowerment of digital health services
- Overcoming professional boundaries in architecture
- Dynamic evaluation with realistic goals, adapting to evolving conditions

**ENVIRONMENTAL HEALTH and SUSTAINABILITY**

- Environmental contamination risks
- Minimised exposure to pollution and hazards
- Climate adaptation
- Sustainable communities
- Biodiverse green spaces
- Low input, high output ecological benefits
- Micro-climate creation by design or accident
- Sustainable use of land and nature-based solutions

**PUBLIC HEALTH POLICY and URBAN PLANNING**

- Ageing societies & demographic challenges
- Industrialisation effect on life expectancy
- Climate linked energy plans
- Accessible, available and affordable housing
- Inclusion of displaced populations
- Urban ecosystems - benefits and considerations
- Economic development
- Environmental planning
- Infrastructure planning
- Resource management
- Health impact assessment (hias) action
- Urban resilience and mobility
- Social inclusion measures

**COMMUNITY HEALTH and WELL-BEING**

- Health equity
- The social determinants of health
- Culture and cultural heritage
- High-level goal setting
- HUDU planning for health
- Health-promoting design principles
- Rapid planning studio methods
- Inter-agency work
- Multidisciplinary processes
- Community mobilization
- Focus on building with climate change in mind

**PUBLIC HEALTH and URBAN INFRASTRUCTURE**

- Anti-microbial resistance (AMR) & healthcare-associated infections (hais)
- Citizen science
- Sanitation management
- Water quality and management
- Spatial epidemiology
- RTAs road traffic accidents
- Home design and falls
- Traffic congestion
- (Extreme) heat-related illness and death, and cardiovascular failure
- Health impact assessment (hias) knowledge
- Air quality and respiratory disease
- City dashboards and city profiling
- Urban health indicator (UHI) tools
- The new leipzig charter on the transformative power of cities for the common good
- Innovative and responsible public procurement
- Causal loop diagrams (clds)
- Form meeting function in city/town design
- Availability of jobs and skills in locality
- Local food systems and resilience strategies
- Community satisfaction

## Bachelor Degree Level

## HEALTHCARE INFRASTRUCTURE PLANNING and MANAGEMENT

- Support re-thinking hospital projects for environmental sustainability
- Factor in epidemiological risks and work stress for better healthcare systems
- Planners, designers, technical directors, facility managers of healthcare infrastructures
- Healthcare network synergy
- Healing environments & universal design strategies
- Departmental distribution & clear signage
- Functionality balance & contamination prevention
- Sustainability & resilience
- Healthy working areas & safety/security measures
- Infection prevention & control (IPC) measures
- Empowerment of digital health services
- Overcoming professional boundaries in architecture
- Dynamic evaluation with realistic goals, adapting to evolving conditions

## ENVIRONMENTAL HEALTH and SUSTAINABILITY

- Environmental contamination risks
- Minimised exposure to pollution and hazards
- Climate adaptation
- Sustainable communities

## PUBLIC HEALTH POLICY and URBAN PLANNING

- Ageing societies & demographic challenges
- Industrialisation effect on life expectancy
- Accessible, available and affordable housing
- Inclusion of displaced populations
- Health impact assessment (HIAs) action
- Urban resilience and mobility
- Social inclusion measures

## COMMUNITY HEALTH and WELL-BEING

- Health equity
- The social determinants of health
- High-level goal setting
- Health-promoting design principles
- Community mobilization
- Focus on building with climate change in mind

## PUBLIC HEALTH and URBAN INFRASTRUCTURE

- Anti-microbial resistance (AMR) & healthcare-associated infections (hais)
- Citizen science
- (Extreme) heat-related illness and death, and cardiovascular failure
- Health impact assessment (hais) knowledge
- Air quality and respiratory disease
- City dashboards and city profiling
- Urban health indicator (UHI) tools
- Availability of jobs and skills in locality
- Local food systems and resilience strategies
- Community satisfaction

## Master Degree Level

**HEALTHCARE INFRASTRUCTURE PLANNING and MANAGEMENT**

- Support re-thinking hospital projects for environmental sustainability
- Factor in epidemiological risks and work stress for better healthcare systems
- Planners, designers, technical directors, facility managers of healthcare infrastructures
- Strategic location selection
- Healthcare network synergy
- Healing environments & universal design strategies
- Departmental distribution & clear signage
- Functionality balance & contamination prevention
- Sustainability & resilience
- Healthy working areas & safety/security measures
- Infection prevention & control (IPC) measures
- Empowerment of digital health services
- Overcoming professional boundaries in architecture
- Dynamic evaluation with realistic goals, adapting to evolving conditions

**ENVIRONMENTAL HEALTH and SUSTAINABILITY**

- Environmental contamination risks
- Minimised exposure to pollution and hazards
- Climate adaptation
- Sustainable communities
- Micro-climate creation by design or accident
- Sustainable use of land and nature-based solutions

**PUBLIC HEALTH POLICY and URBAN PLANNING**

- Ageing societies & demographic challenges
- Industrialisation effect on life expectancy
- Climate linked energy plans
- Accessible, available and affordable housing
- Inclusion of displaced populations
- Urban ecosystems - benefits and considerations
- Economic Development
- Environmental Planning
- Infrastructure Planning
- Resource management
- Health Impact Assessment (HIAs) Action
- Urban resilience and mobility
- Social inclusion measures

**COMMUNITY HEALTH and WELL-BEING**

- Health Equity
- The Social Determinants of Health
- High-level goal setting
- HUDU planning for health
- Health-promoting design principles
- Rapid Planning Studio Methods
- Inter-agency work
- Multidisciplinary processes
- Community Mobilization
- Focus on Building with Climate change in mind

**PUBLIC HEALTH and URBAN INFRASTRUCTURE**

- Anti-microbial resistance (AMR) & Healthcare-associated infections (HAIs)
- Citizen Science
- Sanitation Management
- Water Quality and Management
- Spatial Epidemiology
- RTAs Road Traffic Accidents
- Home design and falls
- Traffic Congestion
- (Extreme) heat-related illness and death, and cardiovascular failure
- Health Impact Assessment (HIAs) Knowledge
- Air quality and respiratory disease
- Urban health indicator (UHI) tools
- Innovative and responsible public procurement
- Causal loop diagrams (CLDs)
- Availability of jobs and skills in locality
- Local food systems and resilience strategies
- Community Satisfaction

## Doctoral Degree Level

### HEALTHCARE INFRASTRUCTURE PLANNING and MANAGEMENT

- Support re-thinking hospital projects for environmental sustainability
- Factor in epidemiological risks and work stress for better healthcare systems
- Planners, designers, technical directors, facility managers of healthcare infrastructures
- Strategic location selection
- Healthcare network synergy
- Healing environments & universal design strategies
- Departmental distribution & clear signage
- Functionality balance & contamination prevention
- Sustainability & resilience
- Healthy working areas & safety/security measures
- Infection prevention & control (IPC) measures
- Empowerment of digital health services
- Overcoming professional boundaries in architecture
- Dynamic evaluation with realistic goals, adapting to evolving conditions

### ENVIRONMENTAL HEALTH and SUSTAINABILITY

- Environmental contamination risks
- Minimised exposure to pollution and hazards
- Climate adaptation
- Sustainable communities
- Biodiverse green spaces
- Low input, high output ecological benefits
- Micro-climate creation by design or accident
- Sustainable use of land and nature-based solutions

### PUBLIC HEALTH POLICY and URBAN PLANNING

- Ageing societies & demographic challenges
- Industrialisation effect on life expectancy
- Climate linked energy plans
- Accessible, available and affordable housing
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- Infrastructure planning
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- Health impact assessment (hais) knowledge
- Air quality and respiratory disease
- City dashboards and city profiling
- Urban health indicator (UHI) tools
- Innovative and responsible public procurement
- Causal loop diagrams (clds)
- Form meeting function in city/town design
- Availability of jobs and skills in locality
- Local food systems and resilience strategies
- Community satisfaction

## Certificate and/or Diploma Level

**HEALTHCARE INFRASTRUCTURE PLANNING and MANAGEMENT**

- Support re-thinking hospital projects for environmental sustainability
- Factor in epidemiological risks and work stress for better healthcare systems
- Planners, designers, technical directors, facility managers of healthcare infrastructures
- Strategic location selection
- Healthcare network synergy
- Healing environments & universal design strategies
- Departmental distribution & clear signage
- Functionality balance & contamination prevention
- Sustainability & resilience
- Healthy working areas & safety/security measures
- Infection prevention & control (IPC) measures
- Empowerment of digital health services
- Overcoming professional boundaries in architecture
- Dynamic evaluation with realistic goals, adapting to evolving conditions

**ENVIRONMENTAL HEALTH and SUSTAINABILITY**

- Environmental contamination risks
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- Climate adaptation
- Sustainable communities
- Biodiverse green spaces
- Low input, high output ecological benefits
- Micro-climate creation by design or accident

**PUBLIC HEALTH POLICY and URBAN PLANNING**

- Ageing societies & demographic challenges
- Industrialisation effect on life expectancy
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- Accessible, available and affordable housing
- Urban ecosystems - benefits and considerations
- Economic development
- Environmental planning
- Infrastructure planning
- Resource management
- Health impact assessment (HAIs) action
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- Social inclusion measures

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- Air quality and respiratory disease
- City dashboards and city profiling
- Urban health indicator (UHI) tools
- Innovative and responsible public procurement
- Form meeting function in city/town design
- Availability of jobs and skills in locality
- Local food systems and resilience strategies
- Community satisfaction

## Continuous Professional Development (CPD) Level

### HEALTHCARE INFRASTRUCTURE PLANNING and MANAGEMENT

- Support re-thinking hospital projects for environmental sustainability
- Factor in epidemiological risks and work stress for better healthcare systems
- Planners, designers, technical directors, facility managers of healthcare infrastructures
- Strategic location selection
- Healthcare network synergy
- Healing environments & universal design strategies
- Departmental distribution & clear signage
- Functionality balance & contamination prevention
- Sustainability & resilience
- Healthy working areas & safety/security measures
- Infection prevention & control (IPC) measures
- Empowerment of digital health services
- Overcoming professional boundaries in architecture
- Dynamic evaluation with realistic goals, adapting to evolving conditions

### ENVIRONMENTAL HEALTH and SUSTAINABILITY

- Environmental contamination risks
- Minimised exposure to pollution and hazards
- Climate adaptation
- Sustainable communities
- Biodiverse green spaces
- Low input, high output ecological benefits
- Micro-climate creation by design or accident
- Sustainable use of land and nature-based solutions

### PUBLIC HEALTH POLICY and URBAN PLANNING

- Ageing societies & demographic challenges
- Industrialisation effect on life expectancy
- Climate linked energy plans
- Accessible, available and affordable housing
- Urban ecosystems - benefits and considerations
- Economic development
- Environmental planning
- Infrastructure planning
- Resource management
- Health impact assessment (hais) action
- Urban resilience and mobility

### COMMUNITY HEALTH and WELL-BEING

- Health equity
- Culture and cultural heritage
- High-level goal setting
- HUDU planning for health
- Health-promoting design principles
- Rapid planning studio methods
- Inter-agency work
- Multidisciplinary processes
- Community mobilization
- Focus on building with climate change in mind

### PUBLIC HEALTH and URBAN INFRASTRUCTURE

- Anti-microbial resistance (AMR) & healthcare-associated infections (hais)
- Citizen science
- Water quality and management
- Spatial epidemiology
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- Home design and falls
- Traffic congestion
- (Extreme) heat-related illness and death, and cardiovascular failure
- Health impact assessment (HIAs) knowledge
- Air quality and respiratory disease
- City dashboards and city profiling
- Urban health indicator (UHI) tools
- The new Leipzig charter on the transformative power of cities for the common good
- Innovative and responsible public procurement
- Causal loop diagrams (CLDs)
- Form meeting function in city/town design
- Availability of jobs and skills in locality
- Local food systems and resilience strategies
- Community satisfaction



## Professional Specialised Training Level

**HEALTHCARE INFRASTRUCTURE PLANNING and MANAGEMENT**

- Support re-thinking hospital projects for environmental sustainability
- Factor in epidemiological risks and work stress for better healthcare systems
- Planners, designers, technical directors, facility managers of healthcare infrastructures
- Strategic location selection
- Healthcare network synergy
- Healing environments & universal design strategies
- Departmental distribution & clear signage
- Functionality balance & contamination prevention
- Sustainability & resilience
- Healthy working areas & safety/security measures
- Infection prevention & control (IPC) measures
- Empowerment of digital health services
- Overcoming professional boundaries in architecture
- Dynamic evaluation with realistic goals, adapting to evolving conditions

**ENVIRONMENTAL HEALTH and SUSTAINABILITY**

- Environmental contamination risks
- Minimised exposure to pollution and hazards
- Climate adaptation
- Sustainable communities
- Biodiverse green spaces
- Low input, high output ecological benefits
- Micro-climate creation by design or accident
- Sustainable use of land and nature-based solutions

**PUBLIC HEALTH POLICY and URBAN PLANNING**

- Ageing societies & demographic challenges
- Industrialisation effect on life expectancy
- Climate linked energy plans
- Accessible, available and affordable housing
- Inclusion of displaced populations
- Urban ecosystems - benefits and considerations
- Economic development
- Environmental planning
- Infrastructure planning
- Resource management
- Health impact assessment (hais) action
- Social inclusion measures

**COMMUNITY HEALTH and WELL-BEING**

- Health equity
- The social determinants of health
- Culture and cultural heritage
- High-level goal setting
- HUDU planning for health
- Health-promoting design principles
- Rapid planning studio methods
- Inter-agency work
- Multidisciplinary processes
- Focus on building with climate change in mind

**PUBLIC HEALTH and URBAN INFRASTRUCTURE**

- Anti-microbial resistance (AMR) & healthcare-associated infections (hais)
- Citizen science
- Sanitation management
- Water quality and management
- Spatial epidemiology
- Road traffic accidents
- Home design and falls
- Traffic congestion
- (Extreme) heat-related illness and death, and cardiovascular failure
- Health impact assessment (HIAs) knowledge
- Air quality and respiratory disease
- City dashboards and city profiling
- Urban health indicator (UHI) tools
- The new Leipzig charter on the transformative power of cities for the common good
- Innovative and responsible public procurement
- Causal loop diagrams (CLDs)
- Form meeting function in city/town design
- Availability of jobs and skills in locality
- Local food systems and resilience strategies
- Community satisfaction

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# Chapter 21

## Emergency Preparedness and Disaster Management



## Rationale and Current Status: Emergency Preparedness and Disaster Management

**Contributors:** *Nadav Davidovitch, Karl F. Conyard, Mary Codd*

Public health emergencies are defined as extraordinary events that poses a significant risk to public health that requires a coordinated response. It is characterized by being serious, sudden, unusual or unexpected, with potential implications beyond national borders. The scope includes both natural and man-made hazards that overwhelm routine capabilities, such as infectious disease outbreaks, chemical or radiological incidents, and natural disasters. Public health emergency preparedness involves a continuous process of planning, implementation, and improvement across health systems, communities and individuals to prevent, protect against, respond to, and recover from such emergencies through coordinated efforts.

Emergency preparedness and disaster management are key components of public health education, serving as crucial pillars in safeguarding populations against unforeseen crises. In today's volatile world, where natural disasters, pandemics, and human-made emergencies pose significant threats to public health, the importance of equipping public health professionals with comprehensive preparedness skills cannot be overstated.

Moreover, public health education fosters interdisciplinary collaboration, bridging gaps between healthcare professionals, emergency responders, policymakers, and community leaders. As seen across the European region during the coronavirus-19 pandemic, pandemic propensity and disaster prevention and reduction are uniquely linked. Through interdisciplinary approaches, individuals can leverage diverse expertise to develop robust emergency response strategies tailored to the unique needs of communities. Ultimately, integrating emergency preparedness and disaster management into public health education not only enhances the resilience of healthcare systems but also strengthens society's overall capacity to withstand and recover from emergencies, ensuring the well-being of populations worldwide.

Several up-to-date competency frameworks for emergency preparedness and disaster management are available, each addressing different aspects of public health and emergency response, the most recent ones include:

1. The **Global competency and outcomes framework for the essential public health functions**, published recently by the World Health Organization (WHO), provides a comprehensive set of competencies required for public health professionals globally<sup>1</sup>. EPHF 2 covers public health emergency management for international and national health security, with five subfunctions<sup>1</sup>:
  - 1.1: Monitoring and analysing available public health information to identify and anticipate potential and priority public health risks, including public health emergency scenarios

**1.2:** Planning and developing capacity for public health emergency preparedness and response as part of routine health system functioning in collaboration with other sectors, including development of a national health emergency response operations plan

**1.3:** Carrying out and coordinating effective and timely public health emergency response activities while supporting the continuity of essential functions and services

**1.4:** Planning and implementing recovery from public health emergencies with an integrated health system strengthening approach

**1.5:** Engaging with affected communities and stakeholders in the public and private sectors and health and allied sectors as part of whole-of-government and whole-of-society approaches to public health emergency management.

- 2.** In May 2024 CDC published **The Public Health Emergency Law Competency Model**. Developed by the Centers for Disease Control and Prevention (CDC), this model outlines legal competencies required for public health professionals to navigate the legal landscape during emergencies.<sup>2</sup> It includes understanding legal authorities, ethical issues, and interjurisdictional coordination.

‘Competency’ in public health law is defined as the level at which public health practitioners have the skills “to access and understand the relevant laws and to actually apply them to given health issues.”<sup>2</sup> Achieving such competency in public health emergency law is critical to a public health practitioner’s ability to prepare for and respond to all-hazards public emergencies effectively.

**3. FEMA Next Generation Core Competencies:**

The Federal Emergency Management Agency (FEMA) provides a set of core competencies for emergency management professionals. These competencies cover areas such as leadership, communication, and operational coordination.<sup>3</sup>

**4. Public Health Emergency Preparedness: Core Competencies for EU Member States:**

This framework, developed by the European Centre for Disease Prevention and Control (ECDC), outlines essential competencies for public health professionals in EU member states to effectively prepare for and respond to public health emergencies. It includes competencies in risk assessment, communication, and coordination.<sup>4</sup>

**Important Interconnections**

Public health emergency response is a multidisciplinary field with significant interconnections and overlaps with various other subject areas in public health and beyond. Some key interconnections include:

**Epidemiology:** Emergency response relies heavily on epidemiological data and methods for outbreak detection, surveillance, and risk assessment.

**Environmental Health:** Emergencies often involve environmental hazards, requiring expertise in managing risks from contamination or destruction of water, sanitation, and waste management systems.

**Health Policy and Management:** Effective emergency response necessitates strong policy frameworks, governance structures, and management of health systems.

**Social Sciences:** Understanding social, cultural, and behavioral factors is crucial for community engagement, risk communication, and tailoring interventions to local contexts.

**Engineering:** Collaboration with engineering is essential for developing resilient infrastructure, innovative technologies, and effective communication systems for emergency response.

**Law and Ethics:** Legal and ethical frameworks are vital for guiding emergency powers, resource allocation, and balancing individual rights with public health needs.

**One Health:** The interconnection between human, animal, and environmental health is increasingly recognized as crucial in preventing and responding to zoonotic disease outbreaks.

These are just the main examples of interconnections, highlighting the need for interdisciplinary approaches in public health emergency preparedness and response field, similar to other public health fields, yet with a specific focus.

The WHO Essential Public Health Functions (EPHFs) include "Managing public health emergencies" as a key function.<sup>5</sup> Curricula in this area directly support building capacity for this essential function. Both frameworks emphasize the need for multisectoral collaboration in public health. Curricula often include training on working across sectors during emergencies as well as using and translating different kinds of evidence. The EPHFs highlight the connection between health security and universal health coverage.<sup>5</sup> Many curricula now address both emergency response and broader health system strengthening. Another important aspect relates to the need to highlight leadership, community engagement and public health ethics in training and practice.

In conclusion, having a unified, competency aligned curriculum which can be adapted for a multitude of different educational delivery levels for emergency preparedness and disaster management is useful and needed in both public health education and practice.

## Alignment to Competency Frameworks

The Emergency Preparedness and Disaster subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking

### WHO 12 Essential Public Health Functions, 2024

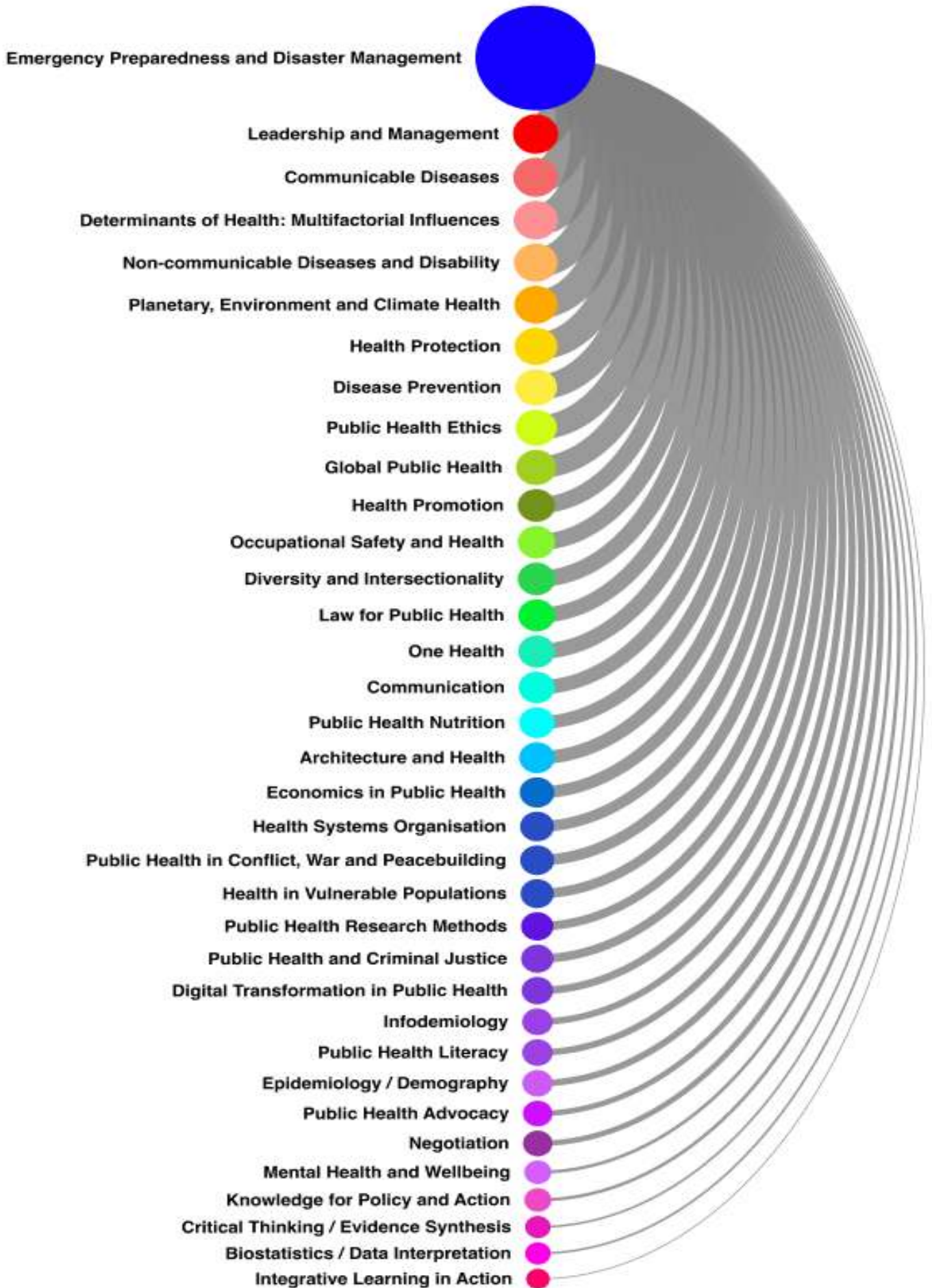
- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Finance, and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 11: Public Health Research, Evaluation and Knowledge

### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
- Subject area D: Practice of infectious disease epidemiology
- Subject area F: Leadership and management



Connectivity of Emergency Preparedness / Disaster Management in PH curricula

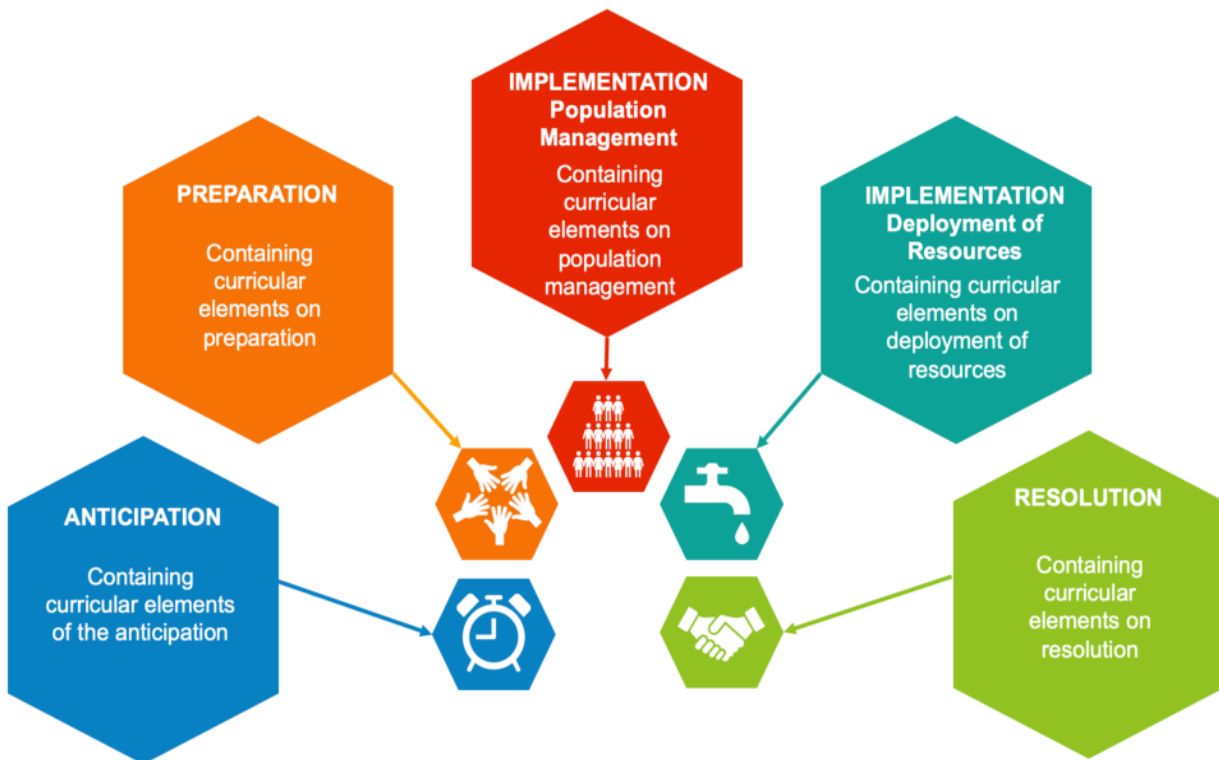


*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Emergency Preparedness and Disaster Management Curriculum Overview

Public health education plays a vital role in cultivating a workforce that can effectively respond to emergencies and mitigate their impact on society. By integrating emergency preparedness and disaster management into public health curricula, educational institutions empower future healthcare leaders with the knowledge and tools necessary to anticipate, plan for, and respond to a wide range of emergencies.

### Emergency Preparedness and Disaster Management Themes



### Emergency Preparedness and Disaster Management Curriculum

Amidst the current global landscape rife with violence, displacement, war, and humanitarian crises, populations facing such adversities encounter unique challenges and urgent needs. These circumstances underscore the critical importance of addressing public disasters with appropriate preparedness. Recognizing the pressing nature of this issue, the CCP Emergency Preparedness and Disaster Management Expert Advisory Group emphasizes the necessity of this comprehensive curriculum to encompass various educational levels. Suggested curricular elements are presented for all educational levels.

## Full Curriculum

### ANTICIPATION

- Definitions of preparedness, prevention and project management
- Responsibility for action
- Organization and structure of core planning teams
- Additional services and workforce planning including social services, military, private industry, as well as civic, social and faith-based organisations
- Appreciation of how multi-stakeholder processes enrich emergency and exposure response
- Risk communication with all relevant stakeholders national and international and with general public (discovery and dissemination of facts)
- Design, implement and evaluate public health response strategies
- Anticipation of facility / supply loss

### PREPARATION

- Addressing a range of typical public health problems by use of the preparedness cycle (plan; organise/equip; exercise; evaluate/improve)
- Necessary steps to carry out preparedness planning including all public and private stakeholders
- Disaster / emergency simulation training
- Hospital emergency response training (HERT) for mass casualty incidents
- Appropriate public health preparedness and response for relevant settings (hospitals, long term care settings, boarding schools, universities and places of congregation)
- Plan appropriate interventions with continuous review and approval by all agents
- Interruption in communications, including cyber attacks
- Hazards in geographic area, care related emergencies, power scarcity
- Natural disasters and humanitarian emergencies
- Epidemic and pandemic management strategies

### IMPLEMENTATION - Population Management

- Multi-disciplinary approach with key use of emergency management professionals
- Public health management in the time of a public health emergency
- Managing displaced populations due to war (health; mental health and organisation)
- Population threats and hazards aetiology and their relevant impacts
- Health promotion strategies which are culturally appropriate
- Displaced population / migrant health access
- Population / community capability development

### IMPLEMENTATION - Deployment of Resources

- Resource management before, during and after emergency situations
- Availability of needed supplies (food, water, medical)
- Knowledge of compliance, completeness, feasibility, adequacy

### RESOLUTION

- Multi-sectoral evidence-based responses
- Evidence-based decision making
- Timely decision making and their repercussions
- Conflict resolution
- Knowledge and access of local systems
- Involvement of public works and utilities
- Role of major stakeholders
- Capacity of field epidemiologists and public health teams to respond to infectious disease outbreaks, epidemics and pandemics.
- Community and minority group engagement
- Active voices
- Bioethical considerations
- Cross-border relationships and collaboration in the area of surveillance
- Players vs listeners / actors vs reactor theory
- Detailed quality improvement analysis allowing for in-detail explanation outside of kpis

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# Chapter 22

## Public Health in Conflict, War and Peacebuilding



## Rationale and Current Status: Public Health in Conflict, War and Peacebuilding

*Contributors: John Middleton, Mary Codd, Ariane Bauernfeind, Karl F. Conyard, Uma Divya Kudupudi on behalf of the ASPHER War and Public Health Task Force*

### Importance of the Subject

Public health in war and conflict zones is a critical domain within public health education and practice. This area addresses the distinct challenges and urgent health needs that emerge in contexts of violence, displacement, and humanitarian crises. Conflict and war disrupt essential health services, severely impacting populations already burdened by poverty, social inequalities, and limited access to healthcare. The breakdown of health systems in these environments exacerbates existing health disparities and exposes communities to an increased risk of morbidity, injury, infectious diseases, malnutrition, and mental health disorders.

In conflict settings, public health workers are often faced with overwhelming demands, including the provision of emergency care, prevention of disease outbreaks, management of chronic conditions, and care for psychological trauma. The role of public health extends beyond immediate crisis response; it requires a comprehensive understanding of the social, economic, and environmental factors that underlie health challenges in these regions. The provision of healthcare in conflict zones involves navigating complex political landscapes, prioritizing the most vulnerable populations, and ensuring that health services are delivered without discrimination based on social or political affiliations.

### Public Health Frameworks and Educational Significance

The integration of conflict, war, and peacebuilding into public health education emphasizes the importance of a holistic and rights-based approach to health. Public health curricula increasingly incorporate elements of conflict resolution, trauma-informed care, and peacebuilding to equip students with the skills and knowledge to address health challenges in complex and volatile environments.

The 2023, WHO Global Health and Peace Initiative Roadmap<sup>1</sup> notes the ‘absolute’ need for public health professionals to understand these intersections by building resilience in populations through health systems, through peacebuilding and conflict prevention with long term peace and security being the key objective.

Frameworks such as the WHO-ASPHER Competency Framework, 2020<sup>2</sup>; WHO 12 Essential Public Health Functions, 2024 and the Sustainable Development Goals (SDGs)<sup>3</sup> along with many other frameworks emphasize the need to promote health and well-being in all settings, including those affected by conflict. The SDGs' call for universal health coverage, reduced inequalities, and peace, justice, and strong institutions highlights the interconnectedness of health and peace. Public health education aligns with these frameworks by preparing students to contribute to health systems that are resilient in the face of conflict and capable of promoting peace and recovery. By fostering an understanding of international law, human

rights, and the ethics of health in conflict, educational institutions play a crucial role in shaping a generation of public health professionals who are prepared to work in conflict and post-conflict settings.

### Long-Term Impacts of Conflict on Public Health

The long-term effects of conflict on population health cannot be overstated. Beyond the immediate devastation caused by violence, war leaves behind a legacy of trauma, weakened health systems, and long-standing public health challenges. Populations affected by war are more susceptible to infectious diseases due to disruptions in healthcare infrastructure and sanitation systems. Malnutrition, mental health disorders, and non-communicable diseases become prevalent as healthcare access is limited. Additionally, the breakdown of social systems and economic instability further undermine the health of affected populations.

For this reason, public health education must incorporate the principles of conflict resolution, peacebuilding, and trauma-informed care to better equip future professionals. By understanding the root causes of conflict, the social determinants of health, and the pathways to recovery, public health practitioners can contribute to rebuilding resilient health systems and fostering peace in post-conflict societies.

### Core Areas of Public Health Curriculum in Conflict and War

A comprehensive public health curriculum addressing war and conflict should focus on several core competencies, which are conceptualized below using the Venn diagram (Fig 22.1) to illustrate the interconnections between preparedness, response, prevention, and recovery.

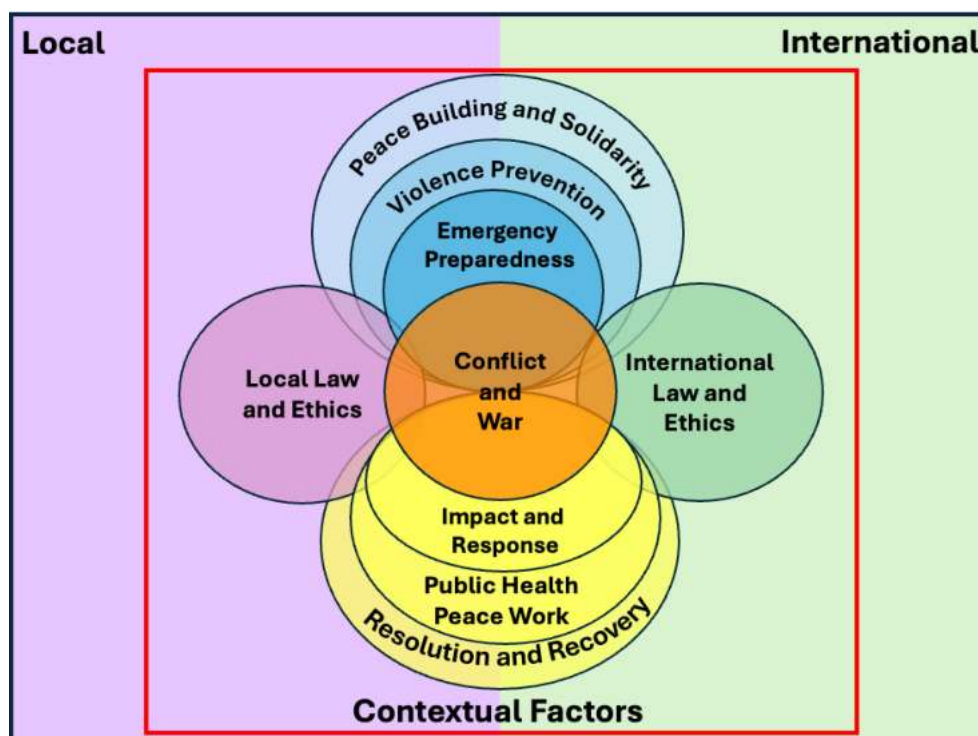


Fig 22.1: ASPHER CCP Core Areas of PH Curriculum in Conflict and War

**Key areas include:****Preparedness and Response:**

Public health professionals must be equipped with the knowledge and skills to prepare for and respond to health crises in conflict zones. This includes understanding emergency health services, disaster management, and strategies for delivering care in resource-limited settings. Effective preparedness requires an understanding of global, national, and local health risks, including the health impacts of climate change and environmental degradation.

**Violence Prevention and Trauma-Informed Care:**

A vital component of conflict-related public health is violence prevention, both at the community and international levels. Public health professionals must be trained in trauma-informed care, recognizing and responding to the mental health needs of populations affected by violence. Competencies in addressing domestic violence, substance abuse, and harmful behaviours are essential for promoting community health.

**International Law and Humanitarian Efforts:**

Conflict settings often require a deep understanding of international law, humanitarian principles, and the organization of relief efforts. Public health workers must navigate the complex ethical and political challenges of providing care in conflict zones, while advocating for the protection of healthcare workers and facilities.

**Peacebuilding and Recovery:**

Public health education should also focus on the role of health professionals in peacebuilding and post-conflict recovery. This includes working with communities to address the long-term health impacts of war, fostering reconciliation, and contributing to the rebuilding of health systems that promote peace and social justice.

**Models and Resources for Public Health Education in Conflict**

Several educational models and resources can guide the development of public health curricula in this area. For example, the Erasmus-funded Medical Peace Work Project<sup>4</sup> offers a rich repository of teaching aids and resources that emphasize the intersection of healthcare and peacebuilding. Though these resources have not been updated since 2018, they remain valuable for educators aiming to incorporate principles of medical peace work into public health education.

Additionally, the Public Health Wales Report, "Preventing Violence, Promoting Peace" (2017)<sup>5</sup>, provides a robust evidence base for violence prevention strategies from local to global levels. This report highlights the role of public health in promoting peace and preventing violence, making it an essential resource for developing public health competencies in conflict settings.

The UK Faculty of Public Health's 2016<sup>6</sup> statement on the role of public health in preventing violence outlines key principles for public health practice in conflict zones. It emphasizes the



need for ethical debate, trauma-informed care, and a commitment to violence prevention at both local and international levels.

This rationale for integrating conflict, war, and peacebuilding into public health education underscores the importance of preparing future professionals to navigate the complexities of health in conflict zones. By fostering a holistic understanding of the social, political, and environmental determinants of health, public health education can contribute to building a more resilient and peaceful world.

## Alignment to Competency Framework

The Public Health in Conflict, War and Peacebuilding subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 11:Public Health Research, Evaluation and knowledge

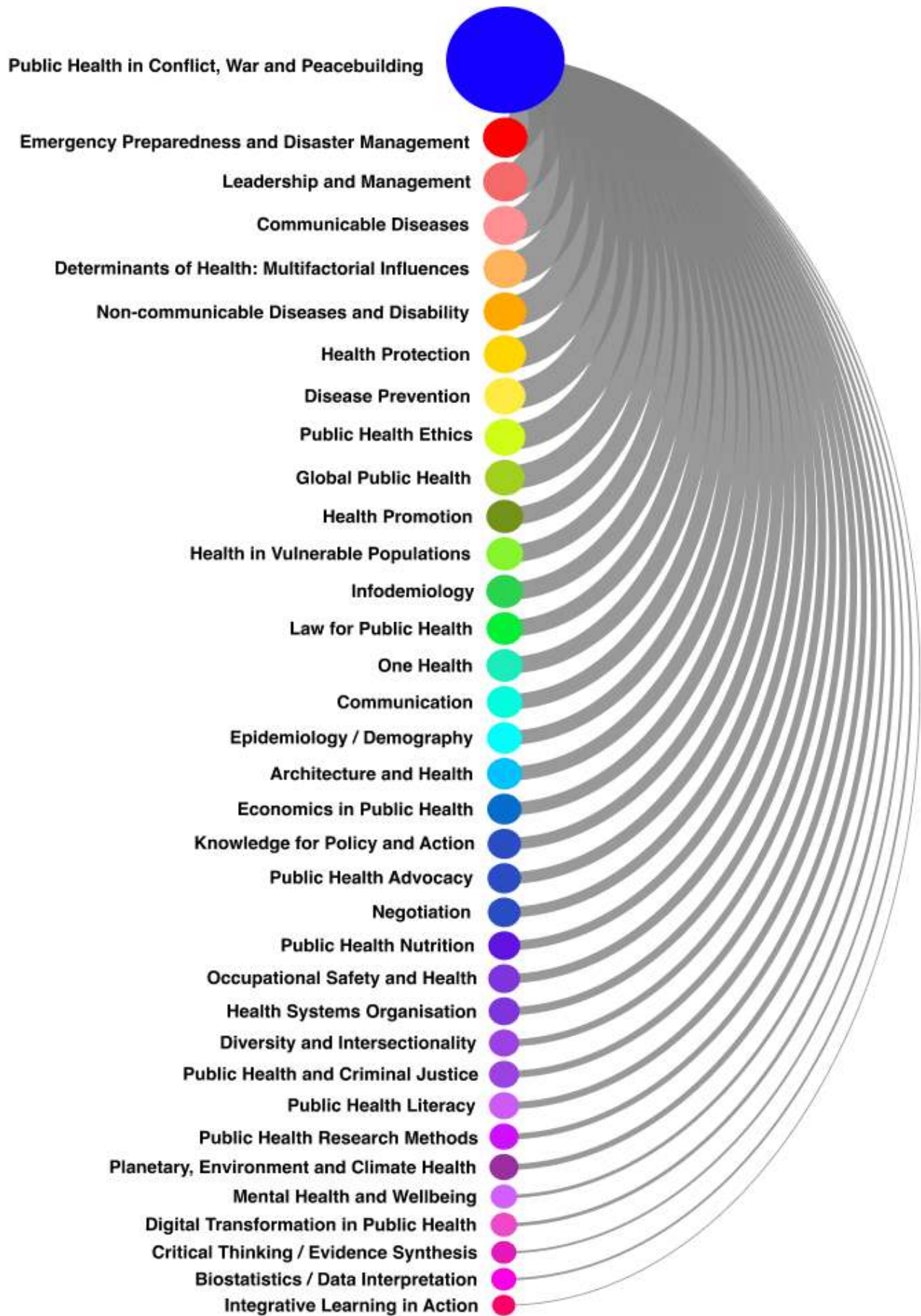
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, Surveillance and Response to Infectious Disease Outbreaks
- Subject area C: Communication and Advocacy
- Subject area D: Practice of Infectious Disease Epidemiology
- Subject area F: Leadership and Management

### WHO Global Health and Peace Initiative Roadmap, 2023

- All Workstreams

## Connectivity of PH in Conflict, War and Peacebuilding in PH curricula



*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Public Health in Conflict, War and Peacebuilding Curriculum Overview

Understanding the intersection of public health and conflict is essential for equipping public health professionals with the knowledge and skills to respond effectively to the health needs of affected populations. This includes addressing immediate medical emergencies, providing essential healthcare services and implementing measures to prevent the spread of disease and mitigate the impact of violence on public health.

### Public Health in Conflict, War and Peacebuilding Themes



### Educational Level

Amidst the current global landscape rife with violence, displacement, war and humanitarian crises, populations facing such adversities encounter unique challenges and urgent needs. These circumstances underscore the critical importance of addressing public health in conflict and war zones. Recognizing the pressing nature of this issue, the CCP Public Health in Conflict and War Expert Advisory Group emphasizes the necessity of this comprehensive curriculum to encompass various educational levels. Suggested curricular elements are presented for all educational levels.

