

From Potential to Action

Public Health Core Competences  
For Essential Public Health Operations

A MANUAL

Volume 2: Lists of competences and EPHOs

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## Volume 2: Lists of Competences and EPHOs

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## List of core competences for public health professionals <sup>4</sup>

### Competences definition

- A. Methods in public health
- B. Population health and its social and economic determinants
- C. Population health and its material - physical, radiological, chemical and biological - environmental determinants
- D. Health policy; economics; organisational theory and management
- E. Health promotion: health education, health protection and disease prevention
- F. Ethics

**Note:** The lists are based on an adjusted version of *Bird C, Foldspang A. European Core Competences for Public Health professionals (ECCPHP). ASPHER Publications No. 5. Brussels: ASPHER, 2011*, with numbering of individual competences added and a few additional competences.<sup>4</sup>

## List of core competences for public health professionals <sup>4</sup>

### *Competences definition*

The knowledge capacity and the ability to demonstrate appropriate action for the attainment of set goals.

Comment: Competences may be defined for individuals and for groups as well as organisations and systems. The present list presents competences defined for individuals – public health professionals.

## A. Methods in Public Health

### **Definitions**

#### *Health*

The WHO defined health in 1948 as ‘*a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity*’<sup>6</sup>

There are many definitions of health in the literature, none of which seem to be completely satisfactory. Many models of health have been described and identification of just three of these may illustrate some aspects of the discussion about concepts of health:

- a. The medical model sees health as the absence of disease; so health is viewed as a steady state from which an individual falls off, when s/he becomes ill.
- b. The behavioural model refers to the ability of an individual to fulfill the behavioural expectations of society regarding the functional capacities expected of an individual of that age, gender, etc.; thus an individual fulfilling all society’s expectations in these respects is seen as enjoying health.
- c. The control model envisages health as the extent to which the overall environment can be controlled and improved so as to promote health and wellbeing.

#### *Public Health*

In the current context, public health will be considered as the science and art, which focuses on:

- Population health,
- Human systems and interventions made to improve health, and
- Interactions between these two systems.

Population health includes involvement with all social, economic, physical, chemical and biological conditions that influence or interact with the health of the members of the population.

Human systems and interventions made to improve health include all types of health services, social services, and all interventions and policies intended to improve health. Public health focuses on health promotion.

The concept of “interaction” refers to real influences of human systems on population health.

There are other definitions, e.g. that which originates from 1920, when it was proposed by Professor C E A Winslow, then the Professor of Public Health at Yale University, USA, according to which ‘*Public health is the science and art of preventing disease, prolonging life and promoting health through the organised efforts and informed choices of society, organisations, public and private, communities and individuals*’<sup>7</sup>. More recently, this definition was adopted both by both the Acheson Report in 1988 on the Future of Public Health in England<sup>8</sup> and by the UK Faculty of Public Health, which amended it slightly, so as to define public health as ‘*The science and art of promoting and protecting health and well-being, preventing ill-health and prolonging life through the organised efforts of society*’<sup>9</sup>

### *Epidemiology*

Is the science focusing on the occurrence of health phenomena in populations.

### *Demography*

Is the science focusing on populations, especially with reference to size and density, fertility, mortality, growth, age distribution, and migration, and the interaction of all of these with social and economic conditions.

### *Statistics*

Is the science of collecting, summarising, analysing, and interpreting numerical information that is subject to chance or systematic variation.

### *Quantitative research methods*

These are scientific methods applying formal probabilities when studying structure and when inferring causality and effect.

### *Qualitative research methods*

These are scientific methods not applying formal probabilities when studying structure or when inferring causality and effect.

### *Sociology*

Is the science focussing on the structure and dynamics of human groups or populations and on their mutual interactions.

### *Social psychology*

Is the science focussing on the psychological aspects of the structure and dynamics of human groups or populations and on their mutual interactions.

### *Anthropology*

Is the science focussing on the cultural, religious, psychological and social aspects of the structure and dynamics of human groups or populations and on their mutual interactions.

## Competences

### **A.1. Intellectual competences: The public health professional shall know and understand:**

#### *A.1.1. Health*

- A.1.1.1. Basic definitions, models and concepts of health and disease;
- A.1.1.2. Concepts of mental and somatic diseases and their practical implications, including diagnostic systems and diagnoses.

#### *A.1.2. Public health*

- A.1.2.1. Major definitions of public health;
- A.1.2.2. Significant aspects of the history of public health theory and practice.

#### *A.1.3. Philosophy of science*

- A.1.3.1. Major definitions of philosophy and philosophy of science;
- A.1.3.2. Essentials of philosophy of science as relevant to public health;
- A.1.3.3. Basic theories in philosophy and philosophy of science, and concepts of importance for public health science and practice, e.g. concepts such as hypothesis, theory, explanation, understanding, objectivity, evidence, method, deduction, induction, utilitarian, qualitative and quantitative studies and observations.

#### *A.1.4. Epidemiology, demography and statistics*

- A.1.4.1. Major definitions of epidemiology as a science;
- A.1.4.2. Definition of demography as a science;
- A.1.4.3. Major aspects of the history of epidemiology;
- A.1.4.5. Basic demographic and epidemiological aspects, such as:
  - A.1.4.5.1. Population;
  - A.1.4.5.2. Population pyramid;
  - A.1.4.5.3. Population at risk;
  - A.1.4.5.4. Duration;
  - A.1.4.5.5. Time at risk;
  - A.1.4.5.6. Case vs. non-case;
  - A.1.4.5.7. Rate;
  - A.1.4.5.8. Fertility;
  - A.1.4.5.9. Migration;
  - A.1.4.5.10. Disease;
  - A.1.4.5.11. Incidence (number; rate; proportion);
  - A.1.4.5.12. Prevalence (number; proportion);
  - A.1.4.5.13. Mortality (number; rate; proportion);
  - A.1.4.5.14. Lethality/fatality (number; rate; proportion);
  - A.1.4.5.15. Specific mortality parameters (age, gender, disease, other);

A.1.4.5.16.	Survival and life expectancy (general and specified by, e.g., age);	A.1.4.5.37.	Before-and-after quasi-experimental design;
A.1.4.5.17.	Demographic transition;	A.1.4.5.38.	Contemporary quasi-experimental design;
A.1.4.5.18.	Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);	A.1.4.5.39.	Multicentre studies;
A.1.4.5.19.	Odds ratio;	A.1.4.5.40.	Measurement error;
A.1.4.5.20.	Population attributable risk;	A.1.4.5.41.	Validity;
A.1.4.5.21.	Preventive fraction;	A.1.4.5.42.	Reliability;
A.1.4.5.22.	Etiological fraction;	A.1.4.5.43.	Bias (selection bias; information bias; confounding);
A.1.4.5.23.	Longitudinal study;	A.1.4.5.44.	Inference;
A.1.4.5.24.	Cross-sectional design including population health surveys;	A.1.4.6.	The concepts of test sensitivity, specificity and the predictive value of a positive and a negative test result;
A.1.4.5.25.	Longitudinal design;	A.1.4.7.	Lead time and lead time bias;
A.1.4.5.26.	Cohort design;	A.1.4.8.	The concepts of health, disease, handicap and death, both as comprehensive entities and in terms of identifiable components, i.e. physical, mental and social dimensions;
A.1.4.5.27.	Fixed cohort design;	A.1.4.9.	The structure, main content and applications of standard authorised health classification systems in common use in Europe, such as:
A.1.4.5.28.	Dynamic cohort design;	A.1.4.9.1.	International Classification of Diseases (ICD);
A.1.4.5.29.	Case-referent design;	A.1.4.9.2.	International Classification of Functioning, Disability and Health (ICF);
A.1.4.5.30.	Case-control design;		
A.1.4.5.31.	Case-base design;		
A.1.4.5.32.	Case cross-over design;		
A.1.4.5.33.	Observational design;		
A.1.4.5.34.	Quasi-experimental design;		
A.1.4.5.35.	Experimental design;		
A.1.4.5.36.	Randomised controlled trial (RCT);		

A.1.4.9.3.	International Classification of Health Interventions (ICHI);	A.1.4.15.7.	The normal distribution;
A.1.4.9.4.	Other systems;	A.1.4.15.8.	The binominal distribution;
A.1.4.10.	The principles, main content, validity and applications of standardised data collection instruments for measuring health outcomes, e.g. KAP, QOL, SF36, GHQ, FINBALT;	A.1.4.15.9.	The Poisson distribution;
A.1.4.11.	The concept of epidemiological surveillance;	A.1.4.15.10.	Statistical power;
A.1.4.12.	Basic principles, methods, types and components of:	A.1.4.15.11.	Point estimate;
A.1.4.12.1.	Epidemiological surveillance systems;	A.1.4.15.12.	Interval estimate;
A.1.4.12.2.	Health services monitoring systems;	A.1.4.15.13.	Confidence interval;
A.1.4.13.	Major national and European population surveys and surveillance systems and the application of their results;	A.1.4.15.14.	Association;
A.1.4.14.	Major definitions of statistics as a science;	A.1.4.15.15.	Confounding;
A.1.4.15.	Basic statistical concepts, such as:	A.1.4.15.16.	Interaction;
A.1.4.15.1.	Inference;	A.1.4.15.17.	Correlation;
A.1.4.15.2.	Parameter;	A.1.4.15.18.	Significance;
A.1.4.15.3.	Probability;	A.1.4.15.19.	Statistical test;
A.1.4.15.4.	Random sampling;	A.1.4.15.20.	Parametric vs. non-parametric test;
A.1.4.15.5.	Probability sampling;	A.1.4.15.21.	Student's t-test;
A.1.4.15.6.	Stratified sampling;	A.1.4.15.22.	Chi-square test (X <sup>2</sup> );
		A.1.4.15.23.	Non-parametric tests, such as Kruskal-Wallis test and other tests;
		A.1.4.15.24.	Predictor;
		A.1.4.15.25.	Stratified analysis (Mantel-Haenszel and other stratified analysis methods);
		A.1.4.15.26.	Standardisation;
		A.1.4.15.27.	Direct standardisation;
		A.1.4.15.28.	Indirect standardisation;
		A.1.4.15.29.	Survival analysis;



A.1.4.15.30.	Regression;	A.1.5.2.8.	Focus groups
A.1.4.15.31.	Additive and multiplicative prediction models;	A.1.5.2.9.	Case study;
A.1.4.15.32.	Logistic regression;	A.1.5.2.10.	Observation and participant observation;
A.1.4.15.33.	Linear regression;	A.1.5.2.11.	Consensus methods (Delphi);
A.1.4.15.35.	Binomial regression;	A.1.5.2.12.	Thematic analysis, document and content analysis;
A.1.4.15.36.	Poisson regression;	A.1.5.2.13.	Action research;
A.1.4.15.37.	Randomisation;	A.1.5.3.	Methods to assure the validity of qualitative research, e.g., triangulation.
A.1.4.15.38.	Factorial study design;		
A.1.4.15.39.	Basic methods of forecasting developments in population health.		
<i>A.1.5. Qualitative methods</i>		<i>A.1.6. Sociology, social psychology and anthropology</i>	
A.1.5.1.	Main approaches to, and concepts of, qualitative methods frequently applied in public health concerning population groups as well as organisations;	A.1.6.1.	Major definitions of sociological and anthropological science;
A.1.5.2.	Qualitative main concepts, terms, theories, methodologies, approaches, data collection methods and methods for data analysis, such as:	A.1.6.2.	Significant aspects of the history of social science;
A.1.5.2.1.	Grounded theory;	A.1.6.3.	Sociological, social psychological and anthropological main theories and concepts, e.g. material levels of living, social group, social network, social system, culture, religion, social status, interest and power, attitude, behaviour;
A.1.5.2.2.	Structuralism;	A.1.6.4.	Sociological, social psychological and anthropologic main empirical methods of documentation, including:
A.1.5.2.3.	Phenomenology;	A.1.6.4.1.	Main designs;
A.1.5.2.4.	Symbolic interactionism;	A.1.6.4.2.	Main data collection methods;
A.1.5.2.5.	Constructivism;	A.1.6.4.3.	Main analytic methods;
A.1.5.2.6.	Ethnographic research;		
A.1.5.2.7.	Qualitative interview;		

A.1.6.5.	Basic concepts of classification and scaling.	A.2.2.1.1.	Population projection;
<i>A.1.7. IT handling</i>		A.2.2.1.2.	Time at risk;
A.1.7.1.	General aspects of IT functioning, including, e.g.:	A.2.2.1.3.	Probability;
A.1.7.1.1.	Data protection techniques.	A.2.2.1.4.	Incidence (number; rate; proportion);
A.1.7.1.2.	Data transfer protocols;	A.2.2.1.5.	Prevalence (number; proportion);
A.1.7.1.3.	Internet uses for public health;	A.2.2.1.6.	Mortality (number; rate; proportion);
<i>A.1.8. Literature search and evaluation</i>		A.2.2.1.7.	Lethality/fatality (number; rate; proportion);
A.1.8.1.	The existence of the most important literature databases and their main fields, within health sciences, social sciences, and natural sciences, for the identification of:	A.2.2.1.8.	Specific mortality parameter (age, gender, disease, other);
A.1.8.1.1.	Theoretical literature;	A.2.2.1.9.	Survival and life expectancy (general and specified by, e.g., age);
A.1.8.1.2.	Original empirical studies;	A.2.2.1.10	Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);
A.1.8.1.3.	Reviews and meta-analyses.	A.2.2.1.11.	Odds ratio;
<b><i>A.2. Practical competences: The public health professional shall be able to:</i></b>		A.2.2.1.12.	Population attributable risk;
<i>A.2.1. Philosophy of science an ethics</i>		A.2.2.1.13.	Preventive fraction;
A.2.1.1.	Identify the lines of thinking of philosophical main streams in a concrete piece of text.	A.2.2.1.15.	Etiological fraction;
<i>A.2.2. Epidemiology, demography and biostatistics</i>		A.2.2.1.16.	Validity;
A.2.2.1.	Estimate basic demographic and epidemiological parameters, such as:	A.2.2.1.17.	Reliability;
		A.2.2.1.18.	Bias (selection bias; information bias; analytical bias);
		A.2.2.2.	Estimate simple statistical parameters, such as:
		A.2.2.2.1.	Point estimate;