## Full Curriculum

## PREVENTION and PEACEBUILDING

- Agreements and peacekeeping treaties between countries
- Anti human rights violation laws UNHRC
- Armistice agreements
- Attract foreign investments and synergistic relationships
- Audits for adherence towards international laws- UN
- Combat misinformation targeted towards populations (propoganda, racist and political manipulation)
- Combat racism in all forms personal to national
- Use of sanctions
- Investment of and use of inter-country intelligence
- Negotiation, dialogue and summits through mediators and mediation
- Principle of military transparency
- Public awareness towards consequences of war
- Public education towards peaceful actions and understanding different cultures and religions
- Respecting sovereignty and non interference
- Role of inter-country relationship maintenance
- Role of NATO and UN in peacekeeping
- Just and fair world leadership
- UN intervention and resolutions to prevent escalations
- Virtual peace building conferences
- Case study: the iraq war - lack of military transparency and wepons of mass destruction
- Lessons learned case study: the Halabja massacre 1988: the catalyst for international efforts to strengthen arms control and disarmament regimes

## CONTEXTUAL FACTORS

- At risk groups: migrant access to health, funding and housing
- Chemical and biological hazards, their immediate and long term effects on human health and the environment
- Decolonisation (knowledge, methods, allyship and progress)
- Discrimination: structural, institutional, interpersonal and intrapersonal
- Displaced population / migrant health access
- Effect of war or international emergency
- Facility / supply loss
- Geneva Convention
- Health policy actors and conflicts
- Historical perspectives with reference to religious, cultural and population discourse
- Historical cases and social ramifications
- Indigenous knowledge and respectful collaboration
- International Court of Justice - ICJ
- International law
- Interruption in communications, including cyber attacks
- Managing displaced populations due to war (health, mental health and organisation)
- Mass violence, war and disaster - concepts and definitions
- Migration trends
- National and international legislation and laws on health
- Policy analysis taking into account political, economic, legal and ethical dimensions
- Prejudice
- Racism
- Transgenerational trauma and injustice
- Xenophobia and public health
- Local and international political discourse
- Morbidity, mortality, and the resilience of populations

## EMERGENCY PREPAREDNESS

- Avoidance of knee-jerk reactions and focus on timely change
- Bioethics and its application
- Basic elements of preparedness including: hazards in geographic area, care related emergencies and power scarcity
- International cooperation and integration (especially EU and WHO) on prevention and health promotion
- Public health threats, including pandemics, bioterrorism and emerging infectious diseases

## IMPACT and RESPONSE

- Food security – importance in war and climate change
- Healthcare supplies trading and accessibility in times of crises
- Cultural sensitivity
- Collaboration with governance structures at different organisational levels
- Communication; principles and practice
- Additional services and workforce planning including social services, military, private industry, as well as civic, social and faith-based organisations
- Health promotion strategies which are culturally appropriate
- UN peacekeeping operations
- Establishment of safe zones and humanitarian corridors
- Securing healthcare facilities
- Airdrop aid case study: the Yezedi genocide; the effects of airdrops in saving countless trapped lives
- Enaction of armistice agreements
- Multi-sectoral evidence-based responses
- NATO - civilian -military engagement and collaboration
- Good samaritan protection and liability waivers in times of war and conflict
- Trans-disciplinary situational awareness

## RESOLUTION and RECOVERY

- Anti-prejudice, anti-discrimination and anti-racism programmes and interventions
- Practice conflict management and shared responsibility
- Cross-border relationships and collaboration in the area of surveillance
- Role of diplomats and mediators in conflict prevention
- Resolution of unresolved issues in a timely manner
- Knowledge and communication of connected required services: law enforcement, fire services, emergency medical services, hospitals and other healthcare facilities
- Availability of needed supplies (food, water, medical)
- Timely decision making and their repercussions
- Negotiation
- Capability development and collaboration between all sectors, public, private, voluntary and military
- Case study: apartheid and south africa: historical significance and conflict resolution
- Case study: Ireland and "the troubles" (civil war 1960s-1998): use of international conflict resolution - Good Friday agreement and the dual state solution

## SOLIDARITY

- Addressing a range of typical public health problems associated with conflict & ethical dilemmas
- Thinking towards a shared goal or cause
- Solidarity as a philosophy
- Solidarity as a political element
- Solidarity at personal, institutional, regional, national and international contexts
- Shared mindset within groups of people, society and populations
- Historical contexts on solidarity
- Solidarity as part of health promotion activities
- Solidarity in discourse
- Intersectoral thinking involving general public and governments
- Shared responsibility at personal, institutional, regional, national and international levels
- Case study: to acknowledge, address and percieve our understanding of solidarity



# Chapter 23

## Public Health and Criminal Justice



## Rationale and Current Status: Public Health and Criminal Justice

**Authors:** *Henrique Lopes on behalf of the Public Health and Criminal Justice Expert Advisory Group supported by Mary Codd, Karl F. Conyard, Jwensh Kumawat, Uma Divya Kudupudi and Mariah De Vos.*

Public health and criminal justice intersect at the nexus of population health and social justice. Public health encompasses the promotion and protection of community well-being through disease prevention, health education, and policy advocacy. Within this framework, addressing the health needs of incarcerated individuals becomes imperative. The criminal justice system, on the other hand, deals with law enforcement, adjudication, and correctional processes.

Recognizing the disproportionately high rates of illness, injury, and chronic conditions among incarcerated populations, integrating criminal justice into public health curricula is essential. Understanding the unique health challenges faced by individuals in custody, including infectious diseases, mental health disorders, and substance abuse, allows for targeted interventions to improve health outcomes and reduce recidivism rates. Therefore, a comprehensive public health curriculum must incorporate the study of criminal justice to promote equitable access to healthcare and foster healthier communities.

As indicated in the referenced competency framework subsection, this subject area harmonizes with pivotal core competency sets within epidemiology. Notably, it aligns with esteemed frameworks such as the WHO-ASPHER Competency Framework 2020, illuminating the interdisciplinary nature of public health and criminal justice integration. Additionally, it resonates with the WHO's 12 Essential Public Health Functions 2024, underlining the imperative for comprehensive and equitable healthcare delivery, even within carceral settings.

Moreover, it mirrors the ECDC's 2022 Core Competencies in Applied Infectious Disease Epidemiology, emphasizing the critical role of epidemiological surveillance and intervention in mitigating public health threats within confined populations. By intertwining principles of epidemiology with the intricate dynamics of criminal justice, this subject area not only broadens the scope of public health education but also fosters a nuanced understanding of health disparities and social determinants. Thus, it serves as a cornerstone for cultivating astute public health professionals equipped to navigate complex healthcare landscapes and advocate for systemic change.

The subject area of public health and criminal justice intersects with various disciplines within the broader field of public health, enriching and enhancing the understanding of health disparities and social determinants across different domains.

Firstly, it aligns closely with epidemiology, as evidenced by its integration with core competency sets such as the WHO-ASPHER Competency Framework 2020 and the ECDC's Core Competencies in Applied Infectious Disease Epidemiology. This alignment underscores the importance of epidemiological surveillance, disease prevention, and intervention



strategies within correctional facilities to safeguard both incarcerated individuals and broader community health.

Moreover, this subject area resonates with health policy and management, as it necessitates an understanding of the legal, ethical, and governance frameworks underpinning healthcare delivery in carceral settings. By addressing the unique health needs of incarcerated populations, public health professionals contribute to the formulation and implementation of equitable health policies and interventions, thus promoting health equity and social justice. Furthermore, it intersects with health promotion and disease prevention, emphasizing the importance of implementing evidence-based health promotion initiatives and preventive measures tailored to the specific needs of incarcerated individuals. By promoting positive health behaviours and addressing underlying social determinants, public health interventions in correctional facilities can facilitate the reintegration of individuals into society and reduce recidivism rates.

An example of this way forward can be found in some prisons using the Prison SMART (Stress Management And Rehabilitation Training), an evidence-based program originally developed by The Art of Living Foundation, a global humanitarian organization. The programme founded the importance of holistic care for those incarcerated emphasising that " Inside every culprit, there is a victim crying for help, When the victim is healed, the culprit disappears". This program reflects a compassionate approach to rehabilitation while addressing mental health challenges within correctional settings. Through structured breathing practices, meditation, and stress reduction techniques, Prison SMART demonstrates the practical application of public health interventions in carceral environments. The program's successful implementation across correctional facilities globally showcases how targeted mental health interventions can effectively support rehabilitation while addressing the unique health challenges of incarcerated populations.

In essence, the integration of public health and criminal justice underscores the interconnectedness of health and social justice, highlighting the multidisciplinary approach required to address the complex health challenges faced by incarcerated populations and promote overall community well-being.

In conclusion, the integration of public health and criminal justice within the broader field of public health underscores the multifaceted nature of health disparities and social determinants. By aligning with disciplines such as epidemiology, health policy and management, and health promotion and disease prevention, this subject area addresses the unique health needs of incarcerated populations while promoting health equity and social justice. Through evidence-based interventions, policy advocacy, and interdisciplinary collaboration, public health professionals play a pivotal role in safeguarding the health and well-being of incarcerated individuals and communities at large. As we strive towards building healthier and more equitable societies, the intersection of public health and criminal justice serves as a testament to the interconnectedness of health and social justice, emphasizing the imperative of holistic approaches in addressing complex health challenges.<sup>4</sup>

## Alignment to Competency Frameworks

The Public Health and Criminal Justice subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework (2020)

- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Competency 9: Professional Development and Reflective Ethical Practice

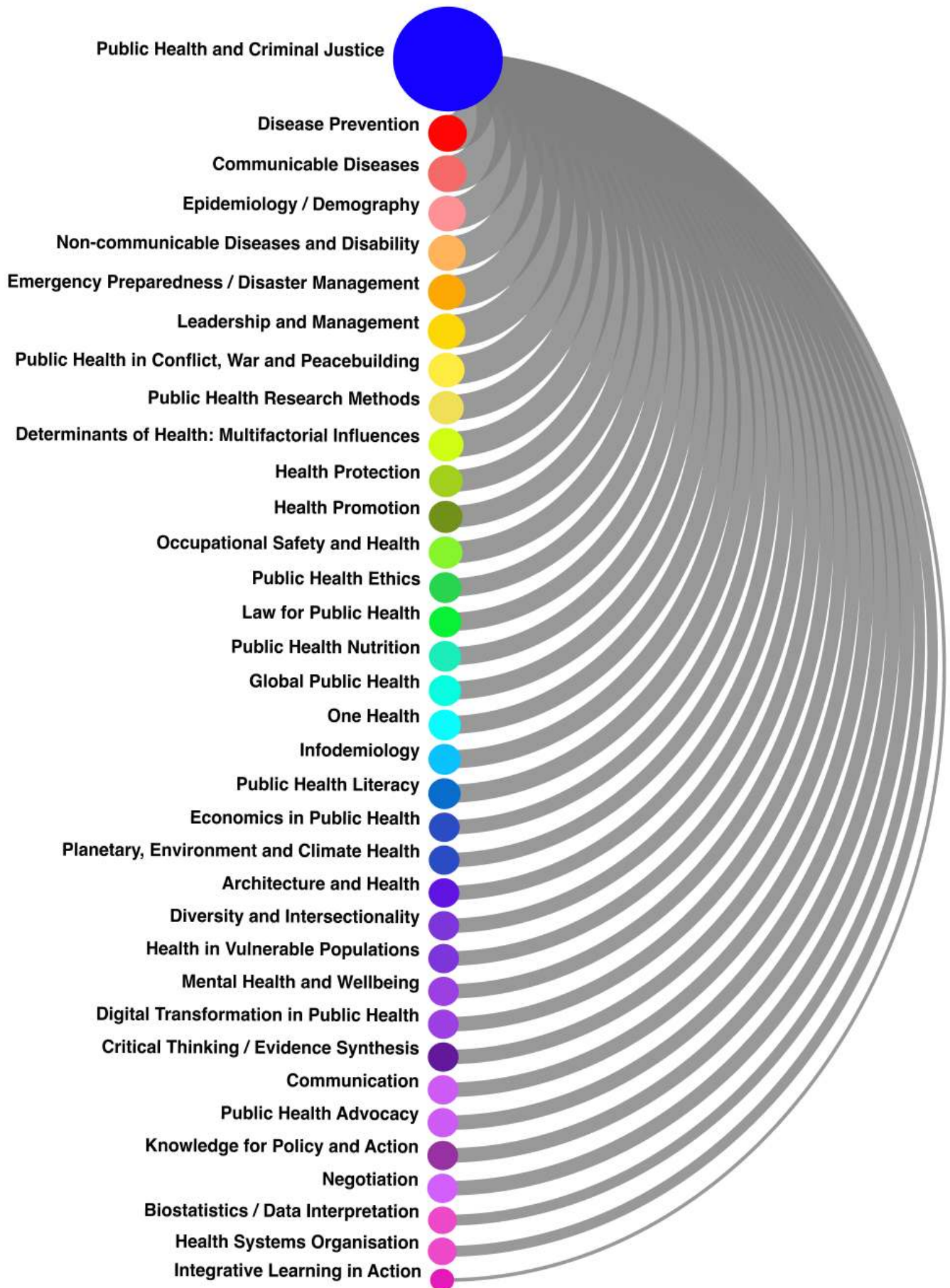
### WHO 12 Essential Public Health Functions (2024)

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

### ECDC Core Competencies in Applied Infectious Disease Epidemiology (2022)

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
- Subject area D: Practice of infectious disease epidemiology
- Subject area F: Leadership and management

## Connectivity of PH and Criminal Justice in Public Health curricula



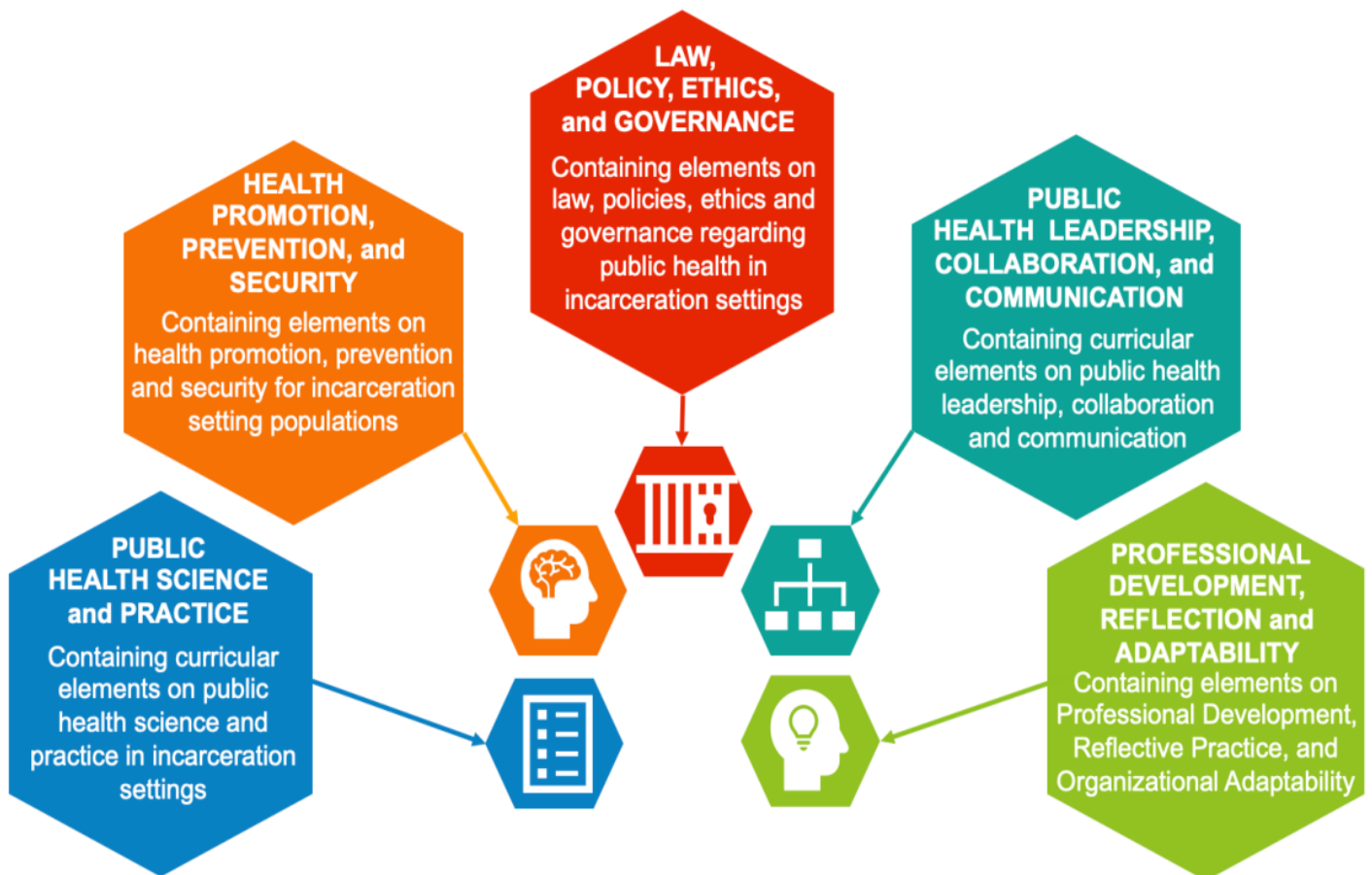
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Public Health and Criminal Justice Curriculum Overview

Incorporating public health and criminal justice into education equips future public health professionals with the knowledge and skills to address the health disparities prevalent among incarcerated populations. In addition, recognizing that the disproportionate impact of the criminal justice system on marginalized communities internationally underscores the importance of advocating for policies that promote health equity and criminal justice reform through public health lenses.

This includes understanding the unique public health presentations with prison populations which encompass communicable and noncommunicable disease management as well as the importance of social determinants of health that contribute to incarceration, such as poverty, racism, and lack of access to education.

## Public Health and Criminal Justice Themes



## Public Health and Criminal Justice Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

Understanding the pressing nature of the unique health needs of incarcerated populations across the European region, the CCP Public Health and Criminal Justice expert advisory group emphasizes the necessity of this comprehensive curriculum to encompass various educational levels.

## Full Curriculum

**PUBLIC HEALTH SCIENCE and PRACTICE**

- Features of the demographic structure in a prison population
- Processes of demographic change and implications for prison health
- Health needs assessment considering various determinants
- Epidemiology of significant causes of morbidity and mortality in prisons
- Comparison of prison population health indicators with the general population
- Data and Evidence Utilization
- Retrieval, analysis, and appraisal of evidence from various sources
- Use of vital statistics and health indicators
- Design and conduct of research
- Evaluation of public health services and interventions
- Development and implementation of standards, protocols, and procedures
- Understanding the health system structure and governance
- Incorporation of WHO Essential Public Health Functions (EPHFs)
- Understanding primary, secondary, and tertiary care in prison health

**HEALTH PROMOTION, PREVENTION and SECURITY**

- Health Promotion Initiatives
- Assessment of health promotion initiatives
- Engagement in health-promoting and health literacy activities
- Use of evidence-based methods and approaches
- Evaluation of public or social policy
- Strategies to address health inequalities and consequences
- Implementation of secondary prevention and screening programs
- Implications of the One Health approach in prisons
- Application of International Health Regulations
- Promotion of occupational safety and health
- Principles of food safety and vaccine-preventable diseases
- Development and application of surveillance, prevention, and control systems

**LAW, POLICY, ETHICS and GOVERNANCE**

- Legal Framework and Ethical Standards
- Application of laws/regulations
- Development of strategies based on evidence and legislation
- Identification and use of ethical codes and standards
- Policy Implementation and Comparison
- Implementation of health and social policies
- Comparison of health service delivery systems
- Application of scientific principles to inform policy discussions
- Implementing strategies tailored to prison settings
- Cultivating leadership and management skills
- Planning and executing health programs effectively
- Knowledge of business practices and financial management
- Designing and monitoring quality standards
- Applying risk management strategies

## LEADERSHIP, COLLABORATION and COMMUNICATION

- Inspiring and motivating towards shared goals
- Building trust and acting as a role model
- Facilitating leadership development
- Leading interdisciplinary teams and catalyzing change
- Working across sectors and understanding interdependencies
- Managing relationships in interdisciplinary and intersectoral projects
- Building and using strategic alliances
- Evaluating partnerships and addressing collaboration barriers
- Defining target audience and developing appropriate messaging
- Effective communication of facts and health messages
- Advocating for healthy public policies and services
- Preparing and delivering communication outputs within organizations

## PROFESSIONAL DEVELOPMENT, REFLECTION and ADAPTABILITY

- Pursuit of lifelong learning
- Self-assessment and addressing development needs
- Critical review and evaluation of own practices
- Acting according to ethical standards and norms
- Promoting evidence-based professional practice
- Managing conflict-of-interest situations
- Demonstrating resilience and adaptability
- Managing uncertainty and work-related stress
- Adapting to changing professional environments
- Applying relevant information technology tools
- Managing, analyzing, and storing data
- Knowledge of funding sources and opportunities

## References

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# Chapter 24

## Health in Vulnerable Populations





## Rationale and Current Status: Health in Vulnerable Populations

Health in vulnerable populations refers to the study and addressing of health disparities experienced by groups who face greater obstacles to health based on their social, economic, environmental, or health status. This includes, but is not limited to, low-income individuals, racial and ethnic minorities, immigrants, refugees, elderly, disabled individuals, and those with chronic diseases or mental health issues. The population of interest spans all age ranges, from infants to the elderly. The scope of this subject encompasses the analysis of social determinants of health, access to healthcare, disease prevalence, and the effectiveness of public health interventions aimed at reducing health disparities.

The subject of health in vulnerable populations in a public health curriculum is essential for several reasons. Public health professionals must understand the root causes of health disparities to promote health equity effectively. Knowledge about vulnerable populations helps in developing targeted interventions that address specific needs and reduce inequities.

Training on the health needs of vulnerable groups ensures future public health professionals can provide comprehensive and culturally competent care, which is vital for improving health outcomes and ensuring all population groups benefit from public health advancements.

Informed professionals can better advocate for and contribute to the creation of policies that protect and promote the health of vulnerable groups, as understanding these populations helps in shaping health policies that are inclusive and equitable. Additionally, the subject offers a global perspective by addressing issues such as migration, refugee health, and international health disparities, preparing students to work in diverse and international settings.

By integrating this subject into the curriculum, public health programs can ensure that graduates are equipped with the knowledge and skills to address complex health issues and promote a more equitable and inclusive health system.

As noted in the competency framework reference subsection, this subject area aligns with several critical core competency sets, underscoring its importance in the public health curriculum. It aligns with the WHO-ASPHER Competency Framework 2020<sup>1</sup>, which emphasizes essential skills for public health professionals. Additionally, it corresponds with the WHO's 12 Essential Public Health Functions 2024<sup>2</sup>, ensuring that key public health functions are comprehensively covered. The European Centre for Disease Prevention and Control's 2023 Core Competencies in Applied Infectious Disease Epidemiology<sup>3</sup> further reinforce its relevance, providing a robust foundation for understanding infectious disease dynamics.

This subject area is also in harmony with the 2023 standards of the International Consortium on Teaching Epidemiology, ensuring that the latest educational practices in epidemiology are integrated. Furthermore, it incorporates the Dahlgren-Whitehead Determinants of Health Model<sup>5</sup>, a fundamental framework for understanding the broad range of factors that influence health. Additionally, the Council on Linkages Between Academia and Public Health Practice's 2021 competencies<sup>6</sup> highlight the synergy between academic training and practical public health needs. Together, these frameworks and models ensure that students are well-equipped with the knowledge and skills necessary to address health disparities and promote health equity in diverse populations.

The subject area of health in vulnerable populations is intrinsically connected with various other curriculum areas, enriching the overall public health education. It intersects with epidemiology, offering insights into the prevalence and spread of diseases within underserved groups. Inclusion Health is a field dedicated to addressing and preventing the severe health and social inequalities faced by marginalized groups, with wider social determinants, like economic status and housing, also contribute to these disparities<sup>7</sup>. This understanding is crucial for designing effective interventions and control measures. It also integrates with health policy and management, as students learn to develop and advocate for policies that promote health equity and access. Moreover, the subject area complements courses on social determinants of health, providing a deeper exploration of how factors like socioeconomic status, environment, and education impact health outcomes. In the realm of global public health, it broadens perspectives on international health disparities, migration, and refugee health, preparing students to address complex health challenges worldwide. Additionally, its alignment with biostatistics allows for the analysis of health data specific to vulnerable populations, facilitating evidence-based decision-making. Overall, the subject area fosters a comprehensive, multidisciplinary approach, ensuring that future public health professionals are equipped to address the multifaceted needs of vulnerable populations within various contexts.

In conclusion, the study of health in vulnerable populations is a vital component of the public health curriculum. It connects seamlessly with other curriculum areas, enriching students' understanding and equipping them with the skills needed to address health disparities. By fostering a multidisciplinary approach, this subject ensures that future public health professionals can effectively promote health equity and improve outcomes for all population groups.

## Alignment to Competency Frameworks

The Health in Vulnerable Groups subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- All Competencies

### WHO 12 Essential Public Health Functions, 2024

- All EPHFs 1-12

### ECDC Core Competencies in Applied Infectious Disease, 2022

- All Subject area

### International Consortium on Teaching Epidemiology, Switzerland, 2023

- All Domains 1-5

### ASPHER Climate Health Core Competencies for Education, 2022

- All Competencies

### Laing.G et al, Advancing One Health: Updated core competencies, 2023

- All Domains

### ASPHER Diversity and Intersectionality Syllabi for Public Health Education, 2023

- All Elements

### EU CompHP Core Competencies for Health Promotion, European Commission, 2011

- All Competencies

### American College of Lifestyle Medicine, Lifestyle Medicine Core competencies 2022

- All Competencies

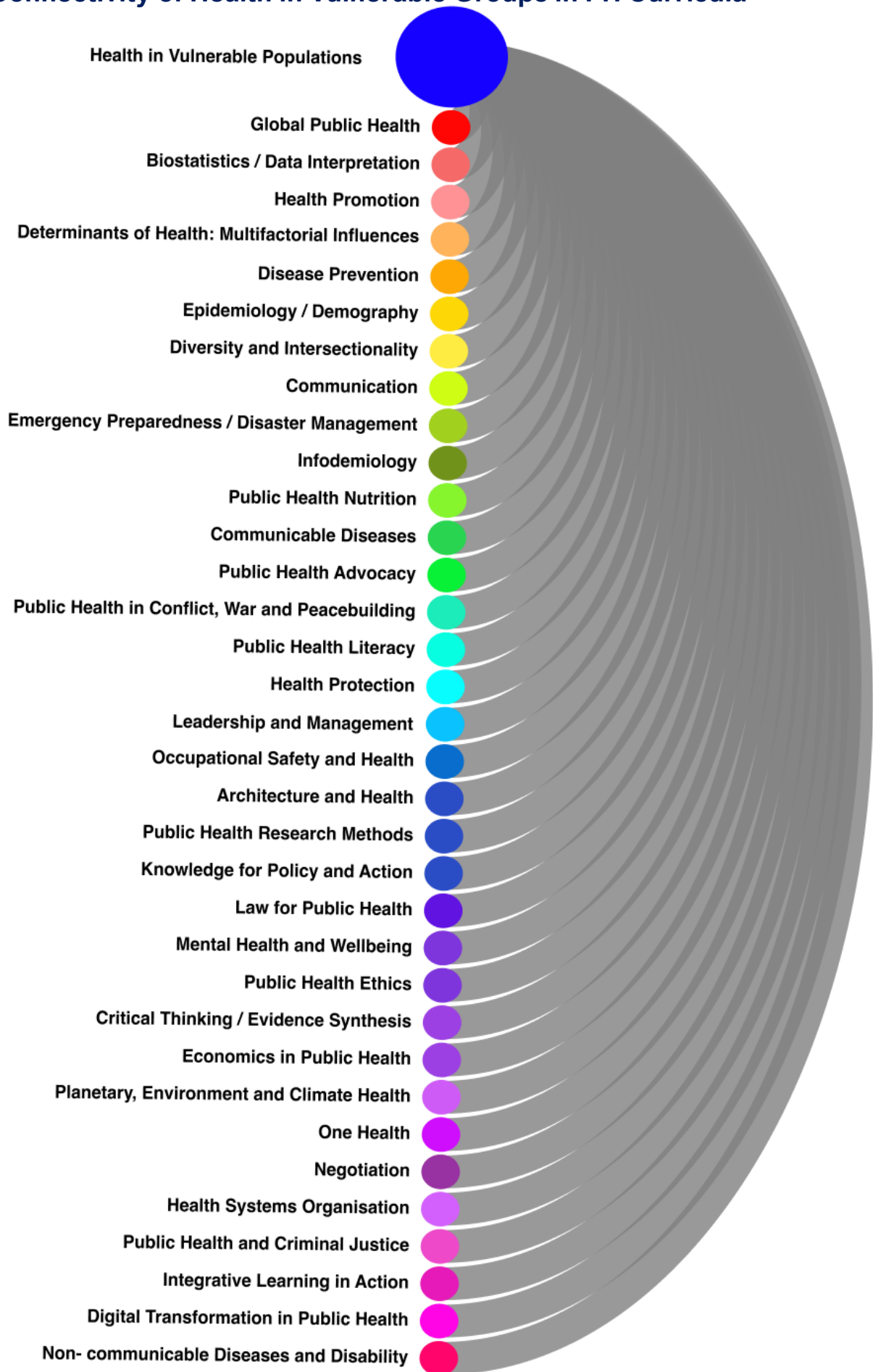
### ISPOR Health Economics and Outcomes Research Competencies Framework, 2002

- All Competencies

### Council on Linkages Between Academia and Public Health Practice, 2021

- All Domains

### Connectivity of Health in Vulnerable Groups in PH Curricula

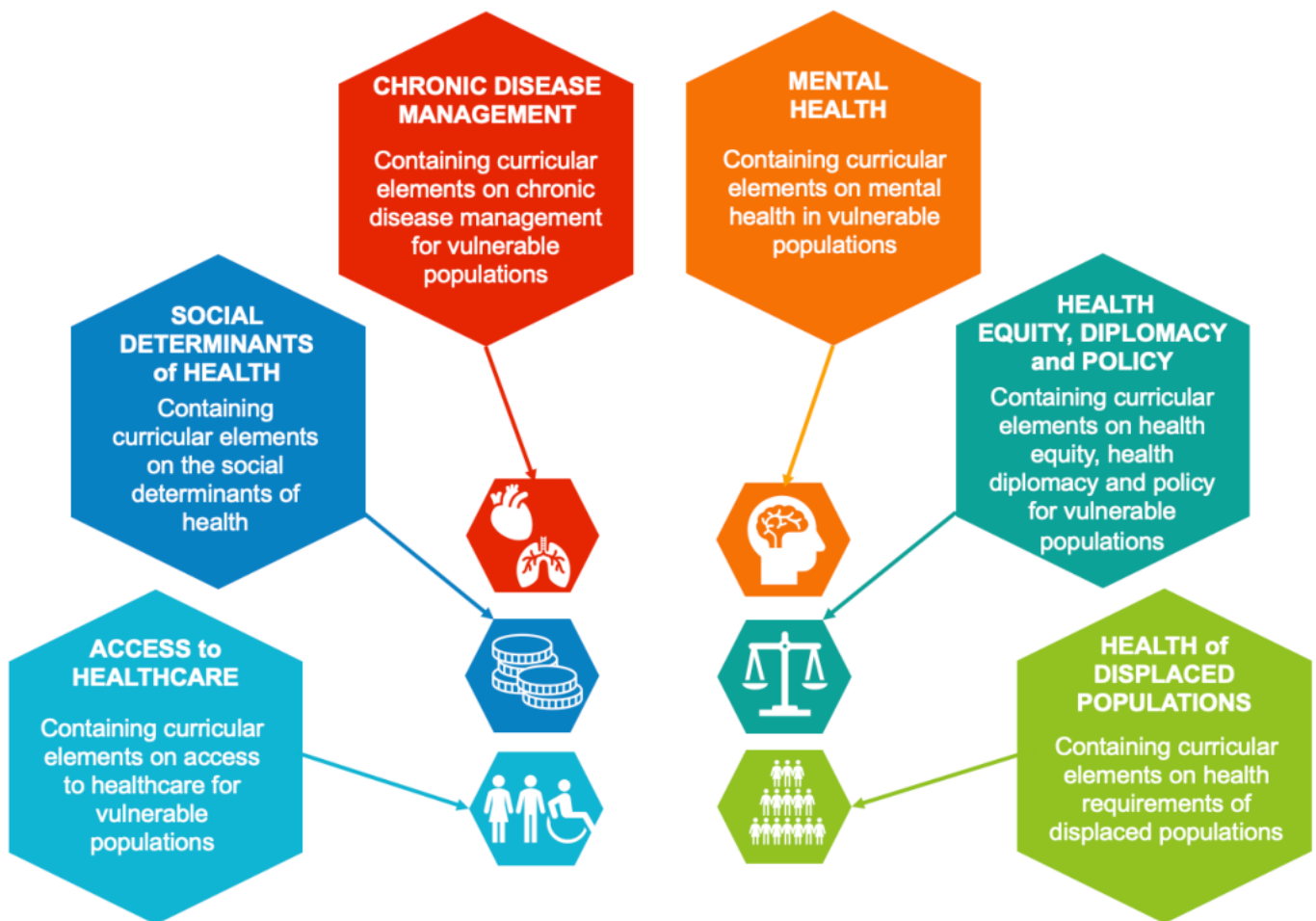


**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Health in Vulnerable Groups Curriculum Overview

The study of health in vulnerable populations is crucial for public health students because it equips them with the knowledge and skills to address health disparities effectively. Understanding the unique challenges faced by these groups enables students to develop targeted interventions that promote health equity. This subject fosters cultural competence, ensuring future professionals can provide inclusive and sensitive care. It also emphasizes the importance of advocacy and policy development, empowering students to influence health policies that benefit marginalized populations. Furthermore, by exploring global health issues such as migration and refugee health, students gain a comprehensive perspective that prepares them for diverse and international public health roles. Overall, this subject is essential for creating well-rounded public health professionals committed to improving health outcomes for all, especially the most vulnerable.

## Health in Vulnerable Groups Themes



## Health in Vulnerable Groups Curriculum

Recognizing the range of vulnerable populations who require public health interventions, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. This inclusive approach equips learners with tools to engage in and address public health challenges of today. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex public health landscapes with insight and action orientated abilities.

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Full Curriculum

### ACCESS to HEALTHCARE

- Barriers to access
- Transportation issues: impact of transportation barriers on healthcare access.
- Language barriers: challenges faced by non-native speakers in navigating the healthcare system.
- Healthcare infrastructure: availability and distribution of healthcare facilities in underserved areas.
- Health insurance
- Underinsurance: problems faced by those who are underinsured.
- Common European asylum system (CEAS)
- Telemedicine
- Technology access: digital divide and its impact on telemedicine efficacy.
- Telehealth policy: regulatory challenges and opportunities in telemedicine.
- Patient satisfaction: assessing patient satisfaction and outcomes with telehealth services.

### SOCIAL DETERMINANTS of HEALTH

- Poverty and health: correlation between poverty levels and health outcomes.
- Employment conditions: impact of job security and working conditions on health.
- Food insecurity: effects of food scarcity on physical and mental health.
- Health education programs: effectiveness of health education initiatives in schools.
- Adult literacy: influence of adult literacy programs on health literacy and outcomes.
- School-based health services: role of school health services in supporting vulnerable children.
- Urban vs. Rural health: differences in health outcomes based on urbanization.
- Environmental hazards: impact of pollution and environmental hazards on health.
- Access to recreational spaces: role of parks and recreational areas in promoting health.

### CHRONIC DISEASE MANAGEMENT

- Diabetes in low-income populations: prevalence and management challenges.
- Cardiovascular diseases: incidence among different vulnerable groups.
- Obesity and related disorders: prevalence and interventions in vulnerable communities.
- Community health initiatives: effectiveness of community-based prevention programs.
- Lifestyle intervention programs: impact of diet and exercise programs on chronic disease management.
- Screening programs: role of regular screening in early detection and management.
- Medication adherence: factors influencing adherence to medication regimens.
- Primary care access: importance of primary care in managing chronic diseases.
- Specialist care access: barriers to accessing specialist care for chronic conditions.

### MENTAL HEALTH

- Depression and anxiety: rates and impacts among vulnerable populations.
- Substance abuse disorders: co-occurrence with other mental health issues.
- Trauma and PTSD: prevalence of trauma-related disorders in vulnerable groups.
- Community mental health resources: availability and effectiveness of community mental health services.
- Integration of mental health and primary care: benefits and challenges of integrated care models.
- Crisis intervention services: role of crisis intervention in addressing acute mental health issues.
- Cultural attitudes towards mental health: impact of cultural beliefs on mental health stigma.
- Training for healthcare providers: importance of cultural competence training in mental health care.
- Peer support programs: effectiveness of peer support in reducing stigma and improving outcomes.

### HEALTH EQUITY, DIPLOMACY and POLICY

- Health diplomacy as a key tool for vulnerable population protection
- Racial and ethnic disparities: examination of health outcomes across different racial and ethnic groups.
- Gender and health: impact of gender on health disparities.
- Disability and health: health challenges faced by individuals with disabilities.
- Policy interventions
- Affordable housing policies: influence on health outcomes for low-income populations.
- Public health funding: impact of funding allocations on health equity.
- Healthcare reform: analysis of healthcare reforms aimed at reducing disparities.
- Grassroots movements: role of grassroots movements in promoting health equity.
- Community-based participatory research: benefits of involving communities in health research.
- Policy advocacy: strategies for advocating for health policies that benefit vulnerable populations

## Full Curriculum Continued

## HEALTH of DISPLACED POPULATIONS

- **Healthcare access and delivery**
- **Healthcare services in refugee camps: availability and quality of healthcare services in refugee camps.**
- **Barriers to healthcare: specific challenges faced by displaced populations in accessing healthcare, such as documentation, language barriers, and cultural differences.**
- **Mobile health units: the role and effectiveness of mobile health clinics in reaching displaced populations.**
- **Mental health and psychosocial support**
- **Trauma and PTSD: prevalence and treatment of trauma-related disorders among displaced individuals.**
- **Mental health services: availability and accessibility of mental health services in refugee and displacement contexts.**
- **Community-based support programs: importance of psychosocial support networks and community-based mental health programs.**
- **Infectious disease management**
- **Disease outbreaks: risks and management of infectious disease outbreaks in displacement settings.**
- **Vaccination programs: implementation and challenges of vaccination programs for displaced populations.**
- **Sanitation and hygiene: role of sanitation and hygiene practices in preventing infectious diseases.**
- **Nutrition and food security**
- **Malnutrition: prevalence of malnutrition and its impact on health among displaced populations.**
- **Food distribution programs: effectiveness of food aid and distribution programs in refugee camps and displaced communities.**
- **Supplemental feeding programs: targeted interventions for vulnerable groups such as children and pregnant women.**
- **Reproductive health**
- **Maternal and child health: access to prenatal, delivery, and postnatal care for displaced women.**
- **Family planning services: availability and importance of family planning and reproductive health services.**
- **Sexual and gender-based violence (SGBV): addressing and preventing SGBV and providing support for survivors.**

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1. Czabanowska K, Shickle D, Burazeri G, Gershuni O, Otok R, Azzopardi-Muscat N. WHO-ASPHER competency framework for the public health workforce in the European Region.
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# Chapter 25

## Diversity and Intersectionality

*(incl. Sociology, Social Epidemiology and Anthropology)*



## Rationale and Current Status: Diversity and Intersectionality

**Authors:** *Lisa Wandschneider, Karl F. Conyard and Uma Divya Kudupudi*

Diversity and intersectionality are pivotal concepts within public health, aiming to elucidate how various social categorizations and systems such as race, ethnicity, gender, disability, and socioeconomic status, interact and contribute to unique experiences of health and illness. Intersectionality, originally coined by Kimberlé Crenshaw, highlights the interconnectedness of these identities, which collectively shape individuals' opportunities and vulnerabilities in multiple interlocking systems of social power and marginalisation<sup>1</sup>.

Incorporating diversity and intersectionality into the public health curriculum allows students to view health issues through multiple lenses, fostering a comprehensive understanding of how long-standing patterns of systemic health inequalities emerge and persist. This approach aligns with the notion that health disparities often stem from complex, interwoven social determinants within systems rather than isolated factors<sup>2</sup>.

The inclusion of diversity and intersectionality in public health education is essential for several reasons:

1. **Holistic Understanding:** It equips future public health professionals with the ability to analyse and address health issues by considering the full spectrum of social determinants, leading to more effective and equitable interventions.
2. **Contextual Relevance:** By embedding these concepts throughout the curriculum rather than treating them as standalone modules, students can consistently apply an intersectional perspective to all areas of public health—be it policy, research, or practice.
3. **Addressing Inequalities:** Recognizing and understanding the compounded effects of multiple forms and systems of discrimination is crucial for developing strategies to mitigate health inequalities and disparities.
4. **Empowerment and Advocacy:** It empowers students to become advocates for social justice, enabling them to challenge and change the systems and structures that perpetuate health inequities.

In conclusion, integrating diversity and intersectionality throughout the public health curriculum ensures a more inclusive and comprehensive educational experience, preparing students to tackle the multifaceted nature of health inequalities effectively.

The integration of diversity and intersectionality within the public health curriculum is not merely an academic exercise but a strategic alignment with globally recognized competency frameworks and syllabi. These concepts are embedded in the core competencies for epidemiology as outlined by pivotal frameworks such as the WHO-

ASPHER Competency Framework (2020)<sup>3</sup> and the WHO's 12 Essential Public Health Functions (2024)<sup>4</sup>.

The WHO-ASPHER Competency Framework emphasizes the necessity for public health professionals to possess a nuanced understanding of the social determinants of health and to apply this knowledge in practical, impactful ways. Similarly, the WHO's 12 Essential Public Health Functions underscore the importance of inclusivity and equity in health services, which are critical for addressing and reducing health disparities. The curriculum is enriched by the ASPHER Syllabi "Diverse social identities and their importance for public health: A syllabi collection with hands-on material for teaching"<sup>5</sup>, and the intersectionality toolbox<sup>6</sup>.

By incorporating diversity and intersectionality throughout the public health curriculum, educational institutions can ensure that their programs are in full alignment with these international standards. This approach not only prepares students to meet these competencies but also equips them with the skills needed to navigate and address the complex landscape of health inequalities. In doing so, future public health professionals are better prepared to develop and implement strategies that promote health equity, social justice, and comprehensive well-being on a global scale.

Diversity and intersectionality are integral to all subject areas in public health, providing a comprehensive lens through which health issues are analysed and addressed. In epidemiology, these concepts help identify and understand disparities in disease prevalence among different populations. In health policy and management, they inform the creation of equitable health policies and practices. In environmental health, they highlight how marginalized communities often face greater exposure to health hazards. Furthermore, in health education and promotion, an intersectional approach ensures culturally competent strategies that effectively reach diverse audiences. By interweaving diversity and intersectionality across all areas of public health, professionals are better equipped to design and implement holistic, inclusive interventions that address the systemic root causes of health inequities.

In conclusion, the integration of diversity and intersectionality within the public health curriculum is indispensable for fostering a holistic understanding of health inequalities, empowering future professionals to enact impactful change, and aligning educational efforts with global competency frameworks. By weaving these concepts throughout all subject areas, from epidemiology to public health ethics and beyond, institutions can equip students with the knowledge and skills necessary to address the multifaceted nature of health inequalities effectively. This approach not only promotes inclusivity and equity within public health practice but also ensures that professionals are prepared to confront the complex challenges of promoting health equity on a global scale.