A.2.2.2.2.	Interval estimate/confidence interval;	A.2.2.4.1.	Assessment of sample size requirements;
A.2.2.2.3.	Statistical power;	A.2.2.4.2.	Random sampling;
A.2.2.2.4.	Strength of association;	A.2.2.4.3.	Probability sampling;
A.2.2.2.5.	Interaction parameters;	A.2.2.4.4.	Stratified sampling;
A.2.2.3.	Apply basic epidemiological concepts in a concrete but simple empirical setting, such as:	A.2.2.4.5.	Student's t-test;
A.2.2.3.1.	Cross-sectional design	A.2.2.4.6.	Chi-square test (X <sup>2</sup> );
A.2.2.3.2.	Longitudinal design;	A.2.2.4.7.	Non-parametric tests, such as Kruskal-Wallis test and other tests;
A.2.2.3.3.	Cohort design;	A.2.2.4.8.	Stratified analysis (Mantel-Haenszel and other methods for stratified analysis);
A.2.2.3.4.	Fixed cohort design;	A.2.2.4.9.	Confounder correction in design;
A.2.2.3.5.	Dynamic cohort design;	A.2.2.4.10.	Confounder correction in analysis;
A.2.2.3.6.	Case-referent design;	A.2.2.4.11.	Direct standardisation;
A.2.2.3.7.	Case-control design;	A.2.2.4.12.	Indirect standardisation;
A.2.2.3.8.	Case-base design;	A.2.2.4.13.	Logistic regression in simple form;
A.2.2.3.9.	Quasi-experimental design;	A.2.2.4.14.	Linear regression in simple form;
A.2.2.3.10.	Randomised controlled trial (RCT);	A.2.2.4.15.	Binomial regression in simple form;
A.2.2.3.11.	Before-and-after quasi-experimental design;	A.2.2.4.16.	Poisson regression in simple form;
A.2.2.3.12.	Contemporary quasi-experimental design;	A.2.2.4.17.	Randomisation;
A.2.2.3.13.	Correction for confounding;	A.2.2.4.18.	Estimation of statistical power;
A.2.2.4.	Apply basic statistical concepts in a concrete but simple empirical setting, such as:	A.2.2.5.	Design and implement a protocol applying:
		A.2.2.5.1.	An ad hoc questionnaire based on classification theory;

A.2.2.5.2.	Extraction of data from antecedent documents and databases or surveillance systems;	<i>A.2.3. Qualitative methods</i>	
A.2.2.6.	Design and carry out a health needs assessment and draw appropriate conclusions;	A.2.3.1.	Identify main types of qualitative empirical methods in literature;
A.2.2.7.	Design and implement a monitoring system for health service interventions and structures, including for adverse events and serious untoward incidents;	A.2.3.2.	Plan, organise, carry out, analyse and report on:
A.2.2.8.	Develop and apply a list designed to assess the quality of scientific publications in public health; the list should include aspects of:	A.2.3.2.1.	Observations based on:
A.2.2.8.1.	Aims and hypotheses/study questions;	A.2.3.2.1.1.	Constructivist approaches;
A.2.2.8.2.	Design;	A.2.3.2.1.2.	Grounded theory;
A.2.2.8.3.	Participant recruitment;	A.2.3.2.1.3.	Qualitative interviews;
A.2.2.8.4.	Data collection;	A.2.3.2.1.4.	Focus groups;
A.2.2.8.5.	Analysis;	A.2.3.2.2.	Action research interventions;
	- and accordingly:	A.2.3.2.3.	Case studies;
A.2.2.8.6.	Selection validity and bias;	A.2.3.2.4.	Participant observation;
A.2.2.8.7.	Information validity and bias;	A.2.3.4.	Observe, describe and analyse a phenomenon such as, e.g., an organisation, a health programme or policy, a social group, a culture.
A.2.2.8.8.	Analytical validity and bias;	<i>A.2.4. Sociology, social psychology and anthropology</i>	
A.2.2.9.	Assess the level of evidence produced by scientific publications in public health;	A.2.4.1.	Develop, plan and implement a simple sociological, social psychological or anthropological empirical study with special reference to population health.
A.2.2.10	Use a statistics software programme to perform the above statistical analyses.	<i>A.2.5. IT handling</i>	
		A.2.5.1.	Make use of the most common IT functions.
		<i>A.2.6. Literature search and evaluation</i>	

A.2.6.1.	Plan a search profile involving the most important data bases;		health actions and possible hypotheses for developing such actions;
A.2.6.2.	Develop a search profile and conduct a literature search based on it;	A.2.7.1.6.	References based on an accepted referencing system, such as the Vancouver or Harvard systems;
A.2.6.3.	Systematise the results of an empirical literature search, based on:	A.2.7.2.	Conduct a public health project according to protocol;
A.2.6.3.1.	Main characteristics of design;	A.2.7.3.	Write a scientific report with the main sections based on the project:
A.2.6.3.2.	Findings/results; - and on this basis produce a review table;	A.2.7.3.1.	Title page;
A.2.6.4.	Present, systematise, and apply important quality criteria for empirical studies on identified literature;	A.2.7.3.2.	Abstract;
A.2.6.5.	Define the concept of meta-analysis and present an overview of strengths and weaknesses of meta-analyses;	A.2.7.3.3.	Introduction;
A.2.6.6.	Summarise the findings of empirical studies through meta-analysis.	A.2.7.3.4.	Aims and hypotheses;
		A.2.7.3.5.	Material and methods;
		A.2.7.3.6.	Results;
		A.2.7.3.7.	Discussion;
		A.2.7.3.8.	Conclusion;
		A.2.7.3.9.	References based on an accepted referencing system, such as the Vancouver or Harvard systems.
<i>A.2.7. Project development, implementation, evaluation and reporting</i>			
A.2.7.1.	Develop a public health research project protocol outlining the main sections, which will include:		
A.2.7.1.1.	Title page;		
A.2.7.1.2.	Introduction;		
A.2.7.1.3.	Aims and hypotheses;		
A.2.7.1.4.	Methods and material /resources;		
A.2.7.1.5.	Results and discussion, including assessment of implications for public		

## B. Population Health and Its Social and Economic Determinants

### Definitions

#### *Social and economic environment*

This consists of the external social and economic elements and conditions which surround, influence, and affect the life and development of an organism or of a population.

#### *Social and economic determinant*

This may be any social or economic definable entity that causes changes in population health; from a statistical viewpoint, such a factor will be associated with, or provide an index relating to, a health outcome.

### Competences

#### ***B.1. Intellectual competences: The public health professional shall know and understand:***

##### *B.1.1. Population health*

- B.1.1.1. The level and trends of main population health indicators in European countries:
  - B.1.1.1.1. Disability indicators;
  - B.1.1.1.2. Mortality indicators:
    - B.1.1.1.2.1. Crude mortality;

- B.1.1.1.2.2. Cause-specific mortality, especially cardio-vascular and cancer mortality and mortality caused by mental disease;

- B.1.1.1.2.3. Age- and gender-specific mortality (e.g., infant mortality; before 5 years of age; after 60 years);

- B.1.1.2. Disease indicators, especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases:
  - B.1.1.2.1. Indicators of occurrence and time (incidence, prevalence, duration);
  - B.1.1.2.2. Disease-specific occurrence indicators;

- B.1.1.3. Health expectancy indicators:
  - B.1.1.3.1. Life expectancy (mean; median) at birth and at later ages;
  - B.1.1.3.2. Population survival curves;
  - B.1.1.3.3. Disease-free life years;
  - B.1.1.3.4. Disability-adjusted life years (DALYs).

##### *B.1.2. Socio-economic determinants*

B.1.2.1.	Basic concepts of the social sciences, i.e. the following sociological concepts:	B.1.2.2.3.	Housing;
B.1.2.1.1.	Family structure	B.1.2.2.4.	Education;
B.1.2.1.2.	Housing;	B.1.2.2.5.	Occupation;
B.1.2.1.3.	Education;	B.1.2.2.6.	Employment;
B.1.2.1.4.	Occupation;	B.1.2.2.7.	Working conditions;
B.1.2.1.5.	Employment;	B.1.2.2.8.	Economy/income/poverty;
B.1.2.1.6.	Working conditions;	B.1.2.2.9.	Socio-economic status;
B.1.2.1.7.	Economy;	B.1.2.2.10.	Socio-economic inequality;
B.1.2.1.8.	Individual and society;	B.1.2.2.11.	Under-privileged groups;
B.1.2.1.9.	Social environment;	B.1.2.3.	The level and trends in indicators of health behaviour development, such as:
B.1.2.1.10.	Social structure, social processes;	B.1.2.3.1.	Exercise activity;
B.1.2.1.11.	Social group;	B.1.2.3.2.	Dietary behaviour;
B.1.2.1.12.	Social network;	B.1.2.3.3.	Alcohol use and abuse;
B.1.2.1.13.	Social cohesion/social support;	B.1.2.3.4.	Drug abuse;
B.1.2.1.14.	Social capital;	B.1.2.3.5.	Tobacco use;
B.1.2.1.15.	Socio-economic status;	B.1.2.3.6.	Sexual behaviour;
B.1.2.1.16.	Social mobility;	B.1.2.3.7.	Injury-prone behaviour;
B.1.2.1.17.	Under-privileged groups;		- In European populations and population subgroups, e.g.:
B.1.2.1.18.	Socio-economic inequality;	B.1.2.3.8.	Adolescents;
B.1.2.2.	The level and trends of main population socio-economic indicators in European countries, such as:	B.1.2.3.9.	The elderly;
B.1.2.2.1.	Family structure;	B.1.2.3.10.	Males and females;
B.1.2.2.2.	Culture and ethnicity;	B.1.2.3.11.	Ethnic groups;
		B.1.2.3.12.	The socially disadvantaged;

<p>B.1.2.3.13. Other socially, culturally and/or religiously distinct groups;</p> <p><i>B.1.3. Population health and social and economic determinants</i></p> <p>B.1.3.1. The burden of disease, injury and fatality associated with social and economic determinants in national and European populations;</p> <p>B.1.3.2. Models concerning social determinants of health, especially:</p> <p style="padding-left: 20px;">B.1.3.2.1. Material pathways, e.g. poverty, income inequality, neighbourhood deprivation;</p> <p style="padding-left: 20px;">B.1.3.2.2. Psycho-social pathways (social stressors and protective factors, e.g. social work, social cohesion, social anomie, social support);</p> <p style="padding-left: 20px;">B.1.3.2.3. Behaviour pathways, e.g. healthy lifestyle, sociological and psychological models of behaviour change;</p> <p>B.1.3.3. The level and trends of associations in Europe between population health indicators – especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases - and various background indicators, such as:</p> <p style="padding-left: 20px;">B.1.3.3.1. Socio-economic, including social inequality;</p> <p style="padding-left: 20px;">B.1.3.3.2. Social environment (cultural, material, psychosocial, behavioural);</p>	<p>B.1.3.3.3. General policy and health policy;</p> <p>B.1.3.3.4. Social capital;</p> <p>B.1.3.3.5. Culture;</p> <p>B.1.3.3.6. Community dynamics;</p> <p>B.1.3.3.7. Economy;</p> <p>B.1.3.4. Social and economic health implications of globalisation;</p> <p>B.1.3.5. Major European research programmes focussing on population health and its social and economic determinants, e.g. North Karelia Project, and research contributing to the Marmot reviews, etc.</p> <p><b><i>B.2. Practical competences: The public health professional shall be able to:</i></b></p> <p><i>B.2.1. Population health and social and economic determinants,</i></p> <p style="padding-left: 20px;">B.2.1.1. Based on information from epidemiological surveillance systems (e.g. national systems; WHO's Health for All (HFA) database; other internet based systems) accessible from, e.g., the internet:</p> <p style="padding-left: 40px;">B.2.1.1.1. Produce epidemiological and statistical documentation (analyses, tables, figures, etc.) on the relationships between the socio-economic environment and the health of European populations and population groups;</p>
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- B.2.1.1.2. Produce forecasts for the development of health status of European populations and population groups, taking into account social and economical conditions;
- B.2.1.1.3. Identify, retrieve and analyse major trends of social change with special reference to demography, social structure, and economic and technological development;
- B.2.1.1.4. Identify population groups with elevated health risks, and recognise their health needs, e.g. children, elderly, adults both within and outside the labour market, immigrants, people with physical, mental and learning disabilities, and under-privileged groups.
- B.2.1.1.5. Write a periodical public health report for a defined population.
- B.2.1.1.7. Recognise the need for a new epidemiological surveillance system;
- B.2.1.1.8. Identify the potential implications for a public health strategy, of socioeconomic determinants of health.

## C. Population Health and Its Material - Physical, Radiological, Chemical and Biological - Environmental Determinants

### Definitions

#### *Environment*

This consists of the external elements and conditions which surround, influence, and affect the life and development of an organism or of a population

#### *Environmental Health*

Is the science of controlling or modifying those physical, radiological, chemical and biological conditions, influences, or forces surrounding human communities, which relate to the promoting, establishing, and maintenance of health.