## Alignment to Competency Frameworks

The Diversity and Intersectionality subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- All Competencies

### WHO 12 Essential Public Health Functions, 2024

- All EPHFs 1-12

### ECDC Core Competencies in Applied Infectious Disease, 2022

- All Subject area

### International Consortium on Teaching Epidemiology, Switzerland, 2023

- All Domains 1-5

### ASPHER Climate Health Core Competencies for Education, 2022

- All Competencies

### Laing.G et al. Advancing One Health: Updated core competencies, 2023

- All Domains

### ASPHER Diversity and Intersectionality Syllibi for Public Health Education, 2023

- All Elements

### EU CompHP Core Competencies for Health Promotion, European Commission, 2011

- All Competencies

### American College of Lifestyle Medicine, Lifestyle Medicine Core competencies 2022

- All Competencies

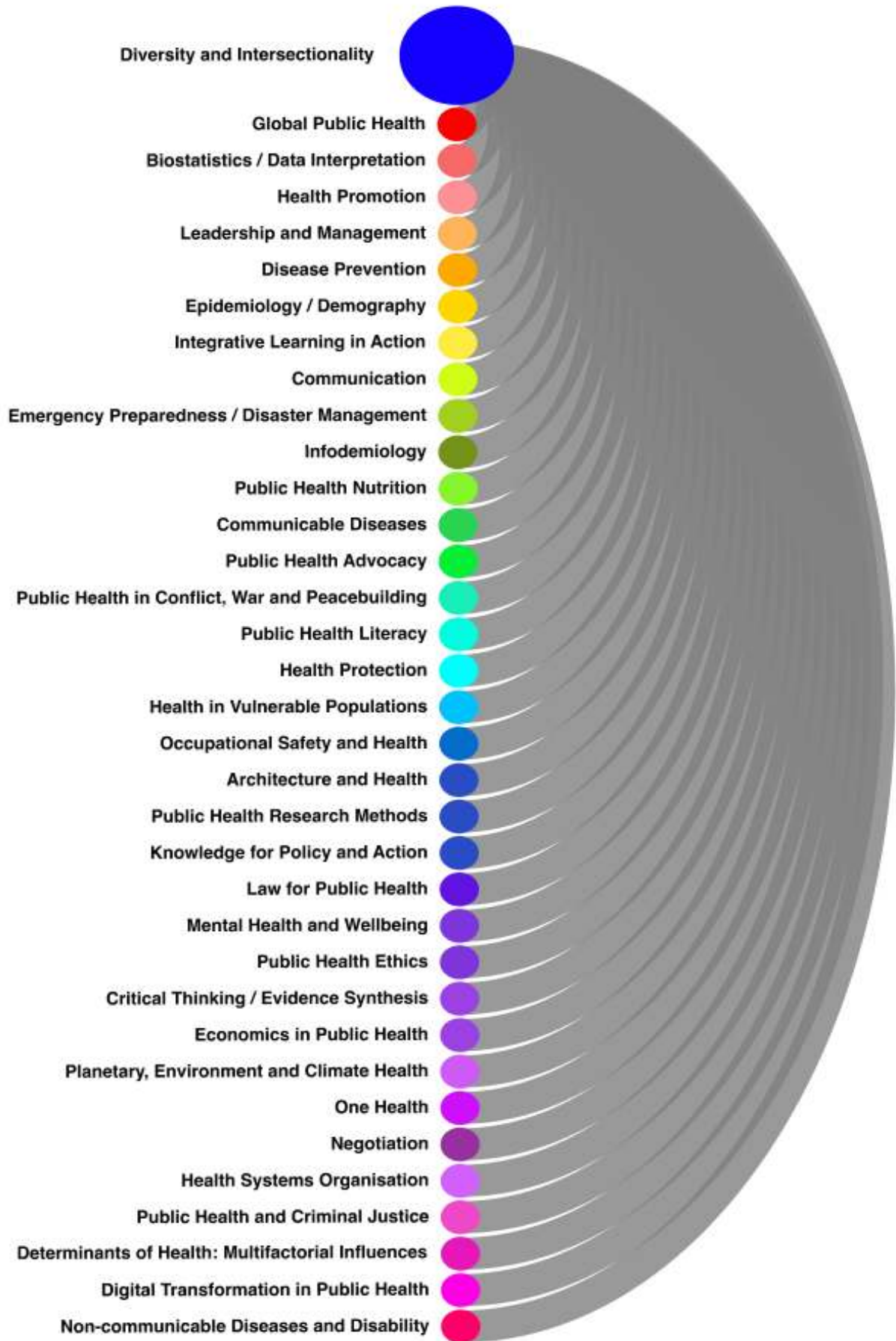
### ISPOR Health Economics and Outcomes Research Competencies Framework, 2002

- All Competencies

### Council on Linkages Between Academia and Public Health Practice, 2021

- All Domains

### Connectivity of Diversity & Intersectionality in PH curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Diversity and Intersectionality Curriculum Overview

Understanding diversity and intersectionality in public health is vital for both students and professionals as it provides a comprehensive lens through which to view health issues. By recognizing how various social determinants intersect within systems of social power and shape individuals' experiences of health and illness, students gain insight into the complex factors driving health disparities and attitudes. Intersectionality also helps fostering critical awareness of root causes of health inequities encouraging to reconsider normativities within public health thus allowing transformative learning among young public health professionals.

Moreover, an understanding of diversity and intersectionality promotes equity and social justice in public health practice, enabling professionals to advocate for policies and programs that prioritize the needs of marginalized communities. Additionally, this awareness enhances communication and collaboration skills across diverse perspectives, facilitating more impactful teamwork and community engagement.

Toolkits and current methodology is critical in this comprehensive curriculum, examples include:

- a) The PROGRESS-PLUS indicator (O'Neill et al. 2014) below:

PROGRESS refers to:

**P**lace of residence  
**R**ace/ethnicity/culture/language  
**O**ccupation  
**G**ender/sex  
**R**eligion  
**E**ducation  
**S**ocioeconomic status  
**S**ocial capital

- **Plus** refers to:
  - 1) personal characteristics associated with discrimination (e.g. age, disability)
  - 2) features of relationships (e.g. smoking parents, excluded from school)
  - 3) time-dependent relationships (e.g. leaving the hospital, respite care, other instances where a person may be temporarily at a disadvantage)

- b) ASPHER's Diversity Syllabi 2023

Diverse social identities and their importance for public health A syllabi collection with hands-on material for teaching

Which presents a practical and useful syllabi which can be used in alignment to the curriculum in this chapter.

- c) The Intersectionality Toolbox: A Resource for Teaching and Applying an Intersectional Lens in Public Health, 2021

Ultimately, incorporating diversity and intersectionality into public health education and practice is essential for promoting inclusive, equitable, and culturally competent approaches to improving population health.

### Diversity and Intersectionality Themes



### Diversity and Intersectionality Curriculum

Suggested curricular elements are presented for all educational levels.

- Bachelor
- Master
- Doctoral
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Bachelor Degree Level

## RACIAL

- Racial equity
- Climate change and environmental justice
- Prejudice
- Discrimination
- Gender based violence (i.e. Female genital mutilation; child marriage; intimate partner violence; sexual violence/rape culture)

## ETHNIC

- Radical reforms and social movements
- Religious practice
- Law and public health (legal accountability) and policy surveillance

## HEALTH RELATED

- Infectious diseases (stigma- HIV, Covid-19 & monkeypox)
- Chronic diseases
- Barriers in access
- Autonomy; equity; diversity and inclusion
- Health as human right and health literacy
- Collective rights in public health (smoking and vaccine hesitancy)
- Causes of co-morbidities and prevention

## MENTAL HEALTH

- Mental health associated inequalities

## DISABILITY

- Ability and disability
- Caregivers and family carers
- Supportive technology
- Learning disabilities

## EDUCATIONAL

- Infrastructural context
- Climate change and environmental justice
- Broad ethics knowledge
- Biomedical approach to sexuality vs. Modern approaches (feminism, relational, constructive)

## REPRODUCTIVE

- Family planning
- Reproductive health and sexually transmitted infections
- Abortion: history to present day - barriers to access
- Family planning
- Access to reproductive services restricted due to immigration status



**SEX and GENDER BASED**

- Gender norms (bias) / gender discrimination
- Men's health – masculinity shadowing early healthcare access and prevention
- Gender based violence (i.e. Female genital mutilation; child marriage; intimate partner violence; sexual violence / rape culture)
- Women's health

**ACCESS to SERVICE**

- Preventative healthcare access
- Migration health
- Law and public health (legal accountability) and policy surveillance
- Discrimination and prejudices in healthcare systems
- Religious barriers to safe care
- Social protection
- Preventative care and treatment

**EMPLOYMENT and OPPORTUNITIES**

- Equal opportunity

**PRACTICE**

- Self-reflection
- Understanding your own misconceptions
- Experience
- Social change and public health activism
- Migration trends

## Master Degree Level

**RACIAL**

- Critical-race theory
- Postcolonial theory
- Dehumanisation
- Radical reforms and social movements
- Methodologies to research human rights in a public health arena
- Law and public health (legal accountability) and policy surveillance
- Racial equity
- Climate change and environmental justice
- Prejudice
- Discrimination
- Indigenous knowledge; respectful collaboration
- Decolonisation (knowledge, methods, allyship and progress)
- Racism
- Distributive and racial justice

**ETHNIC**

- Radical reforms and social movements
- Religious practice
- Law and public health (legal accountability) and policy surveillance

**HEALTH RELATED**

- Feminist theory
- Infectious diseases (stigma- HIV, Covid-19 & monkeypox)
- Chronic diseases
- Opioid crisis
- Barriers in access
- Autonomy; equity; diversity and inclusion
- Health as human right and health literacy
- Law and public health (legal accountability) and policy surveillance
- Health of criminalised persons, violence perpetrated by the police
- LGBTQI\* healthcare
- Intersex people – bodily autonomy

**MENTAL HEALTH**

- Case study: mental health practices
- Historical perspectives : Mental health
- Mental health associated inequalities

**DISABILITY**

- Ability and disability
- Stigma and discrimination – ableism attitudes : verbal & non-verbal / media portrayal
- Historical perspective
- Legal protection and public support from inequalities
- Sexual diversity and disability
- Caregivers and family carers
- Supportive technology
- Learning disabilities

**EDUCATIONAL**

- Historical publication bias
- Minority stress theory and mental health
- Infrastructural context
- Climate change and environmental justice
- Anti-prejudice, anti-discrimination and anti-racism programmes and interventions
- Understand differences in sex, gender and sexuality
- Transgenerational trauma and injustice
- Indigenous knowledge; respectful collaboration
- Broad ethics knowledge
- Biomedical approach to sexuality vs. Modern approaches (feminism, relational, constructive)

**REPRODUCTIVE**

- Family planning
- Reproductive health and sexually transmitted diseases
- Abortion: history; barriers to access
- Medicalisation
- Family planning
- Childbirth traditions and organisation thereof
- Access to reproductive services restricted due to immigration status

**SEX and GENDER BASED**

- Masculinity, femininity and gender fluidity
- Gender norms (bias) / gender discrimination
- Men's health – masculinity shadowing early healthcare access and prevention
- Trans people – transition / gender affirming care/ trans children/ conversion therapy
- Gender based violence (i.e. female genital mutilation; child marriage; intimate partner violence; sexual violence / rape culture)
- Women's health

**ACCESS to SERVICE**

- Case study: entitlement of refugees to health care
- Law and public health (legal accountability) and policy surveillance
- Migration health
- Non-binary persons health – barriers, stigma, discriminations
- Indigenous knowledge; respectful collaboration
- Religious barriers to safe care
- Social protection
- Preventative care and treatment

**EMPLOYMENT and OPPORTUNITIES**

- Equal opportunity
- Law and public health (legal accountability) and policy surveillance
- Representativeness in public health workforce
- Barriers in creating inclusive diverse workplaces

**PRACTICE**

- Self-reflection
- Understanding your own misconceptions
- Experience
- Social change and public health activism
- Inclusive research
- Xenophobia and public health
- Non-western/diverse ethical codes
- Epistemicides and epistemic injustice (knowledge system destruction)
- Migration trends
- Indigenous knowledge; respectful collaboration
- Analytic approaches to gender in public health
- Legal frameworks for migration

**RELIGION and SPIRITUALITY**

- Health related practice in religion
- Religion and spirituality effect on sexuality, sex and gender-related needs
- Health leaders in faith
- Indigenous knowledge; respectful collaboration
- Collaboration for health and faith-based organisations

## Doctoral Degree Level

**RACIAL**

- Dehumanisation
- Radical reforms and social movements
- Methodologies to research human rights in a public health arena
- Law and public health (legal accountability) and policy surveillance
- Climate change and environmental justice
- Indigenous knowledge; respectful collaboration

**ETHNIC**

- Radical reforms and social movements
- Religious practice
- Law and public health (legal accountability) and policy surveillance

**HEALTH RELATED**

- Feminist theory
- Opioid crisis
- Barriers in access
- Autonomy; equity; diversity and inclusion
- Health as human right and health literacy
- Law and public health (legal accountability) and policy surveillance
- Health of criminalised persons, violence perpetrated by the police
- LGBTQI\* healthcare
- Intersex people – bodily autonomy

**MENTAL HEALTH**

- Case study: mental health practices

**DISABILITY**

- Supportive technology
- Learning disabilities

**EDUCATIONAL**

- Historical publication bias
- Understand differences in sex, gender and sexuality
- Indigenous knowledge and respectful collaboration
- Broad ethics knowledge

**REPRODUCTIVE**

- Abortion: History to present day - barriers to access
- Medicalisation

**SEX and GENDER BASED**

- Methodologies to make public health research gender sensitive
- Trans people – Transition / gender affirming care

**ACCESS to SERVICE**

- Migration Health
- Law and public health (legal accountability) and policy surveillance

**EMPLOYMENT and OPPORTUNITIES**

- Barriers in creating inclusive diverse workplaces

**PRACTICE**

- Inclusive research
- Xenophobia and public health
- Legal frame works for migration

**RELIGION and SPIRITUALITY**

- Health related practice in religion
- Religion and spirituality effect on sexuality, sex and gender-related needs
- Health leaders in faith
- Collaboration for health and faith based organisations

## Certificate and / or Diploma Level

**RACIAL**

- Radical reforms and social movements
- Indigenous knowledge; respectful collaboration

**ETHNIC**

- Radical reforms and social movements
- Religious practice
- Law and public health (legal accountability) and policy surveillance

**HEALTH RELATED**

- Feminist theory
- Opioid crisis
- Autonomy; equity; diversity and inclusion
- Health as human right and health literacy
- Law and public health (legal accountability) and policy surveillance
- Collective rights in public health (smoking and vaccine hesitancy)
- Health of criminalised persons, violence perpetrated by the police
- LGBTQI\* healthcare
- Intersex people – bodily autonomy
- Causes of co-morbidities and prevention

**DISABILITY**

- Caregivers and family carers
- Supportive technology
- Learning disabilities

**EDUCATIONAL**

- Understand differences in sex, gender and sexuality
- Indigenous knowledge and respectful collaboration
- Broad ethics knowledge

**REPRODUCTIVE**

- Abortion: History to present day - barriers to access

**SEX and GENDER BASED**

- Gender norms (bias)/ gender discrimination
- Gender based violence (i.e. female genital mutilation; child marriage; intimate partner violence; sexual violence / rape culture)

**ACCESS to SERVICE**

- Migration Health
- Law and public health (legal accountability) and policy surveillance

**EMPLOYMENT and OPPORTUNITIES**

- Barriers in creating inclusive diverse workplaces

**PRACTICE**

- Xenophobia and public health

**RELIGION and SPIRITUALITY**

- Health related practice in religion
- Collaboration for health and faith based organisations

## Continuous Professional Development (CPD) Level

**RACIAL**

- Racial equity
- Climate change and environmental justice
- Prejudice
- Discrimination

**ETHNIC**

- Radical reforms and social movements
- Religious practice
- Law and public health (legal accountability) and policy surveillance

**HEALTH RELATED**

- Infectious diseases (stigma- HIV, Covid-19 & monkeypox)
- Chronic diseases
- Barriers in access
- Autonomy; equity; diversity and inclusion
- Health as a human right and health literacy
- Collective rights in public health (smoking and vaccine hesitancy)
- Causes of co-morbidities and prevention

**DISABILITY**

- Ability and disability
- Caregivers and family carers
- Supportive technology
- Learning disabilities

**EDUCATIONAL**

- Infrastructural context
- Climate change and environmental justice
- Broad ethics knowledge
- Biomedical approach to sexuality vs. Modern approaches (feminism, relational, constructive)

**REPRODUCTIVE**

- Family planning
- Reproductive health and sexually transmitted infections
- Abortion: history; barriers to access
- Family planning
- Access to reproductive services restricted due to immigration status

**SEX and GENDER BASED**

- Gender norms (bias)/ gender discrimination
- Gender based violence (i.e. female genital mutilation; child marriage; intimate partner violence; sexual violence / rape culture)
- Men's health – Masculinity shadowing early healthcare access and prevention

**ACCESS to SERVICE**

- Preventative healthcare access
- Migration health
- Law and public health (legal accountability) and policy surveillance
- Discrimination and prejudices in healthcare systems
- Religious barriers to safe care

**EMPLOYMENT and OPPORTUNITIES**

- Equal Opportunity

**PRACTICE**

- Self-reflection
- Understanding your own misconceptions
- Experience
- Social change and public health activism
- Migration trends

## Professional Specialised Training (PST) Level

**RACIAL**

- Racial equity
- Climate change and environmental justice
- Prejudice
- Discrimination

**ETHNIC**

- Radical reforms and social movements
- Religious practice
- Law and public health (legal accountability) and policy surveillance

**HEALTH RELATED**

- Infectious diseases (stigma- HIV, Covid-19 & monkeypox)
- Chronic diseases
- Barriers in access
- Autonomy; equity; diversity and inclusion
- Health as a human right and health literacy
- Collective rights in public health (smoking and vaccine hesitancy)
- Causes of co-morbidities and prevention

**DISABILITY**

- Ability and disability
- Caregivers and family carers
- Supportive technology
- Learning disabilities

**EDUCATIONAL**

- Infrastructural context
- Climate change and environmental justice
- Broad ethics knowledge
- Biomedical approach to sexuality vs. Modern approaches (feminism, relational, constructive)

**REPRODUCTIVE**

- Family planning
- Reproductive health and sexually transmitted infections
- Abortion: history; barriers to access
- Family planning
- Access to reproductive services restricted due to immigration status

**SEX and GENDER BASED**

- Gender norms (bias)/ gender discrimination
- Gender based violence (i.e. female genital mutilation; child marriage; intimate partner violence; sexual violence / rape culture)
- Men's health – Masculinity shadowing early healthcare access and prevention
- Women's health

**ACCESS to SERVICE**

- Preventative healthcare access
- Migration health
- Law and public health (legal accountability) and policy surveillance
- Discrimination and prejudices in healthcare systems
- Religious barriers to safe care

**EMPLOYMENT and OPPORTUNITIES**

- Equal Opportunity

**PRACTICE**

- Self-reflection
- Understanding your own misconceptions
- Experience
- Social change and public health activism
- Migration trends

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# Chapter 26

## Mental Health and Wellbeing



## Rationale and Current Status: Mental Health and Wellbeing

**Contributors:** *Jwenish Kumawat, Karl F. Conyard, Uma Divya Kudupudi, Mary Codd*

Mental health and wellbeing encompasses a holistic approach to fostering mental health, recognizing the interconnections between mental, emotional, and physical health. This subject area involves understanding the social determinants of mental health, promoting resilience, and implementing strategies for mental health promotion, prevention, and intervention across diverse populations. Mental health advocacy requires public health professionals to be adept in addressing stigma, creating supportive environments, and enhancing access to mental health services.

In today's interconnected and fast-paced world, mental health and wellbeing are more relevant than ever. Going beyond traditional public health subjects, it is important for Public health professionals to incorporate into their education and practice a deep understanding of mental health dynamics and effective interventions. Research has highlighted the gap in mental health services and the need for more robust public health strategies. Successfully addressing these gaps requires public health advocacy skills, which empower professionals to influence policy, promote mental health literacy, and engage communities in mental health initiatives.

The importance of mental health and wellbeing is underscored by key frameworks such as the WHO-ASPHER Competency Framework 2020<sup>1</sup>, which integrates mental health within broader public health competencies. Similarly, the WHO's 12 Essential Public Health Functions 2024<sup>2</sup> emphasize the role of mental health in achieving overall health equity. The ECDC 2022 Core Competencies in Applied Infectious Disease Epidemiology<sup>3</sup> also recognize the impact of mental health on infectious disease outcomes, highlighting the need for integrated mental health strategies.

### **Programme overview and implementation:**

Among the critical challenges in modern society, suicide prevention has emerged as a key public health priority. The escalating mental health concerns in modern society have placed suicide prevention at the forefront of public health priorities. Public health professionals require comprehensive understanding of complex risk factors, from societal influences to personal triggers, to effectively address this critical issue. Evidence-based interventions are essential for reducing suicide rates and addressing fundamental causes across diverse populations.

### **Understanding Mental Health Economics**

A key component for public health professionals is understanding mental health economics, i.e. exploring the evaluation and comparison of mental health interventions, societal impact and cost-effectiveness. This introduces future policy makers to essential economic analysis methods and evidence-based decision-making in mental health programme implementation.

By integrating these components into established public health competency frameworks and educational programmes, educational institutions can develop well-rounded future leaders equipped with both theoretical understanding and practical tools.

## Alignment to Competency Frameworks

The Mental Health and Wellbeing subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- All Competencies

### WHO 12 Essential Public Health Functions, 2024

- All EPHFs 1-12

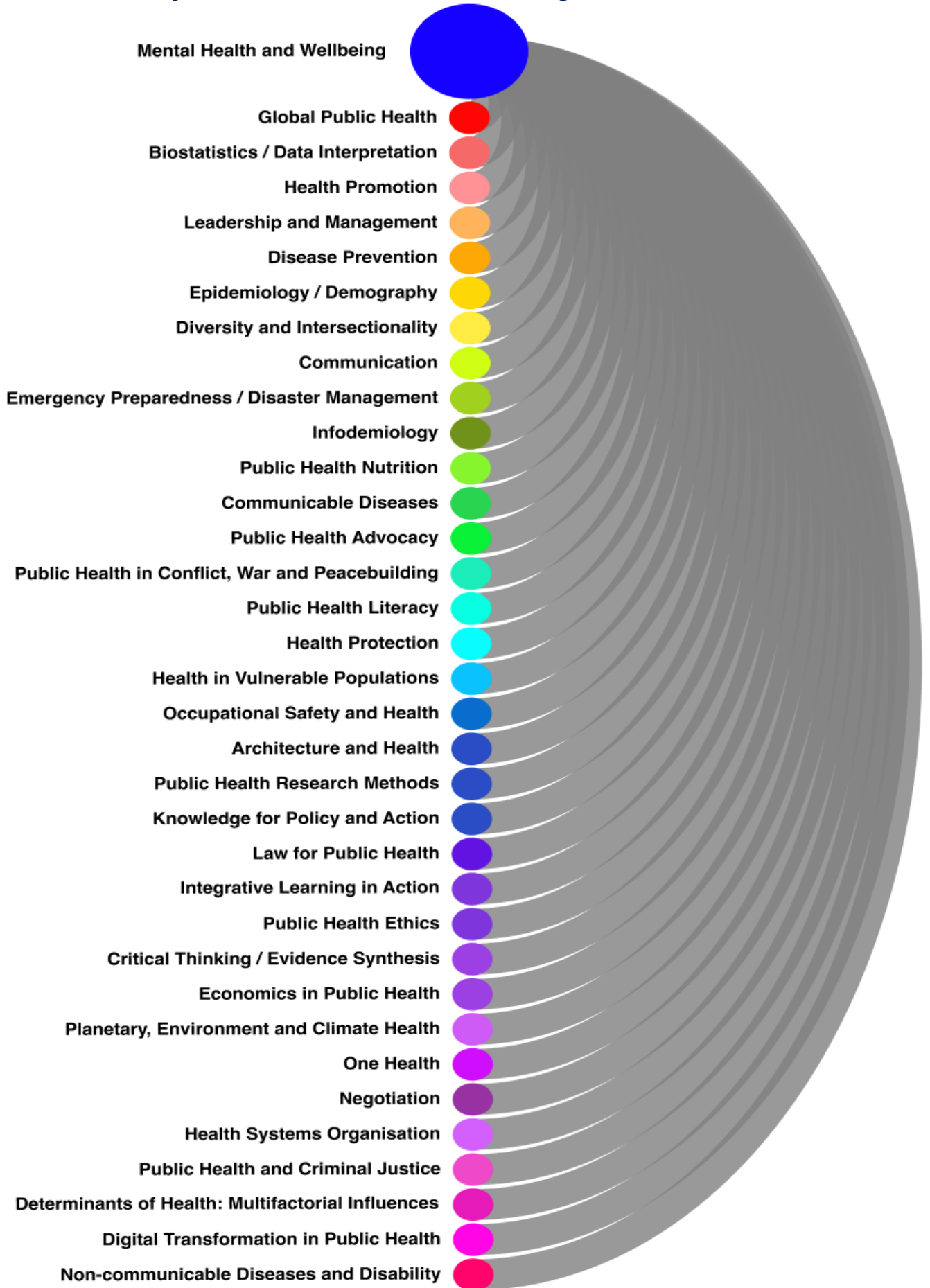
### EU CompHP Core Competencies for Health Promotion, European Commission, 2011

- All Competencies

### American College of Lifestyle Medicine, Lifestyle Medicine Core competencies 2022

- All Competencies

### Connectivity of Mental Health and Wellbeing in Public Health curricula



*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*

## Mental Health and Wellbeing Curriculum Overview

Mental health and well-being are essential for students and young professionals at a critical stage of personal and professional development. Good mental health enhances cognitive functions such as concentration, memory, and problem-solving skills, which are vital for academic and professional success. It promotes emotional resilience, helps in managing stress, adapt to new environments, and handle setbacks more effectively. In academic settings, students with good mental health are more likely to engage actively in their studies, participate in extracurricular activities, and build strong social networks. These experiences enhance personal growth and develop skills that are valuable in the professional world.

For young professionals, maintaining mental well-being is key to sustaining productivity, creativity, and job satisfaction. It helps to build effective working relationships, navigating workplace challenges, and pursue career advancement opportunities. Early adulthood is a period when individuals establish habits and coping mechanisms that can affect long-term mental health. Prioritizing mental well-being during this phase can prevent the onset of mental health issues and reduce the risk of burnout, depression, and anxiety. Overall, fostering mental health and well-being in students and young professionals is not only beneficial for their immediate academic and career performance but also for their long-term personal and professional development.

## Mental Health and Wellbeing Themes



## Mental Health and Wellbeing Curriculum

Recognizing the range of mental health issues which benefit from public health interventions, the Expert Advisory Group stressed the need for a curriculum applied across all educational levels. This inclusive approach equips learners with tools to engage in and address public health challenges of today. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex public health landscapes with insight and action orientated abilities.

Suggested curricular elements are presented for all educational levels, i.e.

- Bachelor
- Master
- Doctorate
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Full Curriculum

**FOUNDATIONS of MENTAL HEALTH**

- Introduction to mental health and wellbeing
- Historical perspectives on mental health
- Mental health across the lifespan
- Mental health disorders: overview and classification
- Neuroplasticity and mental health recovery
- Mental health policy and legislation
- Research methods in mental health
- Ethics in mental health care

**MENTAL HEALTH CONDITIONS and DISORDERS**

- Depression: symptoms, causes, and treatments
- Anxiety disorders: types, causes, and management
- Bipolar disorder: understanding the spectrum
- Schizophrenia and psychotic disorders
- Personality disorders: types and treatments
- Substance use and mental health
- Eating disorders: recognition and treatment
- Trauma and post-traumatic stress disorder (PTSD)
- Sleep disorders and mental health
- Psychosomatic disorders

**MENTAL HEALTH TREATMENT MODALITIES**

- Psychotherapy and counseling approaches
- Cognitive behavioral therapy and dialectical behavior therapy
- Acceptance and commitment therapy (ACT)
- Exposure therapy for anxiety disorders
- Pharmacotherapy in mental health
- Pharmacogenomics and personalized medicine in psychiatry
- Transcranial magnetic stimulation (TMS)
- Electroconvulsive therapy (ECT)
- Virtual reality therapy for mental health disorders

**MENTAL HEALTH in DIVERSE POPULATIONS and CONTEXTS**

- Child and adolescent mental health
- Geriatric mental health
- Mental health in the LGBTQ+ community
- Mental health in minority populations
- Mental health in low- and middle-income countries
- Mental health in refugee and migrant populations
- Impact of war and conflict on mental health
- Mental health in the criminal justice system
- Mental health services in rural areas
- Impact of COVID-19 on mental health

**INFLUENCES, PREVENTION and PROMOTION**

- Mental health stigma and discrimination
- The role of family and community in mental health
- Workplace mental health
- School and college mental health programs
- Suicide prevention and intervention
- Crisis intervention and emergency mental health services
- Telehealth and mental health services
- Mental health promotion and prevention strategies
- Self-care and resilience building
- Digital mental health: apps and online resources
- Stress management techniques
- Impact of social media on mental health
- Impact of adverse childhood experiences (aces)
- Physical activity and exercise for mental wellbeing
- Future trends in mental health and wellbeing

**WELLBEING PRACTICES and APPROACHES**

- Mindfulness
- Meditation methodologies (i.e. Sudarshan kriya yoga, Sahaj Samadhi or Vipassana meditation, Zen)
- Yoga and mental health
- Spirituality and religion in mental health
- Holistic and alternative approaches to mental health
- Art therapy and creative expression
- Music therapy
- Animal-assisted therapy

**PRACTICAL APPLICATION\***

- Neuro Resilience workshop
- Mental health and triggers group work
- Mindfulness practical sessions
- Neurophysiology and well-being group work
- Economics and prevention group work
- Breathwork practical sessions

## References

1. World Health Organization. WHO-ASPHER Competency Framework for the Public Health Workforce in the European Region. Copenhagen: World Health Organization; 2020. Available from: <https://iris.who.int/bitstream/handle/10665/347866/WHO-EURO-2020-3997-43756-61569-eng.pdf?sequence=1> [Accessed 10 May 2014].
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# Chapter 27

# Global Public Health



## Rationale and Current Status: Global Public Health

**Contributors:** Alena Petrakova, Karl F. Conyard, Jwenish Kumawat, Uma Divya Kudupudi, Mary Codd

Global Public Health with an emphasis on the Sustainable Development goals (SDGs) is essential in shaping the landscape of public health education. With the interconnectedness of nations and the growth of global travel, public health phenomena are rarely confined within political borders. Understanding global public health is crucial for addressing emerging pandemics, preventing the spread of infectious diseases, addressing climate crises and coping with the consequences of conflict and war.

The Sustainable Development Goals, adopted by all United Nations member states in 2015, serve as a blueprint for achieving a better and more sustainable future for all. Among the 17 goals are targets directly related to public health, including ensuring healthy lives and promoting well-being for all at all ages (SDG 3).

The inclusion of global public health as a subject area within this core curriculum is aligned with several key competency frameworks. The WHO-ASPHER Competency Framework (2020)<sup>1</sup> guides public health training in Europe and globally by emphasizing leadership, health promotion, and epidemiology. It ensures public health professionals can address global challenges such as pandemics and chronic diseases through cross-border collaboration. The WHO Essential Public Health Functions (2024)<sup>2</sup> outline core functions vital for global health security, such as outbreak response, policy development, and community engagement. These functions support coordinated responses to global health threats. The ECDC Core Competencies in Applied Infectious Disease Epidemiology (2022)<sup>3</sup> suggest critical skills for epidemiologists, particularly in disease surveillance and risk communication essential for managing infectious diseases that cross borders, like COVID-19. The Council on Linkages Between Academia and Public Health Practice (2021)<sup>4</sup> bridges academic training with practical public health needs. By focusing on community engagement, policy analysis, and systems thinking, it ensures professionals are prepared to address global health issues. The European Commission adopted a new EU Global Health Strategy (2022)<sup>5</sup> to improve global health security and deliver better health for all in a changing world. It offers a framework for EU health policies leading up to 2030 that sets policy priorities and guiding principles to shape global health, and it identifies concrete lines of action.

Including global public health as a cross-curricular subject in public health curricula is essential for preparing future professionals to tackle transnational health challenges. Global health issues such as pandemics, climate change, and health disparities require coordinated international responses. By studying global public health, students gain a deep understanding of how public health systems differ worldwide, and how to implement policies that can address complex, global health crises. Integrating frameworks like the WHO-ASPHER Competency Framework and the ECDC Core Competencies helps ensure that public health education includes practical skills in outbreak management, disease surveillance, and policy development, enabling professionals to respond effectively in an interconnected world

Professionals trained in this area can take on roles that require them to collaborate across borders, manage health crises, and work on health equity and access in underserved populations. Competencies in global public health equip public health professionals to develop policies, manage international health projects, and contribute to research that influences health outcomes worldwide. This subject area opens pathways to public health professionals in global health diplomacy, infectious disease control, and health policy advocacy, making professionals more versatile and responsive to the evolving health landscape.

## Alignment to Competency Frameworks

The Global Public Health subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 4: One Health and Health Security

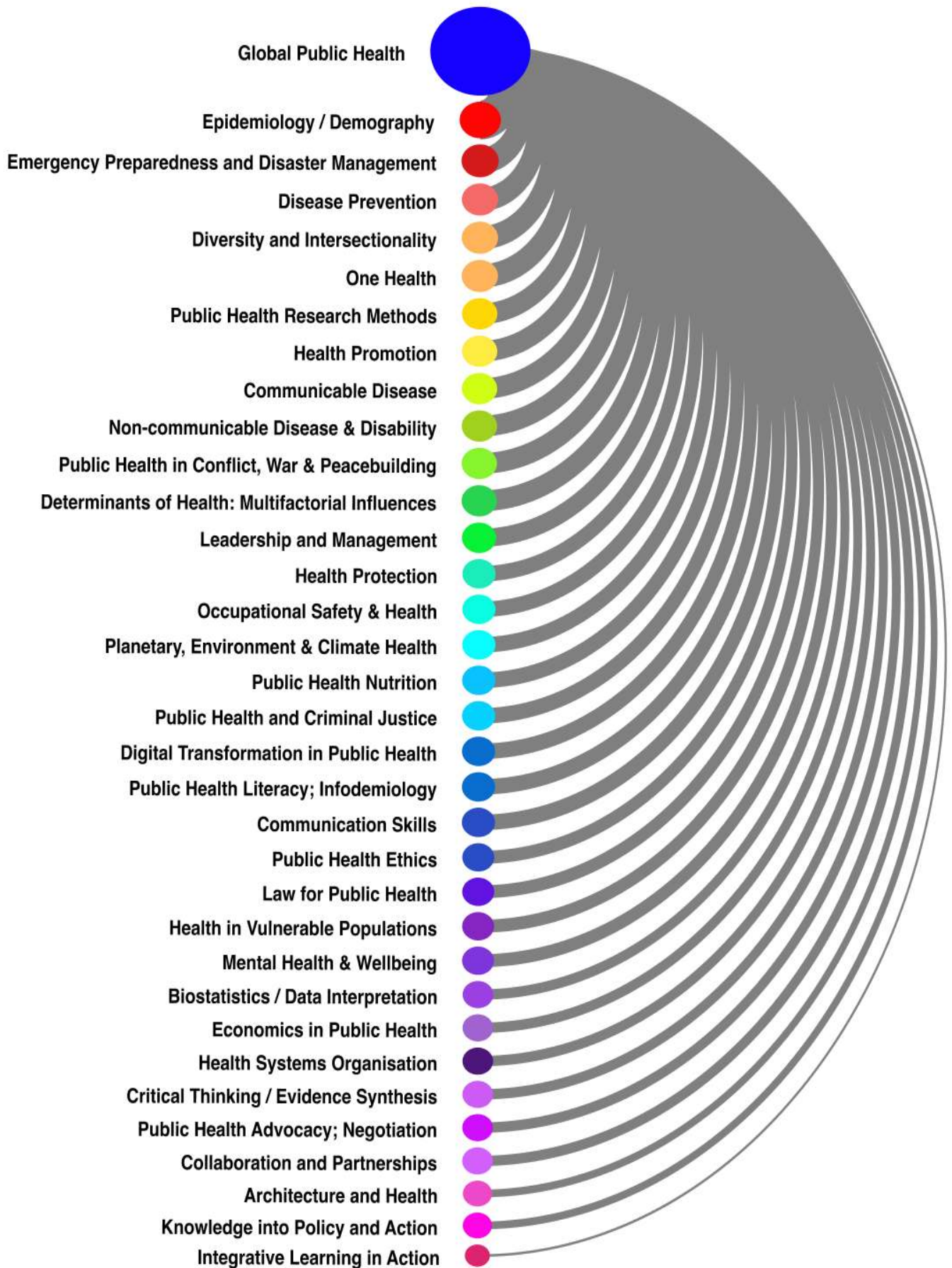
### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 11: Public Health Research, Evaluation and Knowledge

### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2024

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
- Subject area D: Practice of infectious disease epidemiology
- Subject area F: Leadership and management

## Connectivity of Global Public Health in Public Health curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Global Public Health Curriculum Overview

Public health education must incorporate global perspectives to equip future and current professionals with the knowledge and skills needed to tackle complex health challenges effectively. By integrating the principles of global public health and SDGs into curricula, educational institutions foster a comprehensive understanding of the interconnected factors influencing health outcomes, encourage interdisciplinary collaboration, and empower students to become agents of positive change on a global scale.

Emphasizing these aspects not only enriches public health education but also contributes to achieving sustainable development and improving the health and well-being of populations worldwide.

## Global Public Health Themes



## Global Public Health Curriculum

Suggested curricular elements are presented for different educational levels, i.e.

- Bachelor
- Master
- Doctorate
- Certificate and / or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Bachelor Degree Level

## BASE CONCEPTS

- Definition, principles and important criteria that drive decisions in global health (i.e. Public health perspective versus individualistic approach)
- Global health agencies: WHO, World Bank, Global Fund and other UN and other agencies/entities
- Population health indicators sustainable development goals (SDGs) and millenium development goals (MDGs)
- Population intergenerational and newfound poverty
- Health financing and health care expenditures
- Global estimates of mortality
- YLL, DALYs and QALYs
- Top causes of death and dalys loss in high- and low- income settings / countries
- Health systems around the world
- Project management: knowledge, skill and experience
- Political determinants of health and how politics shapes population health discourse
- Ethical considerations: clinical, humanitarian and emergency situations

## CLINICAL CONTEXT

- Vectors and zoonosis
- Antimicrobial resistance and one health
- Communicable diseases incl. HIV, TB and malaria
- Global burden of disease (communicable and non-communicable disease)
- Homelessness and public health
- Maternal and child health
- Determinants of health model
- Medication and vaccination access, use and taboo
- Lifestyle factors and health

## HUMANITARIAN CONTEXT

- Migration: culturally sensitive healthcare - access and planning
- Drivers of migration
- Health and society (population health beliefs)
- Use of sustainable development goals (SDGs) to guide humanitarian action
- Resilience
- Disability considerations to culture in clinical, humanitarian and emergency situations

## EMERGENCY CONTEXT

- Emergency Preparedness

## Master Degree Level

## BASE CONCEPTS

- Definition, principles and important criteria that drive decisions in global health (i.e. Public health perspective versus individualistic approach)
- Global health agencies: WHO, World Bank, Global Fund and other UN and other agencies/entities
- Population health indicators sustainable development goals (SDGs) and millennium development goals (MDGs)
- Population intergenerational and newfound poverty
- Health financing and health care expenditures
- Global estimates of mortality
- YLL, DALYs and QALYs
- Top causes of death and DALYs loss in high- and low- income settings / countries
- Health systems around the world
- Project management: knowledge, skill and experience
- Political determinants of health and how politics shapes population health discourse
- Public and Private Systems: Overlaps and Differences
- Project management: knowledge, skill and experience
- Ethical considerations: clinical, humanitarian and emergency situations

## CLINICAL CONTEXT

- Vectors and zoonosis
- Antimicrobial resistance and one health
- Communicable diseases incl. HIV, TB and malaria
- Health promotion and displaced populations
- Social protection: policies to support and expand
- Communication of risk; science and outcomes
- Global burden of disease (communicable and non-communicable disease)
- Homelessness and public health
- Maternal and child health
- Determinants of health model
- Medication and vaccination access, use and taboo
- Lifestyle factors and health

## HUMANITARIAN CONTEXT

- Migration: culturally sensitive healthcare - access and planning
- Drivers of migration
- Health and society (population health beliefs)
- Use of sustainable development goals (SDGs) to guide humanitarian action
- Resilience
- Disability considerations to culture in clinical, humanitarian and emergency situations

## EMERGENCY CONTEXT

- Time sensitive decision making
- Emergency preparedness
- Emergency management: use of population health indicators sustainable development goals (SDGs) in times of crisis
- Emergency management
- Prioritization tools: essential medicine lists, essential diagnostic lists, assistive technologies, universal health coverage, selection of most important health commodities, procurement, availability and use of essential commodities
- Workforce management
- Multidisciplinary Processes

## Doctoral Degree Level

### BASE CONCEPTS

- Health financing and health care expenditures
- Global estimates of mortality
- Health systems around the world
- Project management: knowledge, skill and experience
- Political determinants of health and how politics shapes population health discourse
- Public and private systems: Overlaps and differences
- Project management: knowledge, skill and experience
- Ethical considerations: clinical, humanitarian and emergency situations

### CLINICAL CONTEXT

- Vectors and zoonosis
- Antimicrobial resistance and one health
- Health promotion and displaced populations
- Social protection: policies to support and expand
- Communication of risk; science and outcomes
- Homelessness and public health
- Maternal and child health

### HUMANITARIAN CONTEXT

- Migration: culturally sensitive healthcare - access and planning
- Drivers of migration
- Use of sustainable development goals (SDGs) to guide humanitarian action
- Resilience
- Disability considerations to culture in clinical, humanitarian and emergency situations

### EMERGENCY CONTEXT

- Time sensitive decision making
- Emergency preparedness
- Prioritization tools: essential medicine lists, essential diagnostic lists, assistive technologies, universal health coverage, selection of most important health commodities, procurement, availability and use of essential commodities
- Workforce management
- Multidisciplinary processes

## Certificate and/or Diploma Level



## BASE CONCEPTS

- Definition, principles and important criteria that drive decisions in global health (i.e. public health perspective versus individualistic approach)
- Global health agencies: WHO, World Bank, Global Fund and other UN and other agencies/entities
- Population health indicators sustainable development goals (SDGs) and millenium development goals (MDGs)
- Health financing and health care expenditures
- Project management: knowledge, skill and experience
- Political determinants of health and how politics shapes population health discourse
- Project management: knowledge, skill and experience
- Ethical considerations: clinical, humanitarian and emergency situations

## CLINICAL CONTEXT

- Vectors and zoonosis
- Antimicrobial resistance and one health
- Health promotion and displaced populations
- Communicable Diseases incl. HIV, TB and malaria
- Global Burden of disease (communicable and non-communicable disease)
- Communication of risk; science and outcomes
- Determinants of health model
- Medication and vaccination access, use and taboo
- Lifestyle factors and health
- Communication of risk; science and outcomes
- Maternal and child health

## HUMANITARIAN CONTEXT

- Migration: culturally sensitive healthcare - access and planning
- Drivers of migration
- Resilience

## EMERGENCY CONTEXT

- Time sensitive decision making
- Emergency preparedness
- Prioritization tools: essential medicine lists, essential diagnostic lists, assistive technologies, universal health coverage, selection of most important health commodities, procurement, availability and use of essential commodities
- Workforce management



## Professional Specialised Training

### BASE CONCEPTS

- Definition, principles and important criteria that drive decisions in global health (i.e. Public health perspective versus individualistic approach)
- Global health agencies: WHO, World Bank, Global Fund and other UN and other agencies / entities
- Population health indicators sustainable development goals (SDGs) and millenium development goals (MDGs)
- Population intergenerational and newfound poverty
- Health financing and health care expenditures
- Global estimates of mortality
- YLL, DALYs and QALYs
- Top causes of death and dalys loss in high- and low- income settings / countries
- Public and private systems: overlaps and differences
- Health systems around the world
- Project management: knowledge, skill and experience
- Political determinants of health and how politics shapes population health discourse
- Ethical considerations: clinical, humanitarian and emergency situations

### CLINICAL CONTEXT

- Vectors and zoonosis
- Antimicrobial resistance and one health
- Communicable diseases incl. HIV, TB and malaria
- Health promotion and displaced populations
- Degenerative diseases
- Social protection: policies to support and expand
- Communication of risk; science and outcomes
- Global burden of disease (communicable and non-communicable disease)
- Homelessness and public health
- Maternal and child health
- Determinants of health model
- Medication and vaccination access, use and taboo
- Lifestyle factors and health

### HUMANITARIAN CONTEXT

- Migration: culturally sensitive healthcare - access and planning
- Drivers of migration
- Health and society (population health beliefs)
- Use of sustainable development goals (SDGs) to guide humanitarian action
- Resilience
- Disability considerations to culture in clinical, humanitarian and emergency situations

### EMERGENCY CONTEXT

- Time sensitive decision making
- Emergency preparedness
- Emergency management: use of population health indicators: sustainable development goals (SDGs) in times of crisis
- Emergency management
- Prioritization tools: essential medicine lists, essential diagnostic lists, assistive technologies, universal health coverage, selection of most important health commodities, procurement, availability and use of essential commodities
- Workforce management
- Multidisciplinary Processes

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# Chapter 28

# One Health



## Rationale and Current Status: One Health

**Contributors:** Polychronis Kostoulas, Emreacan Özeler, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Patrick Wall

In the wake of the COVID-19 pandemic, the significance of One Health in public health education is increasingly apparent. One Health, as a subject area, epitomizes the essence of interdisciplinary collaboration in public health education. Rooted in the recognition of the interconnectedness of human, animal, and environmental health, One Health transcends traditional disciplinary boundaries, weaving together strands of epidemiology, veterinary science, agriculture, zoology, ecology, sustainability and sociology, . In doing so, it emerges as an exemplar of a cross-curricular subject area in public health education programmes. Public health education must adapt to the evolving challenges of our world. Understanding and embracing the One Health approach prepares future public health professionals to tackle complex, interconnected health issues. This introduction serves as a gateway to explore the critical role of One Health in post-pandemic public health education.

According to the One Health High Level Expert Panel (OHHLEP), the One Health advisory group for the Food and Agriculture Organization of the United Nations (FAO), United Nations Environment Programme (UNEP), World Health Organization (WHO) and World Organisation for Animal Health (WOAH), One Health *“is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.”*<sup>1</sup>. Although this definition is relatively new, the concept of one health has been around for quite some time. It was in the 19th century that Rudolf Virchow coined the term ‘zoonosis’ to describe infectious diseases that are passed between animals and human<sup>2</sup>. Then, Sir William Osler (1849-1919) published on the relation of animals to man and promoted comparative pathology and the One Medicine Concept<sup>3</sup>. In the 20th century, Dr. Calvin Schwabe, coined the term One Medicine which promoted a unified medical and veterinary medical approach to zoonotic diseases<sup>4</sup>.