### Competences

***C.1. Intellectual competences: The public health professional shall know and understand:***

- C.1.1. Significant aspects of the history of environmental health;
- C.1.2. Basic concepts of the natural sciences, especially:
  - C.1.2.3. Chemistry;
  - C.1.2.4. Physiology;
  - C.1.2.5. Genetics;
  - C.1.2.6. Toxicology;
  - C.1.2.7. Microbiology;
  - C.1.2.8. Radiation;
  - C.1.2.9. Immunology;
- C.1.3. Basic concepts and terminology of empirical scientific disciplines that analyse the impact of the physical, radiological, chemical and biological environment on health, e.g. toxicology, radiation measurement, etc.;

C.1.4.	The basic concepts, principles and methods of environmental risk estimation;		susceptibility to adverse health outcomes following exposure to environmental hazards;
C.1.5.	The level and trends of main physical, radiological, chemical and biological exposures in European countries, and their relationship to health;	C.1.8.	The burden of disease, injury and fatality associated with physical, radiological, chemical and biological environmental exposures in national and European populations;
C.1.6.	The variation by age, gender, socio-economic background, and arena of exposure to physical, radiological, chemical, and biological exposures, e.g. in the context of:	C.1.9.	Population health consequences of climate change;
C.1.6.1.	Indoor and outdoor air pollution;	C.1.10.	Basic principles of measurement and monitoring of environmental components, e.g. water, indoor air, microorganisms;
C.1.6.2.	Noise;	C.1.11.	National and European policies, legislation, standards, systems and organisations for the monitoring and control of the physical, radiological, chemical and biological environment;
C.1.6.3.	Carcinogens;	C.1.12.	Major stakeholders in environmental health, e.g. the chemical industry, farming industry, mining industry, electricity supply industry, water purification industry, injury prevention programmes, accident and emergency services;
C.1.6.4.	Neurotoxins;	C.1.13.	Environmental and infectious disease surveillance systems, databases and early warning systems, as developed by
C.1.6.5.	Electromagnetic fields;		
C.1.6.6.	Radioactivity;		
C.1.6.7.	Exposures from housing;		
C.1.6.8.	Occupational exposures;		
C.1.6.9.	Transport;		
C.1.6.10.	Hydrological cycle;		
C.1.6.11.	Sewage;		
C.1.6.12.	Town and country planning;		
C.1.7.	Genetic, physiological and psychosocial factors that affect		

	ECDC and in individual European countries;		environment, including the effects of climate change;
C.1.14.	Basic principles of and major approaches to preventing and controlling environmental hazards that pose risks to human health and safety;	C.2.3.	Develop public health strategies, including risk management programmes, based on evidence from empirical environmental studies;
C.1.15.	Material environmental health implications of globalisation;	C.2.4.	Based on data from epidemiological surveillance systems (e.g. national systems; WHO's Health for All (HFA) database; other internet based systems) accessible from, e.g., the internet:
C.1.16.	The general principles of emergency planning and of how to manage major incidents of various kinds, such as those caused by flooding, by a train crash, or by a bomb;	C.2.4.1.	Produce epidemiological and statistical documentation (analyses, tables, figures, etc.) on the relationship between physical, chemical and biological environmental exposures and the health of European populations and population groups;
C.1.17.	Major European research programmes focussing on population health and environmental risks, e.g. research carried out over the last three decades in various European countries on improved road design; the association between alcohol consumption and road traffic accidents (RTAs); air pollution and health.	C.2.4.2.	Produce forecasts for the development of health status of European populations and population groups, taking into account physical radiological, environmental exposures, and also the effects of climate change;
<b><i>C.2. Practical competences: The public health professional shall be able to:</i></b>		C.2.4.3.	Identify population groups with elevated health risks and recognise their health needs, e.g. children, groups living in areas of particular environmental stress (such as in areas suffering from industrial pollution),
C.2.1.	Monitor and interpret environmental exposures;		
C.2.2.	Perform risk assessment associated with components of the physical, radiological, chemical and biological		

C.2.5.

people occupied in risky occupations and their families, people living in areas at risk of natural disasters;

Produce a plan for a field investigation concerning relationships between the material environment and health;

C.2.6.

Produce an empirical project based on hypotheses on the relationship between the material environment and health.

## D. Health Policy; Economics; Organisational Theory and Management

### **Definitions**

#### *Economics*

The science of utilisation, distribution, and consumption of services and materials and of setting priorities and decision making.

#### *Policy*

This is a course or method of action selected usually by a public or private body, at international, national or local level, from among alternatives to guide and determine present and future decisions.

#### *Organisation*

This is a collective structure for the purpose of systematising activities for a particular goal, including the planning and management of programmes, services, and resources.

#### *Leadership*

Is the ability to recruit and keep followers in pursuing common goals, taking into consideration the person's individual competences and attitudes, his/her

position, his/her ability to obtain results, and the process to reach the designated goals.

#### *Management*

Is the process of strategy identification and implementation by motivating people together to accomplish desired goals efficiently and effectively. Is often used – erroneously – as being synonymous with the concept of leadership.

#### *Strategy*

This consists of a formerly planned set of actions designed to deal with a problem or problems, including the following stages, which are cyclical in principle:

1. Problem identification/community analysis/situation analysis;
  - a. Population health;
  - b. Intervention system;
2. Selection of targets and identification of target groups;
3. Selection of intervention;
4. Implementation of intervention;

## 5. Follow-up and evaluation.

### Competences

#### *D.1. Intellectual competences: The public health professional shall know and understand:*

- D.1.1. Significant aspects of the modern history of the disciplines of health policy, health economics, organisational theory and management – and thus the main developments relating to national, EU, European and international:
  - D.1.1.2. Health policy;
  - D.1.1.3. Social policy;
  - D.1.1.4. Health services;
  - D.1.1.5. Social services;
  - D.1.1.6. Legislation affecting health and health services in at least one European country;
  - D.1.1.7. NGOs operating in the public health arena;
- D.1.2. The basic philosophies and concepts of:
  - D.1.2.1. Social scientific theories and methods utilised within public health:

- organisational theory, systems thinking, health economics (micro and macro economics) and leadership and management theory, and their application in public health strategy-making and in health systems development and management;
- D.1.3. Important concepts, including:
  - D.1.3.1. Strategy targets/objectives;
  - D.1.3.2. Market and market failure;
  - D.1.3.3. Gross National Product/Gross Domestic Product;
  - D.1.3.4. Inputs, processes and outcomes of health services;
  - D.1.3.5. Efficiency;
  - D.1.3.6. Elasticity;
  - D.1.3.7. Marginal analysis;
  - D.1.3.8. Opportunity cost;
  - D.1.3.9. Cost analysis related to health:
    - D.1.3.9.1. Cost of service;
    - D.1.3.9.2. Years of life lost;
  - D.1.3.10. Cost-effectiveness;
  - D.1.3.11. Cost-utility;
  - D.1.3.12. Cost-benefit;

D.1.3.13.	Quality assurance and quality development;	D.1.6.	Within the context of the health services and social services in at least one European country, the main:
D.1.3.14.	Equity;		
D.1.3.15.	Priority setting in health systems;	D.1.6.1.	Components, structure and organisation;
D.1.3.16.	Acceptance and acceptability;	D.1.6.2.	Economics;
D.1.3.17.	Need and demand;	D.1.6.3.	Functioning;
D.1.3.18.	Operational management and coordination of activities (logistics);	D.1.6.4.	Legal aspects;
D.1.3.19.	Major leadership theories;	D.1.6.5.	Regulation;
D.1.3.20.	Collaborative leadership;	D.1.6.6.	Management;
D.1.3.21.	Leadership and emotional intelligence;	D.1.6.7.	Human resources;
D.1.3.22.	Leading and management of change;	D.1.6.8.	Decision processes;
D.1.3.23.	The learning organisation and organisational development;	D.1.6.9.	Production/outputs;
D.1.3.24.	Organisational governance;	D.1.7.	Main principles and methods of development, planning, implementation and evaluation of public health policies, strategies, programmes, and institutions – for evaluation including:
D.1.3.25.	Inter-sectorial collaboration;		
D.1.3.26.	Programme implementation;		
D.1.3.27.	SWOT analysis (Strengths-Weaknesses-Opportunities-Threats);	D.1.7.1.	Effect evaluation;
D.1.3.28.	Development modelling;	D.1.7.2.	Process evaluation;
D.1.4.	Main accountancy principles;	D.1.7.3.	Health economic evaluation;
D.1.5.	Main principles for the organisation of health systems;	D.1.7.4.	Organisational evaluation;
		D.1.7.4.1.	The main structure and contents of a standard periodical public health report for a defined population.



D.1.7.5.	Health technology assessment;	D.1.11.1.	WHO;
D.1.7.6.	Financial management in general and with regard to investment decisions in health care and public health organisations;	D.1.11.2.	EU;
		D.1.11.3.	NGOs;
D.1.7.7.	How resources – including capacity and capability – may be assessed, secured, prioritised and allocated to achieve optimal impact on population health and wellbeing;	D.1.12.	National, EU, European, international and global public health strategies, e.g.:
		D.1.12.1.	WHO's strategies, e.g. HFA2000, Health21, Health2020, Ottawa Charter and their successors;
D.1.7.8.	Evaluation of comprehensive strategies;	D.1.12.2.	EU's strategy, e.g. Together for Health - A Strategic Approach for the EU 2008-13, the Europe 2020 Strategy, and their successors;
D.1.7.9.	How global and national communicable disease policy is developed and implemented, for example, ebola, pandemic influenza control;	D.1.12.3.	The public health strategy of at least one European country;
D.1.8.	Main principles underlying health impact assessment;	D.1.13.	The role of national and international commerce in supporting or hindering the development of public health interventions to improve population health, and how to balance the interests of organisational, political and multi-agency agendas, for example:
D.1.9.	Limitations of market principles in the finance and organisation of health care;		
D.1.10.	Partnership building – how to communicate the vision and strategic direction for policies, strategies and interventions, and how strategic alliances and partnerships can be built and sustained;	D.1.13.1.	The tobacco industry;
		D.1.13.2.	The alcohol industry;
		D.1.13.3.	The farming and food industries;
D.1.11.	The role of national and international organisations in the development of public health, such as:	D.1.13.4.	The pharmaceutical industry;
		D.1.13.5.	The military industry;
		D.1.13.6.	Insurance companies.

**D.2. Practical competences: The public health professional shall be able to:**

- D.2.1. Develop and implement a public health policy/strategy/intervention based on standard public health methods and guidelines, including e.g.:
  - D.2.1.1. Vision and mission;
  - D.2.1.2. The identification of systematic scientific evidence to support the public health policy/strategy/intervention;
  - D.2.1.2. Observable and attainable goals;
  - D.2.1.3. The identification of stakeholders and establishment of potential partnerships for potential inter-sectorial joint working;
  - D.2.1.4. Plans for longer term sustainability of the strategies;
  - D.2.1.5. Analysis of the process and outcomes of policy implementation;
  - D.2.1.6. Communicate effectively and motivate people to engage in change in the organisation and support learning and development of staff;
- D.2.2. Perform an organisational, managerial and financial analysis concerning:
  - D.2.2.1. Organisational entities within the health and social services;
  - D.2.2.2. Public health strategies and policies;

- D.2.3. Perform a health economic assessment of a given procedure, intervention, strategy or policy, e.g.:
  - D.2.3.1. Cost-effectiveness assessment;
  - D.2.3.2. Cost-utility assessment;
  - D.2.3.3. Cost-benefit assessment;
- D.2.4. Perform a health impact assessment of a given proposed development, e.g. planning a new airport or a new park in a city;
- D.2.5. Model and project the impact of the introduction of new services, technologies, health promotion interventions, and treatments;
- D.2.6. Plan, develop and manage activities in the health system by application of systematic guidelines;
- D.2.7. Perform a SWOT analysis of a programme, an institution or a procedure;
- D.2.8. Perform budgetary forecasts for a programme, an institution or a procedure, under varying resource assumptions;
- D.2.9. Perform programme planning, implementation and evaluation, translating policy into public health

D.2.10.	practice, e.g. by applying the principles of Intervention Mapping;  Identify relevant documentation needs and sources for the development of a public health strategy to meet a population health challenge;	D.2.11.	Apply constructively insight into own leadership style and personality type towards positive human resource management
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## E. Health Promotion: Health Education, Health Protection and Disease Prevention

### Definitions

#### *Health promotion*

Health promotion consists of activities to improve or protect health and to prevent disease. It was first described as a component of public health practice around 40 years ago, and has been defined as including within it health education, health protection and disease prevention.<sup>10,11</sup>

#### *Health education*

Consists of activities designed to increase awareness and to influence favourably attitudes and knowledge relating to the improvement of health on both a personal and on a community basis.

#### *Health protection*

Consists of policies and activities based on legislative or other means designed to promote healthier environments, within which healthy choices are easier to make.

#### *Disease prevention*

This includes all measures taken to prevent diseases or injuries.

### Competences

#### ***E.1. Intellectual competences: The public health professional shall know and understand:***

- |          |  |
|----------|--|
| E.1.1.   | Significant aspects of the history of health promotion theory and practice, including main health promotion charters, e.g. Ottawa; |
| E.1.2.   | The definitions of:  |
| E.1.2.1. | Health education;  |
| E.1.2.2. | Health protection, including preparedness against acute and emerging public health threats;  |
| E.1.2.3. | Disease prevention;  |
| E.1.3.   | The definitions of types of disease prevention:  |
| E.1.3.1. | Primary prevention;  |

E.1.3.2.	Secondary prevention;	E.1.5.2.1.	Communicable disease control;
E.1.3.3.	Tertiary prevention;	E.1.5.2.2.	Environmental health management;
		E.1.5.2.3.	Accident prevention systems;
E.1.4.	Central concepts applied in health promotion, e.g.:	E.1.5.3.	Disease prevention, including:
E.1.4.1.	Behavioural change;	E.1.5.3.1.	Primary prevention;
E.1.4.2.	Motivational interviewing;	E.1.5.3.2.	Secondary prevention;
E.1.4.3.	Empowerment;	E.1.5.4.3.	Tertiary prevention;
E.1.4.4.	Holism;	E.1.6.	The basic theories underlying communication skills – the basic principles of:
E.1.4.5.	Community development;	E.1.6.1.	Learning processes;
E.1.4.6.	Participation;	E.1.6.2.	Strategic communication;
E.1.4.7.	Capacity building;	E.1.6.3.	Marketing;
E.1.4.8.	Social marketing;	E.1.7.	Basic principles and methods applied in the development, implementation, management and effectiveness evaluation of health promotion programmes in populations and population subgroups (e.g. adolescents, the elderly, males and females, ethnic groups, the socially disadvantaged, other socially, culturally and/or religiously distinct groups, etc.):
E.1.4.9.	Health advocacy;		
E.1.4.10	Health literacy;		
E.1.5.	Major social, behavioural and biomedical theories and models underlying:	E.1.7.1.	Theoretical models of behaviour change as applied to the general population and to high risk and hard-to-reach groups;
E.1.5.1.	Health education, including behaviour change, e.g.:		
E.1.5.1.1.	Stages of change theory;		
E.1.5.1.2.	Social-psychological theory;		
E.1.5.1.3.	Diffusion theory;		
E.1.5.2.	Health protection systems, e.g.:		

E.1.7.2.	Health education, including information on methods for behavioural modification relating to:		groups with increased need of long-term or lifelong tertiary prevention after medical treatment, e.g., patients with ischaemic heart disease, diabetes, chronic lung disease, blindness
E.1.7.2.1.	Environmental health management;		
E.1.7.2.2.	Common risk factors;	E.1.8.	The general principles of emergency planning and managing a major incident;
E.1.7.2.3.	Common factors improving health;		
E.1.7.2.4.	Relevant use of health services;		
E.1.7.3.	Health protection, including e.g.:	E.1.9.	The relative importance of individual and societal health promotion policies;
E.1.7.3.1.	Communicable disease control;		
E.1.7.3.2.	Environmental health management;	E.1.10.	The effectiveness and cost-effectiveness of major health promotion programmes as documented by scientific methods (evidence of effect and costs);
E.1.7.3.3.	Accident prevention systems;		
E.1.7.3.4.	Protection from occupational hazards;		
E.1.7.4.	Primary prevention programmes, including:	E.1.11.	The existence and developmental trends of major health promotion programmes in at least one European country, targeting:
E.1.7.4.1.	Prevention of infectious disease, e.g. immunisation programmes;		
E.1.7.4.2.	Prevention of non-communicable diseases and of intentional and unintentional injuries;	E.1.11.1.	Unselected populations as well as:
		E.1.11.2.	Specific population groups (e.g. children, adults, elderly, socially disadvantaged, ethnic groups, etc.) and:
E.1.7.5.	Secondary prevention programmes (screening), including the criteria to be satisfied before a screening programme is set up;	E.1.11.3.	Special settings (e.g. the workplace, the home, the hospital, institutions, etc.);
E.1.7.6.	Tertiary prevention;	E.1.12.	Major national and international organisations and their cultures and resources to bring about health improvement activity;
E.1.7.6.1.	Tertiary prevention programmes, including the identification of patient		

E.1.13.	Major health promotion policies and strategies in at least one European country;	E.2.3.	Apply community development theory to strengthen community participation;
E.1.14.	National and European legal frameworks in disease prevention and health protection, including IHR 2005 and EU legislation.	E.2.4.	Play an active role in engaging the public in meeting its own health challenges, e.g. by effective asset management;
	E.14.1. Environmental health protection;	E.2.5.	Lead and evaluate the investigation of an infectious disease outbreak/chemical hazard incident and its management, including:
	E.14.2. Occupational health protection;		
	E.14.3. Food safety;	E.2.5.1.	Conduct risk assessment;
	E.14.4. Patient safety;	E.2.5.2.	Draw lessons learnt from outbreak investigations and simulation exercises;
	E.14.5. Road safety.	E.2.5.3.	Design, monitor and evaluate a preparedness plan;
		E.2.5.4.	Write a full report;
<b>E.2. Practical competences: The public health professional shall be able to:</b>		E.2.6.	Design, implement, manage and evaluate a health promotion strategy and a community development programme for a defined population and a defined community, using standard public health tools and taking into account issues of power and politics, providing a business case for the chosen intervention option;
E.2.1.	Identify population health challenges relevant for health promotion at various levels of social and political organisation, from global to local;		
E.2.2.	Communicate effectively public health messages – including risk analysis - to lay, professional, academic and political audiences, by use of modern media, e.g. written media, audio-visual techniques and internet-based social media tools;	E.2.7.	Write a policy proposal, including:
		E.2.7.1.	Title page;
		E.2.7.2.	The concrete health challenge;

- E.2.7.3. Scientific background and consequential policy options;
- E.2.7.4. Policy recommendations;
- E.2.7.5. Communication plan;
- E.2.7.6. References.
- E.2. 8. Plan, implement and evaluate a primary, a secondary and a tertiary prevention programme, including effect and cost-effectiveness evaluation.



## F. Ethics

### Definition

Ethics, or moral philosophy, is the discipline concerned with what is morally good and bad, right and wrong. The term is also applied to any system or theory of moral values or principles.<sup>12</sup>

### Competences

#### *F.1. Intellectual competences: The public health professional shall know and understand:*

- F.1.1. Significant aspects of the history of ethics, including historical examples of misuse of public health principles for political ends;
- F.1.2. Major ethical theories and concepts relevant for public health, e.g.:
  - F.1.2.1. Utilitarianism;
  - F.1.2.2. Egalitarianism;
  - F.1.2.3. Theory of rights;

- F.1.2.4. Theory of duty (deontology);
- F.1.2.5. Autonomy/self decisiveness;
- F.1.2.6. Paternalism;
- F.1.2.7. Uninvited intervention;
- F.1.2.8. Responsibility;
- F.1.2.9. Respect;
- F.1.2.10. Acceptability and acceptance;
- F.1.2.11. Non-discrimination;
- F.1.2.12. Human rights;
- F.1.3. Good epidemiological practice and good clinical practice ('best practice'), including ethical aspects of data handling, confidentiality, security, privacy and disclosure;
- F.1.4. Ethical dimensions of:
  - F.1.4.1. Public health strategy making, including the ethical challenges of each individual stage of a strategy;

F.1.4.2.	Professionalism in relation to the implementation of responsibilities and in the context of accountability in an institutional context;		this arises in emergency circumstances (a flu epidemics);
F.1.4.3.	The ethical aspects involved in choosing between utilitarian and egalitarian alternatives in public health strategy making and in health care planning in broad;	F.2.2.	Ensure the implementation of basic ethical principles in public health strategy making, such as a non-discriminatory approach to target populations and in human resources management;
F.1.4.4.	Ethics committee systems and requirements for ethical approval of public health research in at least one European Country.	F.2.2.1.	Leading and supporting the ethical management of policy, communities and individuals;
F.1.5.	The ethical aspects of individual versus societal intervention policies in, e.g., health promotion.	F.2.3.	Respect and adhere to ethical principles regarding data protection and confidentiality regarding any information obtained as part of professional activities;
		F.2.4.	Prepare an application to the ethics
<b><i>F.2. Practical competences: The public health professional shall be able to:</i></b>			
F.2.1.	Identify ethical aspects of concrete public health interventions, strategies and policies;	F.2.5.	Adhere to general principles for authorship when writing and publishing in the scientific literature context, e.g. respecting intellectual property rights and avoiding plagiarism.
F.2.1.1.	Identify, what the ethical issues are, and how to deal concretely with them, when confronted with the design of a Public health investigation and/or proposed intervention, all the more if		

## Essential Public Health Operations<sup>13,14</sup>

- EPHO 1: Surveillance of population health and well-being
- EPHO 2: Monitoring and response to health hazards and emergencies
- EPHO 3: Health protection, including environmental, occupational and food safety and others
- EPHO 4: Health promotion including action to address social determinants and health inequity
- EPHO 5: Disease prevention, including early detection of illness
- EPHO 6: Assuring governance for health
- EPHO 7: Assuring a competent public health workforce
- EPHO 8: Assuring organizational structures and financing
- EPHO 9: Information, communication and social mobilization for health
- EPHO 10: Advancing public health research to inform policy and practice

**Note:** The headlines of the lists are printed, with subheadings, to ease the access to Tables Volume 2, based on the *European Action Plan for Strengthening Public Health Capacities and Services. Copenhagen: WHO Regional Office for Europe, 2012.*<sup>13</sup> and *Martin-Moreno JM. Self-assessment tool for the evaluation of essential public health operations in the WHO European Region. Copenhagen, WHO Regional Office for Europe, 2012.*<sup>14</sup>

# EPHO 1: Surveillance of population health and well-being

## *Mainlines*

- 1.A. Health data sources and tools
- 1.B. Surveillance of population health and disease programmes
- 1.C. Surveillance of health system performance
- 1.D. Data integration, analysis and reporting

## *Subheadings*

### **1.A. Health data sources and tools**

- 1.A.1. Civil registration and vital statistics system
- 1.A.2. Health-related surveys
- 1.A.3. Health management information system
- 1.A.4. Disease registries

### **1.B. Surveillance of population health and disease programmes**

- 1.B.1. Cause-specific mortality
- 1.B.2. Selected morbidity
- 1.B.3. Risk factors and determinants
- 1.B.4. Child health and nutrition
- 1.B.5. Maternal and reproductive health
- 1.B.6. Immunization
- 1.B.7. Communicable disease
- 1.B.8. Non-communicable diseases

- 1.B.9. Social and mental health
- 1.B.10. Environmental health
- 1.B.11. Occupational health
- 1.B.12. Road safety
- 1.B.13. Injuries and violence
- 1.B.14. Nosocomial infection
- 1.B.15. Antibiotic resistance
- 1.B.16. Migrant health
- 1.B.17. Health inequalities

### **1.C. Surveillance of health system performance**

- 1.C.1. Monitoring of health system financing
- 1.C.2. Monitoring of the health workforce
- 1.C.3. Monitoring of health care utilization, performance and user satisfaction
- 1.C.4. Monitoring of access to essential medicine
- 1.C.5. Monitoring of cross-border health

### **1.D. Data integration, analysis and reporting**

- 1.D.1. Health sector analysis
- 1.D.2. Provision of updates on compliance with International Health Regulations (IHR)

- 1.D.3. Participation and compliance with regard to NCD monitoring reports, based on the Global NCD Action Plan (2013-2020)
- 1.D.4. Development of annual statistical reports
- 1.D.5. (*For non-OECD countries*) Monitoring and reporting on regional or global movements, such as MDGs, Post 2015 Development Goals (DGs) and Universal Health Coverage (UHC)

## EPHO 2: Monitoring and response to health hazards and emergencies

### A. Mainlines

- 2.A. Identification and monitoring of health hazards
- 2.B. Preparedness and response to Public Health emergencies
- 2.C. Implementation of IHR

### B. Subheadings

#### 2.A. Identification and monitoring of health hazards

- 2.A.1. Risk and vulnerability assessments, in accordance with an All Hazard/Whole Health approach
- 2.A.2. Capacity to set up an early warning alert and response network (EWARN) to deal with challenges associated with displaced populations
- 2.A.3. Laboratory support for investigation of health threats
- 2.A.4. Ability to predict public health emergencies

#### 2.B. Preparedness and response to Public Health emergencies

- 2.B.1. Institutional framework for emergency preparedness
- 2.B.2. Health sector emergency plan
- 2.B.3. Ministry of Health's Emergency Preparedness and Response Unit
- 2.B.4. Coordination structure in the event of a public health emergency
- 2.B.5. Public information, alert and communication system

- 2.B.6. Protection, maintenance and restoration of key systems and services in the event of a public health emergency
- 2.B.7. Critical response services
- 2.B.8. Mitigation actions to reduce long-term vulnerability to public health emergencies
- 2.B.9. Capacity for recovery and restoration of essential health services

#### 2.C. Implementation of IHR

- 2.C.1. Fostering of global partnerships with regard to the implementation of IHR
- 2.C.2. Strengthening of national public health capacities for surveillance and response
- 2.C.3. Public health security in travel and transport
- 2.C.4. Management of specific risks
- 2.C.5. Preservation of rights, procedures and obligations
- 2.C.6. Performance of studies to track progress in the implementation of IHR

# EPHO 3: Health protection, including environmental, occupational and food safety and other

## *Mainlines*

- 3.A. Environmental health protection
- 3.B. Occupational health protection
- 3.C. Food safety
- 3.D. Patient safety
- 3.E. Road safety
- 3.F. Consumer product safety

## *Subheadings*

### **3A. Environmental health protection**

- 3.A.1. Legislative framework with regard to environmental health protection, in the areas of air quality, water quality and soil quality
- 3.A.2. Technical capacity for risk assessment in the area of environmental health
- 3.A.3. National legislation and international cooperation in the area of climate change mitigation and energy security
- 3.A.4. Environmental health protection in the area of housing
- 3.A.5. Capacity to communicate and collaborate with key

stakeholders in the area of environmental protection

3.A.6. Effectiveness of sanctions and measures implemented to prevent environmental harm

3.A.7. Institutional capacity to respond to hazards

### **3.B. Occupational health protection**

3.B.1. Occupational health and safety protections

3.B.2. Health promotion and protection in the workplace

3.B.3. Occupational health services for workers in your country

3.B.4. Cross-sectoral integration of occupational health into other national policies

3.B.5. Occupational hazards reporting system and workplace inspections (see also 1.B.11).

3.B.6. Technical capacity for risk assessment in the area of occupational health and safety

3.B.7. Management and mitigation of risks related to occupational health

### **3.C. Food safety**

3.C.1. Food safety regulatory framework

3.C.2. Technical capacity for risk assessment in the area of

food safety

3.C.3. Monitoring and enforcement of food safety protections.

3.C.4. Management and mitigation of risks with regard to food safety

### **3.D. Patient safety**

3.D.1. Laws and institutional framework for protecting patient/providers safety

3.D.2. Consumer protections with regard to health services

3.D.3. Technical capacity for risk assessment in the area of patient and provider safety

3.D.4. Monitoring and supervision of patient safety

3.D.5. Management and mitigation of risks with regard to patient and provider safety

3.D.6. (For *EU Member States ONLY*), your country's contribution to minimum standards regulating cross-border health care

### **3.E. Road safety**

3.E.1. Road safety framework

3.E.2. Technical capacity for risk assessment in the area of road safety.

3.E.3. Supervision and enforcement of road safety legislation and controls

3.E.4. Management and mitigation of risks with regard to road safety

### **3.F. Consumer product safety**

3.F.1. Safety regulations with regard to consumer products

3.F.2. Technical capacity for risk assessment in the area of consumer safety

3.F.3. Enforcement and risk mitigation with regard to consumer safety norms.



## EPHO 4: Health promotion including action to address social determinants and health inequity

### *Mainlines*

- 4.A. Intersectoral and interdisciplinary capacity
- 4.B. Addressing behavioural, social and environmental determinants through a whole-of-government, whole-of-society approach

### *Subheadings*

#### **4.A. Intersectoral and interdisciplinary capacity**

- 4.A.1. Structures and, mechanisms and processes within government to enable intersectoral decision-making and action, using a Health in All Policies (HiAP) approach
- 4.A.2. MoH engagement and involvement of local communities and civil society in the area of health promotion
- 4.A.3. Intersectoral capacity with regard to key national stakeholders in the private sector (industry, agriculture, communications, constructions, etc.)