In the 21st century, more concrete and comprehensive steps were taken on the approach of One Health. In 2007 during the New Delhi International Ministerial Conference on Avian and Pandemic Influenza, an aim was to acknowledge the concept of ‘One Health’ that integrates animal health, human health and environmental health<sup>5</sup>. In 2008, the International Ministerial Conference on Avian and Pandemic Influenza was held in Sharm el-Sheikh, Egypt, where ‘A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface’ was released<sup>6</sup>. The First International One Health Congress was held in Melbourne, Australia in 2011<sup>7</sup> was followed by the One Health Summit held in

Davos, Switzerland in 2012<sup>8</sup>. Work on adopting and implementing the principles of this concept has been ongoing since.

Significant efforts have been made to define core competencies for One Health, defined as the unique competencies that all One Health professionals should have, regardless of their discipline of origin<sup>9</sup>. At the Salzburg Global Seminar in 2007, participants from public, private, academic, and philanthropic organizations reached consensus that this new group of professionals, referred to as ‘One Health’ practitioners, needed to possess unique professional competencies, including soft skills to complement the depth of knowledge in their individual areas of expertise, although no specific set of core competencies was developed. In 2008, the Bellagio working group was convened in Italy to identify core competencies for global food systems leadership<sup>10</sup>. This was followed by the meeting in Stone Mountain, Georgia (May 2010), at which seven work groups were formed including one on training to ‘develop and build skills, expertise, and competencies through a One Health training curriculum and identify opportunities to integrate One Health approaches into existing curricula’<sup>11</sup>. This Global One Health Core Competencies (OHCC) Working Group, as part of the global RESPOND Initiative, USAID Emerging Pandemic Threats Program identified core competencies in One Health<sup>12</sup>, followed workshop in Rome in 2012 (the ‘Rome Synthesis’)<sup>9</sup>.

There were several articles that assessed the One Health approaches and the suggested core competencies. For example<sup>12</sup>, suggested that the aforementioned One Health core competency frameworks “provide a common foundation for continuing professional education and training programs that move beyond the focus on discipline-specific knowledge” and “can be used by universities, governments, and regional networks as a starting point for identifying specific core competencies relevant to local needs, which can in turn be used to guide development of new training programs”. The framework of what One Health approaches can comprise as well as their added benefits was conceptually outlined in the paper by<sup>13</sup>. This framework was developed during a workshop held by the “Network of Evaluation of One Health” (NEOH), a European Cooperation in Science and Technology (COST) Action<sup>14</sup>. went on to provide the four elements of the evaluation process and also mentioned that the framework “uses a systems approach and regards the context of an OH initiative as the system within which it operates, and the initiative itself as a subsystem, which has a potential to affect the system to a smaller or larger degree.”.

In another article by<sup>15</sup>, the authors discussed the issues regarding the incorporation of One Health core competencies into educational programmes and provided certain recommendations. The authors also suggested a six-step approach and provided directions for the future. The paper by focused on the updated core competencies and listed the capabilities of a person who is competent in One Health<sup>16</sup>. The authors also addressed certain limitations and concluded that “the updated competencies from NEOH can be used to evaluate and enhance current curricula, create new ones, or inform professional training programs at all levels, including students, university teaching staff or government officials as well as continual professional development for frontline health practitioners and policymakers.”. There was also a needs assessment for a One Health Workforce Academy

by<sup>17</sup>, where the respondents “reported differences in their perspectives on the relative importance of competency domains of the One Health approach” and the authors concluded that there was “strong support from stakeholders for a One Health Workforce Academy that hosts competency-based training with opportunities for certification and continuing professional development”. As a result, despite the achievements accomplished particularly in the last 2 decades to make One Health a concept to shape the future of health, it is still being considered useful to have a more unified approach on One Health core competencies, create awareness among professionals and other relevant stakeholders to give utmost importance to this domain and to work together to solve all health issues caused by a variety of reasons from infectious disease pandemics to climate change, and also to prevent any future crises that await mankind. The recognition and adoption of this concept and its core competencies at the academic and institutional levels on a wider geographical scale will also enable the achievement of sustainable development goals as well as stronger cooperation and better communication between the different stakeholders.

Additionally, incorporating recent examples such as the COVID-19 pandemic and avian influenza outbreaks can illustrate the practical applications and importance of the One Health approach. These examples highlight the interconnectedness of human, animal, and environmental health and underscore the need for integrated strategies to manage and prevent such crises.

A systemic approach to health emphasizes the importance of understanding the complex interactions between humans, animals, and their environments. This can be achieved by incorporating modules on social-ecological systems (SES) and systems thinking into the curriculum. Additionally, integrated disease surveillance, covering both human and animal health, is vital for equipping future health professionals with practical skills in managing these systems. The curriculum should also address environmental determinants of health, like pollution and climate change, and their impact on the human-animal-environment interface. Modules on antimicrobial resistance (AMR), governance frameworks, and digital health tools (AI, big data, telehealth) would further prepare students for modern health challenges.

By integrating these aspects, the curriculum will better reflect the interconnected and systemic nature of One Health. These enhancements will ensure that future public health professionals are well-equipped to address complex health challenges in a holistic and effective manner.



## Alignment with Competency Frameworks

The One Health subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 4: One Health and Health Security
- Competency 6: Collaboration and Partnership

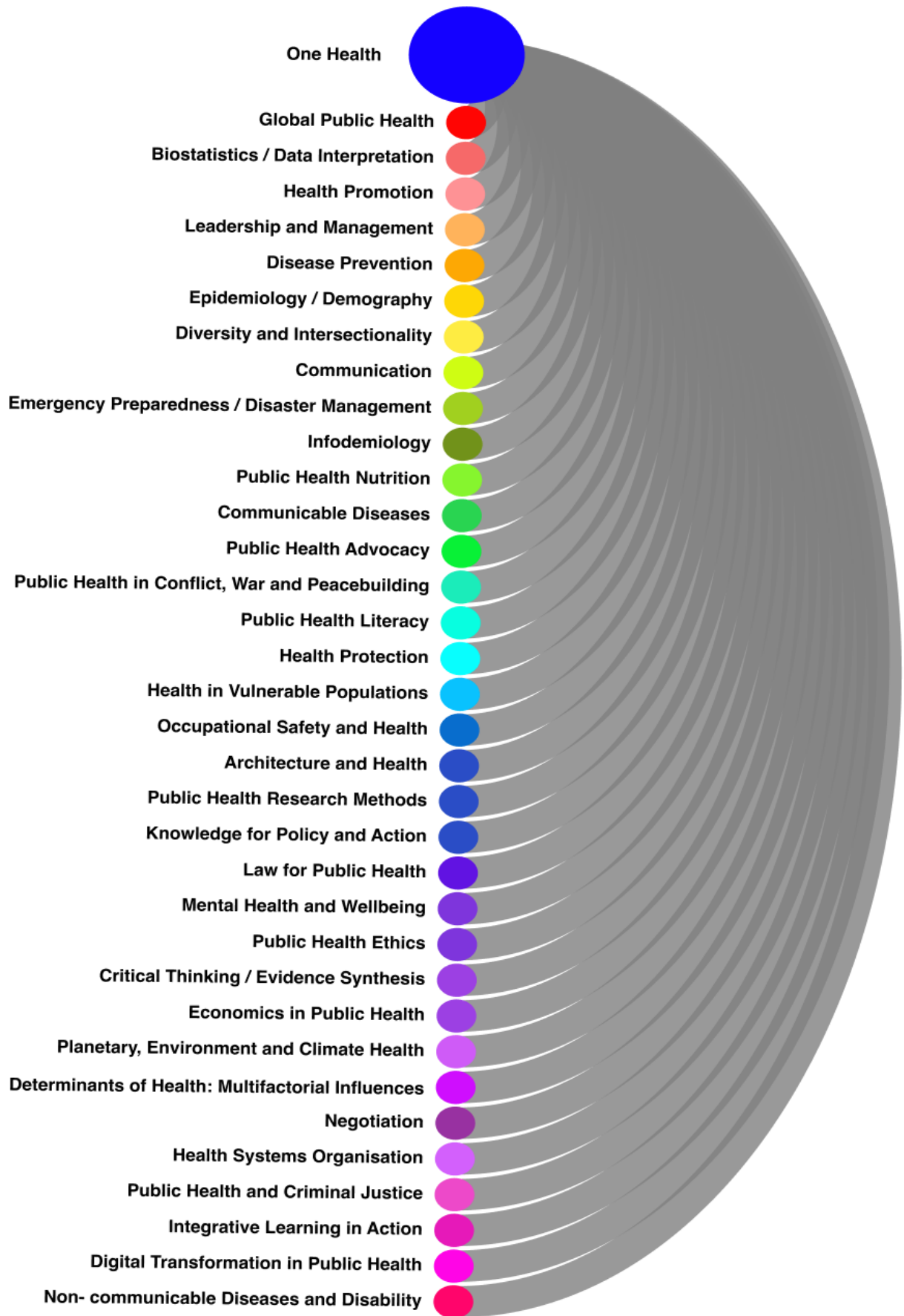
### WHO 12 Essential Public Health Functions, 2024

- EPHF 2: Public Health Emergency Management
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 11: Public Health Research, Evaluation and Knowledge

### Laing, G et al. Advancing One Health: Updated Core Competencies, 2023

- One Health Concepts
- Theoretical and Methodological Pluralism
- Harnessing Uncertainty, Paradox and Limited Knowledge
- Effective Communication
- Collaborative and Resilient Working
- Systems Understanding
- Transdisciplinarity
- Social, Cultural and Gender Equity and Inclusiveness
- Collective Learning and Reflective Practice

### Connectivity of One Health in Public Health curricula

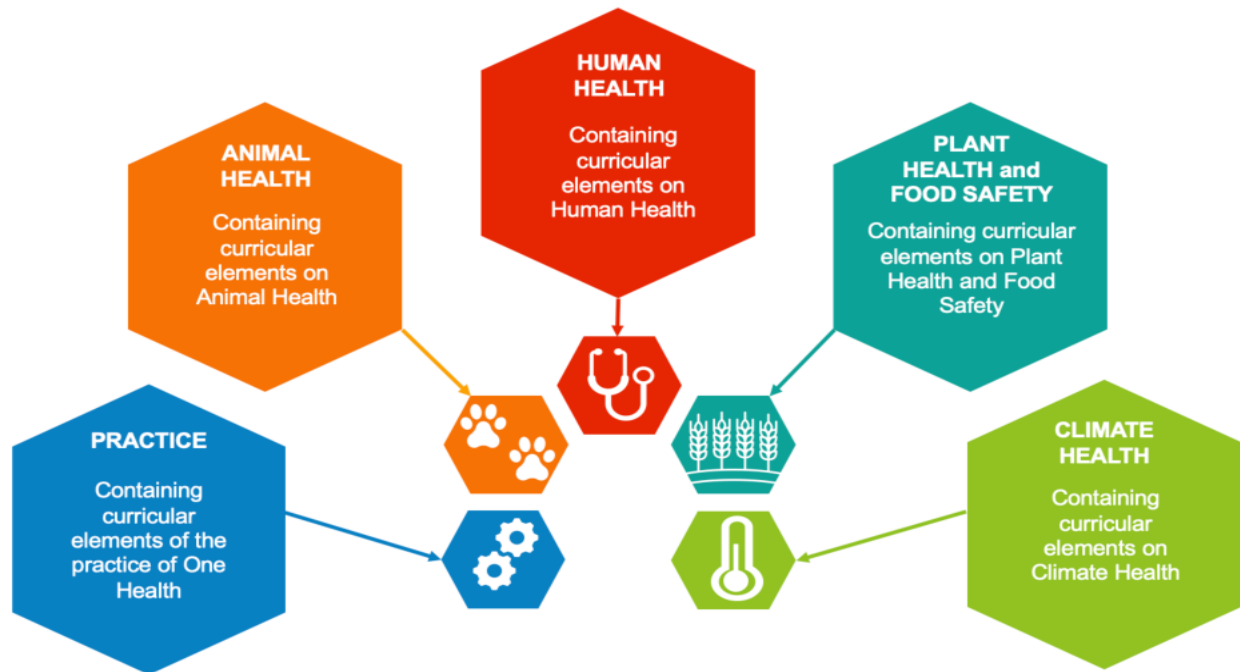


**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## One Health Curriculum Overview

At its core, One Health acknowledges that health challenges cannot be fully understood, let alone effectively addressed, through a single lens. As such educational programs need to advance in One Health as it serves as a nexus where students engage with diverse perspectives and disciplines, fostering critical thinking and problem-solving skills essential for addressing complex health challenges.

## One Health Themes



## One Health Curriculum

Suggested curricular elements are presented for different educational levels, i.e.

- Bachelor
- Master
- Doctorate
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Bachelor Degree Level

### PRACTICE

- Animal health control interventions (vaccination, surveillance, isolation & culling)
- Animal health surveillance (tracking (contact tracing) and prediction)
- Animals as sentinels of environmental hazards
- Antimicrobial resistance: prevention and action
- Behavioral sciences
- Biodiversity - knowledge and action (practice)
- Chemical and physical threat, knowledge, mitigation & resolution
- Comparative medicine and surgery (research & innovation)
- Co-operation with regulators, government and food industry
- Demography including migration
- Monitoring of specialised food production: fortified foods/gluten free/ allergens/ animal feed
- One health link - between environmental health, plant health and animal and human health
- Pandemic preparedness
- Public health ethics in one health
- Regulations: for food safety globally
- Relationship between animals and humans
- Risk assessment of both chemical and microbial hazards
- Risk communication
- SDGs - sustainable development goals
- The public health specialist in a multidisciplinary team addressing one health issues
- Threat management

### ANIMAL HEALTH

- Addressing a range of typical public health problems associated with domestic animals and wildlife (vector/zoonosis)
- Case example: covid-19, foot and mouth, bird flu and CJD etc
- Case study minks and covid19 - animal rights (animal) - lessons learned!
- Combined exposures in food chain (herbicides, pesticides) and effect (endocrine disruptors)
- Control and eradication in the animal reservoirs
- Effective reduction of the incidence of zoonotic diseases in humans through interventions in animals
- Epidemiology of agents including zoonoses
- Farm animal safety and welfare: animal stress and disease prevention
- Infectious diseases and how it can affect a food system including the disruption of supply chains by non-zoonotic agents.
- Major infectious diseases associated with animals e.G. Influenza (swine / avian), foot and mouth, coronaviruses,
- Safe and sustainable food systems
- Sustainable and safe globally sources- animal feed

### HUMAN HEALTH

- Cost of nutritious food vs cost of processed food; accessibility and availability (increased cost of living)
- Food borne disease i.e. Ergot (grain); bacterial/viral contamination of meat, vegetables, fruit]
- Microbiome changes in response to intensive monoculture
- Relationship between animals and humans (food, clothing, transport, labour, communication, companionship and sport (recreation/business))
- Sustainable diet
- Trust and mistrust (processes, information, infrastructure, inequalities)
- Trusted information sources
- Water safety in farming (impact of manures and agrochemicals on drinking and irrigation water)

## PLANT HEALTH and FOOD SAFETY

- Artificial environmental hygiene (hygiene of water in grow houses)
- Climate disaster effect on farming (flooding , fire) “no farmers, no food, no future”
- Ecological agriculture (as a means to balancing climate change)
- EU regulations and legislation on agriculture and food safety
- Food security – importance in war and climate change
- Genetically modified organisms gmos gene editing
- Economic toll of infectious disease of flora e.g. Tobacco mosaic virus, nightshade (potato/tomato) blight and bac. Xylella fastidiosa (olive trees)
- Investigations into outbreaks of food or water borne disease
- Natural environmental hygiene (animal waste/effluent management)
- Open pollinated plants (adaptable to environment) vs patented plants
- Rebuilding ecology and restoring biodiversity (plants, fungi and animals)
- Soil/plant health moving from farm to fork to from “soil to society”

## CLIMATE HEALTH

- Carbon sequestration agriculture providing solutions
- Climate change (potential public health threat associated)
- Climate change surveillance
- Desertification
- Environmental protection which is economically viable to food producers
- Fossil fuel use/dependence in agriculture
- Heat waves and its effects on human, animal and plant health
- Human induced biodiversity change e.g. Culling animals instead of protecting animals from biohazards
- Impact biodiversity has on forestry, in-land fisheries and agriculture
- Radon gas emission
- Reducing methane gas emissions associated with cattle farming
- Soil erosion and regenerative agriculture

## Master Degree Level

### PRACTICE

- AI and big data
- Animal health control interventions (vaccination, surveillance, isolation & culling)
- Animal health surveillance (tracking (contact tracing) and prediction)
- Animals as sentinels of environmental hazards
- Antimicrobial resistance: prevention and action
- Behavioral sciences
- Bridge the gap from research to intervention in one health
- Chemical and physical threat, knowledge, mitigation & resolution
- City planning
- Comparative medicine and surgery (research & innovation)
- Co-operation with regulators, government and food industry
- Demography including migration
- Food systems
- Monitoring of specialised food production: fortified foods/gluten free/ allergens/ animal feed
- One health link - between environmental health, plant health and animal and human health
- Pandemic preparedness
- Public health ethics in one health
- Regulations: for food safety globally
- Relationship between animals and humans
- Risk assessment of both chemical and microbial hazards
- Risk communication
- SDGs - sustainable development goals
- The public health specialist in a multidisciplinary team addressing one health issues
- Threat management
- Use of WGS for understanding webs of transmission and source attribution

### ANIMAL HEALTH

- Addressing a range of typical public health problems associated with domestic animals and wildlife (vector/zoonosis)
- Case example: covid-19, foot and mouth, bird flu and CJD etc
- Case study minks and covid19 - animal rights (animal) - lessons learned!
- Combined exposures in food chain (herbicides, pesticides) and effect (endocrine disruptors)
- Effective reduction of the incidence of zoonotic diseases in humans through interventions in animals
- Epidemiology of agents including zoonoses
- Infectious diseases and how it can affect a food system including the disruption of supply chains by non-zoonotic agents.
- Major infectious diseases associated with animals e.G. Influenza (swine / avian), foot and mouth, coronaviruses,
- Safe and sustainable food systems
- The Cambridge Declaration on Consciousness

## HUMAN HEALTH

- Food borne disease i.e. Ergot (grain); bacterial/viral contamination of meat, vegetables, fruit]
- Microbiome changes in response to intensive monoculture
- Relationship between animals and humans (food, clothing, transport, labour, communication, companionship and sport (recreation/business)
- Sustainable diet
- Trust and mistrust (processes, information, infrastructure, inequalities)
- Trusted information sources
- Water safety in farming (impact of manures and agrochemicals on drinking and irrigation water)

## PLANT HEALTH and FOOD SAFETY

- Artificial environmental hygiene (hygiene of water in grow houses)
- Climate disaster effect on farming (flooding , fire) “no farmers, no food, no future”
- EU regulations and legislation on agriculture and food safety
- Food security – importance in war and climate change
- Genetically modified organisms GMOs gene editing
- Economic toll of infectious disease of flora e.g. Tobacco mosaic virus, nightshade (potato/tomato) blight and *Bacteria xylella fastidiosa* (olive trees)
- Investigations into outbreaks of food or water borne disease
- Natural environmental hygiene (animal waste/effluent management)
- Soil/plant health moving from farm to fork to from “soil to society”

## CLIMATE HEALTH

- Climate change (potential public health threat associated)
- Climate change surveillance
- Desertification
- Heat waves and its effects on human, animal and plant health
- Human induced biodiversity change e.g. Culling animals instead of protecting animals from biohazards
- Impact biodiversity has on forestry, in-land fisheries and agriculture
- Radon gas emission

## Doctorate Degree Level

### PRACTICE

- AI and big data
- Animal health control interventions (vaccination, surveillance, isolation & culling)
- Animal health surveillance (tracking (contact tracing) and prediction)
- Animals as sentinels of environmental hazards
- Antimicrobial resistance: prevention and action
- Behavioural sciences
- Bridge the gap from research to intervention in one health
- City planning
- Comparative medicine and surgery (research & innovation)
- Co-operation with regulators, government and food industry
- Food systems
- Monitoring of specialised food production: fortified foods / gluten free / allergens / animal feed
- One health link - between environmental health, plant health and animal and human health
- Pandemic preparedness
- Public health ethics in one health
- Regulations: for food safety globally
- Risk assessment of both chemical and microbial hazards
- Risk communication
- Sdgs - sustainable development goals
- The public health specialist in a multidisciplinary team addressing one health issues
- Threat management
- Use of WGS for understanding webs of transmission and source attribution

### HUMAN HEALTH

- Food borne disease i.e Ergot (grain); bacterial/viral contamination of meat, vegetables, fruit]
- Microbiome changes in response to intensive monoculture
- Trust and mistrust (processes, information, infrastructure, inequalities)

### PLANT HEALTH and FOOD SAFETY

- Artificial environmental hygiene (hygiene of water in grow houses)
- Economic toll of infectious disease of flora e.g. Tobacco mosaic virus, nightshade (potato/tomato) blight and bac. *Xylella fastidiosa* (olive trees)
- Investigations into outbreaks of food or water borne disease
- Natural environmental hygiene (animal waste/effluent management)

### CLIMATE HEALTH

- Human induced biodiversity change e.g. Culling animals instead of protecting animals from biohazards



## Certificate and/or Diploma Level

### PRACTICE

- Animal health control interventions (vaccination, surveillance, isolation & culling)
- Animals as sentinels of environmental hazards
- Antimicrobial resistance: prevention and action
- Biodiversity - knowledge and action (practice)
- Chemical and physical threat, knowledge, mitigation & resolution
- City planning
- Demography including migration
- Food systems
- One health link - between environmental health, plant health and animal and human health
- Public health ethics in one health
- Relationship between animals and humans
- Sdgs - sustainable development goals

### ANIMAL HEALTH

- Addressing a range of typical public health problems associated with domestic animals and wildlife (vector/zoonosis)
- Case example: covid-19, foot and mouth, bird flu and CJD etc
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- Combined exposures in food chain (herbicides, pesticides) and effect (endocrine disruptors)
- Effective reduction of the incidence of zoonotic diseases in humans through interventions in animals
- Epidemiology of agents including zoonoses
- Infectious diseases and how it can affect a food system including the disruption of supply chains by non-zoonotic agents.
- Major infectious diseases associated with animals e.g. Influenza (swine / avian), foot and mouth, coronaviruses,
- Safe and sustainable food systems

### HUMAN HEALTH

- Cost of nutritious food vs cost of processed food; accessibility and availability (increased cost of living)
- Food borne disease i.e. Ergot (grain); bacterial/viral contamination of meat, vegetables, fruit]
- Sustainable diet
- Trusted information sources
- Water safety in farming (impact of manures and agrochemicals on drinking and irrigation water)

### PLANT HEALTH and FOOD SAFETY

- Artificial environmental hygiene (hygiene of water in grow houses)
- Climate disaster effect on farming (flooding , fire) “no farmers, no food, no future”
- EU regulations and legislation on agriculture and food safety
- Food security – importance in war and climate change
- Natural environmental hygiene (animal waste/effluent management)

### CLIMATE HEALTH

- Climate change (potential public health threat associated)
- Climate change surveillance
- Desertification
- Heat waves and its effects on human, animal and plant health
- Impact biodiversity has on forestry, in-land fisheries and agriculture

## Continuous Professional Development

### PRACTICE

- Chemical and physical threat, knowledge, mitigation & resolution
- Food systems
- One health link - between environmental health, plant health and animal and human health
- Public health ethics in one health
- SDGs - sustainable development goals

### ANIMAL HEALTH

- Case example: covid-19, foot and mouth, bird flu and CJD etc

### HUMAN HEALTH

- Sustainable diet
- Trusted information sources

### CLIMATE HEALTH

- Climate change (potential public health threat associated)
- Climate change surveillance
- Heat waves and its effects on human, animal and plant health

## Professional Specialised Training

### PRACTICE

- AI and big data
- Animal health control interventions (vaccination, surveillance, isolation & culling)
- Animal health surveillance (tracking (contact tracing) and prediction)
- Animals as sentinels of environmental hazards
- Antimicrobial resistance: prevention and action
- Behavioural sciences
- Bridge the gap from research to intervention in one health
- City planning
- Comparative medicine and surgery (research & innovation)
- Co-operation with regulators, government and food industry
- Food systems
- Monitoring of specialised food production: fortified foods/gluten free/ allergens/ animal feed
- One health link - between environmental health, plant health and animal and human health
- Pandemic preparedness
- Public health ethics in one health
- Risk assessment of both chemical and microbial hazards
- Risk communication
- SDGs - sustainable development goals
- The public health specialist in a multidisciplinary team addressing one health issues
- Threat management

### ANIMAL HEALTH

- Case study minks and Covid19 - animal rights (animal) - lessons learned!
- Combined exposures in food chain (herbicides, pesticides) and effect (endocrine disruptors)
- Infectious diseases and how it can affect a food system including the disruption of supply chains by non-zoonotic agents.
- Safe and sustainable food systems

### HUMAN HEALTH

- Food borne disease i.e. Ergot (grain); bacterial/viral contamination of meat, vegetables, fruit]
- Microbiome changes in response to intensive monoculture
- Trust and mistrust (processes, information, infrastructure, inequalities)

### PLANT HEALTH and FOOD SAFETY

- Artificial environmental hygiene (hygiene of water in grow houses)
- Climate disaster effect on farming (flooding , fire) “no farmers, no food, no future”
- Economic toll of infectious disease of flora e.g. Tobacco mosaic virus, nightshade (potato/tomato) blight and bac. *Xylella fastidiosa* (olive trees)
- Investigations into outbreaks of food or water borne disease
- Natural environmental hygiene (animal waste/effluent management)

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# Chapter 29

# Digital Transformation in Public Health



## Reflecting Digital Transformations in Public Health Curricula

**Contributors:** Rok Hrzic, Stefan Buttigieg, Brian Li Han Wong, Anabelle Macedo Silva, Karl F. Conyard, Mary Codd, Patty Kostkova, Nienke M. Schutte, Robin van Kessel

### Introduction

Digital technologies promise greater personalisation and precision in public health services, automation of repetitive tasks, and more efficient use of existing resources through rapid management and analysis of big data sets. To seize this opportunity, the public health workforce needs to become sufficiently competent to navigate these novel digital technologies and understand how to apply them across the spectrum of essential public health functions. With few exceptions, however, digital skills are not yet systematically incorporated into public health curricula.

### The promise and peril of digital transformations in public health

Digital transformation in public health is “a complex and multifaceted process that is disruptive and fundamentally changes the culture, operational models, and goals of public health services, centred on the health needs of the public.”<sup>1</sup> Critically, this includes not only the digitisation of existing processes and patient pathways but also devising entirely new ways of working, bringing about a cultural transformation.<sup>2</sup>

The widespread adoption of smartphones, wearable technology, and social media platforms since the 2000s was seized as new opportunities for public health interventions, while the COVID-19 pandemic accelerated the uptake of digital technologies within the health sector.<sup>3,4</sup> Legislation like the European Health Data Space regulation is creating increasingly sophisticated and technically advanced health information systems that require skilled professionals to manage efficiently and amplify the potential benefits of digital transformations.<sup>5</sup> On the other hand, the emergence of social media as a dominant source of health (mis)information, increasing concern about the mental health impacts of social media, and the growing role of 'Big Tech' in public health also create new challenges that most public health professionals are ill-equipped to handle promptly and comprehensively.<sup>6</sup> On top of that, the emergence of a range of artificial intelligence technologies could redesign and positively augment central tenets of health systems and healthcare delivery, while simultaneously posing a potential risk to public and population health through the spread of misinformation and reinforcement of health-harming behaviours.<sup>2</sup> To navigate the complexities of digital transformations in public health, there is an urgent need to upskill the public health workforce.

### Existing guidance on relevant competencies

At the time of publication, there are no generally agreed-upon competency frameworks focused on digital transformations in public health. However, sufficient relevant evidence is available to start an initial redesign of public health curricula in anticipation of more comprehensive guidance. For instance, we can learn from competency frameworks aimed at healthcare providers. A recent review of educational frameworks identified 28 digital health competency domains, including

basic information technology literacy, health information management, digital communication, ethical, legal, or regulatory requirements, and data privacy and security.<sup>7</sup>

Ongoing global and Europe-wide initiatives will improve the theoretical and practical basis for training the (public) health workforce. Building on its experience with infodemic management training, the WHO convened a Digital Health Competency Framework Committee in 2023 to develop a framework outlining competencies for digital health policymakers, programme planners or managers, health practitioners, and the general public. Another example is the EU-funded BeWell project ([bewell-project.eu](http://bewell-project.eu)), which developed a strategy for developing digital and green skills in healthcare and an overview of relevant training programmes.<sup>8</sup>

Currently available resources (e.g. the WHO-ITU Digital Health Platform Handbook)<sup>9</sup> are geared towards helping professionals navigate and steer digital transformations in health organisations and services. These resources are not explicitly aimed at directing public health workforce development, risking the oversight of public health-specific factors. Nevertheless, they can offer a promising starting point for the augmentation and redesigning public health curricula to include materials on digital transformations.

## Recommendations for curriculum redesign

Based on a comprehensive synthesis and expert consensus of priority areas in the digital determinants of health,<sup>2</sup> we identified and described the competency domains for undergraduate and general graduate public health education that are widely accepted as critical to public health in the digital era (Table 1). However, the key challenge is implementing new competency domains in public health curricula that balance well-established public health competencies with the new competencies required by digital transformations. To support institutions and educators in navigating this challenge, we provide four guiding principles.

Firstly, it is important to integrate relevant digital competencies throughout the curriculum rather than exclusively in standalone courses on digital transformations - especially in light of the ubiquitous nature of digitalisation.<sup>2</sup> This allows staff and students to contend with the challenges of digital transformation in the relevant context and avoids counterproductive pigeonholing of digital skills.<sup>10</sup> For example, emerging sources of health data can be studied in the context of an existing course on epidemiology; digital communication skills can be integrated into existing courses on health promotion. Secondly, the integration of digital competencies in organisational management and leadership skills is necessary to reflect digital transformations as a fundamental process of change in the way public health services are delivered. Thirdly, it is essential to foster literacy in managing organisations and leading organisational change. These themes are already highlighted in the WHO-ASPHER Competency Framework for the Public Health Workforce in the European Region. Some schools already provide relevant content in their core programmes. This experience, supplemented by the work of specialist groups such as the ASPHER Task Force on Digital Transformation in Public Health (DiPH), has contributed to the proposed curricular content in the ASPHER Core Curriculum for Public Health ([www.ccp.aspher.org](http://www.ccp.aspher.org)), a current and ongoing dynamic effort to define and harmonise PH curricula in support of the attainment of PH competencies. This also covers the potential to

upskill the existing public health workforce through executive training and other forms of continuous professional development.

Finally, it is vital to create an interdisciplinary academic community with a deep understanding of information technology and data engineering as well as public health disciplines. Digital transformations in public health require that the public health workforce be prepared to work closely with other professionals in and outside of the health sector, including employees of social media companies, software developers, data engineers and scientists.<sup>2</sup> This requires a bidirectional transition to an interdisciplinary curriculum. In one direction, public health education needs to foster digital skills in students with backgrounds in medicine or the health sciences. In the other direction, public health schools need to provide training in the principles of public health for information technology and engineering students interested in digital public health. To achieve this, public health schools will need to work collaboratively with faculties of computer science and engineering.

## **Acknowledgements**

\*The ASPHER task force on digital transformations includes Stefan Buttigieg, Clara Bermúdez-Tamayo, Mary Codd, Karl F. Conyard, Keren Dopelt, Mariusz Duplaga, Paula Sofia Herrera Espejel, Giovanna Failla, Magda Fonseca, Michal Grivna, Stephanie Hoffmann, Rok Hrzic, Alexandre Jaborska, Jaime Jimenez, Robin van Kessel, Patty Kostkova, Mirjana Kujundžić Tiljak, Szczepan Jakubowski, Anabelle Macedo Silva, Laura Maaß, Ana Cecilia Quiroga Gutierrez, Anna Odone, Gaetano Privitera, Nienke M. Schutte, Mariam Shokralla, Azhar Talal, Joost Verbeek, and Brian Li Han Wong.



Theme	Definition	Example priority educational components
<b>Using digital tools</b>	Provide essential public health functions using digital tools (hardware and software) and navigate emerging disruptive technologies like artificial intelligence.	Understanding how Public Health Information Systems works  Being knowledgeable of Infrastructures and the basics of a Digital Health Platform (with a focus on the relevant parts of the DHP that focus on PH functions)
<b>Digital Health Literacy and Digital Determinants of Health</b>	Digital health literacy is the ability to seek, understand, evaluate, and use digital health information and tools to make informed health decisions and engage with healthcare systems effectively.	Understanding what is Digital Health Literacy  Understanding the role of the Digital Determinants of Health
<b>Management and Leadership Skills applied to Digital Transformation in Health</b>	Deep understanding of the relevant skills necessary to implement pragmatic digital transformation in Public Health, including agile project management, change management, and behaviour change.	Understanding Digital Project Management (Waterfall, Agile and more)  Understanding Digital Behavioural Change (Behavioural Design Thinking)  Understanding Change Management  Developing the Case for Digital Transformation (Business Case, Financial Planning)
<b>Health data collection and analysis</b>	Collate, evaluate, and analyse health data from existing and emerging sources (e.g., electronic health records, social media, wearables, etc.)	Understanding data transfer agreements  Assessing data quality  Data science, including modelling big data and using machine learning approaches
<b>Health data management and governance</b>	Organise, manage, and govern health data efficiently following the FAIR principles to support research efficiency	Understanding FAIR principles and implementing international guidelines  Development of a data management plan  Increase knowledge of legislative/policy framework for data government and management  Development of Data Maturity Assessment and Health Data Strategy
<b>Ethics and regulation of digital transformations in society</b>	Understand and apply ethical frameworks to navigate data privacy, digital and data equity, and other relevant challenges	Understand the relevance of the exercise of regulatory and legislative activity in data protection to protect the digital dimension of fundamental rights, whether at the European Community level, nationally or globally.  Understand the general principles of the GDPR and the legal bases for justifying the use of personal data.  Understand the relevance of digital platforms regulation, both locally and internationally
<b>Infosphere and spread of information over digital networks</b>	Understand the spread of information across digital networks and apply these insights in designing effective communication strategies, including on social media	Measure and monitor the impact of infodemics during health emergencies  Detect and understand the spread and impact of infodemics  Respond and deploy interventions that protect and mitigate the infodemic and its harmful effects Evaluate infodemic interventions and strengthen the resilience of individuals and communities to infodemics  Promote the development, adaptation and application of tools for the management of infodemics
<b>The safe, ethical and sustainable use of Artificial Intelligence in Health</b>	The Safe, Ethical, and Sustainable Use of Artificial Intelligence in Health involves understanding and applying principles that ensure AI technologies are used responsibly in public health.	Familiarise learners with the various AI technologies and their applications in public health settings.  Critically appraise AI solutions used in a public health setting  Understand the regulatory and ethical frameworks supporting Artificial Intelligence in Healthcare and Public Health  Understand the importance of sustainable (environmental impact) and equitable AI solutions (bias mitigation and access to technologies)  Understand the use of Artificial Intelligence in Public Health Research

Table 1. Themes of competence relevant to digital transformations in public health

## Alignment to Competency Frameworks

The Digital Transformation in Public Health subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Copmetency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning and Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagment and Social Participation
- EPHF 11: Public Health Research, Evaluation and Knowledge

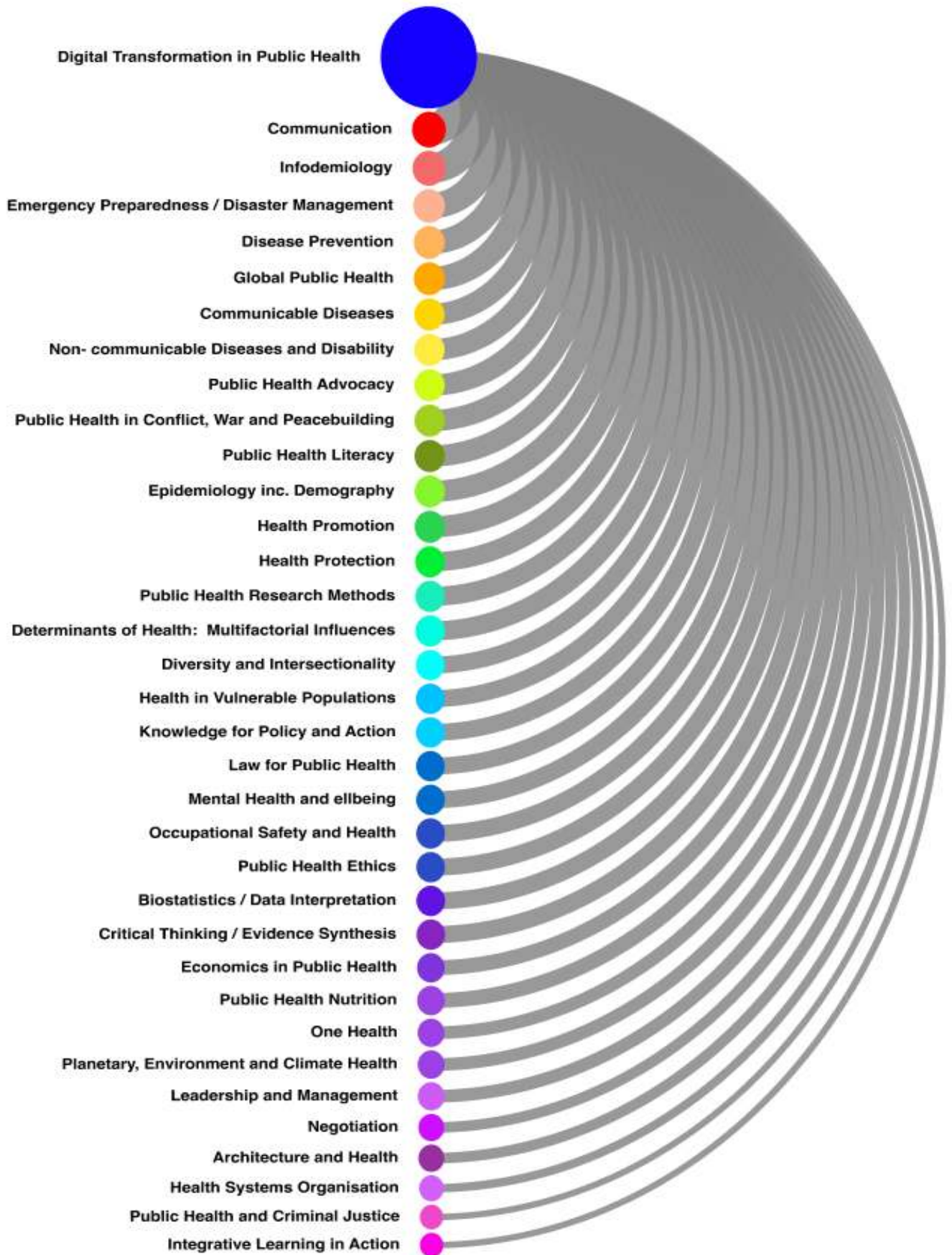
### WHO Building a Response Workforce to Manage Infodemics, 2021

- Domain 1: Infodemic Management
- Domain 2: Prepare and Monitor
- Domain 3: Detect and Intervene
- Domain 4: Strengthen

### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
  - C1: Public Health Communication
  - C2: Digital Transformation in Public Health and Infodemic Management
  - C3: Communication and Community Engagement
  - C4Scientific Communication and Advocacy for Policy Change

## Connectivity of Digital Transformations in Public Health curricula



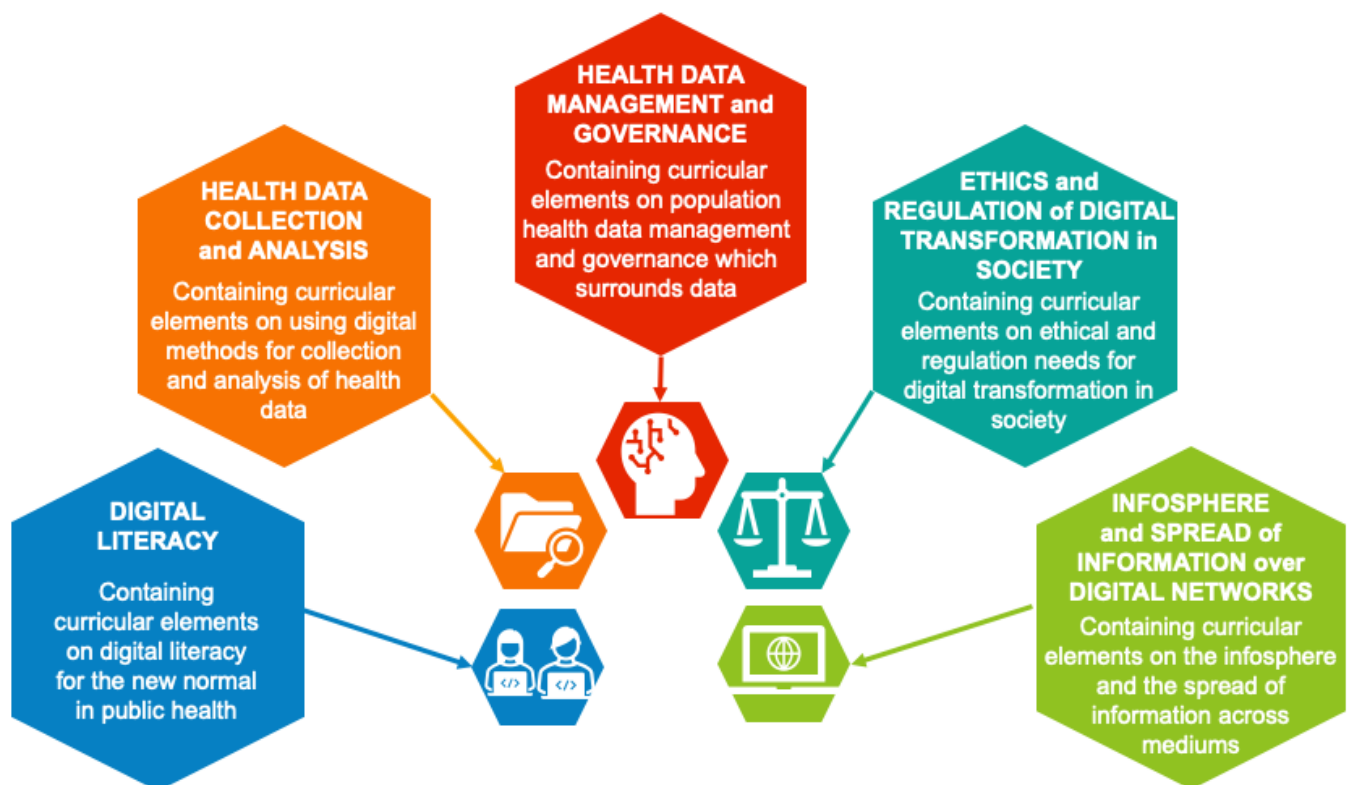
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Digital Transformation in Public Health Curriculum Overview

Digital transformation is revolutionizing public health, making it an essential focus for new students and the future workforce. The integration of digital tools, such as electronic medical records, wearable technology, and big data analytics, promises to enhance the personalization and precision of public health services, improve the efficiency of resource use, and automate repetitive tasks. This shift is critical in addressing emerging health challenges and managing large-scale health crises like pandemics more effectively but there are still challenges present which hinder full acceptance of these methodologies thus public health is aptly suited to mitigate challenges posed by digitalisation.

For new students, understanding digital health is crucial as it forms the foundation for modern public health practice. Students must be adept at using advanced technologies for data collection, analysis, and management to make informed decisions and implement effective population interventions. Digital literacy, data governance, and ethical considerations are now integral components of public health education, ensuring students are prepared for the complexities of the digital age. For the future workforce, possessing digital competencies is not just beneficial but necessary. The ability to navigate and leverage digital tools will enable public health professionals to respond swiftly to health threats, manage health information efficiently, and engage with the public through digital platforms. By equipping the workforce with these skills, we can ensure that public health services remain robust, adaptive, and capable of meeting future health challenges. Embracing digital transformation is key to sustaining and advancing public health in an increasingly digital world.

## Digital Transformations in Public Health Themes



## Digital Transformations in Public Health Curriculum

Recognizing the range of digital transformative elements in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. This inclusive approach equips learners with tools to engage in and address public health challenges of today. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex public health landscapes with insight and action orientated abilities.

Suggested curricular elements are presented for all educational levels in public health.