#### **4.B. Addressing behavioural, social and environmental determinants through a whole-of-government, whole-of-society approach**

- 4.B.1. Tobacco policy in line with the requirements of the Framework Convention on Tobacco Control

- 4.B.2. Alcohol control policy, in line with the WHO Global Strategy to reduce harmful use of alcohol
- 4.B.3. Nutrition policy from a lifecourse perspective
- 4.B.4. National policy(s) on physical activity
- 4.B.5. Programmes and policies to promote sexual and reproductive health
- 4.B.6. Activities to address substance abuse
- 4.B.7. Policies and practices related to mental health
- 4.B.8. Policies to control domestic violence and violence against children and women
- 4.B.9. Policies and programmes related to injury prevention
- 4.B.10. Addressing the social determinants of health

## EPHO5: Disease prevention, including early detection of illness

### **Main lines**

- 5.A. Primary Prevention
- 5.B. Secondary prevention
- 5.C. Tertiary/quartenary prevention
- 5.D. Social support

### **Subheadings**

#### **5.A. Primary Prevention**

- 5.A.1. Immunisation programme
- 5.A.2. Provision of information on behavioural and medical health risks in healthcare settings
- 5.A.3. Disease prevention programmes at primary and specialized health care levels
- 5.A.4. Provision of maternal and neonatal care programmes
- 5.A.5. Evaluation your country's provision of health services to migrant, the homeless people and ethnic minority populations
- 5.A.6. National approach to prison health

#### **5.B. Secondary prevention**

- 5.B.1. Secondary prevention (screening) programmes for the early detection of disease

5.B.2. Awareness of programmes related to early detection of pathologies

5.B.3. Provision of chemoprophylactic agents to control risk factors for disease

#### **5.C. Tertiary/quartenary prevention**

5.C.1. Rehabilitation, survivorship and chronic pain management programmes

5.C.2. Access to palliative and end-of-life care

5.C.3. Capacity to establish patient support groups

#### **5.D. Social support**

5.D.1. Programmes aimed at creating and maintaining supportive environments for health behavioural change

5.D.2. Support for caregivers

## EPHO 6: Assuring governance for health

### *Mainlines*

- 6.A. Leadership for a whole-of-government and whole-of-society approach to health and well-being
- 6.B. Health policy cycle
- 6.C. Regulation and control (see also relevant sections in EPHO 3)

### *Subheadings*

#### **6.A. Leadership for a whole-of-government and whole-of-society approach to health and well-being**

- 6.A.1. National government's commitment to health and health equity as an explicit priority in national policy
- 6.A.2. Governance for health

#### **6.B. Health policy cycle**

- 6.B.1. Mechanisms for stakeholder participation included in the health policy cycle
- 6.B.2. Situational analyses, prior to formulating plans or strategies.
- 6.B.3. Planning of national, regional and local strategies, policies and plans for public health.
- 6.B.4. Implementation of strategies, policies and plans for public health

- 6.B.5. Monitoring and evaluation activities embedded in strategies and policies on public health

#### **6.C. Regulation and control (see also relevant sections in EPHO 3)**

- 6.C.1. Ministry of Health's capacity to develop, enact and implement appropriate national legislation to improve public health and promotion of healthy environments and behaviours, aligned with regional and global commitments
- 6.C.2. Performance of HIA
- 6.C.3. Performance of Health Technology Assessments (HTA)
- 6.C.4. For *EU Member States only*: Short-, medium- and long-term strategies to comply with a European Union community health services system

## EPHO 7: Assuring a competent public health workforce

### **Mainlines**

- 7.A. Human resources development cycle
- 7. B. Human Resources Management
- 7.C. Public health education
- 7.D. Governance of public health human resources

### **Subheadings**

#### **7.A. Human resources development cycle**

- 7.A.1. Situational analysis phase in your human resources development strategy
- 7.A.2. Planning phase in human resources development strategy
- 7.A.3.. Implementation phase in human resources development strategy
- 7.A.4. Monitoring and evaluation phase in your human resources development strategy

#### **7. B. Human Resources Management**

- 7.B.1. Human Resources Management Systems in the field of public health
- 7.B.2. Recruitment and retention practices with regard to human resources for public health

7.B.3.. Policies pertaining to human resources development in public health

7.B.4. Financing of human resources for public health in your country

#### **7.C. Public health education**

7.C.1.. Educational institutions for public health (including epidemiology, community or social medicine and other units with similar mandates)

7.C.2. General educational issues, as they pertain to core public health professionals

7.C.3. Public health curricula

#### **7.D. Governance of public health human resources**

7.D.1. Leadership and management of human resources for public health

7.D.2. Structures and agreements for strategic partnerships in the development of human resources for public health

## EPHO 8: Assuring organizational structures and financing

### *Mainlines*

- 8.A. Ensure appropriate organizational structures to deliver EPHOs
- 8.B. Financing public health services

### *Subheadings*

#### **8.A. Ensure appropriate organizational structures to deliver EPHOs**

- 8.A.1. Clarity and coherence of the organizational structure of the Ministry of Health (or equivalent) and its linkage to all independent public agencies on health
- 8.A.2. Basic quality criteria for health care centres that deliver EPHOs (primary health care, specialized health centres and hospitals)
- 8.A.3. Public health laboratory system for routine diagnostic services
- 8.A.4. National Public Health Institute(s) and/or Schools of Public Health
- 8.A.5. Coordination of services delivered outside government bodies
- 8.A.6. Oversight of the systems and organizational structures that perform EPHOs

#### **8.B. Financing public health services**

- 8.B.1. Public health budget within the health system
- 8.B.2. Mechanisms to fund public health services delivered outside the health system
- 8.B.3. Decision-making criteria on resource allocation for public health

## EPHO 9: Information, communication and social mobilization for health

### *Mainlines*

- 9.A. Strategic and systematic approach to public health communication
- 9.B. ICT for health

### *Subheadings*

#### **9.A. Strategic and systematic approach to public health communication**

- 9.A.1. Communication concepts within the Ministry of Health
- 9.A.2. Organization of health communication
- 9.A.3. Integration of communication strategies within priority public health programmes
- 9.A.4. Implementation of risk communication activities
- 9.A.5. Use of resources in communication and social mobilization efforts in your country
- 9.A.6. Capacity to monitor and evaluate your public health communication campaigns

#### **9.B. ICT for health**

- 9.B.1. Ministry of Health's approach to ICT for health

## EPHO 10: Advancing public health research to inform policy and practice

### *Mainlines*

- 10.A. Setting a national research agenda
- 10.B. Capacity-building
- 10.C. Coordination of research activities
- 10.D. Dissemination and knowledge-brokering

### *Subheadings*

#### **10.A. Setting a national research agenda**

- 10.A.1. Identification of national public health research priorities
- 10.A.2. Alignment of public health research agenda with Health 2020

#### **10.B. Capacity-building**

- 10.B.1. Data access to health indicators for researchers
- 10.B.2. Integration of research activities in public health education and continuous training
- 10.B.3. Performance of research in public health practice
- 10.B.4. Capacity for innovation in public health
- 10.B.5. Maintenance of scientific and ethical standards in research

#### **10.C. Coordination of research activities**

- 10.C.1. Research coordination

#### **10.D. Dissemination and knowledge-brokering**

- 10.D.1. Mechanisms and structures in place to disseminate research findings to public health colleagues
- 10.D.2. Mechanisms to translate evidence into policy and practice
- 10.D.3. Effectiveness of policy-makers in communicating their needs to the research community, including health technology firms

## Contextual/background competences by EPHOs

Contextual/background competences common to all EPHOs

EPHO-specific contextual/background competences common to intelligence EPHOs (1 and 2)

EPHO-specific contextual/background competences common to service delivery EPHOs (3, 4 and 5)

EPHO-specific contextual/background competences common for enabler EPHOs 6-9

Section 1 references



## Contextual/background competences common to all EPHOs

### ***Intellectual competences: The public health professional shall know and understand:***

#### *A.1.1. Health*

- A.1.1.1. Basic definitions, models and concepts of health and disease;
- A.1.1.2. Concepts of mental and somatic diseases and their practical implications, including diagnostic systems and diagnoses.

#### *A.1.2. Public health*

- A.1.2.1. Major definitions of public health;
- A.1.2.2. Significant aspects of the history of public health theory and practice.

#### *A.1.3. Philosophy of science*

- A.1.3.1. Major definitions of philosophy and philosophy of science;
  - A.1.3.2. Essentials of philosophy of science as relevant to public health;
  - A.1.3.3. Basic theories in philosophy and philosophy of science, and concepts of importance for public health science and practice, e.g. concepts such as hypothesis, theory, explanation, understanding, objectivity, evidence, method, deduction, induction, utilitarian, qualitative and quantitative studies and observations.
- #### *A.1.4. Epidemiology, demography and statistics*

- A.1.4.1. Major definitions of epidemiology as a science;

- A.1.4.2. Definition of demography as a science;

- A.1.4.3. Major aspects of the history of epidemiology;

- A.1.4.9. The structure, main content and applications of standard authorised health classification systems in common use in Europe, such as:

- A.1.4.9.1. International Classification of Diseases (ICD);

- A.1.4.9.2. International Classification of Functioning, Disability and Health (ICF);

- A.1.4.9.3. International Classification of Health Interventions (ICHI);

- A.1.4.9.4. Other systems;

- A.1.4.14. Major definitions of statistics as a science;

#### *A.1.5. Qualitative methods*

- A.1.5.1. Main approaches to, and concepts of, qualitative methods frequently applied in public health concerning population groups as well as organisations;

#### *A.1.6. Sociology, social psychology and anthropology*

- A.1.6.1. Major definitions of sociological and anthropological science;

- A.1.6.2. Significant aspects of the history of social science;

- A.1.6.5. Basic concepts of classification and scaling.

### A.7. IT handling

#### A.1.7.1. General aspects of IT functioning, including, e.g.:

A.1.7.1.1. Data protection techniques.

A.1.7.1.2. Data transfer protocols;

A.1.7.1.3. Internet uses for public health;

#### A.1.8. Literature search and evaluation

A.1.8.1. The existence of the most important literature databases and their main fields, within health sciences, social sciences, and natural sciences, for the identification of:

A.1.8.1.1. Theoretical literature;

A.1.8.1.2. Original empirical studies;

A.1.8.1.3. Reviews and meta-analyses.

#### B.1.3. Population health and social and economic determinants

B.1.3.1. The burden of disease, injury and fatality associated with social and economic determinants in national and European populations;

B.1.3.2. Models concerning social determinants of health, especially:

B.1.3.2.1. Material pathways, e.g. poverty, income inequality, neighbourhood deprivation;

B.1.3.2.2. Psycho-social pathways (social stressors and protective factors, e.g. social work, social cohesion, social anomie, social support);

B.1.3.2.3. Behaviour pathways, e.g. healthy lifestyle, sociological and psychological models of behaviour change;

B.1.3.3. The level and trends of associations in Europe between population health indicators – especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases - and various background indicators, such as:

B.1.3.3.1. Socio-economic, including social inequality;

B.1.3.3.2. Social environment (cultural, material, psychosocial, behavioural);

B.1.3.3.3. General policy and health policy;

B.1.3.3.4. Social capital;

B.1.3.3.5. Culture;

B.1.3.3.6. Community dynamics;

B.1.3.3.7. Economy;

B.1.3.4. Social and economic health implications of globalisation;

B.1.3.5. Major European research programmes focussing on population health and its social and economic determinants, e.g. North Karelia Project, and research contributing to the Marmot reviews, etc.

EU, European and international:

#### D.1. Health Policy; Economics; Organisational Theory and Management

D.1.1. Significant aspects of the modern history of the disciplines of health policy, health economics, organisational theory and management – and thus the main developments relating to national,

D.1.7. Main principles and methods of development, planning, implementation and evaluation of public health policies, strategies, programmes, and institutions – for evaluation including:

*E.1. Health Promotion: Health Education, Health Protection and Disease Prevention*

- E.1.1. Significant aspects of the history of health promotion theory and practice, including main health promotion charters, e.g. Ottawa;
- E.1.2. The definitions of:
  - E.1.2.1. Health education;
  - E.1.2.2. Health protection, including preparedness against acute and emerging public health threats;
  - E.1.2.3. Disease prevention;
- E.1.3. The definitions of types of disease prevention:
  - E.1.3.1. Primary prevention;
  - E.1.3.2. Secondary prevention;
  - E.1.3.3. Tertiary prevention;

*F.1. Ethics*

- F.1.1. Significant aspects of the history of ethics, including historical examples of misuse of public health principles for political ends;
- F.1.2. Major ethical theories and concepts relevant for public health, e.g.:
  - F.1.2.1. Utilitarianism;
  - F.1.2.2. Egalitarianism;
  - F.1.2.3. Theory of rights;
  - F.1.2.4. Theory of duty (deontology);
  - F.1.2.5. Autonomy/self decisiveness;
  - F.1.2.6. Paternalism;

- F.1.2.7. Uninvited intervention;
- F.1.2.8. Responsibility;
- F.1.2.9. Respect;
- F.1.2.10. Acceptability and acceptance;
- F.1.2.11. Non-discrimination;
- F.1.2.12. Human rights;
- F.1.3. Good epidemiological practice and good clinical practice ('best practice'), including ethical aspects of data handling, confidentiality, security, privacy and disclosure;
- F.1.4. Ethical dimensions of:
  - F.1.4.1. Public health strategy making, including the ethical challenges of each individual stage of a strategy;
  - F.1.4.2. Professionalism in relation to the implementation of responsibilities and in the context of accountability in an institutional context;
  - F.1.4.3. The ethical aspects involved in choosing between utilitarian and egalitarian alternatives in public health strategy making and in health care planning in broad;
  - F.1.4.4. Ethics committee systems and requirements for ethical approval of public health research in at least one European Country.
- F.1.5. The ethical aspects of individual versus societal intervention policies in, e.g., health promotion.

***Practical competences: The public health professional shall be able to:***

- A.2.1. Philosophy of science and ethics*

A.2.1.1. Identify the lines of thinking of philosophical main streams in a concrete piece of text;

*A.2.2. Epidemiology, demography and biostatistics*

A.2.2.1. Estimate basic demographic and epidemiological parameters, such as:

*A.2.3. Qualitative methods*

A.2.3.1. Identify main types of qualitative empirical methods in literature;

*A.2.5. IT handling*

A.2.5.1. Make use of the most common IT functions.

*A.2.6. Literature search and evaluation*

A.2.6.1. Plan a search profile involving the most important data bases;

A.2.6.2. Develop a search profile and conduct a literature search based on it;

A.2.6.3. Systematise the results of an empirical literature search, based on:

A.2.6.3.1. Main characteristics of design;

A.2.6.3.2. Findings/results;

- and on this basis produce a review table;

A.2.6.4. Present, systematise, and apply important quality criteria for empirical studies on identified literature;

A.2.6.5. Define the concept of meta-analysis and present an overview of strengths and weaknesses of meta-analyses;

A.2.6.6. Summarise the findings of empirical studies through meta-analysis.