## Full curriculum

## DIGITAL LITERACY

- Basic IT literacy
- Digital communication
- Digital health competency
- Emerging disruptive technologies (AI)
- Digital skills for public health curricula
- Digital health tools (hardware and software)
- Promotion of digital health literacy
- Digital health literacy
- Health informational systems knowledge and practice
- Information literacy
- Patient centred applications and education – no jargon; with photos
- Services and information are easier to access (closer to people)
- Usability across the age range
- Readiness of use (general population buy-in)
- Providing teaching and training (medical education)
- Understand and carryout appropriate boolean term search methodologies
- Technological compatibility
- Clinical decision making support
- Data translation - dashboards for digital public health literacy

## HEALTH DATA COLLECTION and ANALYSIS

- Collate, evaluate, and analyse health data
- Emerging sources of health data (social media, wearables)
- Health information management
- Infodemic management
- Data privacy and security
- EMRs Electronic medical records & Distributed ledger technologies
- Wearables and sensors
- Precision public health
- Basic medical informatics
- Data analysis (access to data, usability, biostatistics)
- Prediction
- GPS data in pandemics
- Pathology/X-ray software
- Computerised Care Plans
- Health protection practice (ID/nonID)
- Infectious disease tracking and tracing
- Testing and investigation set-up (i.E. Mass population level)
- Medication calculators
- Genomics
- Knowledge & Practice: Statistical software - Microsoft Excel, STATA, SPSS, SAS, R
- Knowledge & Practice: Epidemiology data entry programmes - Microsoft ACCESS, EpiData
- Knowledge & Practice: Epidemiological calculators - EpiTab, OpenEpi, WinPEPI, PS (Power and Sample Size)
- Data Transfer Software - StatTransfer

### HEALTH DATA MANAGEMENT and GOVERNANCE

- Security, privacy and confidentiality
- GDPR (Data protection laws) & national laws on health data
- Organise, manage, and govern health data (FAIR principles)
- Structural interoperability
- Organisational interoperability
- Semantic interoperability
- Access and retrieval; information governance
- (AI) Artificial Intelligence
- Investment in technical infrastructure
- WHO resources for digital transformations

### ETHICS and REGULATION of DIGITAL TRANSFORMATION in SOCIETY

- Bioethics
- Ethical, legal, and regulatory requirements
- Data privacy
- Data and digital equity
- System readiness for emergency
- Risk management & risk communication
- Risk and its influence
- Data ethically used to shape service provision
- System readiness for emergency
- Certification of public health services
- Case study: proximity data in pandemics
- Certification of public health services
- Robotics
- Ethical case study: Use of drones for population surveillance

### INFOSPHERE and SPREAD of INFORMATION over DIGITAL NETWORKS

- Infodemiology
- Social media
- Spread of information across digital networks
- Communication strategies
- Health misinformation
- Big technologies role in public health
- Telecommunications (patients/population and health service)
- Food safety alerts
- Digital collaboration
- Futures 2030 commission
- Multimethod systems (referencing, plagiarism & grammatical system)- grammarly
- Knowledge & practice: bibliographic and referencing systems - endnote, reference manager, refwork & procite
- Environmental health
- Refining containment strategies
- Research methodologies
- Research use for policymakers
- Social health experience
- Relevant stakeholder involvement

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# Chapter 30

## Infodemiology



## Rationale and Current Status: Infodemiology

**Contributors:** *David Robert Grimes, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd,*

Infodemiology, a portmanteau of "information" and "epidemiology," is the study of the distribution and determinants of information in the modern world from traditional media sources, in particular the internet and social media platforms, with the aim of informing public health and policy. This discipline focuses on understanding how health information is disseminated, consumed, and its impact on public health behaviours and outcomes. It includes the analysis of trends, patterns, and effects of online health information, misinformation, and the role of digital platforms in public health crises.

Incorporating infodemiology into a public health curriculum is crucial due to the increasing influence of digital information on health behaviours. The rationale lies in its potential to enhance public health responses by identifying misinformation swiftly, understanding public concerns, and improving health communication strategies. Training in infodemiology equips future public health professionals with the skills to navigate and leverage digital information landscapes effectively, addressing challenges like misinformation and health disparities. By understanding the dynamics of information flow and its implications, public health professionals can design more effective interventions, promote accurate health information, and ultimately, improve population health outcomes. Integrating this field into public health education ensures preparedness in managing the complexities of information-driven health environments.

The subject area of infodemiology, as delineated in the referenced competency frameworks, aligns seamlessly with key core competencies essential for public health. Notably, it integrates the WHO-ASPHER Competency Framework (2020)<sup>1</sup>, which emphasizes the interdisciplinary approach to health information management. Additionally, it corresponds with the WHO Essential Public Health Functions (2024)<sup>2</sup>, ensuring comprehensive public health strategies are in place to manage information dissemination effectively.

Moreover, the European Centre for Disease Prevention and Control's (ECDC) 2022 Core Competencies in Applied Infectious Disease Epidemiology<sup>3</sup> underscores the necessity for robust skills in identifying and countering misinformation, further reinforcing the relevance of this domain. The WHO Competency Framework titled "Building a response workforce to manage infodemics" (2021)<sup>4</sup> specifically focuses on cultivating a workforce adept at navigating the complexities of information overload and misinformation during health crises.

Collectively, these frameworks highlight the imperative to equip public health professionals with advanced competencies in infodemiology. This ensures a proactive, evidence-based approach to managing health information, ultimately enhancing the efficacy of public health interventions and safeguarding community health.

Infodemiology, the study of information dynamics in public health, is intricately connected to various subject areas within the public health curriculum. Its relevance spans across multiple disciplines, enhancing the overall effectiveness of public health strategies.

In epidemiology, infodemiology provides tools to analyse the spread of health-related information and misinformation, offering insights into public behaviour that complement traditional disease tracking methods. This synergy aids in predicting and mitigating the impact of misinformation on health outcomes. Public health communication benefits significantly from infodemiology, which helps in crafting, disseminating, and evaluating accurate and culturally sensitive public health messages. By integrating health and media literacy, individuals can better evaluate the reliability of health information and sources. This ensures effective communication during health crises, promoting informed public responses. The field of digital public health and the digital transformation in public health leverages infodemiology through advanced data analytics and social listening tools to monitor information trends. This integration supports the early detection of misinformation and the development of digital health interventions.

In public health policy and management, insights from infodemiology inform regulations that promote accurate health information dissemination and counter misinformation. This alignment helps policymakers enhance public health strategies. Diversity and intersectionality intersect with infodemiology by exploring how individuals consume and act upon health information. This understanding is crucial for designing interventions that address the psychological and social determinants of health behaviour. In the realm of global public health, infodemiology addresses the challenges of information dissemination across diverse populations. It ensures that public health interventions are effective in different cultural and socioeconomic contexts. Misinformation can impede public health efforts. Emergency preparedness and disaster management benefit from real-time data provided by infodemiology on public perceptions and misinformation trends, enabling swift and effective responses to health emergencies while also preventing previous episodes of misinformation changing discourse which develop into negative population health outcomes

The ethical and legal aspects of public health are enriched by infodemiology, which addresses issues like data privacy and the regulation of misinformation, ensuring that ethical standards are upheld in public health information management.

## Alignment to Competency Frameworks

The Infodemiology subject area of this curriculum is aligned with the following competency frameworks and associated competencies:

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Copmetency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning and Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagment and Social participation
- EPHF 11: Public Health Research, Evaluation and Knowledge

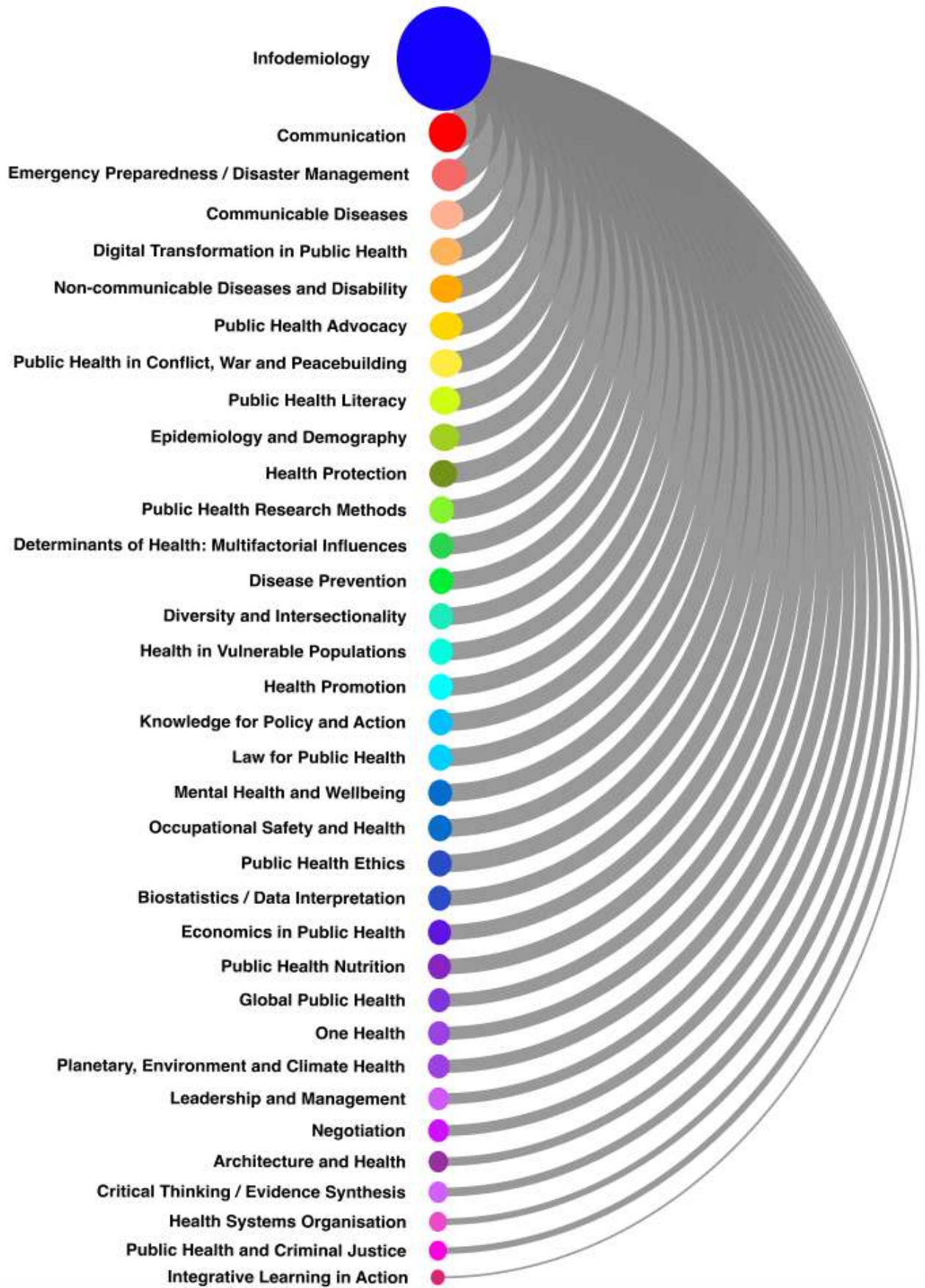
### WHO Building a Response Workforce to Manage Infodemics, 2021

- Domain 1: Infodemic Management
- Domain 2: Prepare and Monitor
- Domain 3: Detect and Intervene
- Domain 4: Strengthen

### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
  - C1: Public Health Communication
  - C2: Infodemiology and Infodemic Management
  - C3: Communication and Community Engagement
  - C4Scientific Communication and Advocacy for Policy Change

# Connectivity of Infodemiology in Public Health curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Infodemiology Curriculum Overview

Infodemiology is an important element for students in public health education, as it equips them with essential skills to navigate the increasingly digital landscape of health information. Understanding infodemiology enables students to monitor online data streams, identify emerging health trends, and assess public perceptions and behaviours effectively. This knowledge is invaluable for early detection of health threats, designing targeted health communication strategies, and evaluating the impact of public health interventions.

Infodemiology fosters critical thinking and data analysis skills, empowering students to distinguish between credible information and misinformation in an era of rampant online health rumours and fake news. By integrating infodemiology into their education, students are better equipped to contribute to evidence-based decision-making, evidence appraisal, improve health communication practices, and ultimately, advance the field of public health in addressing complex health challenges.

### Infodemiology Themes



## Infodemiology Curriculum

Recognizing the range of infodemiological challenges in public health, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. This inclusive approach equips learners with tools to engage in and address public health challenges of today. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex public health landscapes with insight and action orientated abilities.

Suggested curricular elements for all educational levels in public health are presented, i.e.

- Bachelor
- Master
- Doctorate
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Specialised Training

## Full curriculum

**UNDERSTANDING INFODEMICS**

- Definition and scope of infodemics
- Impact of misinformation and information overload on public health
- Categorizing types of information including accurate, misinformation, disinformation, and malinformation
- The Language of Infodemiology: volume of information; velocity of information
- Misinformation, disinformation, and malinformation

**MONITORING and ANALYSIS**

- Social listening and data analysis
- Monitoring digital and social media platforms
- Analyzing data trends
- Identifying emerging infodemic signals
- Measure and quantify the penetration of infodemics
- Ascertain the origin and spread of misinformation
- Track information flow
- Track public sentiment
- Data analytical skills to understand epidemiological spread and impact of information

**EVIDENCE-BASED INTERVENTIONS**

- Health and media literacy
- Strategies for countering misinformation
- Strategies for promoting accurate information
- Strategies for enhancing public health communication
- Intervention design
- Intervention implementation
- Intervention assessment of effectiveness
- Adaptation strategies based on continuous feedback of information received
- Evidence-based and evidence-informed decision making for successful infodemic management
- Risk communication
- Preliminary analysis and strategy development

**COMMUNICATION and ENGAGEMENT**

- Techniques of effective communication
- Principles of effective communication and community engagement, including cultural and linguistic considerations
- Clear communication strategies targeting groups, communities, settings, and organizations (e.g., workplaces, schools, healthcare facilities)
- Interdisciplinary approach to communication
- Social media use and misuse
- Knowledge transfer and exchange methodologies
- Traditional media, incl. press releases
- Key public health messages for the particular infectious disease, in order to optimize individual and population protection
- Community engagement
- Stakeholder engagement and support
- Media engagement and support
- Public health communication
- Use of diverse communication channels
- Targeted communication strategies to address misinformation
- Cultural and clinical sensitivity
- Regulation of health information vs. Freedom of Speech (the typed word)

**COLLABORATION and PARTNERSHIP**

- Collaborate with Infodemiologists to provide credibility to the dissemination of PH information
- Importance of multi-sectoral collaboration
- The role of various stakeholders in infodemic management
- Building and maintaining partnerships
- Coordination with other health sector stakeholders and organizations

**EVALUATION and ADAPTATION**

- Methods for evaluating the impact of infodemic management strategies and interventions
- Evaluation of analysis and data-driven adjustment to interventions



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# Chapter 31

## Public Health Literacy



## Rationale and Current Status: Public Health Literacy

**Contributors:** *Nora Vesela, Alena Petrakova, Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd*

Literacy is the ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with a variety of contexts. Public health literacy refers to the ability of individuals to access, understand, evaluate, and use information to make informed decisions regarding their health and the health of their communities<sup>1-2</sup>. This encompasses not only personal health management but also the capacity to engage in public health activities, understand public health policies, and contribute to community health improvement. The scope of public health literacy includes understanding health information, navigating healthcare systems, effective communication, cultural and clinical sensitivity, and participation in health-promoting behaviours<sup>3</sup>.

A focus on public health literacy in a public health curriculum is health literacy underpins its importance as determinant of health<sup>4</sup>. Individuals with higher health literacy are better equipped to manage chronic diseases, understand and adhere to medical instructions, and engage in preventive health behaviours. The level of health literacy depends on the literacy of the population and the overall level of education. Low literacy not only hinders the development of health literacy but also limits personal, social and cultural development. Public health literacy empowers communities by enhancing their capacity to participate in health decision-making processes, advocate for healthier environments, and support public health initiatives<sup>5</sup>.

In the context of infectious diseases as evidenced by the Covid-19 pandemic, effective health communication tailored to different literacy levels can significantly impact the control and prevention of disease spread<sup>6</sup>. Public health professionals must be adept at creating and disseminating clear, culturally sensitive health messages. The present era is built on information, on quickly acquired information and on the quest for instantly generated data, coupled with expectation to react quickly to the information received<sup>7</sup>.

The COVID-19 pandemic identified concerns about the accuracy of information disseminated through digital and physical information systems. Infodemics related to the spread of COVID-19 was identified by the World Health Organization (WHO) in early 2020<sup>8</sup> as a significant threat to public health.

Health literacy is about the ability to navigate through the amount of information, interpret it correctly and then use it. There is the issue of understanding and being able to evaluate the information obtained. Subsequent application then completes the whole ability to process the acquired information<sup>9-10</sup>. Finally, the evolving landscape of health information, particularly with the rise of digital media and the need for infodemic management, underscores the necessity of equipping public health practitioners with robust literacy skills to combat misinformation and foster informed public.

Organizational health literacy (OHL) is defined as ‘the ability of health organizations to provide services and information that are easy for patients to find, understand, and use, to help patients make decisions, and to remove existing barriers’. It is important that these skills and traits are independent of the level of health literacy of the individuals 2nd that they have specifically targeted individuals with low health literacy<sup>11-12</sup>. In other words, a healthcare literate organization must have the ability to help individuals in the best possible way to reach, understand and use services and information, regardless of the level of literacy. Public health and social service organizations have a responsibility to provide services and information in ways that promote equitable access and engagement, that are responsive to diverse needs and preferences, and support people to participate in decisions regarding their health and wellbeing<sup>13</sup>.

The subject area of public health literacy aligns with several critical core competency sets. These include the WHO- ASPHER Competency Framework 2020<sup>14</sup>, which emphasizes the skills required for effective public health practice in the 21st century, and the WHO 12 Essential Public Health Functions 2024<sup>15</sup>, which delineate key activities necessary for robust public health systems. Additionally, the Dahlgren-Whitehead Determinants of Health Model<sup>16</sup> provides a comprehensive framework for understanding the multifaceted influences on health, while the Council on Linkages Between Academia and Public Health Practice (2021)<sup>17</sup> underscores the integration of academic knowledge with practical public health applications.

The CDC Public Health Core Competency Model, 2021<sup>18</sup> based on the Council on Linkages Between Academia and Public Health Practice highlights the importance of health literacy in achieving effective public health outcomes. This model focuses on the competencies needed to promote health literacy among populations, facilitating better health communication and decision-making processes. The ECDC Core Competencies in Applied Infectious Disease Epidemiology (2022)<sup>19</sup> is an important framework that focuses on key competencies for communication, community engagement, Infodemiology and infodemic management.

Public health literacy is linked with several key subject areas, including health communication, which focuses on effectively conveying health information to diverse populations; epidemiology, which studies the distribution and determinants of health events to inform targeted interventions; behavioural science, which examines the psychological factors influencing health behaviours; health policy, which involves the creation and implementation of policies to improve public health; and community health, which addresses health outcomes and disparities within specific populations. These areas collectively contribute to a comprehensive approach to enhancing health literacy and improving public health outcomes.

In conclusion, integrating public health literacy into the curriculum is essential for preparing public health professionals to effectively communicate, engage with communities, and address health disparities. By interlinking key areas such as health communication, epidemiology, behavioural science, health policy, and community health, students gain a well-rounded understanding necessary for promoting health

literacy and improving public health outcomes. This comprehensive approach ensures that future public health practitioners are equipped to meet the challenges of an increasingly complex health landscape.

## **Alignment to Competency Frameworks**

The Public Health Literacy Subject Area of this curriculum are aligned with the following competency frameworks and associated competencies:

### **WHO-ASPHER Competency Framework, 2020**

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Competency 10: Organisational Literacy and Adaptability

### **WHO 12 Essential Public Health Functions, 2024**

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 11: Public Health Research, Evaluation and Knowledge

### **WHO Building a Response Workforce to Manage Infodemics, 2021**

- Domain 1: Infodemic Management
- Domain 2: Prepare and Monitor
- Domain 3: Detect and Intervene
- Domain 4: Strengthen

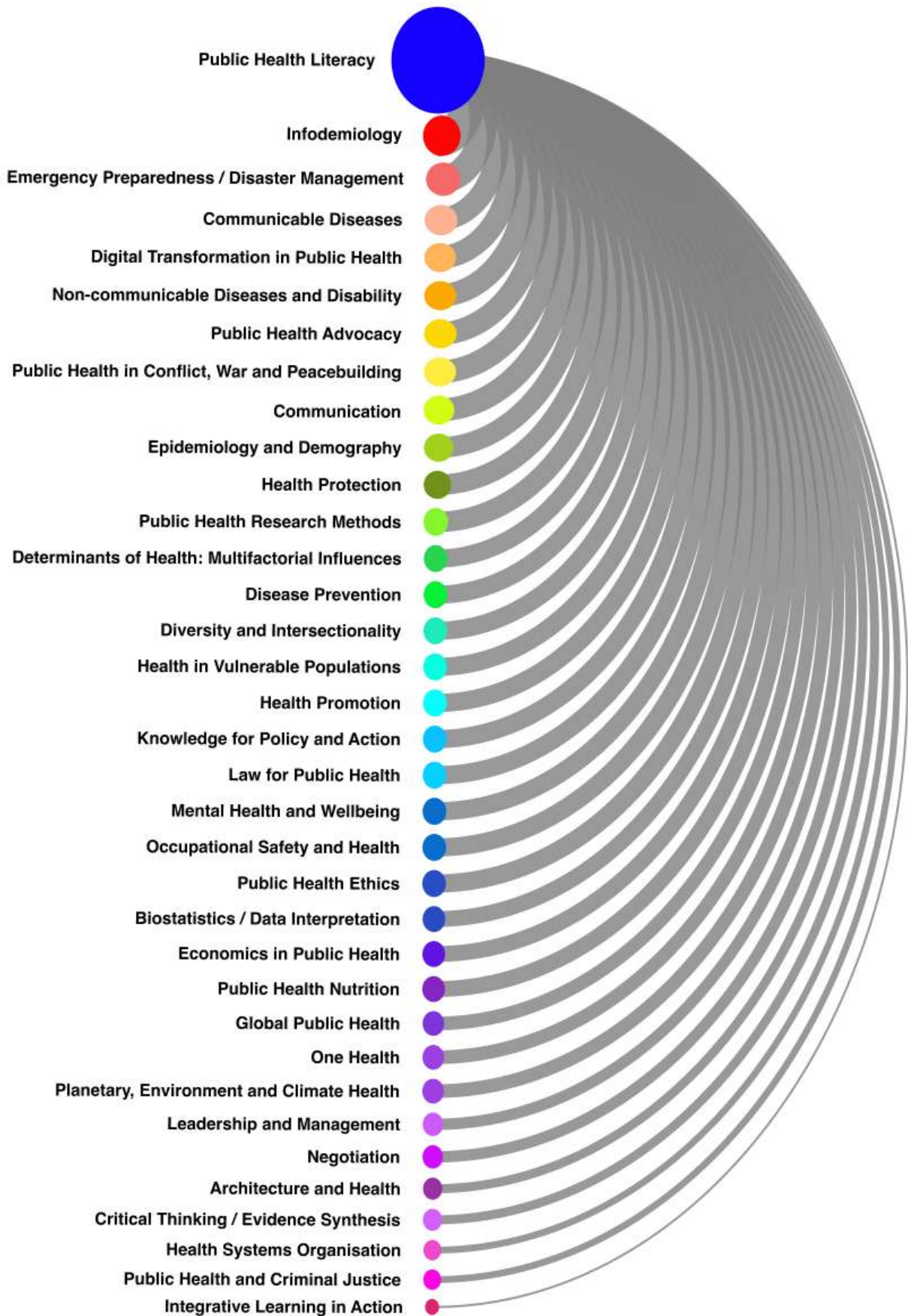
### **ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022**

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
  - C1: Public Health Communication
  - C2: Infodemiology and Infodemic Management
  - C3: Communication and Community Engagement
  - C4: Scientific Communication and Advocacy for Policy Change

### **Council on Linkages Between Academia and Public Health Practice, 2021**

- Domain 3: Communication Skills

# Connectivity of Public Health Literacy in Public Health curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Public Health Literacy Curriculum Overview

Public health literacy is crucial for students and professionals alike. It empowers individuals and communities to make informed health decisions, reducing disparities and improving outcomes. Understanding health literacy principles enables professionals to design effective communication strategies accessible to diverse populations, enhancing the impact of public health initiatives. Clear communication about disease spread, prevention, and treatment is vital to managing infectious diseases and preventing outbreaks, particularly in crises like the COVID-19 pandemic, where misinformation poses significant challenges.

Integrating public health literacy into education equips future professionals with skills to engage stakeholders and address complex health issues collaboratively, fostering a more informed and collaborative public health workforce. Moreover, public health literacy aligns with competency frameworks, ensuring education and training meet the highest standards, leading to more effective and equitable public health interventions. In summary, public health literacy is essential for informed decision-making, crisis management, collaboration, and excellence in public health practice.

### Public Health Literacy Themes





## Public Health Literacy Curriculum

Recognizing that public health literacy is taught through a variety of means either as a standalone module/unit or mixed with other modules/units, it is imperative that we ensure that the knowledge and skills imparted are ready for those who require public health interventions, the Expert Advisory Group stresses the need for a curriculum that accommodates all educational levels. This inclusive approach equips learners with tools to engage in and address public health challenges of today. Furthermore, by fostering inclusivity across educational tiers, the curriculum prepares a diverse cohort of individuals to navigate complex public health landscapes with insight and action orientated abilities.

Suggested curricular elements are presented for all educational levels

## Full Curriculum

### HEALTH LITERACY FOUNDATIONS and THEORETICAL FRAMEWORKS

- Theoretical and empirical foundations of health literacy and its promotion
- Health behavior models
- Salutogenesis
- Health and rights of (commitment of) equality, diversity and inclusion
- Self-determination theory
- Knowledge transfer and exchange methodologies

### COMMUNICATION STRATEGIES and PRACTICES

- Adaptation of communication content to different levels of health literacy in different groups
- Right to Health : Universal precautions for effective communication (interpersonal and mediated) with low health literacy audiences
- Target group-specific communication, e.g., With cooperation partners and respondents
- Traditional media, incl. Press releases, working with journalists
- Key public health messages for the particular infectious disease, in order to optimize individual and population protection
- Quality assurance in health communication
- Evidence-based and evidence-informed decision making for successful infodemic management

### COMMUNITY and PROFESSIONAL ENGAGEMENT

- Work with associated schools, education authorities and NGOs
- Organisational and system literacy
- Continued professional education around advocacy and literacy
- Cultural and clinical sensitivity
- Political commitment, policy support and social acceptance for specific objective/intervention
- Patient and public involvement as a key to community engagement

### PATIENT-CENTERED CARE and DECISION-MAKING

- Concept of autonomy
- Coping with illness and shared decision-making
- Coping strategies and resilience
- Patient empowerment and advocacy
- Concept of paternalism

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# Chapter 32

## Critical Thinking and Knowledge Synthesis



## Rationale and Current Status: Critical thinking /Knowledge synthesis

**Contributors:** *Mariah De Vos, Karl F. Conyard, Uma Divya Kudupudi*

Critical thinking and evidence synthesis are foundational competencies for public health professionals, enabling them to evaluate and integrate diverse sources of information to inform public health practice and policy. This subject area involves the systematic review of research, the appraisal of evidence quality, and the synthesis of findings to draw actionable conclusions. Developing these skills is essential for making informed decisions that enhance population health outcomes.

In the realm of public health, critical thinking and evidence synthesis are indispensable tools. Public health professionals must navigate a vast array of data, discern reliable evidence, and apply it to real-world contexts. Research indicates that critical thinking skills are often underdeveloped in public health education (Brown & Green). To address this, public health advocacy can play a crucial role in emphasizing the importance of evidence-based practice and fostering a culture of critical inquiry.

Competency frameworks such as the WHO-ASPHER Competency Framework 2020<sup>1</sup> and the WHO Essential Public Health Functions 2024<sup>2</sup> emphasize the necessity of critical thinking and evidence synthesis in effective public health practice. The ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022<sup>3</sup> and within the Council on Linkages Between Academia and Public Health Practice (2021)<sup>4</sup> further highlight the importance of these skills in addressing complex health challenges and improving disease control measures.

By incorporating critical thinking and evidence synthesis into public health curricula, educational institutions can cultivate professionals who are adept at evaluating evidence, making data-driven decisions, and advocating for best practices. These competencies empower public health leaders to navigate the complexities of modern health landscapes and implement strategies that are both effective and evidence based.

Incorporating public health advocacy into the curriculum is essential for developing skilled public health professionals who can effectively address health disparities and champion health equity. By aligning with key competency frameworks and fostering critical advocacy skills, educational institutions prepare graduates to become influential leaders and agents of change in the public health arena.

## Alignment to Competency Frameworks

The Critical thinking and Knowledge synthesis subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 2: Promoting Health
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Competency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

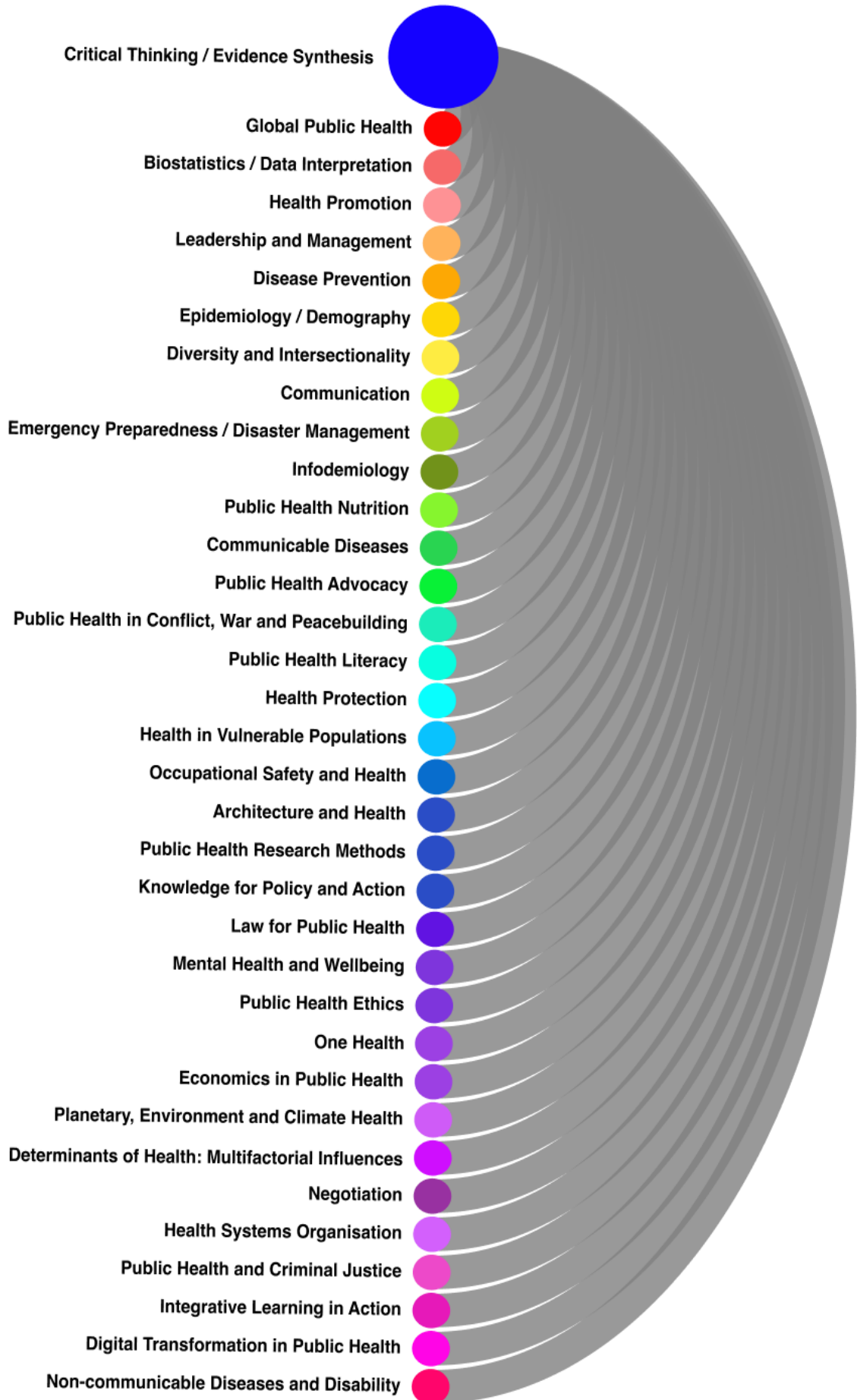
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
  - C1: Public Health Communication
  - C2: Infodemiology and Infodemic Management
  - C3: Communication and Community Engagement
  - C4: Scientific Communication and Advocacy for Policy Change

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 2: Policy Development and Program Planning
- Domain 3: Communication Skills
- Domain 4: Health Equity Skills
- Domain 5: Community Partnership Skills
- Domain 7: Management and Finance Skills
- Domain 8: Leadership and Systems Thinking Skills

### Connectivity of Critical Thinking / Knowledge Synthesis in PH curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Critical Thinking and Knowledge Synthesis Curriculum Overview

This subject is crucial for students and professionals as it equips them with the skills and knowledge necessary to influence all realms of public health practice. Understanding public health advocacy empowers individuals to effectively communicate health messages, mobilize communities, and collaborate with stakeholders to address complex health challenges. For students, it lays a foundation for impactful careers, enabling them to become proactive leaders who can critically analyse situations and synthesis knowledge for better public health outcomes and healthier communities.

## Critical Thinking and Knowledge Synthesis Themes



Suggested curricular elements are presented for all educational levels



## Full Curriculum

### CRITICAL ANALYSIS and EVALUATION

- Foundations of critical thinking and logic in public health
- Cognitive biases and identifying assumptions
- Evaluating sources and assessing credibility of information
- Distinguishing correlation from causation
- Developing and testing research questions and public health theories
- Understanding and using public health databases
- Interpreting and analyzing statistical results
- Critical thinking in policy development and health risk assessment
- Critical appraisal and review of public health campaigns and programs
- Cultural competence and addressing health equity
- Assessing data quality and mitigating health misinformation
- Risk communication and ethical decision-making in public health
- Reflective practice and leadership in public health

### EVIDENCE SYNTHESIS and APPLICATION

- Synthesizing evidence from multiple studies
- Meta-analysis techniques
- Critical appraisal of systematic reviews
- Evidence-based public health
- Frameworks for evidence-based public health practice
- Evidence synthesis for health policy development
- Causal inference in public health research
- Critical review of health programs and policies
- Comparative effectiveness research
- Assessing public health needs and assets
- Innovation and critical thinking in public health
- Critical thinking in public health informatics
- Developing critical thinking through public health simulation

### RESEARCH METHODS and DATA ANALYSIS

- Research methods in public health
- Qualitative data analysis and synthesis
- Using geographic information systems (GIS) for public health
- Ethical considerations in public health research
- Developing and critiquing public health surveys
- Analyzing public health surveillance data
- Integrating quantitative and qualitative data
- Ethnographic methods in public health
- Understanding and addressing social determinants through critical analysis
- Frameworks for health impact assessment

### COMMUNICATION and DECISION-MAKING

- Communicating public health evidence to stakeholders
- Health impact evaluation techniques
- Health communication strategies
- Decision-making models in public health
- Identifying and mitigating health misinformation
- Scenario planning and foresight in public health
- Problem-solving techniques in public health
- Health literacy interventions
- Risk communication and critical thinking

### POLICY and PRACTICE

- Critical thinking in health policy development
- Case studies in public health: applying critical thinking
- Public health law and regulation
- Frameworks for health impact assessment
- Interpreting and critiquing public health legislation
- Developing public health logic models
- Critical thinking in health technology assessment
- Assessing the impact of social media on public health

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# Chapter 33

## Integrative Learning in Action



## Rationale and Current Status: Integrative Learning in Action

**Contributors:** Karl F. Conyard, Uma Divya Kudupudi, Mariah De Vos, Mary Codd

Integrative learning in action is an important component of the public health education experience, offering students the opportunity to apply theoretical knowledge and practical skills acquired throughout their previous academic training. This unifying subject serves as a bridge between theoretical learning and real-world public health practice, synthesising diverse learning experiences into tangible outcomes that contribute to advancement in public health. Integrative learning opportunities may include practical placements, internships, research projects, dissertations, scientific presentations or publications any of which can foster a deeper understanding of public health issues and concepts, cultivate critical thinking, problem-solving abilities, and professional competencies essential for success in the field.

Integrative Learning in Action can also encourage students to engage with stakeholders, communities, and interdisciplinary teams to develop evidence-based solutions that promote health equity, address social determinants of health, and improve population health outcomes. Whether through conducting research, designing interventions, or participating in hands-on public health practice, students can make meaningful contributions to the field while honing their skills as future public health leaders. Integrative Learning exercises serves as a catalyst for empowering students to become effective agents of change who are equipped to tackle emerging public health challenges and promote health and well-being in diverse settings.

A central aspect of this alignment is the emphasis on practical work for students. The integration of these frameworks into the curriculum guarantees that students do not merely learn theoretical concepts but also engage in hands-on experiences that are crucial for their professional development. Through practical projects, fieldwork, and real-world applications, students can bridge the gap between academic knowledge and public health practice. These experiences prepare them to address health challenges, implement evidence-based interventions, and respond to public health emergencies with competence and confidence.

This subject area aligns with all core competency sets for public health. It adheres to the WHO-ASPHER Competency Framework 2020<sup>1</sup>, ensuring that students acquire the necessary skills and knowledge to meet international standards in public health practice. It is in harmony with the WHO Essential Public Health Functions (EPHFs) 2024<sup>2</sup>, which underscore the foundational elements for effective public health systems worldwide. It aligns with the ECDC Core Competencies in Applied Infectious Disease<sup>3</sup>, ensuring students are prepared with the best knowledge to understand how to address real-world infectious disease challenges. It encompasses all domains of the International Consortium on Teaching Epidemiology<sup>4</sup> and ASPHER Climate Health Core Competencies for Education<sup>5</sup>, and the updated One Health Core Competencies<sup>6</sup> among others.

By incorporating these diverse competencies into the curriculum, the subject area ensures that graduates are equipped with practical education which prepares them to contribute meaningfully to public health systems, leveraging interdisciplinary skills and hands-on experience to make an impact on population health.

## **Influential Factors in Integrative Learning in Action**

### **Student Support**

A key to the success of integrative learning is mentorship and supervision. This provides students with guidance, support, and real-world insights. Experienced mentors can help bridge the gap between theoretical knowledge and practical application. They offer the lived experience, personalized advice, share their professional experiences, and assist mentees in navigating career paths. This relationship not only enhances the learning experience but also fosters professional growth and confidence. Effective supervision ensures that students progress appropriately through their educational journey. Supervisors provide oversight, ensuring that the academic and practical components of the curriculum are being met. They offer feedback, help students stay on track with their learning objectives, and ensure that any challenges or difficulties are addressed promptly.

### **Continuous Input**

Continuous input from instructors, peers, and professionals in the field underpins the dynamic learning process in public health education. Regular feedback and constructive criticism help students refine their skills and knowledge. Ongoing input encourages reflective practice, enabling students to continually assess and improve their competencies. In a field that is constantly evolving, such as public health, staying updated with the latest research, policies, and practices through continuous input is vital.

### **Possible outputs**

Possible outputs from these strategies include lived experience of the research journey, from data collection, analysis to publication. Presentation of work at scientific meetings and conferences also encompass further opportunities to further develop key skills and competence in public health action.

In conclusion, mentorship, supervision, continuous input, and practical elements are integral to effective public health training. These components ensure that students not only acquire theoretical knowledge but also develop the practical skills necessary to address real-world public health issues.

## Alignment with Competency Frameworks

The Integrative Learning in Action subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- All Competencies

### WHO 12 Essential Public Health Functions, 2024

- All EPHFs 1-12

### ECDC Core Competencies in Applied Infectious Disease, 2022

- All Subject areas

### International Consortium on Teaching Epidemiology, Switzerland, 2023

- All Domains 1-5

### ASPHER Climate Health Core Competencies for Education 2022

- All Competencies

### Laing.G et al, Advancing One Health: Updated core competencies, 2023

- All Domains

### ASPHER Diversity and Intersectionality Syllabi for Public Health Education, 2023

- All Elements

### EU CompHP Core Competencies for Health Promotion, European Commission, 2011

- All Competencies

### American College of Lifestyle Medicine, Lifestyle Medicine Core competencies 2022

- All Competencies

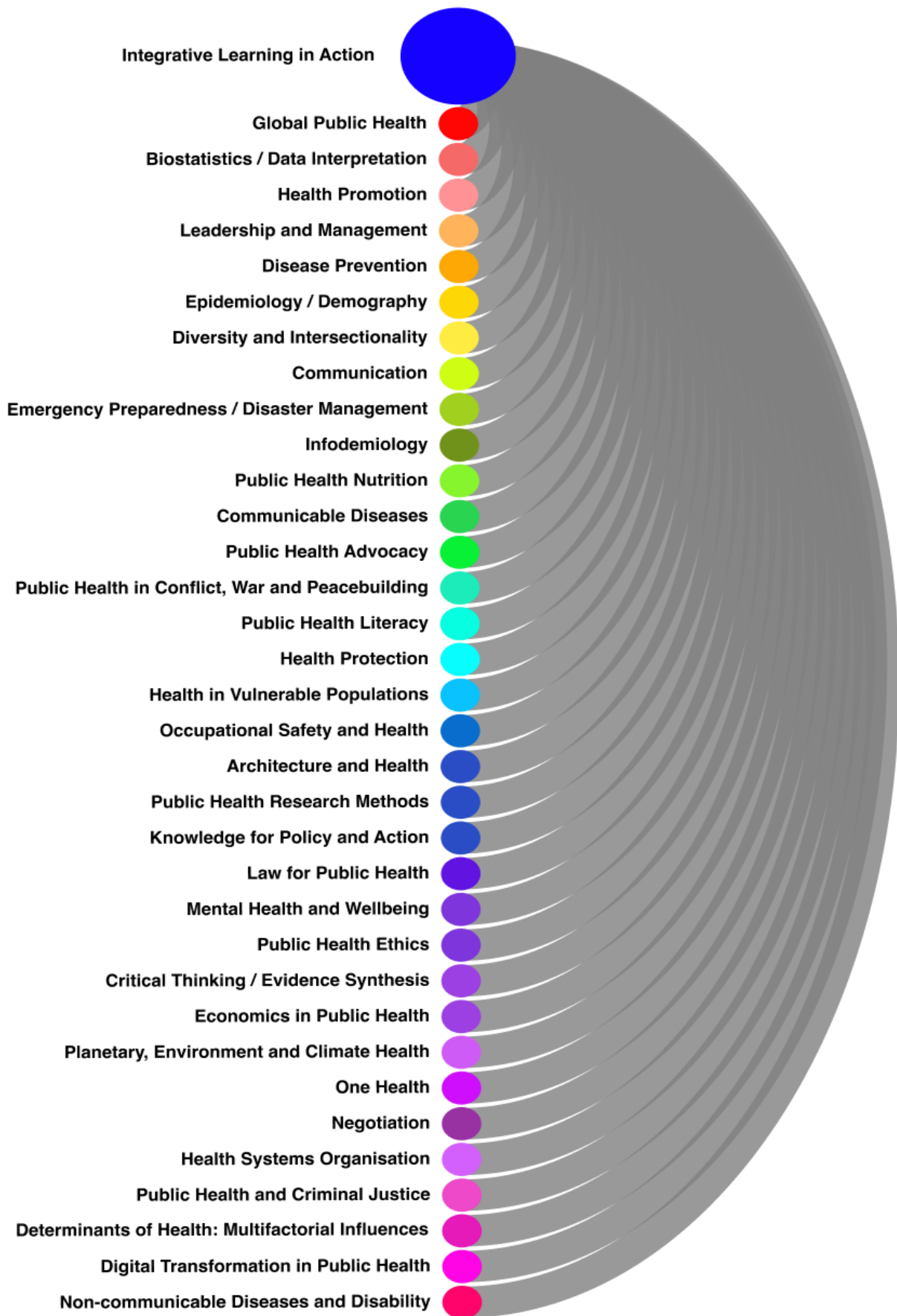
### ISPOR Health Economics and Outcomes Research Competencies Framework, 2002

- All Competencies

### Council on Linkages Between Academia and Public Health Practice, 2021

- All Domains

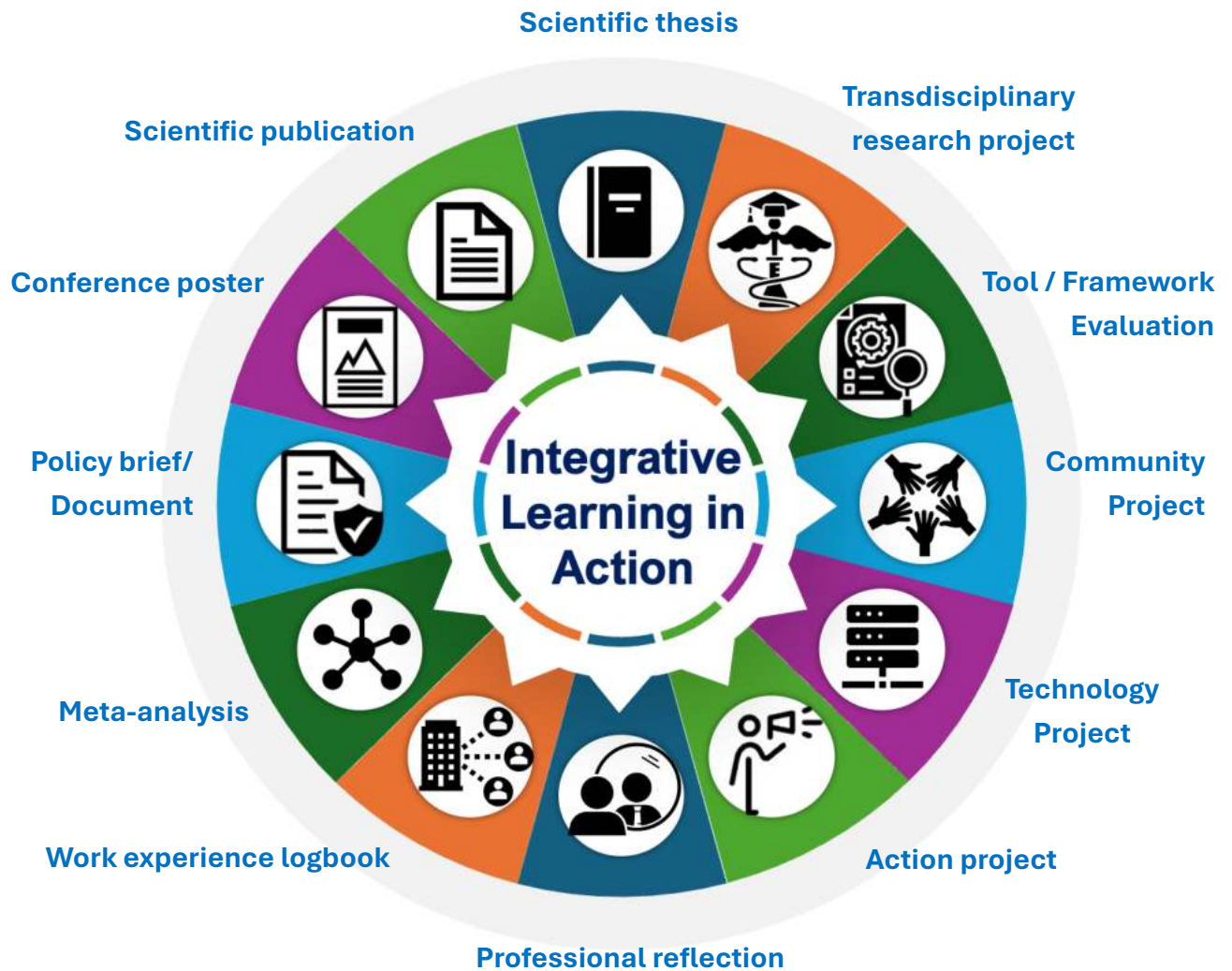
### Connectivity of Integrative Learning in Action in Public Health curricula



*NOTE: Sizes of circles and arches represent the degree of connectivity with other subject areas*



## Integrative Learning in Action



Practical elements, particularly capstone projects, are indispensable in public health training. These projects provide students with the opportunity to apply their learned knowledge to real-world problems. A capstone project typically involves identifying a public health issue, conducting thorough research, developing and implementing a solution, and evaluating the outcomes. This hands-on experience is crucial for several reasons:

**Application of Knowledge:** Students can apply theoretical concepts in practical settings, enhancing their understanding and skills.