*A.2.7. Project development, implementation, evaluation and reporting*

A.2.7.1. Develop a public health research project protocol outlining the main sections, which will include:

A.2.7.1.1. Title page;

A.2.7.1.2. Introduction;

A.2.7.1.3. Aims and hypotheses;

A.2.7.1.4. Methods and material /resources;

A.2.7.1.5. Results and discussion, including assessment of implications for public health actions and possible hypotheses for developing such actions;

A.2.7.1.6. References based on an accepted referencing system, such as the Vancouver or Harvard systems;

A.2.7.2. Conduct a public health project according to protocol;

A.2.7.3. Write a scientific report with the main sections based on the project:

A.2.7.3.1. Title page;

A.2.7.3.2. Abstract;

A.2.7.3.3. Introduction;

A.2.7.3.4. Aims and hypotheses;

A.2.7.3.5. Material and methods;

A.2.7.3.6. Results;

A.2.7.3.7. Discussion;

A.2.7.3.8. Conclusion;

A.2.7.3.9. References based on an accepted referencing system, such as the Vancouver or Harvard systems.

### *B.2.1. Population health and social and economic determinants,*

B.2.1.1. Based on information from epidemiological surveillance systems (e.g. national systems; WHO's Health for All (HFA) database; other internet based systems) accessible from, e.g., the internet:

B.2.1.1.1. Produce epidemiological and statistical documentation (analyses, tables, figures, etc.) on the relationships between the socio-economic environment and the health of European populations and population groups;

B.2.1.1.2. Produce forecasts for the development of health status of European populations and population groups, taking into account social and economical conditions;

B.2.1.1.3. Identify, retrieve and analyse major trends of social change with special reference to demography, social structure, and economic and technological development;

B.2.1.1.4. Identify population groups with elevated health risks, and recognise their health needs, e.g. children, elderly, adults both within and outside the labour market, immigrants, people with physical, mental and learning disabilities, and under-privileged groups.

B.2.1.1.5. Write a periodical public health report for a defined population.

B.2.1.1.7. Recognise the need for a new epidemiological surveillance system;

B.2.1.1.8. Identify the potential implications for a public health strategy, of socioeconomic determinants of health.

### *E.2. Health Promotion: Health Education, Health Protection and Disease Prevention*

E.2.2. Communicate effectively public health messages – including risk analysis - to lay, professional, academic and political audiences, by use of

modern media, e.g. written media, audio-visual techniques and internet-based social media tools;

### *F.2. Ethics*

F.2.1. Identify ethical aspects of concrete public health interventions, strategies and policies;

F.2.1.1. Identify, what the ethical issues are, and how to deal concretely with them, when confronted with the design of a Public health investigation and/or proposed intervention, all the more if this arises in emergency circumstances (a flu epidemics);

F.2.2. Ensure the implementation of basic ethical principles in public health strategy making, such as a non-discriminatory approach to target populations and in human resources management;

F.2.2.1. Leading and supporting the ethical management of policy, communities and individuals;

F.2.1.3. Respect and adhere to ethical

principles regarding data protection and confidentiality regarding any information obtained as part of professional activities;

F.2.4. Prepare an application to the ethics committee system within the context of appropriate research governance, as determined in one particular country;

F.2.5. Adhere to general principles for authorship when writing and publishing in the scientific literature context, e.g. respecting intellectual property rights and avoiding plagiarism.

## EPHO-specific contextual/background competences common to intelligence EPHOs (1 and 2)

***Intellectual competences: The public health professional shall know and understand:***

- A.1.4.1. Major definitions of epidemiology as a science;
- A.1.4.2. Definition of demography as a science;
- A.1.4.5. Basic demographic and epidemiological aspects, such as:
  - A.1.4.5.1. Population;
  - A.1.4.5.2. Population pyramid;
  - A.1.4.5.3. Population at risk;
  - A.1.4.5.4. Duration;
  - A.1.4.5.5. Time at risk;
  - A.1.4.5.6. Case vs. non-case;
  - A.1.4.5.7. Rate;
  - A.1.4.5.8. Fertility;
  - A.1.4.5.9. Migration;
  - A.1.4.5.10. Disease;
  - A.1.4.5.11. Incidence (number; rate; proportion);
  - A.1.4.5.12. Prevalence (number; proportion);
  - A.1.4.5.13. Mortality (number; rate; proportion);
  - A.1.4.5.14. Lethality/fatality (number; rate; proportion);
  - A.1.4.5.15. Specific mortality parameters (age, gender, disease, other);
  - A.1.4.5.16. Survival and life expectancy (general and specified by, e.g., age);
  - A.1.4.5.17. Demographic transition;
  - A.1.4.5.18. Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);
  - A.1.4.5.19. Odds ratio;
  - A.1.4.5.20. Population attributable risk;
  - A.1.4.5.21. Preventive fraction;
  - A.1.4.5.22. Etiological fraction;
  - A.1.4.5.23. Longitudinal study;
  - A.1.4.5.24. Cross-sectional design including population health surveys;
  - A.1.4.5.25. Longitudinal design;
  - A.1.4.5.26. Cohort design;
  - A.1.4.5.27. Fixed cohort design;
  - A.1.4.5.28. Dynamic cohort design;
  - A.1.4.5.29. Case-referent design;
  - A.1.4.5.30. Case-control design;
  - A.1.4.5.31. Case-base design;

- A.1.4.5.32. Case cross-over design;
- A.1.4.5.33. Observational design;
- A.1.4.5.34. Quasi-experimental design;
- A.1.4.5.35. Experimental design;
- A.1.4.5.36. Randomised controlled trial (RCT);
- A.1.4.5.37. Before-and-after quasi-experimental design;
- A.1.4.5.38. Contemporary quasi-experimental design;
- A.1.4.5.39. Multicentre studies;
- A.1.4.5.40. Measurement error;
- A.1.4.5.41. Validity;
- A.1.4.5.42. Reliability;
- A.1.4.5.43. Bias (selection bias; information bias; confounding);
- A.1.4.5.44. Inference;
- A.1.4.6. The concepts of test sensitivity, specificity and the predictive value of a positive and a negative test result;
- A.1.4.7. Lead time and lead time bias;
- A.1.4.8. The concepts of health, disease, handicap and death, both as comprehensive entities and in terms of identifiable components, i.e. physical, mental and social dimensions;
- A.1.4.9. The structure, main content and applications of standard authorised health classification systems in common use in Europe, such as:
  - A.1.4.9.1. International Classification of Diseases (ICD);
  - A.1.4.9.2. International Classification of Functioning, Disability and Health (ICF);
  - A.1.4.9.3. International Classification of Health Interventions (ICHI);
  - A.1.4.9.4. Other systems
- A.1.4.10. The principles, main content, validity and applications of standardised data collection instruments for measuring health outcomes, e.g. KAP, QOL, SF36, GHQ, FINBALT
- A.1.4.11. The concept of epidemiological surveillance
- A.1.4.12. Basic principles, methods, types and components of:
  - A.1.4.12.1. Epidemiological surveillance systems.
- A.1.4.13. Major national and European population surveys and surveillance systems and the application of their results;
- A.1.4.14. Major definitions of statistics as a science;
- A.1.4.15. Basic statistical concepts, such as:
  - A.1.4.15.1. Inference;
  - A.1.4.15.2. Parameter;
  - A.1.4.15.3. Probability;
  - A.1.4.15.4. Random sampling;
  - A.1.4.15.5. Probability sampling;
  - A.1.4.15.6. Stratified sampling;
  - A.1.4.15.7. The normal distribution;
  - A.1.4.15.8. The binominal distribution;
  - A.1.4.15.9. The Poisson distribution;
  - A.1.4.15.10. Statistical power;
  - A.1.4.15.11. Point estimate;
  - A.1.4.15.12. Interval estimate;

- A.1.4.15.13. Confidence interval;
- A.1.4.15.14. Association;
- A.1.4.15.15. Confounding;
- A.1.4.15.16. Interaction;
- A.1.4.15.17. Correlation;
- A.1.4.15.18. Significance;
- A.1.4.15.19. Statistical test;
- A.1.4.15.20. Parametric vs. non parametric test;
- A.1.4.15.21. Student's t-test;
- A.1.4.15.22. Chi-square test (X<sup>2</sup>);
- A.1.4.15.23. Non-parametric tests, such as Kruskal-Wallis test and other tests;
- A.1.4.15.24. Predictor;
- A.1.4.15.25. Stratified analysis (Mantel-Haenszel and other stratified analysis methods);
- A.1.4.15.26. Standardisation;
- A.1.4.15.27. Direct standardisation;
- A.1.4.15.28. Indirect standardisation;
- A.1.4.15.29. Survival analysis;
- A.1.4.15.30. Regression;
- A.1.4.15.31. Additive and multiplicative prediction models;
- A.1.4.15.32. Logistic regression;
- A.1.4.15.33. Linear regression;
- A.1.4.15.35. Binomial regression;
- A.1.4.15.36. Poisson regression;
- A.1.4.15.37. Randomisation;
- A.1.4.15.38. Factorial study design;
- A.1.4.15.39. Basic methods of forecasting developments in population health.
  
- A.1.6.1. Major definitions of sociological and anthropological science;
- A.1.6.2. Significant aspects of the history of social science;
- A.1.6.3. Sociological, social psychological and anthropological main theories and concepts, e.g. material levels of living, social group, social network, social system, culture, religion, social status, interest and power, attitude, behaviour;
- A.1.6.4. Sociological, social psychological and anthropologic main empirical methods of documentation, including:
  - A.1.6.4.1. Main designs;
  - A.1.6.4.2. Main data collection methods;
  - A.1.6.4.3. Main analytic methods;
- A.1.6.5. Basic concepts of classification and scaling.
  
- B.1.1.1. The level and trends of main population health indicators in European countries:
  - B.1.1.1.1. Disability indicators;
  - B.1.1.1.2. Mortality indicators:
    - B.1.1.1.2.1. Crude mortality;



B.1.1.1.2.2. Cause-specific mortality, especially cardio-vascular and cancer mortality and mortality caused by mental disease;

B.1.1.1.2.3. Age- and gender-specific mortality (e.g., infant mortality; before 5 years of age; after 60 years);

B.1.1.2. Disease indicators, especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases:

B.1.1.2.1. Indicators of occurrence and time (incidence, prevalence, duration);

B.1.1.2.2. Disease-specific occurrence indicators;

B.1.1.3. Health expectancy indicators:

B.1.1.3.1. Life expectancy (mean; median) at birth and at later ages;

B.1.1.3.2. Population survival curves;

B.1.1.3.3. Disease-free life years;

B.1.1.3.4. Disability-adjusted life years (DALYs).

B.1.2.1. Basic concepts of the social sciences, i.e. the following sociological concepts:

B.1.2.1.1. Family structure

B.1.2.1.2. Housing;

B.1.2.1.3. Education;

B.1.2.1.4. Occupation;

B.1.2.1.5. Employment;

B.1.2.1.6. Working conditions;

B.1.2.1.7. Economy;

B.1.2.1.8. Individual and society;

B.1.2.1.9. Social environment;

B.1.2.1.10. Social structure, social processes;

B.1.2.1.11. Social group;

B.1.2.1.12. Social network;

B.1.2.1.13. Social cohesion/social support;

B.1.2.1.14. Social capital;

B.1.2.1.15. Socio-economic status;

B.1.2.1.16. Social mobility;

B.1.2.1.17. Under-privileged groups;

B.1.2.1.18. Socio-economic inequality;

B.1.2.2. The level and trends of main population socio-economic indicators in European countries, such as:

B.1.2.2.1. Family structure;

B.1.2.2.2. Culture and ethnicity;

B.1.2.2.3. Housing;

B.1.2.2.4. Education;

B.1.2.2.5. Occupation;

B.1.2.2.6. Employment;

B.1.2.2.7. Working conditions;

B.1.2.2.8. Economy/income/poverty;

B.1.2.2.9. Socio-economic status;

B.1.2.2.10. Socio-economic inequality;

- B.1.2.2.11. Under-privileged groups;
- B.1.2.3. The level and trends in indicators of health behaviour development, such as:
  - B.1.2.3.1. Exercise activity;
  - B.1.2.3.2. Dietary behaviour;
  - B.1.2.3.3. Alcohol use and abuse;
  - B.1.2.3.4. Drug abuse;
  - B.1.2.3.5. Tobacco use;
  - B.1.2.3.6. Sexual behaviour;
  - B.1.2.3.7. Injury-prone behaviour;
  - In European populations and population subgroups, e.g.:
    - B.1.2.3.8. Adolescents;
    - B.1.2.3.9. The elderly;
    - B.1.2.3.10. Males and females;
    - B.1.2.3.11. Ethnic groups;
    - B.1.2.3.12. The socially disadvantaged;
    - B.1.2.3.13. Other socially, culturally and/or religiously distinct groups;
- B.1.3.1. The burden of disease, injury and fatality associated with social and economic determinants in national and European populations;
- B.1.3.2. Models concerning social determinants of health, especially:
  - B.1.3.2.1. Material pathways, e.g. poverty, income inequality, neighbourhood deprivation;

- B.1.3.2.2. Psycho-social pathways (social stressors and protective factors, e.g. social work, social cohesion, social anomie, social support);
- B.1.3.2.3. Behaviour pathways, e.g. healthy lifestyle, sociological and psychological models of behaviour change;
- B.1.3.3. The level and trends of associations in Europe between population health indicators – especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases - and various background indicators, such as:
  - B.1.3.3.1. Socio-economic, including social inequality;
  - B.1.3.3.2. Social environment (cultural, material, psychosocial, behavioural);
  - B.1.3.3.3. General policy and health policy;
  - B.1.3.3.4. Social capital;
  - B.1.3.3.5. Culture;
  - B.1.3.3.6. Community dynamics;
  - B.1.3.3.7. Economy;
- B.1.3.4. Social and economic health implications of globalisation;
- B.1.3.5. Major European research programmes focussing on population health and its social and economic determinants, e.g. North Karelia Project, and research contributing to the Marmot reviews, etc.

***Practical competences: The public health professional shall be able to:***

*A.2.2. Epidemiology, demography and biostatistics*

- A.2.2.1. Estimate basic demographic and epidemiological parameters, such as:
  - A.2.2.1.1. Population projection;

- A.2.2.1.2. Time at risk;
- A.2.2.1.3. Probability;
- A.2.2.1.4. Incidence (number; rate; proportion);
- A.2.2.1.5. Prevalence (number; proportion);
- A.2.2.1.6. Mortality (number; rate; proportion);
- A.2.2.1.7. Lethality/fatality (number; rate; proportion);
- A.2.2.1.8. Specific mortality parameter (age, gender, disease, other);
- A.2.2.1.9. Survival and life expectancy (general and specified by, e.g., age);
- A.2.2.1.10. Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);
- A.2.2.1.11. Odds ratio;
- A.2.2.1.12. Population attributable risk;
- A.2.2.1.13. Preventive fraction;
- A.2.2.1.15. Etiological fraction;
- A.2.2.1.16. Validity;
- A.2.2.1.17. Reliability;
- A.2.2.1.18. Bias (selection bias; information bias; analytical bias);
- A.2.2.2. Estimate simple statistical parameters, such as:
  - A.2.2.2.1. Point estimate;
  - A.2.2.2.2. Interval estimate/confidence interval;
  - A.2.2.2.3. Statistical power;
  - A.2.2.2.4. Strength of association;
  - A.2.2.2.5. Interaction parameters;
- A.2.2.3. Apply basic epidemiological concepts in a concrete but simple empirical setting, such as:
  - A.2.2.3.1. Cross-sectional design;
  - A.2.2.3.2. Longitudinal design;
  - A.2.2.3.3. Cohort design;
  - A.2.2.3.4. Fixed cohort design;
  - A.2.2.3.5. Dynamic cohort design;
  - A.2.2.3.6. Case-referent design;
  - A.2.2.3.7. Case-control design;
  - A.2.2.3.8. Case-base design;
  - A.2.2.3.9. Quasi-experimental design;
  - A.2.2.3.10. Randomised controlled trial (RCT);
  - A.2.2.3.11. Before-and-after quasi-experimental design;
  - A.2.2.3.12. Contemporary quasi-experimental design;
  - A.2.2.3.13. Correction for confounding;
- A.2.2.4. Apply basic statistical concepts in a concrete but simple empirical setting, such as:
  - A.2.2.4.1. Assessment of sample size requirements;
  - A.2.2.4.2. Random sampling;
  - A.2.2.4.3. Probability sampling;
  - A.2.2.4.4. Stratified sampling;
  - A.2.2.4.5. Student's t-test;
  - A.2.2.4.6. Chi-square test (X<sup>2</sup>);

- A.2.2.4.7. Non-parametric tests, such as Kruskal-Wallis test and other tests;
- A.2.2.4.8. Stratified analysis (Mantel-Haenszel and other methods for stratified analysis);
- A.2.2.4.9. Confounder correction in design;
- A.2.2.4.10. Confounder correction in analysis;
- A.2.2.4.11. Direct standardisation;
- A.2.2.4.12. Indirect standardisation;
- A.2.2.4.13. Logistic regression in simple form;
- A.2.2.4.14. Linear regression in simple form;
- A.2.2.4.15. Binomial regression in simple form;
- A.2.2.4.16. Poisson regression in simple form;
- A.2.2.4.17. Randomisation;
- A.2.2.5.18. Estimation of statistical power;
- A.2.2.5. Design and implement a protocol applying:
  - A.2.2.5.1. An ad hoc questionnaire based on classification theory;
  - A.2.2.5.2. Extraction of data from antecedent documents and databases or surveillance systems;
- A.2.2.6. Design and carry out a health needs assessment and draw appropriate conclusions;
- A.2.2.7. Design and implement a monitoring system for health service interventions and structures, including for adverse events and serious untoward incidents;
- A.2.2.8. Develop and apply a list designed to assess the quality of scientific publications in public health; the list should include aspects of:

- A.2.2.8.1. Aims and hypotheses/study questions;
- A.2.2.8.2. Design;
- A.2.2.8.3. Participant recruitment;
- A.2.2.8.4. Data collection;
- A.2.2.8.5. Analysis;
- and accordingly:
- A.2.2.8.6. Selection validity and bias;
- A.2.2.8.7. Information validity and bias;
- A.2.2.8.8. Analytical validity and bias;
- A.2.2.9. Assess the level of evidence produced by scientific publications in public health;
- A.2.2.10. Use a statistics software programme to perform the above statistical analyses.

*B.2.1. Population health and social and economic determinants,*

- B.2.1.1. Based on information from epidemiological surveillance systems (e.g. national systems; WHO's Health for All (HFA) database; other internet based systems) accessible from, e.g., the internet:
  - B.2.1.1.1. Produce epidemiological and statistical documentation (analyses, tables, figures, etc.) on the relationships between the socio-economic environment and the health of European populations and population groups;
  - B.2.1.1.2. Produce forecasts for the development of health status of European populations and population groups, taking into account social and economical conditions;

B.2.1.1.3. Identify, retrieve and analyse major trends of social change with special reference to demography, social structure, and economic and technological development;

B.2.1.1.4. Identify population groups with elevated health risks, and recognise their health needs, e.g. children, elderly, adults both within and outside the labour market, immigrants, people with physical, mental and learning disabilities, and under-privileged groups.

C.2.4. Based on data from epidemiological surveillance systems (e.g. national systems; WHO's Health for All (HFA) database; other internet based systems) accessible from, e.g., the internet:

C.2.4.1. Produce epidemiological and statistical documentation (analyses, tables, figures, etc.) on the relationship between physical, chemical and biological environmental exposures and the health of European populations and population groups;

C.2.4.2. Produce forecasts for the development of health status of European populations and population groups, taking into account physical radiological, environmental exposures, and also the effects of climate change;

C.2.4.3. Identify population groups with elevated health risks and recognise their health needs, e.g. children, groups living in areas of particular environmental stress (such as in areas suffering from industrial pollution), people occupied in risky occupations and their families, people living in areas at risk of natural disasters;

C.2.5. Produce a plan for a field investigation concerning relationships between the material environment and health;

C.2.6. Produce an empirical project based on hypotheses on the relationship between the material environment and health.

## EPHO-specific contextual/background competences common to service delivery EPHOs (3, 4 and 5)

***Intellectual competences: The public health professional shall know and understand:***

- A.1.4.5. Basic demographic and epidemiological aspects, such as:
- A.1.4.5.1. Population;
  - A.1.4.5.2. Population pyramid;
  - A.1.4.5.3. Population at risk;
  - A.1.4.5.4. Duration;
  - A.1.4.5.5. Time at risk;
  - A.1.4.5.6. Case vs. non-case;
  - A.1.4.5.7. Rate;
  - A.1.4.5.8. Fertility;
  - A.1.4.5.9. Migration;
  - A.1.4.5.10. Disease;
  - A.1.4.5.11. Incidence (number; rate; proportion);
  - A.1.4.5.12. Prevalence (number; proportion);
  - A.1.4.5.13. Mortality (number; rate; proportion);
  - A.1.4.5.14. Lethality/fatality (number; rate; proportion);
  - A.1.4.5.15. Specific mortality parameters (age, gender, disease, other);
  - A.1.4.5.16. Survival and life expectancy (general and specified by, e.g., age);
  - A.1.4.5.17. Demographic transition;
  - A.1.4.5.18. Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);
  - A.1.4.5.19. Odds ratio;
  - A.1.4.5.20. Population attributable risk;
  - A.1.4.5.21. Preventive fraction;
  - A.1.4.5.22. Etiological fraction;
  - A.1.4.5.23. Longitudinal study;
  - A.1.4.5.24. Cross-sectional design including population health surveys;
  - A.1.4.5.25. Longitudinal design;
  - A.1.4.5.26. Cohort design;
  - A.1.4.5.27. Fixed cohort design;
  - A.1.4.5.28. Dynamic cohort design;
  - A.1.4.5.29. Case-referent design;
  - A.1.4.5.30. Case-control design;
  - A.1.4.5.31. Case-base design;
  - A.1.4.5.32. Case cross-over design;
  - A.1.4.5.33. Observational design;

- A.1.4.5.34. Quasi-experimental design;
- A.1.4.5.35. Experimental design;
- A.1.4.5.36. Randomised controlled trial (RCT);
- A.1.4.5.37. Before-and-after quasi-experimental design;
- A.1.4.5.38. Contemporary quasi-experimental design;
- A.1.4.5.39. Multicentre studies;
- A.1.4.5.40. Measurement error;
- A.1.4.5.41. Validity;
- A.1.4.5.42. Reliability;
- A.1.4.5.43. Bias (selection bias; information bias; confounding);
- A.1.4.5.44. Inference;
- A.1.4.8. The concepts of health, disease, handicap and death, both as comprehensive entities and in terms of identifiable components, i.e. physical, mental and social dimensions;
- A.1.4.9. The structure, main content and applications of standard authorised health classification systems in common use in Europe, such as:
  - A.1.4.9.1. International Classification of Diseases (ICD);
  - A.1.4.9.2. International Classification of Functioning, Disability and Health (ICF);
  - A.1.4.9.3. International Classification of Health Interventions (ICHI);
  - A.1.4.9.4. Other systems
- A.1.4.13. Major national and European population surveys and surveillance systems and the application of their results;
- A.1.4.15. Major definitions of statistics as a science;
- A.1.6.1. Major definitions of sociological and anthropological science;
- A.1.6.2. Significant aspects of the history of social science;
- A.1.6.3. Sociological, social psychological and anthropological main theories and concepts, e.g. material levels of living, social group, social network, social system, culture, religion, social status, interest and power, attitude, behaviour;
- A.1.6.4. Sociological, social psychological and anthropologic main empirical methods of documentation, including:
  - A.1.6.4.1. Main designs;
  - A.1.6.4.2. Main data collection methods;
  - A.1.6.4.3. Main analytic methods;
- A.1.6.5. Basic concepts of classification and scaling.
- B.1.2.1. Basic concepts of the social sciences, i.e. the following sociological concepts:
  - B.1.2.1.1. Family structure
  - B.1.2.1.2. Housing;
  - B.1.2.1.3. Education;
  - B.1.2.1.4. Occupation;
  - B.1.2.1.5. Employment;
  - B.1.2.1.6. Working conditions;
  - B.1.2.1.7. Economy;
  - B.1.2.1.8. Individual and society;

- B.1.2.1.9. Social environment;
- B.1.2.1.10. Social structure, social processes;
- B.1.2.1.11. Social group;
- B.1.2.1.12. Social network;
- B.1.2.1.13. Social cohesion/social support;
- B.1.2.1.14. Social capital;
- B.1.2.1.15. Socio-economic status;
- B.1.2.1.16. Social mobility;
- B.1.2.1.17. Under-privileged groups;
- B.1.2.1.18. Socio-economic inequality;
- B.1.2.2. The level and trends of main population socio-economic indicators in European countries, such as:
  - B.1.2.2.1. Family structure;
  - B.1.2.2.2. Culture and ethnicity;
  - B.1.2.2.3. Housing;
  - B.1.2.2.4. Education;
  - B.1.2.2.5. Occupation;
  - B.1.2.2.6. Employment;
  - B.1.2.2.7. Working conditions;
  - B.1.2.2.8. Economy/income/poverty;
  - B.1.2.2.9. Socio-economic status;
  - B.1.2.2.10. Socio-economic inequality;
  - B.1.2.2.11. Under-privileged groups;
- B.1.2.3. The level and trends in indicators of health behaviour development, such as:
  - B.1.2.3.1. Exercise activity;
  - B.1.2.3.2. Dietary behaviour;
  - B.1.2.3.3. Alcohol use and abuse;
  - B.1.2.3.4. Drug abuse;
  - B.1.2.3.5. Tobacco use;
  - B.1.2.3.6. Sexual behaviour;
  - B.1.2.3.7. Injury-prone behaviour;
    - In European populations and population subgroups, e.g.:
      - B.1.2.3.8. Adolescents;
      - B.1.2.3.9. The elderly;
      - B.1.2.3.10. Males and females;
      - B.1.2.3.11. Ethnic groups;
      - B.1.2.3.12. The socially disadvantaged;
      - B.1.2.3.13. Other socially, culturally and/or religiously distinct groups;
  - B.1.3.1. The burden of disease, injury and fatality associated with social and economic determinants in national and European populations;
  - B.1.3.2. Models concerning social determinants of health, especially:
    - B.1.3.2.1. Material pathways, e.g. poverty, income inequality, neighbourhood deprivation;
    - B.1.3.2.2. Psycho-social pathways (social stressors and protective factors, e.g. social work, social cohesion, social anomie, social support);



B.1.3.2.3. Behaviour pathways, e.g. healthy lifestyle, sociological and psychological models of behaviour change;

B.1.3.3. The level and trends of associations in Europe between population health indicators – especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases - and various background indicators, such as:

B.1.3.3.1. Socio-economic, including social inequality;

B.1.3.3.2. Social environment (cultural, material, psychosocial, behavioural);

B.1.3.3.3. General policy and health policy;

B.1.3.3.4. Social capital;

B.1.3.3.5. Culture;

B.1.3.3.6. Community dynamics;

B.1.3.3.7. Economy;

B.1.3.4. Social and economic health implications of globalisation;

B.1.3.5. Major European research programmes focussing on population health and its social and economic determinants, e.g. North Karelia Project, and research contributing to the Marmot reviews, etc.