**Problem-Solving Skills:** Capstone projects require critical thinking and problem-solving, preparing students to tackle complex health challenges.

**Interdisciplinary Collaboration:** These projects often involve working with diverse teams, mirroring the collaborative nature of public health work.

**Professional Preparation:** Completing a capstone project provides students with a tangible product that demonstrates their capabilities to future employers.

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# Chapter 34

## Public Health Communication



## Rationale and Current Status: Public Health Communication

**Contributors:** *Mariah De Vos, Karl F. Conyard, Mary Codd*

Public health communication is the act of conveying meaning from one person or group to another through a variety of media. Communication within public health means effectively breaking barriers between the public and complex scientific topics including epidemiological principles, biostatistics, and health research.

Communication is fundamental to transmitting epidemiological principles and evidence to a broader group to effect change. Effective communication skills allow public health professionals to elevate public health practice and principles to a broader audience and help the public understand complex issues. According to the WHO, strategic use of communication has the power to alter attitudes and behaviours to empower them to improve their health and that of their families and communities.<sup>1</sup> Inclusion of public health communication in the public health curriculum is essential due to its pivotal role in health promotion and disease prevention. Effective communication is critical for disseminating public health guidelines, countering misinformation, and fostering community engagement. By equipping students with skills in message development, media literacy, and audience analysis, the curriculum ensures future public health professionals can effectively advocate for health, manage health crises, and enhance the overall well-being of communities.

As highlighted in the competency framework reference subsection, public health communication aligns with several core competency sets. These include the WHO-ASPHER Competency Framework, which emphasizes the importance of communication skills for public health professionals in Europe.<sup>2</sup> and the WHO Essential Public Health Functions which underscores communication as a fundamental function necessary for effective public health practice worldwide.<sup>3</sup> The ECDC's Core Competencies in Applied Infectious Disease Epidemiology focuses on the role of communication in managing infectious diseases and outbreaks, ensuring timely and accurate information dissemination.<sup>4</sup> The WHO 'Building a Response Workforce to Manage Infodemics' framework addresses the skills needed to combat misinformation and manage the flow of information during health crises.<sup>5</sup>

In Canada, the Core Competencies for Public Health outlines the critical communication abilities required for public health practitioners to engage with communities and stakeholders effectively.<sup>6</sup> The Council on Linkages Between Academia and Public Health Practice emphasizes bridging academic knowledge and practical public health skills through robust communication strategies.<sup>7</sup> The National Commission for Health Education Credentialing highlights communication as a key competency for health educators, ensuring they can effectively convey health information and promote healthy behaviours.<sup>8</sup>

These frameworks collectively emphasize the crucial role of effective communication in public health. By aligning with these competencies, the curriculum ensures that students are equipped with the essential skills to navigate and address contemporary public health challenges, preparing them to contribute effectively to global public health initiatives. Integrating these competencies into the curriculum is vital for developing a workforce capable of managing health communication needs in an increasingly complex and interconnected world. The WHO has also built a communications framework utilising the IMPACT model for communication for health. The IMPACT model has six principles: Informed by data and theory; Measurable; Planned; Audience and people-centred and Collaborative.<sup>9</sup>

### **Delivery and Assessment**

Regarding delivery and assessment, the 2020 WHO-ASPHER framework outlines levels of competencies from competent (level 3) to expert (level 1) and identifies their lineage to essential public health operations.<sup>1</sup> Delivery and assessment of communication as a subject area should consist of a multifaceted approach that primarily utilises interactive modalities based on the nature of communication as a tool. Several areas for delivery and assessment should be considered:

- 1.** Instructional teaching: this should be limited and defined in scope. Principles of health communication theory and introduction to different mediums should be taught and combined with group discussions and presentations on utilising theory to solidify instructional teaching
- 2.** Interactive learning: this should be the foundation of any interpersonal skills modality to help students learn how to effectively communicate within the institutional space. This could look at designing different communication strategies utilising various resources (i.e. social media, radio, TV, etc)
- 3.** Group work and assessment: because the basis of the subject area is connecting with people, classes could complete a group assignment where they plan and implement communication strategies moving across each of the six principles of the WHO framework. This project could be integrated across multiple subject areas to enhance student learning across different competencies.

### **Conclusion:**

Communication is a fundamental skill that underpins every field, including public health. Effective communicators can connect with individuals and groups in ways that influence behaviour and inform decision-making. In public health, communication is integral to nearly every aspect of service delivery and system enablement, as highlighted by the WHO's essential public health functions.<sup>3</sup>

## Alignment to Competency Frameworks

The Public Health Communication subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Competency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Finance, and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 11: Public Health Research, Evaluation and Knowledge

### WHO Building a Response Workforce to Manage Infodemics, 2021

- Domain 1: Infodemic Management
- Domain 2: Prepare and Monitor
- Domain 3: Detect and Intervene
- Domain 4: Strengthen

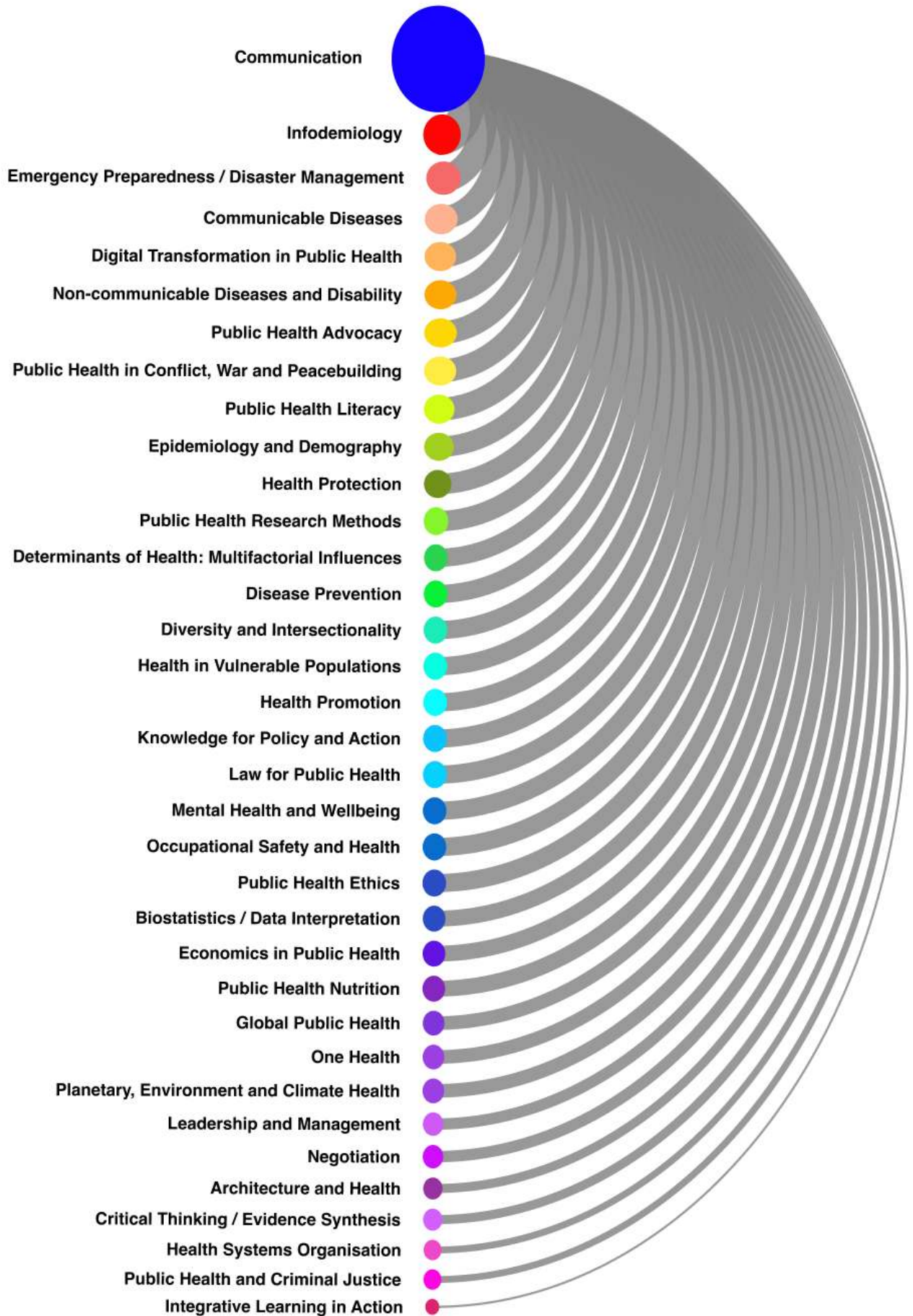
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
  - C1: Public Health Communication
  - C2: Infodemiology and Infodemic Management
  - C3: Communication and Community Engagement
  - C4: Scientific Communication and Advocacy for Policy Change

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 3: Communication Skills

## Connectivity of Public Health Communication in Public Health curricula



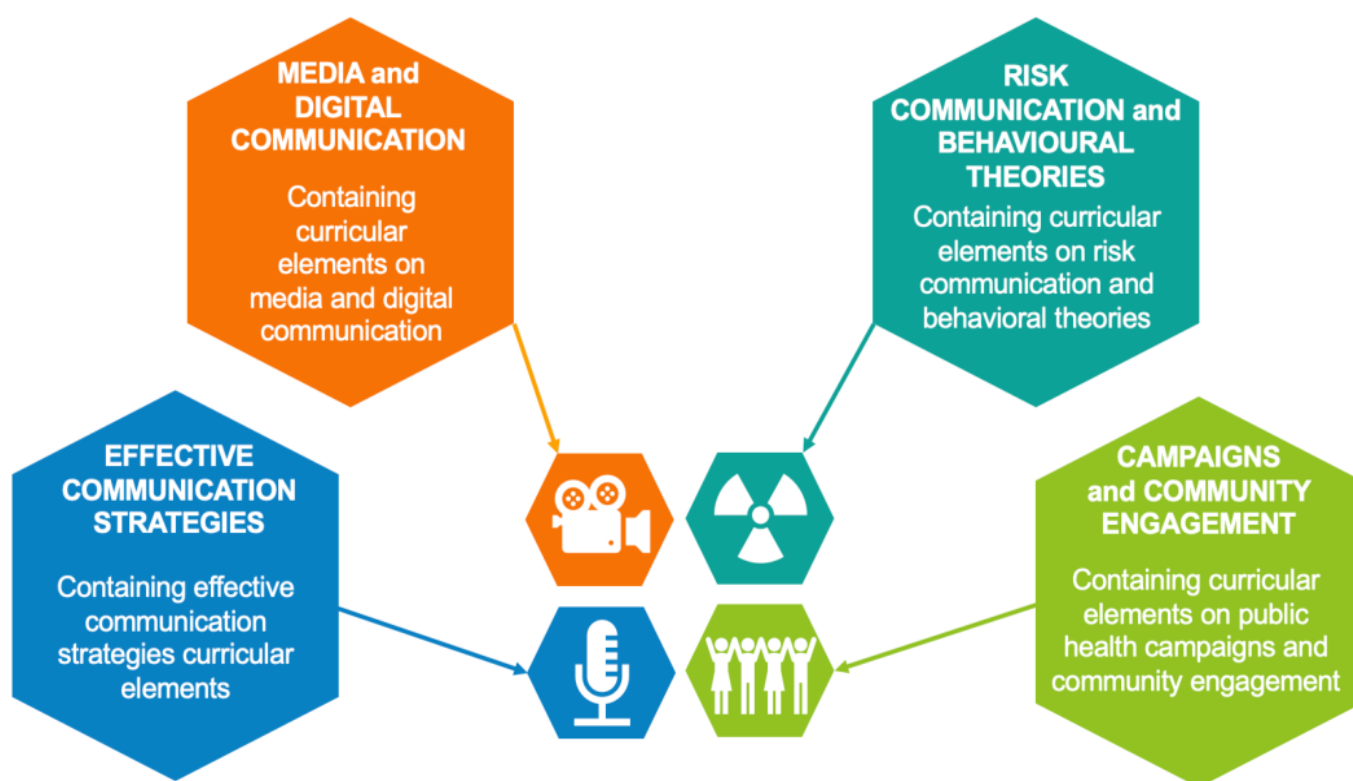
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Public Health Communication: Curriculum Overview

A public health communication curriculum is essential for bridging the gap between scientific knowledge and the public, enhancing health promotion and disease prevention. It equips students with skills to translate complex concepts into accessible information, combat misinformation, and engage communities effectively.

This training is crucial for fostering trust and collaboration, supporting policy and advocacy efforts, and managing health crises through clear, timely communication. Emphasizing cultural competence ensures messages are inclusive and tailored to diverse populations. The curriculum covers a broad range of communication skills, from traditional media to digital strategies, all grounded in evidence-based practices. Preparing students to address global health challenges, it ensures they can influence behaviour, inform decision-making, and advocate for public health policies, ultimately contributing to improved health outcomes locally and globally.

## Public Health Communication Themes



## Public Health Communication Curriculum

Suggested curricular elements are presented for different educational levels:

- Bachelor
- Master
- Doctorate
- Certificate and/or Diploma
- Continuous Professional Development (CPD)
- Professional Speciality Training



## Full Curriculum

## EFFECTIVE COMMUNICATION STRATEGIES

- Clear communication strategies targeting groups, communities, settings, and organizations (e.g. Workplaces, schools, healthcare facilities)
- Techniques of effective communication
- Principles of effective communication and community engagement, including cultural and linguistic considerations
- Knowledge transfer and exchange methodologies
- Use of diverse communication channels
- Message compositions: theoretical and practical implications

## MEDIA and DIGITAL COMMUNICATION

- Social media use and misuse
- Traditional media, including press releases
- Media engagement and support
- Press release and engage with health journalists and media to promote public health policy
- Regulation of health information vs. Freedom of speech (the typed word)
- The role of emerging technologies (e.g. AI, mobile apps) in enhancing public health communication

## RISK COMMUNICATION and BEHAVIOURAL THEORIES

- Principles of risk communication
- Theories in health communication
- Cultural and clinical sensitivity
- Challenges in communicating risk in public health
- Risk perception: cognitive biases, heuristics
- Gain and loss framing issues in health communication
- Prospect theory
- Fear appeal theory
- Humour theories
- The extended parallel process model
- Methods for assessing the effectiveness of communication strategies and campaigns.
- Techniques and best practices for communicating during public health emergencies.

## CAMPAIGNS and COMMUNITY ENGAGEMENT

- Targeted audiences, including policymakers and the general public
- Interdisciplinary approach to communication
- Key public health messages for the particular infectious disease, in order to optimize individual and population protection
- Community engagement
- Stakeholder engagement and support
- Planning a health campaign
- Targeted communication strategies to address misinformation
- Preliminary analysis and strategy development
- Evidence-based and evidence-informed decision-making for successful infodemic management
- Health literacy

## Bachelor and Master Degree Levels

### EFFECTIVE COMMUNICATION STRATEGIES

- Clear communication strategies targeting groups, communities, settings, and organizations (e.g. workplaces, schools, healthcare facilities)
- Techniques of effective communication
- Principles of effective communication and community engagement, including cultural and linguistic considerations
- Knowledge transfer and exchange methodologies
- Use of diverse communication channels
- Message compositions: theoretical and practical implications

### MEDIA and DIGITAL COMMUNICATION

- Social media use and misuse
- Traditional media, including press releases
- Media engagement and support
- Press release and engage with health journalists and media to promote public health policy
- Regulation of health information vs. Freedom of Speech (the typed word)
- The role of emerging technologies (e.g. AI, mobile apps) in enhancing public health communication

### RISK COMMUNICATION and BEHAVIOURAL THEORIES

- Principles of risk communication
- Theories in health communication
- Cultural and clinical sensitivity
- Challenges in communicating risk in public health
- Risk perception: cognitive biases, heuristics
- Gain and loss framing issues in health communication
- Prospect theory
- Fear appeal theory
- Humour theories
- The extended parallel process model
- Methods for assessing the effectiveness of communication strategies and campaigns.
- Techniques and best practices for communicating during public health emergencies.

### CAMPAIGNS and COMMUNITY ENGAGEMENT

- Targeted audiences, including policymakers and the general public
- Interdisciplinary approach to communication
- Key public health messages for the particular infectious disease, in order to optimize individual and population protection
- Community engagement
- Stakeholder engagement and support
- Planning a health campaign
- Targeted communication strategies to address misinformation
- Preliminary analysis and strategy development
- Evidence-based and evidence-informed decision-making for successful infodemic management
- Health literacy

## Doctoral Degree Level

### EFFECTIVE COMMUNICATION STRATEGIES

- Clear communication strategies targeting groups, communities, settings, and organizations (e.g. workplaces, schools, healthcare facilities)
- Techniques of effective communication
- Principles of effective communication and community engagement, including cultural and linguistic considerations
- Knowledge transfer and exchange methodologies
- Message compositions: theoretical and practical implications

### MEDIA and DIGITAL COMMUNICATION

- Press release and engage with health journalists and media to promote public health policy
- Regulation of health information vs. Freedom of Speech (the typed word)
- The role of emerging technologies (e.g. AI, mobile apps) in enhancing public health communication

### RISK COMMUNICATION and BEHAVIOURAL THEORIES

- Principles of risk communication
- Theories in health communication
- Cultural and clinical sensitivity
- Challenges in communicating risk in public health
- Risk perception: cognitive biases, heuristics
- Gain and loss framing issues in health communication
- Prospect theory
- Fear appeal theory
- Humour theories
- The extended parallel process model
- Methods for assessing the effectiveness of communication strategies and campaigns.

### CAMPAIGNS and COMMUNITY ENGAGEMENT

- Targeted audiences, including policymakers and the general public
- Interdisciplinary approach to communication
- Key public health messages for particular infectious disease, in order to optimize individual and population protection
- Stakeholder engagement and support
- Targeted communication strategies to address misinformation
- Preliminary analysis and strategy development
- Evidence-based and evidence-informed decision-making for successful infodemic management
- Health literacy

## Certificate and/or Diploma Level

## EFFECTIVE COMMUNICATION STRATEGIES

- Clear communication strategies targeting groups, communities, settings, and organizations (e.g. workplaces, schools, healthcare facilities)
- Techniques of effective communication
- Principles of effective communication and community engagement, including cultural and linguistic considerations
- Knowledge transfer and exchange methodologies
- Use of diverse communication channels
- Message compositions: theoretical and practical implications

## MEDIA and DIGITAL COMMUNICATION

- Social Media Use and Misuse
- Traditional media, including press releases
- Media engagement and support
- Press release and engage with health journalists and media to promote public health policy
- Regulation of health information vs. Freedom of Speech (the typed word)
- The role of emerging technologies (e.g. AI, mobile apps) in enhancing public health communication

## RISK COMMUNICATION and BEHAVIOURAL THEORIES

- Principles of risk communication
- Theories in health communication
- Cultural and clinical sensitivity
- Challenges in communicating risk in public health
- Risk perception: cognitive biases, heuristics
- Gain and loss framing issues in health communication
- Prospect theory
- Fear appeal theory
- Humour theories
- The extended parallel process model
- Methods for assessing the effectiveness of communication strategies and campaigns.
- Techniques and best practices for communicating during public health emergencies.

## CAMPAIGNS and COMMUNITY ENGAGEMENT

- Targeted audiences, including policymakers and the general public
- Interdisciplinary approach to communication
- Key public health messages for the particular infectious disease, in order to optimize individual and population protection
- Community engagement
- Stakeholder engagement and support
- Planning a health campaign
- Targeted communication strategies to address misinformation
- Preliminary analysis and strategy development
- Evidence-based and evidence-informed decision-making for successful infodemic management
- Health literacy

## Continuous Professional Development Level

### EFFECTIVE COMMUNICATION STRATEGIES

- Clear communication strategies targeting groups, communities, settings, and organizations (e.g., workplaces, schools, healthcare facilities)
- Techniques of effective communication
- Principles of effective communication and community engagement, including cultural and linguistic considerations
- Knowledge transfer and exchange methodologies
- Use of diverse communication channels
- Message compositions: theoretical and practical implications

### MEDIA and DIGITAL COMMUNICATION

- Social Media Use and Misuse
- Traditional media, including press releases
- Media engagement and support
- Press release and engage with health journalists and media to promote public health policy
- Regulation of health information vs. Freedom of Speech (the typed word)
- The role of emerging technologies (e.g. AI, mobile apps) in enhancing public health communication

### RISK COMMUNICATION and BEHAVIOURAL THEORIES

- Principles of risk communication
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- The extended parallel process model
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- Techniques and best practices for communicating during public health emergencies.

### CAMPAIGNS and COMMUNITY ENGAGEMENT

- Targeted audiences, including policymakers and the general public
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- Key public health messages for the particular infectious disease, in order to optimize individual and population protection
- Community engagement
- Stakeholder engagement and support
- Planning a health campaign
- Targeted communication strategies to address misinformation
- Preliminary analysis and strategy development
- Evidence-based and evidence-informed decision-making for successful infodemic management
- Health literacy

## Professional Speciality Training Level

## EFFECTIVE COMMUNICATION STRATEGIES

- Clear communication strategies targeting groups, communities, settings, and organizations (e.g., workplaces, schools, healthcare facilities)
- Techniques of effective communication
- Principles of effective communication and community engagement, including cultural and linguistic considerations
- Knowledge transfer and exchange methodologies
- Use of diverse communication channels
- Message compositions: theoretical and practical implications

## MEDIA and DIGITAL COMMUNICATION

- Social media use and misuse
- Traditional media, including press releases
- Media engagement and support
- Press release and engage with health journalists and media to promote public health policy
- Regulation of health information vs. Freedom of Speech (the typed word)
- The role of emerging technologies (e.g., AI, mobile apps) in enhancing public health communication

## RISK COMMUNICATION and BEHAVIOURAL THEORIES

- Principles of risk communication
- Theories in health communication
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- Techniques and best practices for communicating during public health emergencies.

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- Stakeholder engagement and support
- Planning a health campaign
- Targeted communication strategies to address misinformation
- Preliminary analysis and strategy development
- Evidence-based and evidence-informed decision-making for successful infodemic management
- Health literacy

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# Chapter 35

## Public Health Negotiation



## Rationale and Current Status: Public Health Negotiation

Negotiation in public health refers to the process by which stakeholders engage in dialogue and compromise to reach mutually beneficial agreements. These negotiations can encompass a wide range of topics, including resource allocation, policy implementation, access to care, and emergency response strategies.

Being at the forefront of public health leadership or health service delivery today means frequently encountering conflicts, disputes, and other situations that necessitate negotiation. Public health leaders must navigate a complex landscape where diverse stakeholders often have differing priorities and perspectives. These situations can range from disagreements over resource allocation and policy implementation to conflicts arising from ethical dilemmas and equity concerns. Effective negotiation skills are essential for resolving these issues, building consensus, and fostering collaboration. By mastering negotiation, public health professionals can better manage these challenges, ensuring that health initiatives are both effective and equitable, and ultimately leading to improved health outcomes for communities.

As highlighted in the competency framework subsection, this subject area aligns with key core competency sets essential for public health professionals. Notably, the WHO-ASPHER Competency Framework 2020 serves as a foundational guideline, providing a comprehensive structure for the skills and knowledge necessary in public health practice.<sup>1</sup> This framework emphasizes the integration of negotiation skills as part of its broader competencies, ensuring that public health professionals are equipped to effectively manage conflicts, engage stakeholders, and advocate for health policies. The WHO Essential Public Health Functions further underscores the importance of negotiation in public health.<sup>2</sup> This updated framework outlines critical functions that are indispensable for a robust public health system. Among these, the ability to negotiate and collaborate with various stakeholders is highlighted as a pivotal skill. By fostering these competencies, public health professionals can better navigate complex health challenges, advocate for necessary resources, and implement effective health interventions. Together, these competency frameworks emphasize that negotiation is not merely a supplementary skill but a core component of effective public health practice. Ensuring alignment with these standards equips professionals to address the dynamic and multifaceted nature of public health challenges in a global context. The Core Competencies for Public Health Professionals was unique as its competencies, developed by the Council on Linkages, are widely used in public health education and practice.<sup>3</sup> They are organized into eight domains, and negotiation skills can be found under several domains.<sup>3</sup>

Public health negotiation subject area also has connections to other parts of the core curriculum, the curriculum presented in this chapter presents clearly how negotiation is an important function especially as practitioners take roles of greater public health responsibility. Negotiation as a subject area in other curricula across the European region is rarely noted or examined in an in-depth manner, presenting how it has not garnered much attention, but after the worldwide pandemic of Coronavirus 19, public health negotiation is

a key skill to ensure best outcomes are attainable while ensuring all stakeholders including the general public feel empowered by decisions which may reduce autonomy or social freedoms (restrictions on travel, people gathering etc.). Incorporating public health advocacy into the curriculum is essential for developing skilled public health professionals who can effectively address health disparities and champion health equity. By aligning with key competency frameworks and fostering critical advocacy skills, educational institutions prepare graduates to become influential leaders and agents of change in the public health arena.

## Alignment to Competency Frameworks

The Public Health Negotiation subject area of this curriculum is aligned with the following competency frameworks and associated competencies

### WHO-ASPHER Competency Framework, 2020

- Competency 2: Promoting Health
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Competency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

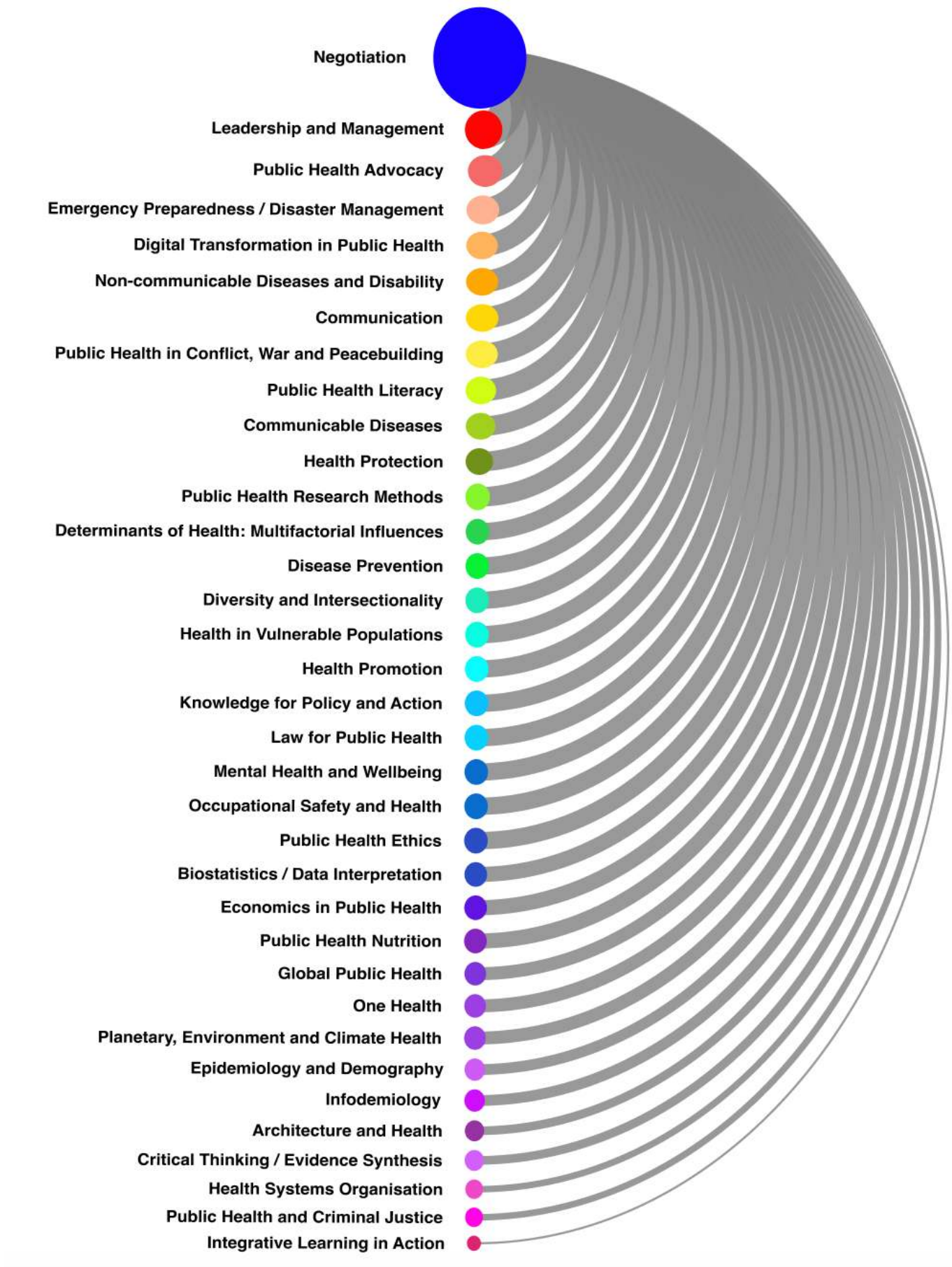
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Advocacy and advocacy
  - C1: Public Health Advocacy
  - C2: Infodemiology and Infodemic Management
  - C3: Advocacy and Community Engagement
  - C4: Scientific Communication and Advocacy for Policy Change

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 2: Policy Development and Program Planning
- Domain 3: Communication Skills
- Domain 4: Health Equity Skills
- Domain 5: Community Partnership Skills
- Domain 7: Management and Finance Skills
- Domain 8: Leadership and Systems Thinking Skills

# Connectivity of Public Health Negotiation in PH Curricula



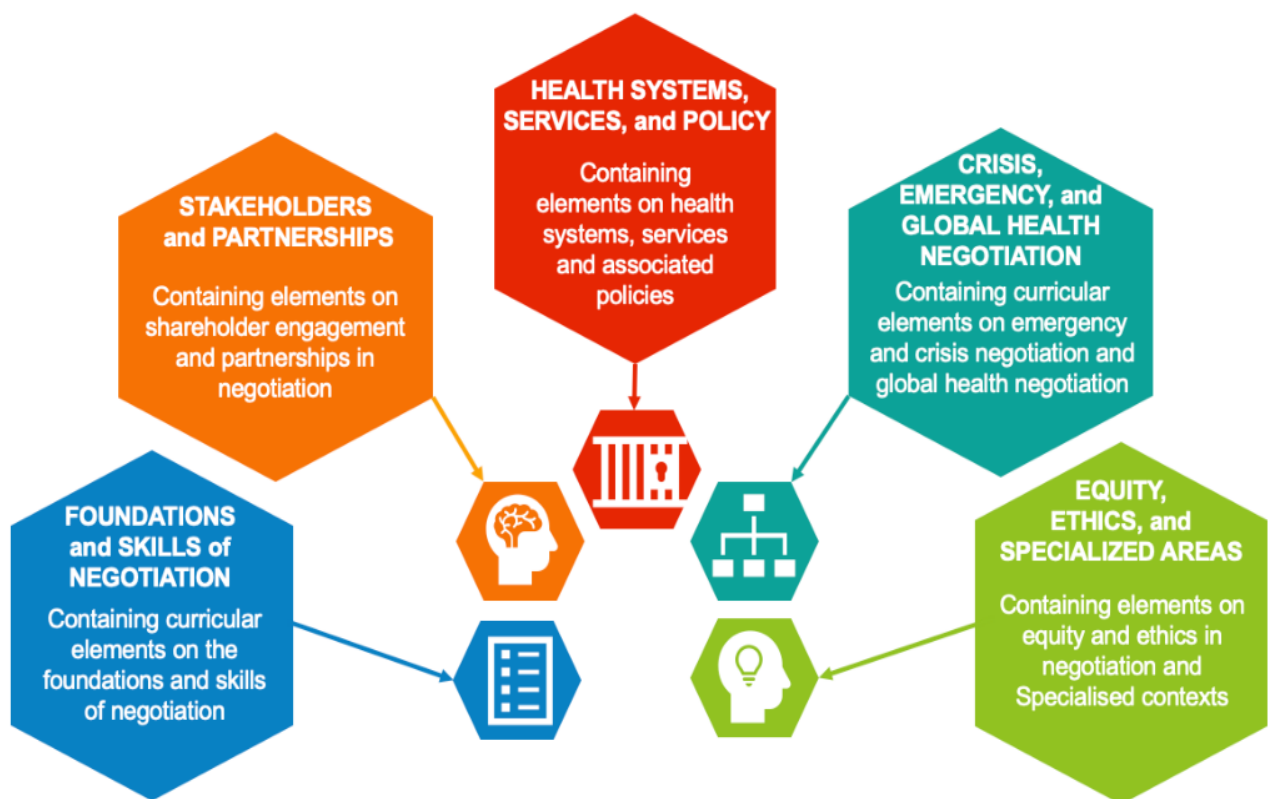
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Public Health Negotiation Curriculum Overview

This subject is crucial for students and professionals as it equips them with the skills and knowledge necessary to understand how to influence public health policy, promote health equity, and drive systemic change. Understanding public health advocacy empowers individuals to effectively communicate health messages, mobilize communities, and collaborate with stakeholders to address complex health challenges.

For students, it lays a foundation for impactful careers, enabling them to become proactive leaders who can advocate for healthier communities. For professionals, continuous education in public health advocacy ensures they remain adept at navigating evolving health landscapes, thereby enhancing their capacity to protect and improve population health.

## Public Health Negotiation Themes



## Public Health Advocacy Curriculum

Suggested curricular elements are presented for all educational levels

## Full Curriculum

## FOUNDATIONS and SKILLS of NEGOTIATION

- Introduction to negotiation in public health
- Principles of negotiation
- Types of negotiation strategies
- Communication skills for effective negotiation
- Cultural competence in negotiation
- Ethics in public health negotiation
- Conflict resolution in public health
- Behavioral economics in public health negotiation
- Use of technology in negotiation
- Negotiation skills for public health leaders
- Evaluation of negotiation outcomes
- Simulation exercises in public health negotiation

## STAKEHOLDERS and PARTNERSHIPS

- Stakeholder analysis and engagement
- Negotiating with government agencies
- Negotiating with non-governmental organizations (NGOs)
- Negotiating with community groups
- Negotiating with private sector partners
- Public health funding
- Research collaborations
- Interdisciplinary negotiation in public health
- Negotiation in resource-limited settings
- Negotiating public health campaigns and media relations

## HEALTH SYSTEMS, SERVICES and POLICY

- Negotiating for health services delivery
- Health care reform
- Negotiating health insurance and access to care
- Health infrastructure development
- Public health policies
- Health promotion and education
- Negotiation in health policy advocacy
- Negotiating for improved health literacy

## CRISIS, EMERGENCY and GLOBAL HEALTH NEGOTIATION

- Crisis negotiation in public health emergencies
- Tactics for vaccine distribution
- Pandemic preparedness and response
- Global health security
- Public health disaster recovery plans
- International health initiatives
- Health equity in marginalized populations
- Addressing social determinants of health

## EQUITY, ETHICS and SPECIALIZED AREAS

- Negotiation and health equity
- Ethical dilemmas in public health negotiation
- Environmental health negotiations
- Mental health services
- Data sharing and privacy negotiations
- Negotiating for improved health literacy
- Future trends in public health negotiation

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# Chapter 36

## Public Health Advocacy





## Rationale and Current Status: Public Health Advocacy

Public health advocacy encapsulates a strategic process of influencing public health practice and policy by combining research, education, collaboration, and knowledge of political systems to amplify evidence-based policies and interventions that promote health equity and improve population health outcomes. Public health advocacy involves learning to identify health inequities, raising awareness, and mobilizing stakeholder groups for prevention and evidence-based interventions while navigating complex social dynamics and fluid political climates.

In the dynamic, globalized landscape of public health, professionals need more than competencies related to understanding epidemiological principles and biostatistics. Public health professionals should possess the capacity to translate strategies from research into actionable policies and community mobilization. Public health advocacy serves as the conduit for achieving this goal. Research has shown that advocacy as a tool is underdeveloped and underutilized within the world of public health.<sup>2,3</sup> Advocacy as a tool has been employed successfully across the world to address social determinants of health.<sup>2</sup> The 2020 WHO-ASPHER Public Health competencies do not include public health advocacy as a standalone subject area, but rather as a tool in communication.<sup>4</sup> Advocacy is not simply communication, but the skill of utilizing knowledge transfer to raise awareness and mobilize communities to influence systems change.

As exemplified in the competency framework reference subsection below, this subject area resonates profoundly with critical core competency sets. It harmonizes seamlessly with esteemed frameworks such as the WHO-ASPHER Competency Framework 2020, illuminating the path towards mastery in public health advocacy.<sup>4</sup> Additionally, it echoes the fundamental principles encapsulated within the WHO's Essential Public Health Functions 2024, serving as a cornerstone for effective public health practice.<sup>5</sup> Moreover, it finds resonance with the ECDC's 2022 Core Competencies in Applied Infectious Disease Epidemiology, underscoring its pivotal role in combating infectious diseases through strategic advocacy and community engagement.<sup>6</sup> Furthermore, its alignment with the Council on Linkages Between Academia and Public Health Practice underscores its significance in bridging the gap between academia and real-world public health challenges.<sup>7</sup> By integrating this subject area into the curriculum, educational institutions cultivate a new generation of public health leaders armed with the expertise and acumen needed to navigate complex health landscapes with finesse and efficacy.

Incorporating public health advocacy into the curriculum is essential for developing skilled public health professionals who can effectively address health disparities and champion health equity. By aligning with key competency frameworks and fostering critical advocacy skills, educational institutions prepare graduates to become influential leaders and agents of change in the public health arena.