E.1.1. Significant aspects of the history of health promotion theory and practice, including main health promotion charters, e.g. Ottawa;

E.1.2. The definitions of:

E.1.2.1. Health education;

E.1.2.2. Health protection, including preparedness against acute and emerging public health threats;

E.1.2.3. Disease prevention;

E.1.3. The definitions of types of disease prevention:

E.1.3.1. Primary prevention;

E.1.3.2. Secondary prevention;

E.1.3.3. Tertiary prevention;

E.1.4. Central concepts applied in health promotion, e.g.:

E.1.4.1. Behavioural change;

E.1.4.2. Motivational interviewing;

E.1.4.3. Empowerment;

E.1.4.4. Holism;

E.1.4.5. Community development;

E.1.4.6. Participation;

E.1.4.7. Capacity building;

E.1.4.8. Social marketing;

E.1.4.9. Health advocacy;

E.1.5. Major social, behavioural and biomedical theories and models underlying:

E.1.5.1. Health education, including behaviour change, e.g.:

E.1.5.1.1. Stages of change theory;

E.1.5.1.2. Social-psychological theory;

E.1.5.1.3. Diffusion theory;

- E.1.5.2. Health protection systems, e.g.:
  - E.1.5.2.1. Communicable disease control;
  - E.1.5.2.2. Environmental health management;
  - E.1.5.2.3. Accident prevention systems;
- E.1.5.3. Disease prevention, including:
  - E.1.5.3.1. Primary prevention;
  - E.1.5.3.2. Secondary prevention;
  - E.1.5.4.3. Tertiary prevention;
- E.1.6. The basic theories underlying communication skills – the basic principles of:
  - E.1.6.1. Learning processes;
  - E.1.6.2. Strategic communication;
  - E.1.6.3. Marketing;
- E.1.7. Basic principles and methods applied in the development, implementation, management and effectiveness evaluation of health promotion programmes in populations and population subgroups (e.g. adolescents, the elderly, males and females, ethnic groups, the socially disadvantaged, other socially, culturally and/or religiously distinct groups, etc.):
  - E.1.7.1. Theoretical models of behaviour change as applied to the general population and to high risk and hard-to-reach groups;
  - E.1.7.2. Health education, including information on methods for behavioural modification relating to:
    - E.1.7.2.1. Environmental health management;
    - E.1.7.2.2. Common risk factors;
    - E.1.7.2.3. Common factors improving health;
    - E.1.7.2.4. Relevant use of health services;
  - E.1.7.3. Health protection, including e.g.:
    - E.1.7.3.1. Communicable disease control;
    - E.1.7.3.2. Environmental health management;
    - E.1.7.3.3. Accident prevention systems;
    - E.1.7.3.4. Protection from occupational hazards;
  - E.1.7.4. Primary prevention programmes, including:
    - E.1.7.4.1. Prevention of infectious disease, e.g. immunisation programmes;
    - E.1.7.4.2. Prevention of non-communicable diseases and of intentional and unintentional injuries;
  - E.1.7.5. Secondary prevention programmes (screening), including the criteria to be satisfied before a screening programme is set up;
  - E.1.7.6. Tertiary prevention;
- E.1.8. The general principles of emergency planning and managing a major incident;
- E.1.9. The relative importance of individual and societal health promotion policies;

E.1.10. The effectiveness and cost-effectiveness of major health promotion programmes as documented by scientific methods (evidence of effect and costs);

E.1.11. The existence and developmental trends of major health promotion programmes in at least one European country, targeting:

E.1.11.1. Unselected populations as well as:

E.1.11.2. Specific population groups (e.g. children, adults, elderly, socially disadvantaged, ethnic groups, etc.) and:

E.1.11.3. Special settings (e.g. the workplace, the home, the hospital, institutions, etc.);

E.1.12. Major national and international organisations and their cultures and resources to bring about health improvement activity;

E.1.13. Major health promotion policies and strategies in at least one European country;

E.1.14. National and European legal frameworks in disease prevention and health protection, including IHR 2005 and EU legislation.

***Practical competences: The public health professional shall be able to:***

A.2.2.1. Estimate basic demographic and epidemiological parameters, such as:

A.2.2.1.1. Population projection;

A.2.2.1.2. Time at risk;

A.2.2.1.3. Probability;

A.2.2.1.4. Incidence (number; rate; proportion);

A.2.2.1.5. Prevalence (number; proportion);

A.2.2.1.6. Mortality (number; rate; proportion);

A.2.2.1.7. Lethality/fatality (number; rate; proportion);

A.2.2.1.8. Specific mortality parameter (age, gender, disease, other);

A.2.2.1.9. Survival and life expectancy (general and specified by, e.g., age);

A.2.2.1.10. Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);

A.2.2.1.11. Odds ratio;

A.2.2.1.12. Population attributable risk;

A.2.2.1.13. Preventive fraction;

A.2.2.1.15. Etiological fraction;

A.2.2.1.16. Validity;

A.2.2.1.17. Reliability;

A.2.2.1.18. Bias (selection bias; information bias; analytical bias);

A.2.2.2. Estimate simple statistical parameters, such as:

A.2.2.2.1. Point estimate;

A.2.2.2.2. Interval estimate/confidence interval;

A.2.2.2.3. Statistical power;

A.2.2.2.4. Strength of association;

- A.2.2.2.5. Interaction parameters;
- A.2.2.3. Apply basic epidemiological concepts in a concrete but simple empirical setting, such as:
  - A.2.2.3.1. Cross-sectional design;
  - A.2.2.3.2. Longitudinal design;
  - A.2.2.3.3. Cohort design;
  - A.2.2.3.4. Fixed cohort design;
  - A.2.2.3.5. Dynamic cohort design;
  - A.2.2.3.6. Case-referent design;
  - A.2.2.3.7. Case-control design;
  - A.2.2.3.8. Case-base design;
  - A.2.2.3.9. Quasi-experimental design;
  - A.2.2.3.10. Randomised controlled trial (RCT);
  - A.2.2.3.11. Before-and-after quasi-experimental design;
  - A.2.2.3.12. Contemporary quasi-experimental design;
  - A.2.2.3.13. Correction for confounding;
- A.2.2.4. Apply basic statistical concepts in a concrete but simple empirical setting, such as:
  - A.2.2.4.1. Assessment of sample size requirements;
  - A.2.2.4.2. Random sampling;
  - A.2.2.4.3. Probability sampling;
  - A.2.2.4.4. Stratified sampling;
  - A.2.2.4.5. Student's t-test;
  - A.2.2.4.6. Chi-square test (X<sup>2</sup>);
  - A.2.2.4.7. Non-parametric tests, such as Kruskal-Wallis test and other tests;
  - A.2.2.4.8. Stratified analysis (Mantel-Haenszel and other methods for stratified analysis);
  - A.2.2.4.9. Confounder correction in design;
  - A.2.2.4.10. Confounder correction in analysis;
  - A.2.2.4.11. Direct standardisation;
  - A.2.2.4.12. Indirect standardisation;
  - A.2.2.4.13. Logistic regression in simple form;
  - A.2.2.4.14. Linear regression in simple form;
  - A.2.2.4.15. Binomial regression in simple form;
  - A.2.2.4.16. Poisson regression in simple form;
  - A.2.2.4.17. Randomisation;
  - A.2.2.4.18. Estimation of statistical power;
- A.2.2.5. Design and implement a protocol applying:
  - A.2.2.5.1. An ad hoc questionnaire based on classification theory;
  - A.2.2.5.2. Extraction of data from antecedent documents and databases or surveillance systems;
- A.2.2.6. Design and carry out a health needs assessment and draw appropriate conclusions;
- A.2.2.7. Design and implement a monitoring system for health service interventions and structures, including for adverse events and serious untoward incidents;

A.2.2.8. Develop and apply a list designed to assess the quality of scientific publications in public health; the list should include aspects of:

A.2.2.8.1. Aims and hypotheses/study questions;

A.2.2.8.2. Design;

A.2.2.8.3. Participant recruitment;

A.2.2.8.4. Data collection;

A.2.2.8.5. Analysis;

- and accordingly:

A.2.2.8.6. Selection validity and bias;

A.2.2.8.7. Information validity and bias;

A.2.2.8.8. Analytical validity and bias;

A.2.2.9. Assess the level of evidence produced by scientific publications in public health;

A.2.2.10. Use a statistics software programme to perform the above statistical analyses.

B.2.1.1. Based on information from epidemiological surveillance systems (e.g. national systems; WHO's Health for All (HFA) database; other internet based systems) accessible from, e.g., the internet:

B.2.1.1.1. Produce epidemiological and statistical documentation (analyses, tables, figures, etc.) on the relationships between the socio-economic environment and the health of European populations and population groups;

B.2.1.1.2. Produce forecasts for the development of health status of European populations and population groups, taking into account social and economical conditions;

B.2.1.1.3. Identify, retrieve and analyse major trends of social change with special reference to demography, social structure, and economic and technological development;

B.2.1.1.4. Identify population groups with elevated health risks, and recognise their health needs, e.g. children, elderly, adults both within and outside the labour market, immigrants, people with physical, mental and learning disabilities, and under-privileged groups.

E.2.1. Identify population health challenges relevant for health promotion at various levels of social and political organisation, from global to local;

E.2.2. Communicate effectively public health messages – including risk analysis - to lay, professional, academic and political audiences, by use of modern media, e.g. written media, audio-visual techniques and internet-based social media tools;

E.2.3. Apply community development theory to strengthen community participation;

E.2.4. Play an active role in engaging the public in meeting its own health challenges, e.g. by effective asset management;

E.2.5. Lead and evaluate the investigation of an infectious disease outbreak/chemical hazard incident and its management, including:

E.2.5.1. Conduct risk assessment;

E.2.5.2. Draw lessons learnt from outbreak investigations and simulation exercises;

E.2.5.3. Design, monitor and evaluate a preparedness plan;

E.2.5.4. Write a full report;

E.2.6. Design, implement, manage and evaluate a health promotion strategy and a community development programme for a defined population and a defined community, using standard public health tools and taking into account issues of power and politics, providing a business case for the chosen intervention option;

E.2.7. Write a policy proposal, including:

E.2.7.1. Title page;

E.2.7.2. The concrete health challenge;

E.2.7.3. Scientific background and consequential policy options;

E.2.7.4. Policy recommendations;

E.2.7.5. Communication plan;

E.2.7.6. References.

## EPHO-specific contextual/background competences common for enabler EPHOs 6-9

### ***Intellectual competences: The public health professional shall know and understand:***

D.1.1. Significant aspects of the modern history of the disciplines of health policy, health economics, organisational theory and management – and thus the main developments relating to national, EU, European and international:

D.1.1.2. Health policy;

D.1.1.3. Social policy;

D.1.1.4. Health services;

D.1.1.5. Social services;

D.1.1.6. Legislation affecting health and health services in at least one European country;

D.1.1.7. NGOs operating in the public health arena;

D.1.2. The basic philosophies and concepts of:

D.1.2.1. Social scientific theories and methods utilised within public health: organisational theory, systems thinking, health economics (micro and macro economics) and leadership and management theory, and their application in public health strategy-making and in health systems development and management;

D.1.3. Important concepts, including:

D.1.3.1. Strategy targets/objectives;

D.1.3.3. Gross National Product/Gross Domestic Product;

D.1.3.4. Inputs, processes and outcomes of health services;

D.1.3.13. Quality assurance and quality development;

D.1.3.14. Equity;

D.1.3.15. Priority setting in health systems;

D.1.3.16. Acceptance and acceptability;

D.1.3.17. Need and demand;

D.1.3.18. Operational management and coordination of activities (logistics);

D.1.3.19. Major leadership theories;

D.1.3.20. Collaborative leadership;

D.1.3.21. Leadership and emotional intelligence;

D.1.3.22. Leading and management of change;

D.1.3.23. The learning organisation and organisational development;

D.1.3.24. Organisational governance;

D.1.3.25. Inter-sectorial collaboration;

D.1.3.26. Programme implementation;

D.1.3.27. SWOT analysis (Strengths-Weaknesses-Opportunities-Threats);

D.1.3.28. Development modelling;

D.1.13. The role of national and international commerce in supporting or hindering the development of public health interventions to improve population health, and how to balance the interests of organisational, political and multi-agency agendas, for example:

D.1.13.1. The tobacco industry;

D.1.13.2. The alcohol industry;

D.1.13.3. The farming and food industries;

D.1.13.4. The pharmaceutical industry;

D.1.13.5. The military industry;

D.1.13.6. Insurance companies.

D.1.5. Main principles for the organisation of health systems;

D.1.6. Within the context of the health services and social services in at least one European country, the main:

D.1.6.1. Components, structure and organisation;

D.1.6.2. Economics;

D.1.6.3. Functioning;

D.1.6.4. Legal aspects;

D.1.6.5. Regulation;

D.1.6.6. Management;

D.1.6.7. Human resources;

D.1.6.8. Decision processes;

D.1.6.9. Production/outputs;

D.1.7. Main principles and methods of development, planning, implementation and evaluation of public health policies, strategies, programmes, and institutions – for evaluation including:

D.1.7.1. Effect evaluation;

D.1.7.2. Process evaluation;

D.1.7.3. Health economic evaluation;

D.1.7.4. Organisational evaluation;

D.1.7.5. Health technology assessment;

D.1.7.9. How global and national communicable disease policy is developed and implemented, for example, ebola, pandemic influenza control;

D.1.8. Main principles underlying health impact assessment;

D.1.10. Partnership building – how to communicate the vision and strategic direction for policies, strategies and interventions, and how strategic alliances and partnerships can be built and sustained;



D.1.11. The role of national and international organisations in the development of public health, such as:

D.1.11.1. WHO;

D.1.11.2. EU;

D.1.11.3. NGOs;

D.1.12. National, EU, European, international and global public health strategies, e.g.:

D.1.12.1. WHO's strategies, e.g. HFA2000, Health21, Health2020, Ottawa Charter and their successors;

D.1.12.2. EU's strategy, e.g. Together for Health - A Strategic Approach for the EU 2008-13, the Europe 2020 Strategy, and their successors;

D.1.12.3. The public health strategy of at least one European country;

D.1.13. The role of national and international commerce in supporting or hindering the development of public health interventions to improve population health, and how to balance the interests of organisational, political and multi-agency agendas, for example:

D.1.13.1. The tobacco industry;

D.1.13.2. The alcohol industry;

D.1.13.3. The farming and food industries;

D.1.13.4. The pharmaceutical industry;

D.1.13.5. The military industry;

D.1.13.6. Insurance companies.

***Practical competences: The public health professional shall be able to:***

D.2.1. Develop and implement a public health policy/strategy/intervention based on standard public health methods and guidelines, including e.g.:

D.2.1.1. Vision and mission;

D.2.1.2. The identification of systematic scientific evidence to support the public health policy/strategy/intervention;

D.2.1.2. Observable and attainable goals;

D.2.1.3. The identification of stakeholders and establishment of potential partnerships for potential inter-sectorial joint working;

D.2.1.4. Plans for longer term sustainability of the strategies;

D.2.1.5. Analysis of the process and outcomes of policy implementation;

D.2.1.6. Communicate effectively and motivate people to engage in change in the organisation and support learning and development of staff;

D.2.2. Perform an organisational, managerial and financial analysis concerning:

D.2.2.1. Organisational entities within the health and social services;

D.2.2.2. Public health strategies and policies;

D.2.4. Perform a health impact assessment of a given proposed development, e.g. planning a new airport or a new park in a city;

D.2.5. Model and project the impact of the introduction of new services, technologies, health promotion interventions, and treatments;

D.2.6. Plan, develop and manage activities in the health system by application of systematic guidelines;

D.2.7. Perform a SWOT analysis of a programme, an institution or a procedure;

D.2.9. Perform programme planning, implementation and evaluation, translating policy into public health practice, e.g. by applying the principles of Intervention Mapping;

D.2.10. Identify relevant documentation needs and sources for the development of a public health strategy to meet a population health challenge;

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