## Alignment to Competency Frameworks

The Public Health Advocacy subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Advocacy, Culture and Advocacy
- Competency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

### WHO Building a Response Workforce to Manage Infodemics, 2021

- Domain 2: Prepare and Monitor
- Domain 3: Detect and Intervene
- Domain 4: Strengthen

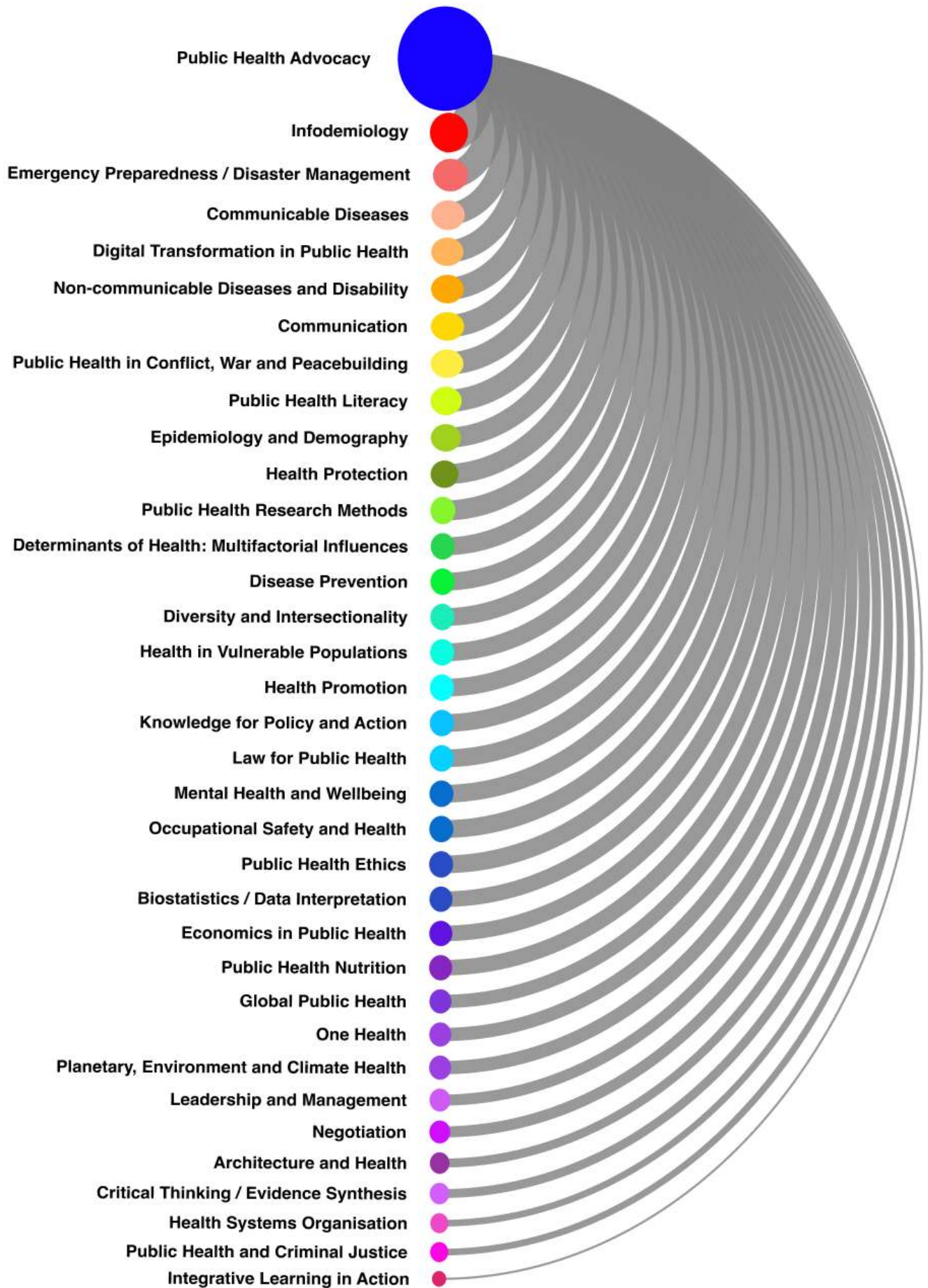
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Advocacy and advocacy
  - C1: Public Health Advocacy
  - C2: Infodemiology and Infodemic Management
  - C3: Advocacy and Community Engagement
  - C4: Scientific Communication and Advocacy for Policy Change

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 5: Community Partnership Skills

### Connectivity of Public Health Advocacy in public Health curricula



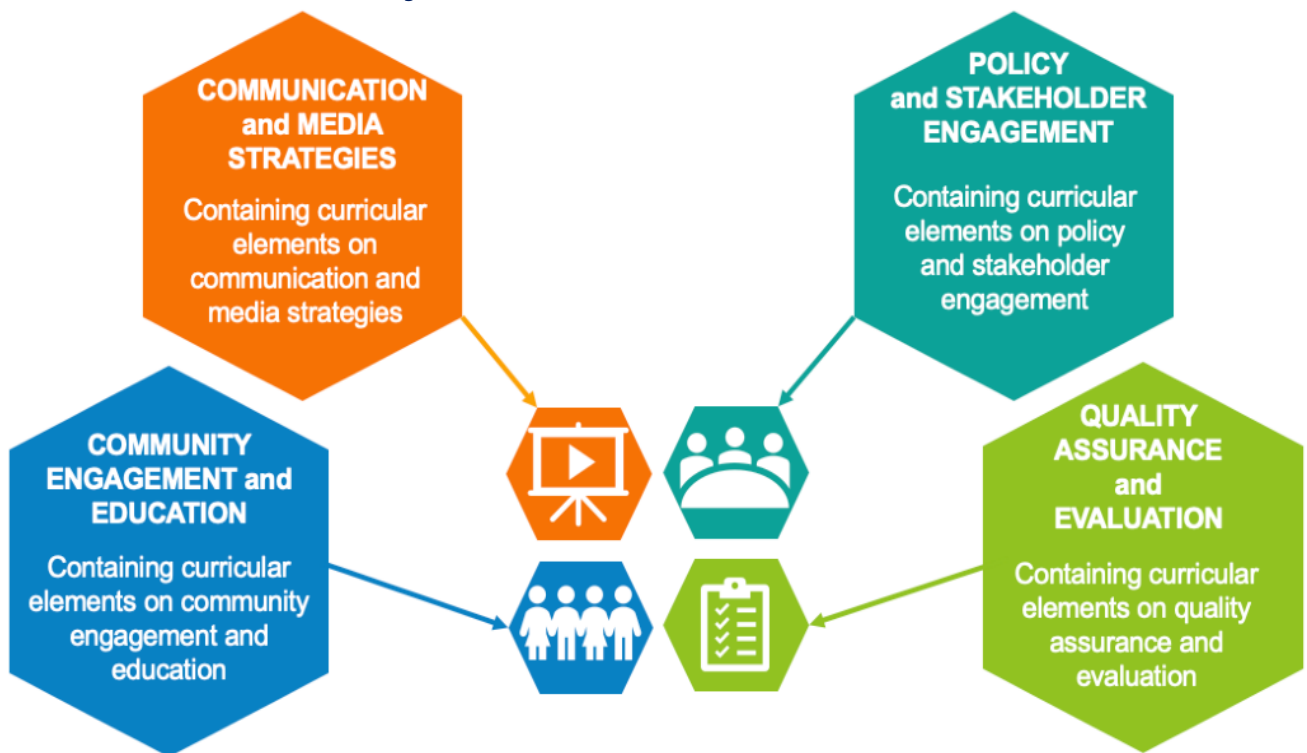
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Public Health Advocacy: Curriculum Overview

This subject is crucial for students and professionals as it equips them with the skills and knowledge necessary to influence public health policy, promote health equity, and drive systemic change. Understanding public health advocacy empowers individuals to effectively communicate health messages, mobilize communities, and collaborate with stakeholders to address complex health challenges.

For students, it lays a foundation for impactful careers, enabling them to become proactive leaders who can advocate for healthier communities. For professionals, continuous education in public health advocacy ensures they remain adept at navigating evolving health landscapes, thereby enhancing their capacity to protect and improve population health.

### Public Health Advocacy Themes



### Public Health Advocacy Curriculum

Suggested curricular elements are presented for all educational levels, i.e.

## Full Curriculum

**COMMUNITY ENGAGEMENT and EDUCATION**

- Principals of advocacy
- Advocate effectively in community-based organisations and at community level to enhance commitment to public health interventions
- Community-based education to enhance public health knowledge
- Correct information to challenge misinformation in communities
- Sustain partnerships in different key identified at-risk groups
- Work with associated non-governmental organisations (NGOs)
- Continued professional education around advocacy and literacy
- Digital and social media strategies
- Grassroots mobilization
- Health literacy promotion

**COMMUNICATION and MEDIA STRATEGIES**

- Appropriate channels, contexts, materials, and activities
- Methodologies to assist advocacy
- Quality assurance in health communication
- Traditional media, incl. press releases
- Key public health messages for the particular infectious disease, in order to optimize individual and population protection
- Digital and social media strategies
- Crisis communication
- Behaviour change communication

**POLICY and STAKEHOLDER ENGAGEMENT**

- Political commitment, policy support & social acceptance for specific objective/intervention
- Investigation of knowledge, attitudes, practices, and behaviour of infectious disease within specific population groups
- Adaption of communication content to different levels of health literacy in different groups
- Stakeholder engagement and collaboration
- Legislative advocacy
- Advocacy for health equity
- Funding and resource mobilization

**QUALITY ASSURANCE and EVALUATION**

- Quality assurance tools
- Evidence-based and evidence-informed decision-making for successful infodemic management
- Monitoring and evaluation
- Knowledge transfer and exchange methodologies

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# Chapter 37

## Knowledge for Policy and Action





## Rationale and Current Status: Knowledge for Policy and Action

Knowledge for policy and action encompasses the information, research, and evidence required to inform decision-making processes and drive effective public policy. Translating evidence into policy and action is a crucial competency for public health professionals, bridging the gap between research findings and practical implementation. This subject area involves understanding policy processes, engaging stakeholders, and advocating for the adoption of evidence-based interventions. Public health professionals must be skilled in translating complex research into clear, actionable policies that improve health outcomes and promote health equity.

In the field of public health, the ability to translate evidence into policy and action is vital for driving systemic change. Professionals must navigate political landscapes, build coalitions, and advocate for policies that reflect the latest scientific evidence. Research has shown that there is often a disconnect between research and policy implementation.<sup>1</sup> Public health advocacy can help bridge this gap by emphasizing the importance of policy engagement and providing the tools necessary for effective advocacy.

As noted in the competency framework reference section, knowledge for policy and action closely aligns with essential core competencies in interdisciplinary professional skills within public health. This connection is clearly reflected in various key frameworks and guidelines. Notably, the WHO-ASPHER Competency Framework 2020 emphasizes the importance of translating evidence into policy and action.<sup>2</sup> Similarly, the WHO's 12 Essential Public Health Functions 2024, and the ECDC's 2022 Core Competencies in Applied Infectious Disease Epidemiology all emphasise the significance of converting evidence into actionable policy across essential public health domains.<sup>3,4</sup> These frameworks underscore the need for public health professionals to be adept at policy advocacy and implementation, ensuring that evidence-based interventions are adopted at all levels of public health practice.

Furthermore, the principles outlined by the Council on Linkages Between Academia and Public Health Practice effectively connect theoretical knowledge with practical application, establishing a robust foundation of policy understanding and awareness of political landscapes.<sup>5</sup> This approach not only cultivates skilled public health professionals but also equips them with the necessary tools to translate policy into action. By emphasising the integration of academic insights with the complexities of real-world governance, these principles promote a more effective and responsive approach to addressing public health challenges.

By integrating this subject area into public health education, institutions can prepare graduates to be effective advocates for policy change. These professionals will possess the skills needed to translate research into practice, engage with policymakers, and drive initiatives that improve population health and promote health equity.

## Alignment to Competency Frameworks

The Knowledge for Policy and Action subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 2: Promoting Health
- Competency 3: Law, Policies and Ethics
- Competency 4: One Health and Health Security
- Competency 5: Leadership and System Thinking
- Competency 7: Communication, Culture and Advocacy
- Competency 10: Organisational Literacy and Adaptability

### WHO 12 Essential Public Health Functions, 2024

- EPHF 1: Public Health Surveillance and Monitoring
- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Multisectoral Planning, Financing and Management for Public Health
- EPHF 5: Health Protection
- EPHF 6: Disease Prevention and Early Detection
- EPHF 7: Health Promotion
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 10: Health Service Quality and Equity
- EPHF 11: Public Health Research, Evaluation and Knowledge
- EPHF 12: Access to and Utilization of Health Products, Supplies, Equipment and Technologies

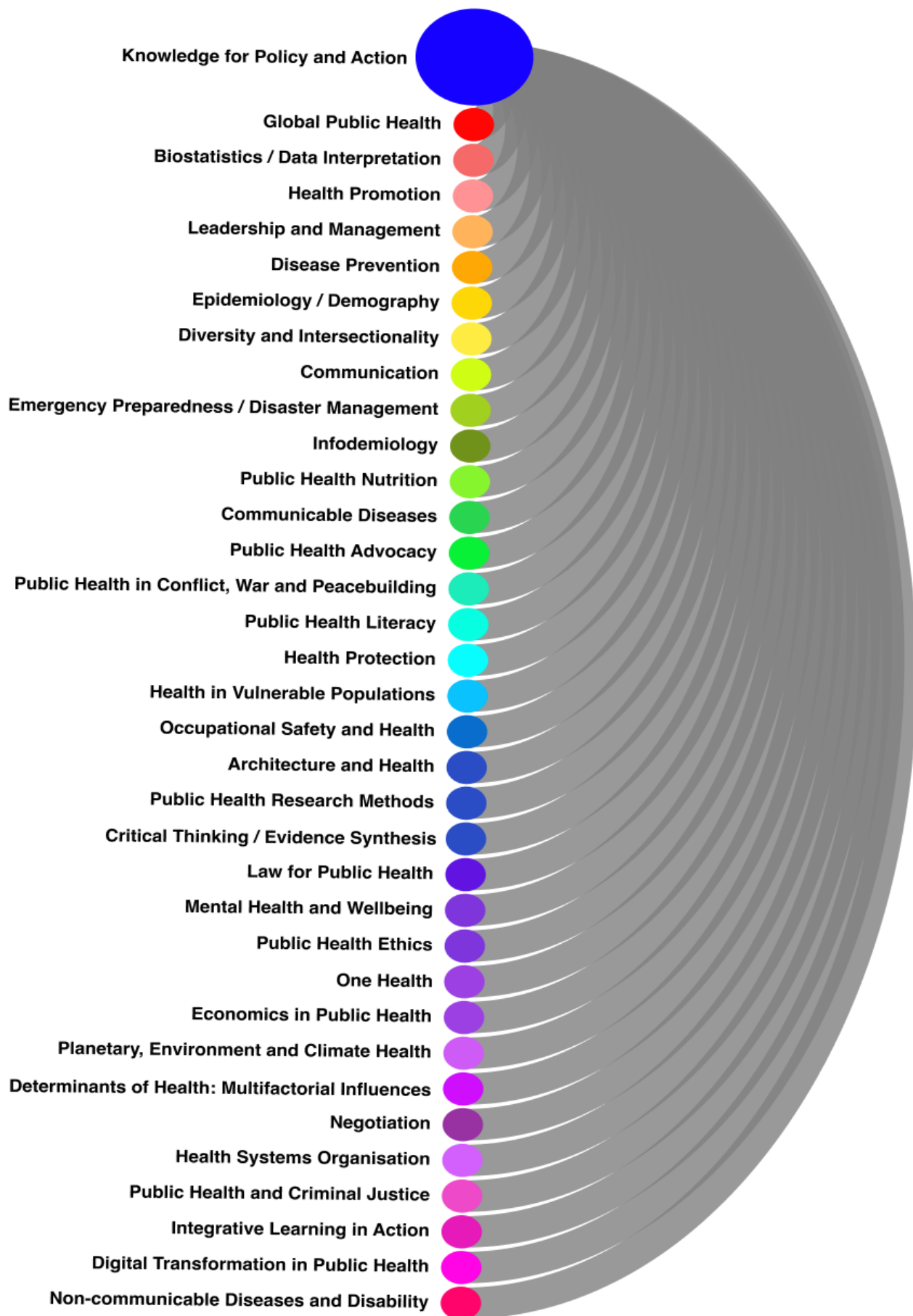
### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area B: Preparedness, surveillance and response to infectious disease outbreaks
- Subject area C: Communication and advocacy
  - C1: Public Health Communication
  - C2: Infodemiology and Infodemic Management
  - C3: Communication and Community Engagement
  - C4: Scientific Communication and Advocacy for Policy Change

### Council on Linkages Between Academia and Public Health Practice, 2021

- Domain 2: Policy Development and Program Planning
- Domain 3: Communication Skills
- Domain 4: Health Equity Skills
- Domain 5: Community Partnership Skills
- Domain 7: Management and Finance Skills
- Domain 8: Leadership and Systems Thinking Skills

### Connectivity Knowledge for Policy and Action in PH in curricula



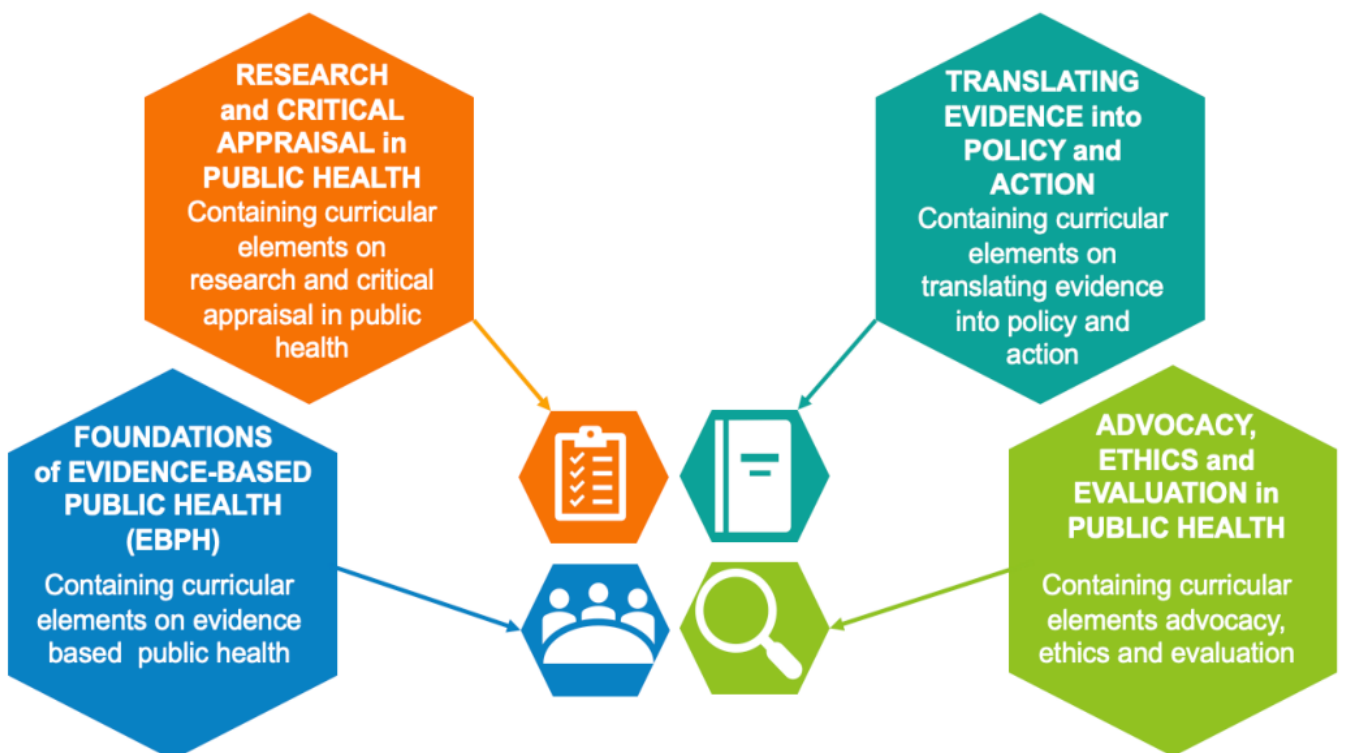
**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Knowledge for Policy and Action Curriculum Overview

This subject is crucial for students and professionals as it equips them with the skills and knowledge necessary to influence all realms of public health practice. Synthesizing and disseminating knowledge into policy and action is imperative.

For students, it lays a foundation for impactful careers, enabling them to become proactive leaders who can critically take knowledge and learn the process into which we can create new policy and develop action based upon the policies created for better public health outcomes and healthier communities.

## Knowledge for Policy and Action Themes



## Public Health Advocacy Curriculum

Suggested curricular elements are presented for all educational levels

## Full Curriculum

### FOUNDATIONS of EVIDENCE-BASED PUBLIC HEALTH (EBPH)

- Introductions to EBPH
- Definition and importance
- Historical context and evolution
- Understanding types and sources of evidence
- Qualitative vs. Quantitative evidence
- Primary and secondary sources
- Levels of evidence and hierarchy

### RESEARCH and CRITICAL APPRAISAL IN PUBLIC HEALTH

- Research methodologies for EBPH
- Study designs (cross-sectional, cohort, case-control, rcts, mixed-methods)
- Data collection techniques (surveys, interviews, focus groups)
- Biostatistics and epidemiology basics
- Critical appraisal for public health translation
- Quality assessment tools (CASP checklists, GRADE system)
- Identifying bias and confounding factors
- Conducting systematic reviews and meta-analyses

### TRANSLATING EVIDENCE into POLICY and ACTION

- Policy frameworks and models for translation
- Policy cycle, kingdon's streams model, advocacy coalition framework
- Stakeholder engagement to ensure translation
- Stakeholder analysis and engagement
- Crafting policy briefs and recommendations
- Case studies and applications
- Successful EBPH policies (tobacco control, vaccination programs)
- Challenges and barriers in policy implementation
- Lessons learned from case studies

### ADVOCACY, ETHICS, and EVALUATION in PUBLIC HEALTH

- Advocacy strategies for public health
- Effective communication with policymakers and the public
- Utilizing media and public relations
- Ethical considerations in public health policy
- Promoting health equity in policies
- Implementation science
- Evaluation methods for public health policies
- Using evaluation for continuous improvement

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# Chapter 38

## Leadership and Management

*incl. Collaboration and Partnerships  
& Implementation Science*





## Rationale and Current Status: Leadership and Management

**Authors:** *Martina Parić, Kasia Czabanowska, Lorraine Doherty, Karl F. Conyard, Mariah De Vos, Uma Divya Kudupudi, Mary Codd*

In the realm of public health education, effective leadership and management play pivotal roles in driving progress and achieving impactful outcomes. Leadership sets the vision, inspires action and cultivates a culture of innovation and collaboration within public health institutions. It encompasses strategic decision-making, resource allocation and fostering a supportive environment for the development and execution of health initiatives. Meanwhile, proficient management ensures the efficient utilization of resources, the implementation of evidence-based practices and the coordination of diverse teams toward common goals.

In the context of public health education, leadership serves as a guiding force, steering academic programs, research endeavours and community outreach efforts toward addressing pressing health challenges. Through transformational leadership, educational institutions can adapt to evolving trends, integrate interdisciplinary approaches and foster a cadre of future public health leaders equipped with the necessary skills and knowledge to tackle complex, interconnected health challenges.

Moreover, educational institutions have a duty to invest in strategies that cultivate specific competencies and skills in both teachers and students. Leadership plays a vital role in building resilience, improving employability and fostering a culture of continuous learning, making it essential to integrate into public health curricula and related disciplines. Leadership development and the action of leadership should be supported and be from all organizational levels to foster an environment that nurtures both students and staff, ultimately contributing to the development of a resilient public health workforce.

In conclusion, leadership and management are integral to the success of public health education, shaping the direction and impact of academic programs, research, and community health initiatives. Effective leadership not only drives innovation and collaboration but also ensures that public health institutions remain adaptive and forward-thinking in the face of evolving health challenges. By fostering competencies in resilience, employability, and lifelong learning, leadership development should be embedded at all levels of public health education. This commitment to cultivating leadership and management skills will help build a more capable, empowered public health workforce prepared to address the complex health issues of the future.

## Alignment to Competency Framework

The Leadership and Management subject area of this curriculum is aligned with the following competency frameworks and associated competencies.

### WHO-ASPHER Competency Framework, 2020

- Competency 1: Science and Practice
- Competency 5: Leadership and System Thinking
- Competency 6: Collaboration and Partnership
- Competency 8: Governance and Resource Management
- Competency 9: Professional Development and Reflective Ethical Practice
- Competency 10: Organizational Literacy and Adaptability

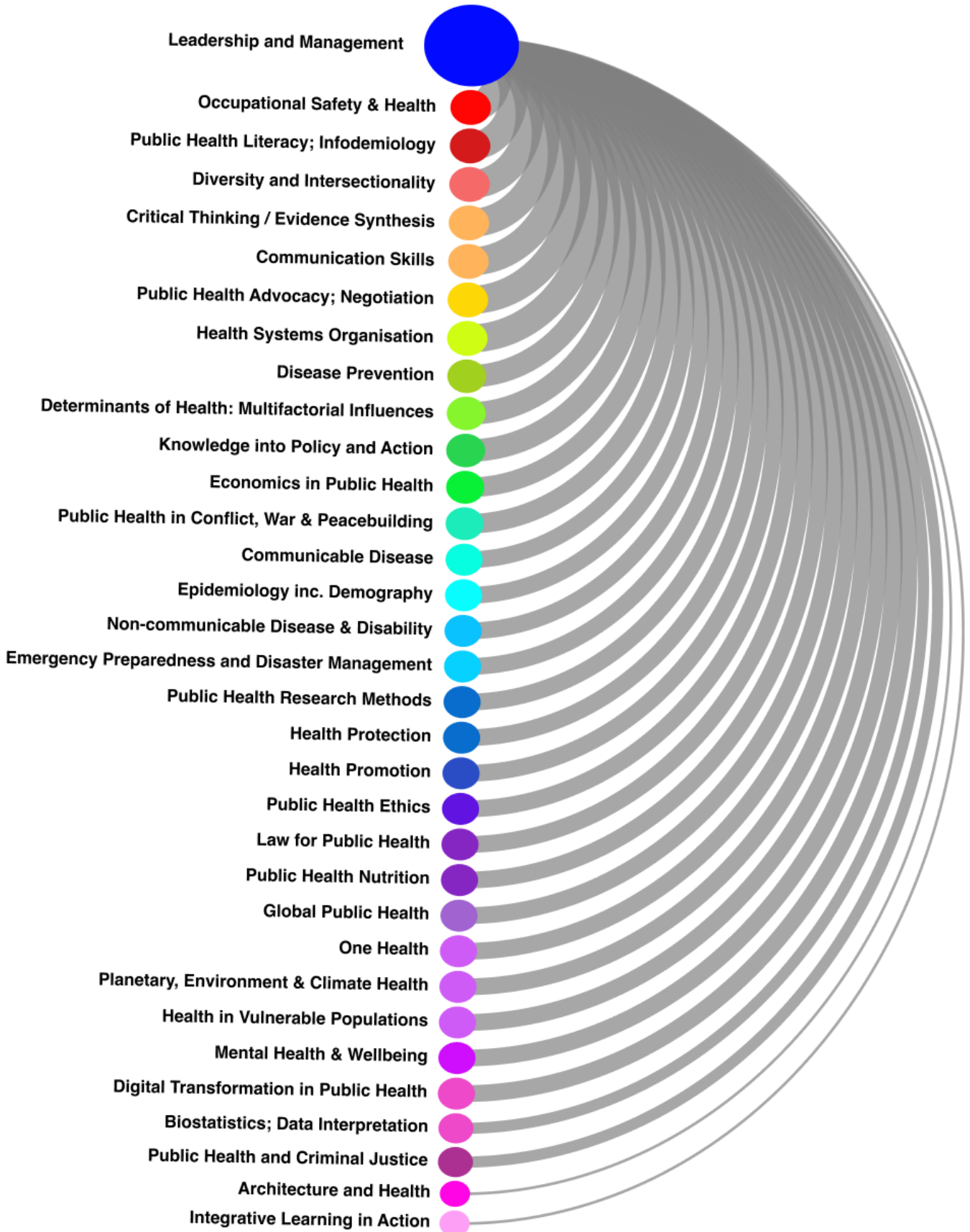
### WHO 12 Essential Public Health Functions, 2024

- EPHF 2: Public Health Emergency Management
- EPHF 3: Public Health Stewardship
- EPHF 4: Health System and Multisectoral Planning and Financing
- EPHF 8: Community Engagement and Social Participation
- EPHF 9: Public Health Workforce Development
- EPHF 11: Public Health Research, Evaluation and Knowledge

### ECDC Core Competencies in Applied Infectious Disease Epidemiology, 2022

- Subject area F: Leadership and Management
  - Leadership and Systems Thinking
  - Epidemiological Research Methods

### Connectivity of Leadership and Management in PH curricula



**NOTE:** Sizes of circles and arches represent the degree of connectivity with other subject areas

## Leadership and Management Curriculum Overview

In essence, leadership and management in public health education are not only essential for the success of academic institutions but also critical for advancing population health and addressing the myriad of health challenges faced by communities worldwide. The combination of strong and effective leadership and management competencies fosters innovation, resilience, and sustainability in the pursuit of a healthier future for all.

Moreover, effective management practices ensure the smooth operation of educational programs, optimizing student learning experiences, faculty engagement, and research productivity. By prioritizing strategic planning, budget management, and quality assurance, institutions can uphold standards of excellence and maximize their impact on public health outcomes.

## Leadership and Management Themes



Suggested curricular elements are presented for all educational levels.

## Bachelor Degree Level

## LEADING SELF, OTHERS and ORGANISATIONS

- Leadership theories / styles: including ethical, authentic, distributive
- Values and knowledge difference between leadership and management
- Awareness of the impact of one's own beliefs, values and behaviour upon decision-making
- Emotional intelligence and leadership
- Personality, cultural perceptions, and attributions (within and outside of the organization)
- Ethical reflective practice

## PROFESSIONAL DEVELOPMENT and LEARNING ORGANISATIONS

- Support an environment of trust and learning within an organisation
- Perform effectively as a team member or team leader in teams and groups

## EFFECTIVE COMMUNICATION and COLLABORATION

- Communication; Principles and Practice
- Cultural sensitivity
- Intersectoral collaboration
- Interprofessional collaboration
- Inter- and transdisciplinary collaboration in teams and groups

## SOCIAL RESPONSIBILITY and PRINCIPLES of PRACTICE

- Health Inequalities and Health Inequity
- Diversity and inclusion (e.g. LGBTQI+, Gender mainstreaming, etc.)
- Introduction to public health ethics and bioethics - principles and process in practice
- Pro-bono work carried out by an institution
- CSR - Corporate social responsibility - CSR programs, philanthropy, and volunteer efforts
- The role of pharmaceutical companies and the 'greater good'

## COMPLEX SYSTEMS: SYSTEM THINKING

- Principles of systems-thinking and infectious and non-infectious disease policies
- Compare the organization, structure and function of health care, public health and regulatory systems, across national and international settings
- Interconnectedness and complexity of systems within organisation and society

## COMPLEX SYSTEMS: POLICY, STAKEHOLDERS and ADVOCACY

- Evaluation theory and application
- Program planning, implementation, and evaluation in organizational, community, and policy initiatives
- Intersection and power of the stakeholders
- Synergistic Relationships (Private industry assisting public interests)
- The role of the populations actions and outcomes

## COMPLEX SYSTEMS: GOVERNANCE and RESOURCE MANAGEMENT

- Structure and organization of health care services both public and private

**Master and Doctoral Degree Level****LEADING SELF, OTHERS and ORGANISATIONS**

- Leadership theories / styles: including ethical, authentic, compassionate, distributive,
- Values and knowledge difference between leadership and management
- Awareness of the impact of one's own beliefs, values and behaviour upon decision-making
- Recognise the need for change when it arises and develop and apply methods and approaches to support change
- Emotional intelligence and leadership
- Change leadership
- Personality, cultural perceptions, and attributions (within and outside of the organization)
- Strategic management and leadership in health care organizations
- Inspiration and motivation; work towards a common vision and/or organisational goals
- Ethical reflective practice

**PROFESSIONAL DEVELOPMENT and LEARNING ORGANISATIONS**

- Identify and participate in leadership training opportunities
- Identify and apply the strategic priorities of the organisation and the system
- Support an environment of trust and learning within an organisation
- Perform effectively as a team member or team leader
- Organisational culture and its impact on staff and delivery of services

**EFFECTIVE COMMUNICATION and COLLABORATION**

- Communication: principles and practice
- Cultural sensitivity
- Practice conflict management and shared responsibility
- Collaboration with governance structures at different organisational levels
- Intersectoral collaboration
- Interprofessional collaboration
- Inter- and transdisciplinary collaboration

**SOCIAL RESPONSIBILITY and PRINCIPLES of PRACTICE**

- Health Inequalities and Health Inequity
- Diversity and inclusion (e.g. LGBTQI+, Gender mainstreaming, etc.)
- Public health ethics and bioethics - principles and process in practice
- Pro-bono work carried out by an institution
- CSR - Corporate social responsibility - CSR programs, philanthropy, and volunteer efforts
- The role of pharmaceutical companies and the 'greater good'
- GDPR and privacy rights
- Types of responsibility: environmental responsibility, ethical responsibility, philanthropic responsibility, and economic responsibility
- Anti-corruption

**COMPLEX SYSTEMS: SYSTEM THINKING**

- Principles of systems-thinking and infectious and non-infectious disease policies
- Globalization, corporate micro-politics
- Strategic priorities of the organisation and the system
- Compare the organization, structure and function of health care, public health and regulatory systems, across national and international settings
- Interconnectedness and complexity of systems within organisation and society
- Principles of system thinking in governance of one health and planetary health

**COMPLEX SYSTEMS: POLICY, STAKEHOLDERS and ADVOCACY**

- Social mobilization for health
- Evaluation theory and application
- Advancing policy and implementation change
- Program planning, implementation, and evaluation in organizational, community, and policy initiatives
- Intersection and power of the stakeholders
- Synergistic relationships (Private industry assisting public interests)
- The role of the populations actions and outcomes

**COMPLEX SYSTEMS: GOVERNANCE and RESOURCE MANAGEMENT**

- Structure and organization of health care services both public and private

## Certificate and/or Diploma Level

**LEADING SELF, OTHERS and ORGANISATIONS**

- Leadership theories / styles: including ethical, authentic, compassionate, distributive
- Values and knowledge difference between leadership and management
- Awareness of the impact of one's own beliefs, values and behaviour upon decision-making
- Recognise the need for change when it arises and develop and apply methods and approaches to support change
- Emotional intelligence and leadership
- Change Leadership
- Power, influence and political behaviour
- Historical contexts of leadership; (Patriarchy) the great man theory to then reflective ethical practice
- Organisational behaviour: change and balance
- Ethical reflective practice

**EFFECTIVE COMMUNICATION and COLLABORATION**

- Communication: principles and practice
- Intersectoral collaboration
- Interprofessional collaboration
- Inter- and transdisciplinary collaboration

**SOCIAL RESPONSIBILITY and PRINCIPLES of PRACTICE**

- Health Inequalities and Health Inequity
- Diversity and inclusion (e.g. LGBTQI+, Gender mainstreaming, etc.)
- Public health ethics and bioethics - principles and process in practice

**COMPLEX SYSTEMS: SYSTEM THINKING**

- Principles of systems-thinking and infectious and non-infectious disease policies
- Compare the organization, structure and function of health care, public health and regulatory systems, across national and international settings
- Interconnectedness and complexity of systems within organisation and society

**COMPLEX SYSTEMS: POLICY, STAKEHOLDERS and ADVOCACY**

- Evaluation theory and application
- Advancing policy and implementation change
- Intersection and power of the stakeholders
- The role of the populations actions and outcomes

**COMPLEX SYSTEMS: GOVERNANCE and RESOURCE MANAGEMENT**

- Financial management to formulate, implement and support budget plans for programmes and audit functions
- Development of funding proposal
- Management of budget resources consistent with strategies
- Performance assessment at all levels
- Structure and organization of health care services both public and private

## Continuous Professional Development

### LEADING SELF, OTHERS and ORGANISATIONS

- Leadership theories / styles: including ethical, authentic, compassionate, distributive
- Emotional intelligence and leadership
- Change leadership
- Strategic management and leadership in health care organizations
- Power, influence and political behaviour
- Historical contexts of leadership; (Patriarchy) the great man theory to then reflective ethical practice
- Organisational behaviour: change and balance
- Ethical reflective practice
- Delegate responsibilities and tasks based on trust, skill level and expertise of team members

### PROFESSIONAL DEVELOPMENT and LEARNING ORGANISATIONS

- Organisational culture and its impact on staff and delivery of services

### EFFECTIVE COMMUNICATION and COLLABORATION

- Communication: principles and practice
- Practice conflict management and shared responsibility
- Collaboration with governance structures at different organisational levels
- Intersectoral collaboration
- Interprofessional collaboration
- Inter- and transdisciplinary collaboration

### SOCIAL RESPONSIBILITY and PRINCIPLES of PRACTICE

- Health Inequalities and Health Inequity
- Diversity and inclusion (e.g. LGBTQI+, gender mainstreaming, etc.)
- Public health ethics and bioethics - principles and process in practice
- GDPR and privacy rights
- Types of responsibility: environmental responsibility, ethical responsibility, philanthropic responsibility, and economic responsibility
- Anti-corruption

### COMPLEX SYSTEMS: SYSTEM THINKING

- Principles of systems-thinking and infectious and non-infectious disease policies
- Globalization, corporate micro-politics
- Strategic priorities of the organisation and the system
- Compare the organization, structure and function of health care, public health and regulatory systems, across national and international settings
- Interconnectedness and complexity of systems within organisation and society
- Principles of system thinking in governance of one health and planetary health

### COMPLEX SYSTEMS: POLICY, STAKEHOLDERS and ADVOCACY

- Evaluation theory and application
- Advancing policy and implementation change
- Intersection and power of the stakeholders
- Synergistic Relationships (Private industry assisting public interests)
- The role of the populations actions and outcomes

### COMPLEX SYSTEMS: GOVERNANCE and RESOURCE MANAGEMENT

- Financial management to formulate, implement and support budget plans for programmes and audit functions
- Development of funding proposal
- Management of budget resources consistent with strategies
- Performance assessment at all levels
- Structure and organization of health care services both public and private



The background of the page is a dark blue gradient with a complex network of thin, light blue lines connecting various nodes. Some nodes are highlighted with a bright orange or yellow glow, creating a sense of depth and activity. The overall aesthetic is futuristic and technological.

# Appendices



# **Appendix I**

## **Expert Advisory Groups**

### Domain: Core Subject Areas in Public Health

#### Epidemiology incl. Demography Expert Advisory Group (EAG)

**Henrique Barros**

Full Professor of Epidemiology,  
President of The Institute of Public Health of the  
University of Porto  
The Institute of Public Health of the University of  
Porto, Portugal

**Mary Codd**

Associate Professor of Epidemiology &  
Biostatistics  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Karl F Conyard**

ASPHER Fellow  
School of Public Health, Physiotherapy and  
Sports Science, University College Dublin,  
Ireland Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Anders Foldspang**

Full Professor of Public Health  
Århus University, Denmark

**Jenny Houston**

Clinical Fellow in Medical Education  
University of Edinburgh, UK

**Rok Hrzič**

ASPHER Fellow, Chair of ASPHER Taskforce  
(DiPH),  
Lecturer and Researcher  
Maastricht University, The Netherlands

**Monica Hunsberger**

Associate Professor  
University of Gothenburg, Sweden

**Polychronis Kostoulas**

Assistant Professor Veterinary Epidemiology  
Faculty of Veterinary Medicine, University of  
Thessaly, Greece

**Mzwandile Mabhala**

Professor in Public Health Epidemiology  
University of Chester, England, UK &  
ASPHER Executive Board

**Akke Vellinga**

Professor of Public Health  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Alison McCallum**

Professor of Public Health  
Usher Institute  
The University of Edinburgh, UK

**John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

**Alena Petrakova**

Associate Professor  
Faculty of Health Sciences  
Palacký University Olomouc, Czechia

**Olalekan Popoola**

ASPHER Young Professional University College  
Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

**Vladimir Prikazsky**

Senior Epidemiologist  
National Institute of Public Health (NIPH), Prague,  
Czechia

**Gaetano Privitera**

Professor Emeritus  
Medical University of Pisa, Italy

**Carlo Signorelli**

Full Professor of Hygiene and Public Health  
University Vita-Salute San Raffaele of Milan, Italy

**Judit Simon**

Professor of Health Economics  
Centre for Public Health  
Medical University of Vienna, Austria

**Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK

**Mohamud M Sheek-Hussein**

Professor of Global Health  
University of Alain, United Arab Emirates

## Appendices

### Public Health Research Methods Expert Advisory Group (EAG)

**Kylie Cashin**

Young Professional in Public Health  
University College Dublin, Ireland

**Colette Cunningham**

Lecturer  
University College Cork,  
Chair in Public Health Emergencies and Disasters  
World Federation of Public Health Associations

**Klara Dokova**

Associate Professor, Department of Social Medicine  
and Health Organization  
Medical University of Varna, Bulgaria

**Luong Duong**

Young Professional in Public Health  
University College Dublin, Ireland

**Manfred Green**

Head of International Program  
University of Haifa, Israel

**Andi Mabahla**

Professor in Public Health Epidemiology  
Chester University UK; ASPHER EB

**Alena Petrakova**

Associate Professor  
Faculty of Health Sciences  
Palacký University Olomouc, Czechia

**Richard J Pinder**

Senior Clinical Lecturer  
Public Health Physician  
Imperial College London, UK

**Milo Puhan**

Director of the Epidemiology & Biostatistics PhD  
Programme  
University of Zurich, Switzerland

**Shweta Rao**

AmeriCorps Disaster Preparedness Outreach  
Specialist  
Sewa-Houston AmeriCorps Program, USA

**Mary Rose Sweeney**

Executive Vice Dean for Education, Faculty of  
Nursing & Midwifery  
Royal College of Surgeons in Ireland, University of  
Medicine and Health Sciences

### Biostatistics incl. Data Interpretation Expert Advisory Group (EAG)

**Luigi De Angelis**

Public Health Medicine Resident  
Università di Pisa, Italy

**Mary Codd**

Associate Professor of Epidemiology &  
Biostatistics  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Klara Dokova**

Associate Professor, Department of Social  
Medicine and Health Organization  
Medical University of Varna, Bulgaria

**Saswati Ghosh**

Project Coordinator and Young Professional in  
Public Health  
University College Dublin, Ireland

**Monica Hunsberger**

Associate Professor  
University of Gothenburg, Sweden

**Parnian Jalili**

PhD Scholar  
University College Dublin, Ireland

**Nicole Kamikazi**

Young Professional/EUROpubhealth  
University College Dublin, Ireland

**Ricardo Ocaña-Riola**

Professor of Statistics  
Andalusian School of Public Health, Spain

**Raklanna Puangkam**

Young Professional/ EUROpubhealth  
University College Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

**Priscilla Robinson**

Adjunct Associate Professor  
La Trobe University, Australia

**Nataliya Usheva**

Associate Professor, Head of the Department  
Medical University of Varna, Bulgaria

## Appendices

### Determinants of Health: Multifactorial Influences

Expert Advisory Group (EAG)

**Reuben Benjamin**

Young Professional in Public Health  
University College Dublin, Ireland

**Tomas Bochenek**

Assistant Professor, Deputy Director  
Jagiellonian University in Krakow, Poland

**Michal Bystram**

ASPHER Young Professional  
Medical University of Gdansk, Poland

**Manuel Correa**

Professor of Applied Economics  
University of Granada, Spain

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Alessandro Berionni**

Chair, Young World Federation of Public Health  
Associations, Italy

**Uma Divya Kudupudi**

Young Professional in Public Health  
University College Dublin, Ireland

**Vinod Kumar Majani**

Young Professional in Public Health  
University College Dublin, Ireland

**Emer Liddy**

Young Professional in Public Health  
University College Dublin, Ireland

**John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

**Olalekan Popoola**

Europubhealth MPH Candidate  
UCD & Jagiellonian University in Krakow, Poland

### Health Protection

Expert Advisory Group (EAG)

**Colette Cunningham**

Lecturer  
University College Cork,  
Chair in Public Health Emergencies and Disasters  
World Federation of Public Health Associations

**Piedad Martín-Olmedo**

President  
EUPHA HIA Section,  
Professor of Public Health  
Andalusian School of Public Health, Granada, Spain

**Eamonn O'Moore**

National Director of Health Protection  
Health Service Executive, Ireland

**Ruzha Pancheva**

Department of Hygiene and Epidemiology  
Medical University Varna, Bulgaria

**Marian Panteleeva**

Ch. Assist Professor  
Medical University Varna, Bulgaria

**Nikolina Radeva**

Associate Professor  
Medical University Varna, Bulgaria

**Janet Rymound**

Young Professional in Public Health  
University College Dublin, Ireland

**Natalya Usheva**

Assoc. Prof. Faculty of Public Health  
Medical University Varna, Bulgaria

**Members of ASPHER Public Health**

Emergency Task Force  
ASPHER

## Appendices

### Disease Prevention Expert Advisory Group (EAG)

**Francesco Baglivo**

Public Health Medicine Resident  
University of Pisa, Italy

**Shane Piper Creagh**

ASPHER Young Professional,  
Surveillance Scientist  
Health Protection Surveillance Centre, Ireland

**Sinead Hegarty**

Infection Control Nurse  
Health Service Executive, Ireland

**Ondrej Holy**

Vice-dean for Strategic Management and Quality  
Head of Science and Research Centre  
Palacký University Olomouc, Czechia

**Uma Divya Kudupudi**

Young Professional in Public Health  
University College Dublin, Ireland

**Noah Levitin**

Young Professional in Public Health  
University of Edinburgh, UK

**Alison McCallum**

Professor, Usher Institute  
University of Edinburgh, Scotland

**Sonya Nedelcheva**

Assistant Professor for Public Health  
Medical University Varna, Bulgaria

**Rouzha Pancheva**

Prof. Dept of Hygiene and Epidemiology  
Medical University Varna, Bulgaria

**Richard J Pinder**

Senior Clinical Lecturer  
Public Health Physician  
Imperial College London, UK

**David Radomski**

Young Professional in Public Health  
University College Dublin, Ireland

**Natalya Usheva**

Assoc. Prof. Faculty of Public Health  
Medical University Varna, Bulgaria

**Desislava Vankova**

Associate Professor for Public Health  
Medical University Varna, Bulgaria

**Emma Wilson**

Professor of Public Health  
University of Nottingham, UK

### Health Promotion Expert Advisory Group (EAG)

**Francesco Baglivo**

Public Health Medicine Resident  
University of Pisa, Italy

**Shane Piper Creagh**

ASPHER Young Professional,  
Surveillance Scientist  
Health Protection Surveillance Centre, Ireland

**Sinead Hegarty**

Infection Control Nurse  
Health Service Executive, Ireland

**Maria de los Llanos Martinez**

Dental Public Health Specialist  
National Health Service, UK

**Alison McCallum**

Professor, Usher Institute  
University of Edinburgh, Scotland

**Sonya Nedelcheva**

Assistant Professor for Public Health  
Medical University Varna, Bulgaria

**Rouzha Pancheva**

Prof. Dept of Hygiene and Epidemiology  
Medical University Varna, Bulgaria

**Richard J Pinder**

Senior Clinical Lecturer  
Public Health Physician  
Imperial College London, UK

**David Radomski**

Young Professional in Public Health  
University College Dublin, Ireland

**Nipuna Thamanam**

Post Doctoral Researcher  
Royal College of Surgeons in Ireland, University  
of Medicine and Health Sciences

**Natalya Usheva**

Assoc. Prof. Faculty of Public Health  
Medical University Varna, Bulgaria

**Desislava Vankova**

Associate Professor for Public Health  
Medical University Varna, Bulgaria

**Emma Wilson**

Professor of Public Health  
University of Nottingham, UK

**Kate Frazer**

Associate Professor,  
School of Nursing, Midwifery and Health system,  
University College Dublin, Ireland

## Appendices

### Public Health Ethics

Expert Advisory Group (EAG)

**Aashita Jha**

Young Professional in Public Health  
University College Dublin, Ireland

**Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK

**Dominique Mollet**

PhD Scholar, Global Health Law  
Groningen University, The Netherlands

**Muhamad Aleiff Bin Tajuddin**

Young Professional/EUROpubhealth  
University College Dublin, Ireland,  
Maastricht University, The Netherlands

**Abigail Murfitt**

Young Professional in Public Health  
University College Dublin, Ireland

### Law of Public Health

Expert Advisory Group (EAG)

**Aashita Jha**

Young Professional in Public Health  
University College Dublin, Ireland

**Abigail Murfitt**

Young Professional in Public Health  
University College Dublin, Ireland

**Martin Mirchev**

Chief Assistant Professor Medical Ethics & Law  
Medical University Varna, Bulgaria

**Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK

**Dominique Mollet**

PhD Scholar, Global Health Law  
Groningen University, The Netherlands

**Muhamad Aleiff Bin Tajuddin**

Young Professional/EUROpubhealth  
University College Dublin, Ireland,  
Maastricht University, The Netherlands

### Economics in Public Health

Expert Advisory Group (EAG)

**Manuel Correa**

Professor of Applied Economics  
University of Granada, Spain

**Arianna Maviglia**

ASPHER Intern (Health Economics)  
European Medicines Agency, The  
Netherlands

**Lakshmi Dwivedi**

Authorised Public Health Officer  
Victorian Department of Health, Victoria University,  
Australia

**Hans Olav Melberg**

Professor, Health Economics & Health  
Services Research  
UiT - Arctic University of Norway, Tromsø

**Sherrie Kelly**

Swiss Tropical and Public Health Institute,  
Allschwil, Switzerland

**Ciaran O'Neill**

Professor, Centre for Public Health  
Queens University, Belfast, Northern Ireland

**Nguyen Thanh Luong**

Young Professional in Public Health  
University College Dublin, Ireland

**Judit Simon**

Professor of Health Economics  
Centre for Public Health  
Medical University of Vienna, Austria

## Appendices

### Health System Organisation Expert Advisory Group (EAG)

**Henrique Barros**

Full Professor of Epidemiology,  
President of The Institute of Public Health of the  
University of Porto  
The Institute of Public Health of the University  
of Porto, Portugal

**Mary Codd**

Associate Professor of Epidemiology &  
Biostatistics  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Karl F Conyard**

ASPHER Fellow  
School of Public Health, Physiotherapy and  
Sports Science,  
University College Dublin, Ireland  
Royal College of Surgeons in Ireland, University  
of Medicine and Health Sciences

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Anders Foldspang**

Full Professor of Public Health  
Århus University, Denmark

**Jenny Houston**

Clinical Fellow in Medical Education  
University of Edinburgh, UK

**Polychronis Kostoulas**

Assistant Professor Veterinary Epidemiology  
Faculty of Veterinary Medicine, University of  
Thessaly, Greece

**Mzwandile (Andi) Mabhala**

Professor in Public Health Epidemiology  
University of Chester, UK

**Alison McCallum**

Professor of Public Health  
Usher Institute  
The University of Edinburgh, UK

**John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

**Olalekan Popoola**

ASPHER Young Professional University College  
Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

**Vladimir Prikazsky**

Senior Epidemiologist  
National Institute of Public Health (NIPH), Prague,  
Czechia

**Gaetano Privitera**

Professor Emeritus  
Medical University of Pisa, Italy

**Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK

**Carlo Signorelli**

Full Professor of Hygiene and Public Health  
University Vita-Salute San Raffaele of Milan, Italy

**Judit Simon**

Professor of Health Economics  
Centre for Public Health  
Medical University of Vienna, Austria

**Rok Hrzič**

ASPHER Fellow, Chair of ASPHER Taskforce (DiPH),  
Lecturer and Researcher  
Maastricht University, The Netherlands



### Domain: Subject-specific Areas in Public Health

#### Communicable Disease

Expert Advisory Group (EAG)

**Arnold Bosman**

Medical Director  
Transmissible, Belgium

**Mary Codd**

Associate Professor of Epidemiology & Biostatistics  
School of Public Health, Physiotherapy and Sports  
Science, University College Dublin, Ireland

**Karl F Conyard**

ASPHER Fellow  
School of Public Health, Physiotherapy and Sports  
Science, University College Dublin, Ireland;  
Royal College of Surgeons in Ireland, University of  
Medicine and Health Sciences

**Katarzyna Czabanowska**

Professor in Public Health Leadership and Workforce  
Development  
Maastricht University, The Netherlands

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Patricia Fitzpatrick**

Professor of Epidemiology and Biostatistics  
School of Public Health, Physiotherapy and Sports  
Science  
University College Dublin, Ireland

**Ondrej Holy**

Vice-dean for Strategic Management and Quality  
Head of Science and Research Centre  
Palacký University Olomouc, Czechia

**Mohamud M. Sheek-Hussein**

Professor of Global Health  
United Arab Emirates University,  
United Arab Emirates

**John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

**Ralf Reintjes**

Professor of Epidemiology and Statistics  
Hamburg University of Applied Sciences, Germany

**Priscilla Robinson**

Adjunct Associate Professor  
La Trobe University, Australia

**Darren Shickle**

Professor of Public Health  
University of Leeds, UK

**Shiraz Syed**

Public Health Practitioner,  
National Health Service Trust Surgeon  
Sandwell and West Birmingham Hospitals, UK

**Patrick Wall**

Professor of Public Health  
University College Dublin

**UCCAIDE Consortium Members**

ASPHER

## Appendices

### Non-Communicable Diseases & Disability

Expert Advisory Group (EAG)

#### **Francesco Baglivo**

Public Health Resident Doctor  
University of Pisa, Italy

#### **Ambrogio Cerri**

Former Vice President,  
EURONET European Network of Medical Residents  
in Public Health;

PhD Scholar

University of Rome Tor Vergata, Italy;

Public Health Medical Resident

Sapienza University of Rome, Italy

#### **Klara Dokova**

Associate Professor, Department of Social Medicine  
and Health Organization  
Medical University of Varna, Bulgaria

#### **Lakshmi Dwivedi**

Authorised Public Health Officer  
Victorian Department of Health, Victoria University,  
Australia

#### **Patricia Fitzpatrick**

Professor of Epidemiology and Biostatistics,  
School of Public Health, Physiotherapy and Sports  
Science  
University College Dublin, Ireland

#### **Benedict Leonard-Hawkhead**

PhD Scholar  
Queen's University Belfast, Northern Ireland

#### **Anjum Memon**

Chair in Epidemiology and Public Health Medicine  
Brighton and Sussex Medical School, UK

#### **Oanh Nguyen Ngoc**

Young Professional in Public Health  
University College Dublin, Ireland

#### **Silviya Nikolova**

Assistant Professor  
Medical University Varna, Bulgaria

#### **Priscilla Robinson**

Adjunct Associate Professor  
La Trobe University, Australia

#### **Natalya Usheva**

Assoc. Faculty of Public Health  
Medical University Varna, Bulgaria

### Occupational Safety and Health (OSH)

Expert Advisory Group (EAG)

#### **Michael Bystram**

CCP Young professional  
Medical University Gdansk

#### **Teodora Dimitrova**

Associate Professor  
Medical University Varna, Bulgaria

#### **Giovana Failla**

Public Health Medicine Specialist  
Università Cattolica del sacro Curoe, Rome, Italy

#### **Karolina Lyubomirova**

Head of Occupational Health Department  
Medical University Sofia, Bulgaria

#### **Penpatra Sripaiboonkij**

Assistant Professor  
School of Public Health, Physiotherapy and Sports  
Science,  
University College Dublin, Ireland

## Appendices

### Planetary, Environmental and Climate Health

Expert Advisory Group (EAG)

**Laurent Chambaud**

ASPHER Lead on Climate Health,  
Former Dean  
Ecole des Hautes Études en Santé Publique, France

**Tara Chen**

ASPHER Fellow on Climate Health  
Waterloo University, Canada

**Giovana Failla**

Public Health Medicine Specialist  
Università Cattolica del Sacro Cuore, Rome, Italy

**Srihari Govind Kaliapuram Narendrakumar**

Young Professional/ EUROpubhealth  
University College Dublin, Ireland

**Virginia B Arjona**

Lecturer in Environmental Science  
Andalusian School of Public Health, Granada, Spain

**Ana Catarina P Gomes**

Clinical Lecturer  
Institute for Health Informatics,  
University College London, UK

**Kristen Duggan**

Scientific Researcher  
Gesundheitsamt, Frankfurt, Germany

**David W Patterson**

PhD Scholar  
University of Groningen, The Netherlands

**Piedad Martín-Olmedo**

President  
EUPHA HIA Section,  
Professor of Public Health  
Andalusian School of Public Health, Granada, Spain

**Maisoon Mighari**

Clinical Lecturer  
Royal College of Surgeons in Ireland, University of  
Medicine and Health Sciences

**Marie Nabbe**

EU Affairs Officer  
European Hospital and Healthcare Federation,  
ASPHER Young Professional

**Debbi Stanistreet**

Professor of Public Health  
Royal College of Surgeons in Ireland, University of  
Medicine and Health Sciences

**Frederike Garbe**

Consultant in Public Health Medicine  
Public Health, Edinburgh, UK

**Sarah Barry**

Director of Academic Programmes, School of  
Population Health  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Frederike Garbe**

Consultant in Public Health Medicine  
Public Health, Edinburgh, UK

**Susana Veigas**

Full Professor in Environmental Health  
Universidade Nova de Lisboa, Portugal

### Public Health Nutrition

Expert Advisory Group

**Clare Corish**

Professor in Clinical Nutrition and Dietetics  
University College Dublin, Ireland

**Olatundun Gafari**

Senior Research Assistant  
University of Southampton, UK

**Carla Lopes**

Full Professor of Epidemiology and Public Health  
Instituto de Saúde Pública da Universidade do Porto,  
Portugal

**Celine Murrin**

Assistant Professor; Director of National Nutrition  
Surveillance Centre, Ireland  
University College Dublin, Ireland

**Hazem Agah**

Assistant Professor of Public Health Nutrition  
Al-Quds University, Jerusalem

**Mary Rose Sweeney**

Executive Vice Dean for Education,  
Faculty of Nursing & Midwifery  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Shevaun Teo**

PhD Scholar  
University College Dublin, Ireland

**Virginia Ziulu**

Nutritional Therapist of Public Health Nutrition Research  
Nutritional Therapists Of Ireland & Italy

**ASPHER PHN Group**

Public Health Nutrition Competencies Group  
EU

## Appendices

### Architecture & Health Expert Advisory Group (EAG)

**Pratiksha Nagar**

Young Professional in Public Health  
University College Dublin, Ireland

**Desislava Vankova**

Associate Professor  
Varna Medical University, Varna, Bulgaria

### Emergency Preparedness and Disaster Management Expert Advisory Group (EAG)

**Musa N Corr**

Chief Public Health Officer  
Gambian Armed Forces;  
Lecturer  
Management Development Institute, Gambia

**Nikolina Radeva**

Associate Professor  
Medical University Varna, Bulgaria

**Colette Cunningham**

Lecturer  
University College Cork,  
Chair in Public Health Emergencies and Disasters  
World Federation of Public Health Associations

**Shweta Rao**

AmeriCorps Disaster Preparedness  
Outreach Specialist  
Sewa-Houston AmeriCorps Program, USA

**Piedad Martín-Olmedo**

President  
EUPHA HIA Section,  
Professor of Public Health  
Andalusian School of Public Health, Granada, Spain

**Janet Rymound**

Young Professional in Public Health  
University College Dublin, Ireland

**Eamonn O'Moore**

National Director of Health Protection  
Health Service Executive, Ireland

**Natalya Usheva**

Assoc. Faculty of Public Health  
Medical University Varna, Bulgaria

**Ruzha Pancheva**

Department of Hygiene and Epidemiology  
Medical University Varna, Bulgaria

**Members of ASPHER Public Health  
Emergency Task Force**  
ASPHER, EU**Marian Panteleeva**

Ch. Assist Professor  
Medical University Varna, Bulgaria

**Nicole Mc Allister**

Young Professional in Humanitarian Action  
University College Dublin, Ireland

**Maxwell Manning**

Medical Student  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

## Appendices

### Public Health in Conflict, War & Peacebuilding

Expert Advisory Group (EAG)

#### **Paul Barach**

Lecturer and Senior Advisor to the Dean  
Thomas Jefferson University, Philadelphia, USA

#### **Hagai Boas**

Adjunct Associate Professor in Politics &  
Government  
Ben-Gurion University of the Negev, Israel

#### **Tomasz Bochenek**

Deputy Director of Institute of Public Health  
Jagiellonian University Krakow, Poland

#### **Mary Codd**

Associate Professor of Epidemiology & Biostatistics  
School of Public Health, Physiotherapy and Sports  
Science, University College Dublin, Ireland

#### **Karl F Conyard**

ASPHER Fellow  
School of Public Health, Physiotherapy and Sports  
Science, University College Dublin, Ireland  
Royal College of Surgeons in Ireland, University of  
Medicine and Health Sciences

#### **Musa N Corr**

Chief Public Health Officer  
Gambian Armed Forces,  
Lecturer  
Management Development Institute, Gambia

#### **Nicole Mc Allister**

Young Professional in Humanitarian Action  
University College Dublin, Ireland

#### **Colette Cunningham**

Lecturer  
University College Cork,  
Chair in Public Health Emergencies and Disasters  
World Federation of Public Health Associations

#### **Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

#### **Ahmed Al Lami**

Medical Student  
The Royal College of Surgeons in Ireland, University  
of Medicine and Health Sciences

#### **Mzwandile Mabhala**

Professor in Public Health,  
University of Derby, UK

#### **Oliver Razum**

Full Professor, Head of Department of Epidemiology  
& International Public Health,  
School of Public Health,  
Bielefeld University, Germany

#### **Dorit Nitzan**

Professor  
Ben-Gurion University of the Negev, Israel

### Public Health and Criminal Justice

Expert Advisory Group (EAG)

#### **Nawar Arouk**

Young Professional/EUROpubhealth  
University College Dublin, Ireland

#### **Mary Codd**

Associate Professor of Epidemiology & Biostatistics  
School of Public Health, Physiotherapy and Sports  
Science,  
University College Dublin, Ireland

#### **Karl F Conyard**

ASPHER Fellow  
School of Public Health, Physiotherapy and Sports  
Science, University College Dublin, Ireland  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

#### **Katarzyna Czabanowska**

Professor in Public Health Leadership and  
Workforce Development  
Maastricht University, The Netherlands

#### **David Joyce**

Clinical Lead  
Irish Prison Service, Ireland

#### **Jwenish Kumawat**

Research Fellow and PhD Scholar  
University College Dublin, Ireland

#### **Raklanna Puangkam**

Young Professional/ EUROpubhealth  
University College Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

## Appendices

### Domain: Core Cross-curricular Subject Areas in Public Health

#### Mental Health & Wellbeing Expert Advisory Group (EAG)

**Mary Codd**

Associate Professor of Epidemiology & Biostatistics,  
School of Public Health, Physiotherapy and Sports Science  
University College Dublin, Ireland

**Jwenish Kumawat**

Research Fellow and PhD Scholar  
University College Dublin, Ireland

**Karl F Conyard**

ASPHER Fellow  
School of Public Health, Physiotherapy and Sports Science,  
University College Dublin, Ireland  
Royal College of Surgeons in Ireland, University of Medicine and Health Sciences

**Sinead Mc Nally**

Associate Professor of Psychology and Early Childhood Education,  
Institute of Education,  
Dublin City University, Ireland

#### Diversity and Intersectionality Expert Advisory Group (EAG)

**Sonia Colianni**

Public Health Student Ambassador  
London School of Hygiene and Tropical Medicine,  
UK

**Diana Podar**

Research Associate  
Bielefeld University, Germany

**Uma Divya Kudupudi**

Young Professional in Public Health  
University College Dublin, Ireland

**Diana González Rodríguez**

Young Professional/ EUROpubhealth  
University College Dublin, Ireland

**Nikolay Mihaylov**

Chair, Assistant Professor Health Policy  
Medical University Varna, Bulgaria

**Emma Schlegel**

Research Associate  
University of Köln, Germany

**Yudit Namer**

Junior Professor, Department of Psychology  
Bielefeld University, Germany & University of Twente, The Netherlands

**Nipuna Thamanam**

Post Doctoral Researcher  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Kate Ndocko**

Public Health Medicine Resident  
European Commission, Brussels, Belgium

**Desislava Vankova**

Associate Professor, Social Medicine  
Medical University Varna, Bulgaria

**Ugonna Nwankpa**

Public Health Medicine Registrar  
National Health Service,  
Health Education, UK

**Lisa Wandshneider**

Former ASPHER Fellow  
Bielefeld University, Germany

**Alyssa Pascoe**

Young Professional/EUROpubhealth  
University College Dublin, Ireland

## Appendices

### Health in Vulnerable Populations Expert Advisory Group (EAG)

**Sonia Colianni**

Public Health Student Ambassador  
London School of Hygiene and Tropical  
Medicine, UK

**Uma Divya Kudupudi**

Young Professional in Public Health  
University College Dublin, Ireland

**Nikolay Mihaylov**

Chair, Assistant Professor Health Policy  
Medical University Varna, Bulgaria

**Yudit Namer**

Junior Professor, Department of Psychology  
Bielefeld University, Germany & University of  
Twente, The Netherlands

**Kate Ndocko**

Public Health Medicine Resident  
European Commission, Brussels, Belgium

**Ugonna Nwankpa**

Public Health Medicine Registrar  
National Health Service,  
Health Education, UK

**Alyssa Pascoe**

Young Professional/EUROpubhealth  
University College Dublin, Ireland

**Diana Podar**

Research Associate  
Bielefeld University, Germany

**Diana González Rodríguez**

Young Professional/ EUROpubhealth  
University College Dublin, Ireland

**Emma Schlegel**

Research Associate  
University of Köln, Germany

**Nipuna Thamanam**

Post Doctoral Researcher  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Desislava Vankova**

Associate Professor, Social Medicine  
Medical University Varna, Bulgaria

**Lisa Wandshneider**

Former ASPHER Fellow  
Bielefeld University, Germany

## Appendices

### Global Public Health Expert Advisory Group (EAG)

**Iacopo Aiello**

Public Health Medicine Resident  
Aix-Marseille University, France

**Ariane Bauernfeind**

Professor of Public Health  
Andalusian School of Public Health, Granada,  
Spain

**Colette Cunningham**

Lecturer  
University College Cork,  
Chair in Public Health Emergencies and Disasters  
World Federation of Public Health Associations

**Tiffany Hurtado**

Young Professional in Public Health  
University College Dublin, Ireland

**Sherrie Kelly**

Swiss Tropical and Public Health Institute,  
Allschwil, Switzerland

**Noah Levitin**

Young Professional in Public Health  
University of Edinburgh, UK

**Daniel Josef Lindegger**

Physician  
University College London, UK

**Rebecca McKenna**

Health and Social Care Lecturer  
Chevron College, Dublin, Ireland

**Sindhuja Naidoo**

Medical Student  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Lorenzo Moja**

WHO Essential Medicines Team,  
Lecturer  
University of Milan, Italy

**Ugonna Nwankpa**

Public Health Medicine Registrar  
National Health Service,  
Health Education, UK

**Alena Petrakova**

Associate Professor  
Faculty of Health Sciences  
Palacký University Olomouc, Czechia

**Michael J Ryan**

Director of Health Emergencies  
World Health Organization, Geneva, Switzerland

**Berta Piqué Smith**

Young Professional/EUROpubhealth  
University College Dublin, Ireland

**Juliet Ugbedejo Shaibu**

Programme Support Staff  
WHO-Intergovernmental Negotiating Body Team  
at World Federation of Public Health  
Associations, Geneva, Switzerland  
Technical Advice Connect, Nigeria

**Patrick Wall**

Professor of Public Health  
University College Dublin, Ireland

**David Weakliam**

Adjunct Professor of Public Health  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland



## Appendices

### One Health

Expert Advisory Group (EAG)

#### **Hannah Balda**

Young Professional in Public Health  
University College Dublin, Ireland

#### **Gerald Barry**

One Health Champion,  
School of Veterinary Medicine,  
Co-Director, WHO Collaborating Centre for  
One Health,  
University College Dublin, Ireland

#### **Laurent Chambaud**

ASPHER Lead on Climate Health,  
Former Dean  
Ecole des Hautes Études en Santé Publique,  
France

#### **Addiena Luke-Currier**

PhD Scholar, Department of Sociology  
Trinity College Dublin, Ireland

#### **Tara Chen**

ASPHER Fellow on Climate Health  
Waterloo University, Canada

#### **Giovana Failla**

Public Health Medicine Specialist  
Università Cattolica del sacro Curoe, Rome,  
Italy

#### **Shay Fanning**

Professor of Food Safety and Zoonosis  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

#### **Polychronis Kostoulas**

Assistant Professor Veterinary Epidemiology  
Faculty of Veterinary Medicine, University of  
Thessaly, Greece

#### **Piedad Martín-Olmedo**

President  
EUPHA HIA Section,  
Professor of Public Health  
Andalusian School of Public Health, Granada,  
Spain

#### **Vincent Niger**

Young Professional in Public Health  
University College Dublin , Ireland

#### **Mary O'Meara**

Director of Public Health, National TB Lead  
Health Service Executive, Dublin, Ireland

#### **Sue Rackard**

Associate Professor of Veterinary Medicine  
University College Dublin, Ireland

#### **Desislava Vankova**

Associate Professor of PH  
Medical University of Varna, Bulgaria

#### **Patrick Wall**

Professor of Public Health  
University College Dublin , Ireland

#### **Barry John McMahon**

Associate Professor  
School of Agriculture and Food Science  
University College Dublin, Ireland

### Digital Transformation in Public Health Expert Advisory Group (EAG)

**Stefan Buttigieg**

Lecturer  
University of Malta,  
Public Health Medicine Registrar  
Ministry for Health and Active Ageing,  
Public Service of Malta

**Mary Codd**

Associate Professor of Epidemiology & Biostatistics  
School of Public Health, Physiotherapy and Sports  
Science, University College Dublin, Ireland

**Karl F Conyard**

ASHER Fellow  
School of Public Health, Physiotherapy and Sports  
Science,  
University College Dublin, Ireland  
Royal College of Surgeons in Ireland,  
University of Medicine and Health Sciences

**Mariusz Duplaga**

Head of Department,  
Professor of Health Promotion and e-Health,  
Jagiellonian University, Krakow, Poland

**Halil İbrahim Durak**

Health Policy Advisor  
WHO Regional Office for Europe, Baku, Azerbaijan

**Giovana Faila**

Public Health Medicine Specialist  
Università Cattolica del Sacro Cuore, Rome, Italy

**Ana Cecilia Quiroga Gutierrez**

Scientific Associate  
Bern University of Applied Science, Switzerland

**Paula Herrera**

PhD Scholar  
Leibniz Institute for Prevention Research and  
Epidemiology, University of Bremen, Germany

**Stephanie Hoffmann**

Project Co-ordinator  
The Lausitz Center for Digital Public Health,  
Brandenburg Technical University, Cottbus-  
Senftenberg, Germany

**Rok Hrzic**

ASPHER Fellow,  
Chair of ASPHER's DiPH Taskforce, Lecturer and  
Researcher  
Maastricht University & ASPHER

**Szczepan Jakubowski**

Lecturer and Researcher  
Jagnollian University, Krakow, Poland

**Ines Siepmann**

ASPHER Young Professional Programme Lead  
Brussels, Belgium

**Robin van Kessel**

Visiting Fellow  
London School of Economics and Maastricht  
University,  
The Netherlands

**Patty Kostkova**

Professor of Digital Health  
University College London, UK

**Laura Maaß**

PhD Scholar  
SOCIMUM Research Center Inequality and Social  
Policy  
University of Bremen, Germany

**Anna Odone**

Associate Professor of Public Health  
Università di Pavia, Italy

**Gaetano Privitera**

Professor Emeritus  
Medical University of Pisa, Italy

**Nienke Schutte**

Head of EU Health Information System Unit  
Sciensano, Brussels, Belgium

**Ines Siepmann**

CDC Public Health Advisor  
CDC, Portland, USA & ASPHER

**Anabelle Macedo Silva**

Director of Health  
Public Health Institute, Federal University of Rio  
de Janeiro, Brazil

**Mirjana Kujundžić Tiljak**

Professor  
Andrija Štampar School of Public Health,  
Zagreb, Croatia

**Brian Li Han Wong**

Consultant in Economic and Commercial  
Determinants of Health, WHO, Geneva,  
Switzerland,  
Research Fellow  
Stockholm School of Economics & Karolinska  
Institute, Sweden

**Anna Odone**

Associate Professor of Public Health  
Università di Pavia, Italy

**Hamzeh Al Zabadi**

Full Professor in Public Health and  
Epidemiology  
Al-Najah National University, Nablus, Palestine

## Appendices

### Public Health Literacy Expert Advisory Group (EAG)

**Luca Bartolucci**

Public Health Medicine Resident  
Università Cattolica del Sacro Cuore, Italy

**Arnold Bosman**

Medical Director  
Transmissable, Belgium

**Lauren Connell**

PhD Scholar  
University of Galway, Ireland

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Benjamin Paul Duncan**

Senior Risk Communication Consultant  
WHO, Infodemic Management, Geneva,  
Switzerland

**Thelma Feya**

Young Professional in Public Health  
University College Dublin, Ireland

**Gregory Martin**

Consultant in Public Health  
National Health Improvement  
Health Service Executive, Dublin Ireland

**Silviya Nikolova**

Assistant Professor  
Medical University Varna, Bulgaria

**Carly O'Keefe**

Young Professional in Public Health  
University College Dublin, Ireland

**Maria Rohova**

Associate Professor of Health Economics and  
Management Department  
Medical University Varna, Bulgaria

**Nora Veselá**

Education coordinator,  
PhD Scholar  
National Institute of Public Health, Prague, Czechia

**Reuel Jalal**

Senior House Officer in Medicine  
St. Lukes Hospital, Kilkenny, Ireland,  
University College Dublin, Ireland

### Infodemiology

Expert Advisory Group (EAG)

#### Domain: Core Interdisciplinary Professional Skills in Public Health

**Arnold Bosman**

Medical Director  
Transmissable, Belgium

**Lauren Connell**

PhD Scholar  
University of Galway, Ireland

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Benjamin Paul Duncan**

Senior Risk Communication Consultant  
WHO, Infodemic Management, Geneva,  
Switzerland

**Thelma Feya**

Young Professional in Public Health  
University College Dublin, Ireland

**Gregory Martin**

Consultant in Public Health  
National Health Improvement  
Health Service Executive, Dublin Ireland

**Silviya Nikolova**

Assistant Professor  
Medical University Varna, Bulgaria

**Carly O'Keefe**

Young Professional in Public Health  
University College Dublin, Ireland

**Maria Rohova**

Associate Professor at Health Economics and  
Management Department  
Medical University Varna, Bulgaria

**Nora Veselá**

Education coordinator,  
PhD Scholar  
National Institute of Public Health, Prague, Czechia

**Reuel Jalal**

Senior House Officer in Medicine  
St. Lukes Hospital, Kilkenny, Ireland,  
University College Dublin, Ireland

**David Robert Grimes**

Adjunct Assistant Professor in Public Health  
Trinity College Dublin, Ireland

### Critical Thinking / Evidence Synthesis

Expert Advisory Group

**Henrique Barros**

Full Professor of Epidemiology,  
President of The Institute of Public Health of the  
University of Porto  
The Institute of Public Health of the University of  
Porto, Portugal

**Mary Codd**

Associate Professor of Epidemiology &  
Biostatistics  
School of Public Health, Physiotherapy and  
Sports Science  
University College Dublin, Ireland

**Karl F Conyard**

ASHER Fellow  
School of Public Health, Physiotherapy and  
Sports Science,  
University College Dublin, Ireland  
Royal College of Surgeons in Ireland, University  
of Medicine and Health Sciences

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Anders Foldspang**

Full Professor of Public Health  
Århus University, Denmark

**Jenny Houston**

Clinical Fellow in Medical Education  
University of Edinburgh, UK

**Rok Hrzič**

ASPHER Fellow, Chair of ASPHER Taskforce  
(DiPH),  
Lecturer and Researcher  
Maastricht University, The Netherlands

**Polychronis Kostoulas**

Assistant Professor Veterinary Epidemiology  
Faculty of Veterinary Medicine, University of  
Thessaly, Greece

**Mzwandile Mabhala**

Professor in Public Health  
University of Derby, UK

**Alison McCallum**

Professor of Public Health  
Usher Institute  
The University of Edinburgh, UK

**John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

**Sonya Nedelcheva**

Assistant Professor for Public Health  
Medical University Varna, Bulgaria

**Alena Petrakova**

Associate Professor  
Faculty of Health Sciences  
Palacký University Olomouc, Czechia

**Olalekan Popoola**

ASPHER Young Professional University College  
Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

**Vladimir Prikazsky**

Senior Epidemiologist  
National Institute of Public Health (NIPH), Prague,  
Czechia

**Gaetano Privitera**

Professor Emeritus  
Medical University of Pisa, Italy

**Carlo Signorelli**

Full Professor of Hygiene and Public Health  
University Vita-Salute San Raffaele of Milan, Italy

**Judit Simon**

Professor of Health Economics  
Centre for Public Health  
Medical University of Vienna, Austria

**Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK

**Nataliya Usheva,**

Associate Professor,  
Head of the Department  
Medical University of Varna, Bulgaria

**Desislava Vankova**

Associate Professor for Public Health  
Medical University Varna, Bulgaria

**Mariah de Vos**

Young Professional in Public Health  
University College Dublin, Ireland

### Knowledge for Policy & Action

Expert Advisory Group (EAG)

#### **Henrique Barros**

Full Professor of Epidemiology,  
President of The Institute of Public Health of the  
University of Porto  
The Institute of Public Health of the University of  
Porto, Portugal

#### **Mary Codd**

Associate Professor of Epidemiology &  
Biostatistics  
School of Public Health, Physiotherapy and Sports  
Science  
University College Dublin, Ireland

#### **Karl F Conyard**

ASHER Fellow  
School of Public Health, Physiotherapy and Sports  
Science,  
University College Dublin, Ireland  
Royal College of Surgeons in Ireland, University of  
Medicine and Health Sciences

#### **Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

#### **Anders Foldspang**

Full Professor of Public Health  
Århus University, Denmark

#### **Rok Hrzič**

ASPHER Fellow, Chair of ASPHER Taskforce  
(DiPH),  
Lecturer and Researcher  
Maastricht University, The Netherlands

#### **Jenny Houston**

Clinical Fellow in Medical Education  
University of Edinburgh, UK

#### **Polychronis Kostoulas**

Assistant Professor Veterinary Epidemiology  
Faculty of Veterinary Medicine, University of  
Thessaly, Greece

#### **Mzwandile Mabhala**

Professor in Public Health  
University of Derby, UK

#### **Mariah de Vos**

Young Professional in Public Health  
University College Dublin, Ireland

#### **Alison McCallum**

Professor of Public Health  
Usher Institute  
The University of Edinburgh, UK

#### **John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

#### **Alena Petrakova**

Associate Professor  
Faculty of Health Sciences  
Palacký University Olomouc, Czechia

#### **Olalekan Popoola**

ASPHER Young Professional University College  
Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

#### **Vladimir Prikazsky**

Senior Epidemiologist  
National Institute of Public Health (NIPH), Prague,  
Czechia

#### **Gaetano Privitera**

Professor Emeritus  
Medical University of Pisa, Italy

#### **Carlo Signorelli**

Full Professor of Hygiene and Public Health  
University Vita-Salute San Raffaele of Milan, Italy

#### **Judit Simon**

Professor of Health Economics  
Centre for Public Health  
Medical University of Vienna, Austria

#### **Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK

## Appendices

### Public Health Advocacy Expert Advisory Group (EAG)

**Luca Bartolucci**

Public Health Medicine Resident  
Università Cattolica del Sacro Cuore, Italy

**Arnold Bosman**

Medical Director  
Transmissable, Belgium

**Lauren Connell**

PhD Scholar  
University of Galway, Ireland

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Benjamin Paul Duncan**

Senior Risk Communication Consultant  
WHO, Infodemic Management, Geneva,  
Switzerland

**Thelma Feya**

Young Professional in Public Health  
University College Dublin, Ireland

**Mariah de Vos**

Young Professional in Public Health  
University College Dublin, Ireland

**Gregory Martin**

Consultant in Public Health  
National Health Improvement  
Health Service Executive, Dublin Ireland

**Silviya Nikolova**

Assistant Professor  
Medical University Varna, Bulgaria

**Carly O'Keefe**

Young Professional in Public Health  
University College Dublin, Ireland

**Tina Purnat**

Digital Public Health and Infodemic Manager  
Digital Health and Health Equity Working Group,  
World Federation of Public Health Associations

**Maria Rohova**

Associate Professor at Health Economics and  
Management Department  
Medical University Varna, Bulgaria

**Nora Veselá**

Education coordinator,  
PhD Scholar  
National Institute of Public Health, Prague, Czechia

## Appendices

### Communication

Expert Advisory Group (EAG)

**Luca Bartolucci**

Public Health Medicine Resident  
Università Cattolica del Sacro Cuore, Italy

**Arnold Bosman**

Medical Director  
Transmissable, Belgium

**Lauren Connell**

PhD Scholar  
University of Galway, Ireland

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Benjamin Paul Duncan**

Senior Risk Communication Consultant  
WHO, Infodemic Management, Geneva,  
Switzerland

**Thelma Feya**

Young Professional in Public Health  
University College Dublin, Ireland

**Mariah de Vos**

Young Professional in Public Health  
University College Dublin, Ireland

**Gregory Martin**

Consultant in Public Health  
National Health Improvement  
Health Service Executive, Dublin Ireland

**Silviya Nikolova**

Assistant Professor  
Medical University Varna, Bulgaria

**Carly O'Keefe**

Young Professional in Public Health  
University College Dublin, Ireland

**Tina Purnat**

Digital Public Health and Infodemic Manager  
Digital Health and Health Equity Working Group,  
World Federation of Public Health Associations

**Maria Rohova**

Associate Professor at Health Economics and  
Management Department  
Medical University Varna, Bulgaria

**Nora Veselá**

Education coordinator,  
PhD Scholar  
National Institute of Public Health, Prague,  
Czechia

### Negotiation

Expert Advisory Group (EAG)

**Luca Bartolucci**

Public Health Medicine Resident  
Università Cattolica del Sacro Cuore, Italy

**Arnold Bosman**

Medical Director  
Transmissable, Belgium

**Lauren Connell**

PhD Scholar  
University of Galway, Ireland

**Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

**Benjamin Paul Duncan**

Senior Risk Communication Consultant  
WHO, Infodemic Management, Geneva,  
Switzerland

**Thelma Feya**

Young Professional in Public Health  
University College Dublin, Ireland

**Mariah de Vos**

Young Professional in Public Health  
University College Dublin, Ireland

**Gregory Martin**

Consultant in Public Health  
National Health Improvement  
Health Service Executive, Dublin Ireland

**Silviya Nikolova**

Assistant Professor  
Medical University Varna, Bulgaria

**Carly O'Keefe**

Young Professional in Public Health  
University College Dublin, Ireland

**Tina Purnat**

Digital Public Health and Infodemic Manager  
Digital Health and Health Equity Working Group,  
World Federation of Public Health Associations

**Maria Rohova**

Associate Professor at Health Economics and  
Management Department  
Medical University Varna, Bulgaria

**Nora Veselá**

Education coordinator,  
PhD Scholar  
National Institute of Public Health, Prague,  
Czechia

### Leadership and Management Expert Advisory Group (EAG)

**Nawar Arouk**

Young Professional/EUROpubhealth  
University College Dublin, Ireland

**Rini Bhatnagar**

PhD Scholar  
University College Dublin, Ireland

**Leanne Coombe**

Honorary Associate Professor  
The University of Queensland, Australia

**Katarzyna Czabanowska**

Professor in Public Health Leadership and  
Workforce Development  
Maastricht University, The Netherlands

**Monica Georgiana Brînzac**

Deputy Director, Center for Health Workforce  
Research and Policy,  
PhD Scholar  
Babes-Bolyai University, Romania

**Nilam Prinjha**

Lecturer in Public Health  
Univeristy of Bradford, UK

**Mariah de Vos**

Young Professional in Public Health  
University College Dublin, Ireland

**Lorraine Doherty**

National Clinical Director, Strategic Public Health  
Health Service Executive, Dublin, Ireland

**Nikolay Mihaylov**

Chair, Assistant Professor Health Policy  
Medical University Varna, Bulgaria

**Martina Parić**

Lecturer of Public Health  
(Governance and Leadership)  
PhD Scholar  
Maastricht University, The Netherlands

**Satria Nur Sya'ban**

Young Professional/EUROpubhealth  
University College Dublin, Ireland,  
Ecole des Hautes Études en Santé Publique,  
France

**Alessandro Berionni**

Chair, Young World Federation of Public Health  
Associations, Italy

**Piotr Romaniuk**

Professor, Head and Chair of Public Health  
Policy  
Medical University of Silesia, Katowice, Poland



### Integrative Learning in Action

Expert Advisory Group (EAG)

#### **Henrique Barros**

Full Professor of Epidemiology,  
President of The Institute of Public Health of the  
University of Porto  
The Institute of Public Health of the University of Porto,  
Portugal

#### **Alison McCallum**

Professor of Public Health  
Usher Institute  
The University of Edinburgh, UK

#### **Mary Codd**

Associate Professor of Epidemiology & Biostatistics  
School of Public Health, Physiotherapy and Sports  
Science  
University College Dublin, Ireland

#### **Karl F Conyard**

ASHER Fellow  
School of Public Health, Physiotherapy and Sports  
Science, University College Dublin, Ireland  
Royal College of Surgeons in Ireland, University of  
Medicine and Health Sciences

#### **Nadav Davidovitch**

Professor, Head of School of Public Health  
Ben-Gurion University of the Negev, Israel

#### **Anders Foldspang**

Full Professor of Public Health  
Århus University, Denmark

#### **Jenny Houston**

Clinical Fellow in Medical Education  
University of Edinburgh, UK

#### **Rok Hrzič**

ASPHER Fellow, Chair of ASPHER Taskforce (DiPH),  
Lecturer and Researcher  
Maastricht University, The Netherlands

#### **Polychronis Kostoulas**

Assistant Professor Veterinary Epidemiology  
Faculty of Veterinary Medicine, University of Thessaly,  
Greece

#### **Mzwandile Mabhala**

Professor in Public Health  
University of Derby, UK

#### **John Middleton**

Honorary Professor of Public Health  
Wolverhampton University, UK  
Vice President of GNAPH

#### **Alena Petrakova**

Associate Professor  
Faculty of Health Sciences  
Palacký University Olomouc, Czechia

#### **Olalekan Popoola**

ASPHER Young Professional  
University College Dublin, Ireland,  
Jagiellonian University in Krakow, Poland

#### **Gaetano Privitera**

Professor Emeritus  
Medical University of Pisa, Italy

#### **Vladimir Prikazsky**

Senior Epidemiologist  
National Institute of Public Health (NIPH), Prague,  
Czechia

#### **Carlo Signorelli**

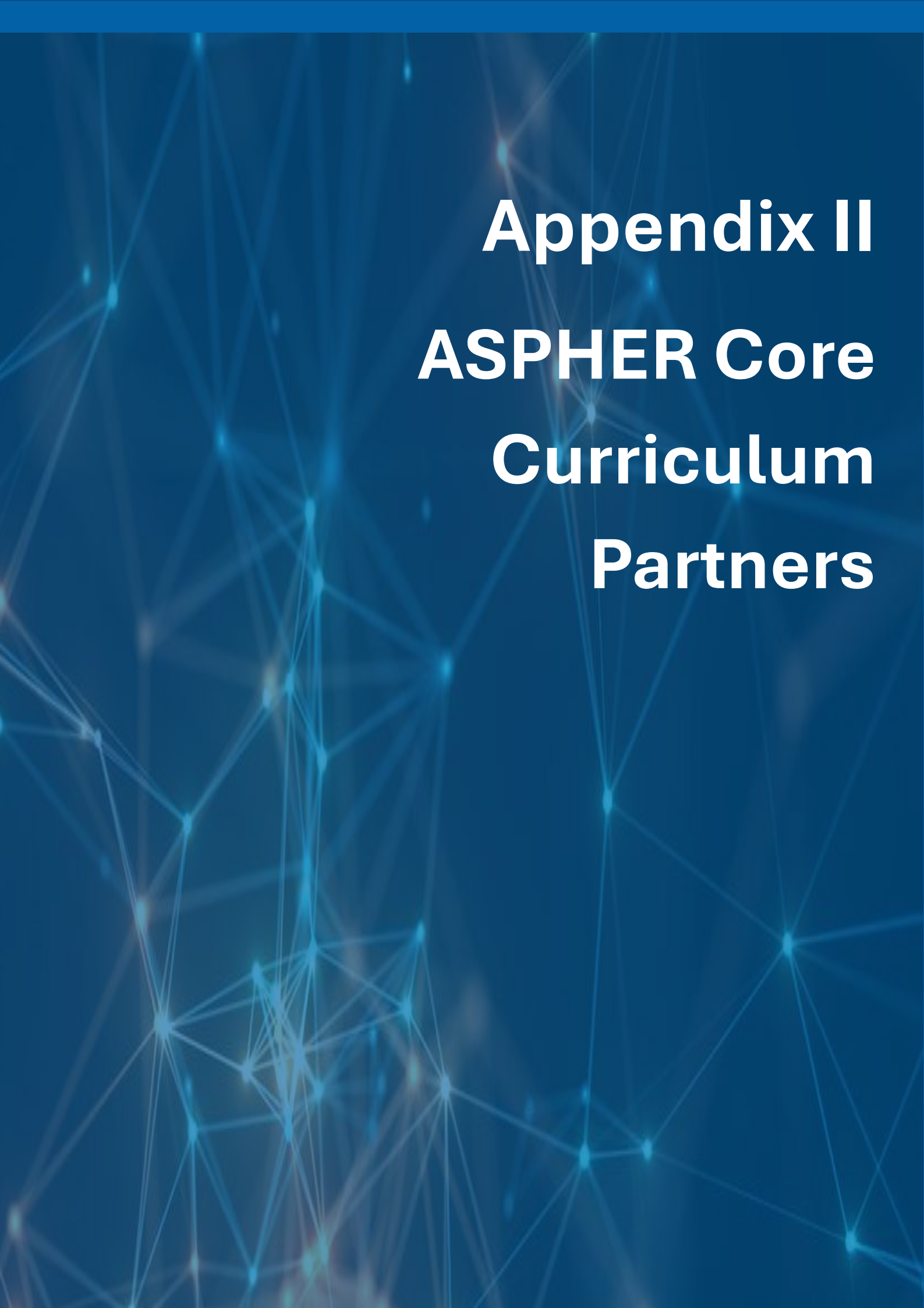
Full Professor of Hygiene and Public Health  
University Vita-Salute San Raffaele of Milan, Italy

#### **Judit Simon**

Professor of Health Economics  
Centre for Public Health  
Medical University of Vienna, Austria

#### **Farhang Tahzib**

Chair of Ethics Committee  
Faculty of Public Health, UK



**Appendix II**  
**ASPHER Core**  
**Curriculum**  
**Partners**



UNIVERSITÀ  
DEGLI STUDI  
DI MILANO



UCD School of Public Health,  
Physiotherapy and Sports Science

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UNIVERSITETI I MJEKËSISË, TIRANË



UNIVERSITY  
OF MEDICINE  
AND HEALTH  
SCIENCES



University College Cork, Ireland  
Coláiste na hOllscoile Corcaigh

Swiss TPH



Swiss Tropical and Public Health Institute



אוניברסיטת בן-גוריון בנגב  
Ben-Gurion University of the Negev



UNIVERSITÀ DI PISA



University of  
Zagreb



KOÇ  
UNIVERSITY



The  
University  
Of  
Sheffield.



National School  
of Public Health

NOVA UNIVERSITY LISBON



Palacký University  
Olomouc



Faculty of Health  
Sciences



University of  
Chester



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## Appendices



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Consejería de Salud y Consumo



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STRADIŅA  
UNIVERSITĀTE**



**UNIVERSITY  
of NICOSIA**



**Andrija Stampar  
School of Public Health**



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DA UNIVERSIDADE DO PORTO



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DE GRANADA**



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DEPARTMENT OF PUBLIC  
AND ONE HEALTH**



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OF ECONOMICS AND  
POLITICAL SCIENCE**



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on Health Systems and Policies  
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