

## Basic Terms Booklet

# What is Inequality?

Basic Health Inequality Concepts  
for Understanding the COVID-19 Pandemic



**OCTOBER 2020**

The Association of Schools of Public Health in the European Region  
(ASPHER)

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ASPHER launched the 'This is Public Health-Europe' campaign challenge in 2019 to communicate the message of the importance of public health. The overall objective is to enhance the visibility of public health and opportunities for careers in public health careers for the benefit of our populations. This effort should also increase the level of interest among potential students to pursue public health education/training to reinforce the current public health workforce. For more information: <https://www.aspher.org/this-is-public-health-tiph.html>

*Version 1. 08/10/2020.*

*This first version may be updated based on feedback received by ASPHER over coming months.*

## FOREWORD

*There are many different definitions of terms and concepts used in looking at health inequalities and vulnerabilities during the pandemic of COVID-19. There is a great interest in who is more severely affected by COVID-19, with its differential impacts. The emerging evidence points to those population groups already vulnerable, and with pre-existing disadvantages and persistent health inequalities. There are some additional vulnerable population groups with newly realised vulnerabilities during the pandemic, such as particular occupations. People with long term clinical conditions are already vulnerable to this virus directly, and indirectly from disruption of their normal health and social care and from increased socio-economic disadvantages. There are also accruing disadvantages from impacts of social distancing, lockdown and resulting economic decline. These impacts are deep and wide both for physical disabilities or long-term conditions and for mental health in already vulnerable populations.*

*It is necessary for us all to better understand what we mean by these terms used in addressing health inequalities and vulnerabilities, especially during a pandemic. Colleagues have contributed from the Association of Schools of Public Health in the European Region (ASPHER) - the oldest Association of Public Health University Schools - it represents many of the great teaching Centres for Public Health in Europe.*

*This was the second proposed in the e-booklet series of basic terms/concepts created on behalf of the ASPHER COVID-19 Task Group. We hope that this quickly constructed compendium will help our students, journalists, clinicians, and the wider public health workforce. The starting list of 21 basic terms/concepts shown here is not exhaustive and could be expanded. We have followed as far as possible the ASPHER e-booklet style of a general definition or description of the concept, followed by a COVID-19 specific context and commentary. COVID-19 specific graphics were not easy to find so we have tried to modify presentation to aid concept visualisation wherever possible. We have identified some useful source references/weblinks but appreciate we cannot be comprehensive in this booklet format and would wish to acknowledge the wider global literature and sources that are in existence or are emerging during the pandemic.*

*We also know that the pandemic has created much anxiety in our communities which allows for misinformation, whether intentional or unintentional, to abound. It is our hope that this science-based and science informed document will help to address misinformation or misunderstandings about the differential impact of the pandemic between and within our communities.*

*However, we hope this offers a specific contribution during the pandemic on how public health professionals look at the nature of health inequality, its components, its causes and enable better insights into what needs to be tackled.*

*We hope it can help affected communities and members of the public to develop their knowledge and expand the power of citizen science. We hope to learn from these all citizens of the world and play our part in controlling and preventing the further spread of this pandemic.*

*I commend this compilation to those interested as a contribution particularly from our Young Professional ASPHER volunteers who are the public health workforce of tomorrow. We hope it will promote wider interest and understanding and assist to tackle health inequalities during and after the pandemic of COVID-19.*

***Prof John Middleton.***  
***President ASPHER July 2020***

## INTRODUCTION

Many of the basic terms or concepts used for understanding health inequalities are linked. They often overlap and are interdependent. Therefore, we use them together to understand the complex and difficult to analysis patterns and trends to gain deeper insight. Understanding these helps us to take action to reduce health inequalities. It is particularly vital to do this during COVID-19 pandemic as it exacerbates or compounds pre-existing inequalities. ASPHER has published its first statement on health inequalities & vulnerable populations in June 2020.

### **COVID-19 – How and why is the pandemic exacerbating and amplifying health inequalities and vulnerabilities in Europe?**

<https://www.aspher.org/download/428/aspher-covid-19-task-force-first-statement-on-health-inequalities-and-vulnerable-populations.pdf>

**(Extract) – ‘A call for concerted action:** The future picture in Europe could be less grim where public health approaches are adopted to underpin new policies and responses to the Pandemic. There is a need to address the expected multitude of complex and long-term direct and indirect consequences of the COVID-19 pandemic. This will require sustained research and enquiry and major societal engagement with these challenges. It will also require full recognition of each inequality and vulnerability, and by being prepared for long-term impacts and inclusive social changes. Such variations and inequalities have been described as due to differential exposure, differential vulnerability, and differential consequences. All three of these mechanisms should be investigated fully’.

This e-booklet of basic terms and concepts is intended to compliment and reinforce those first Statement’s findings and other ASPHER commentaries on the pandemic. It is also part of a series of pandemic e-booklets setting out ASPHER’s position, as the association for Schools of Public Health, on basic terms and concepts as related to the pandemic.

Health inequalities can be experienced by large or small groups of people. These groups may be identified by their geographical location, circumstances, characteristics, or life experiences. These factors are known as health vulnerabilities when facing hazards and infections such as COVID-19. The underlying factors that create health inequalities are ones that disadvantage a group or groups when they are compared to a larger community/population. When multiple adverse factors are experienced, inequality from these disadvantages is further exacerbated, as in this pandemic. How these factors/vulnerabilities interact is not always the same for different people and groups.

Evidence of inequalities is based on both existing and emerging data. It is not always possible to compare statistics and other data between different groups, different places and different timeframes. Patterns and trends will vary over time and place.

During large-scale crises comparing evidence is particularly challenging. By the time, this current pandemic has been through the worst levels we expect inequalities and vulnerabilities to have widened and that new groups of people will swell the numbers.

During epidemics and pandemics, groups/populations that have pre-existing disadvantages are exposed more often and get infected more often, die more often, experience more serious illness, disability and impacts that are felt for a longer period. The impacts extend to financial, emotional, and social areas of people's lives as individuals, families, communities, regions, countries, and continents. Public health leaders will need to mobilise experts and other willing people to take fundamental society wide decisions and actions reduce health inequalities and improve their health outcomes.

The format for the 21 Basic Terms or concepts in this e-booklet is partly following that of the first ASPHER e-booklet 'How to Count Illness': <https://www.aspher.org/how-to-count-illness.html>

Each basic term has a generic section looking at the usual explanation of the concept in pre-pandemic era. It has been difficult to locate COVID-19 specific visual materials to go alongside the text in some cases. We seek to acknowledge the useful sources from published evidence or websites. We have also tried to capture some key points to highlight where no others were found. We will update this e-booklet where any more useful explanatory materials are brought to our attention or we have missed any overlaps with other people's work.

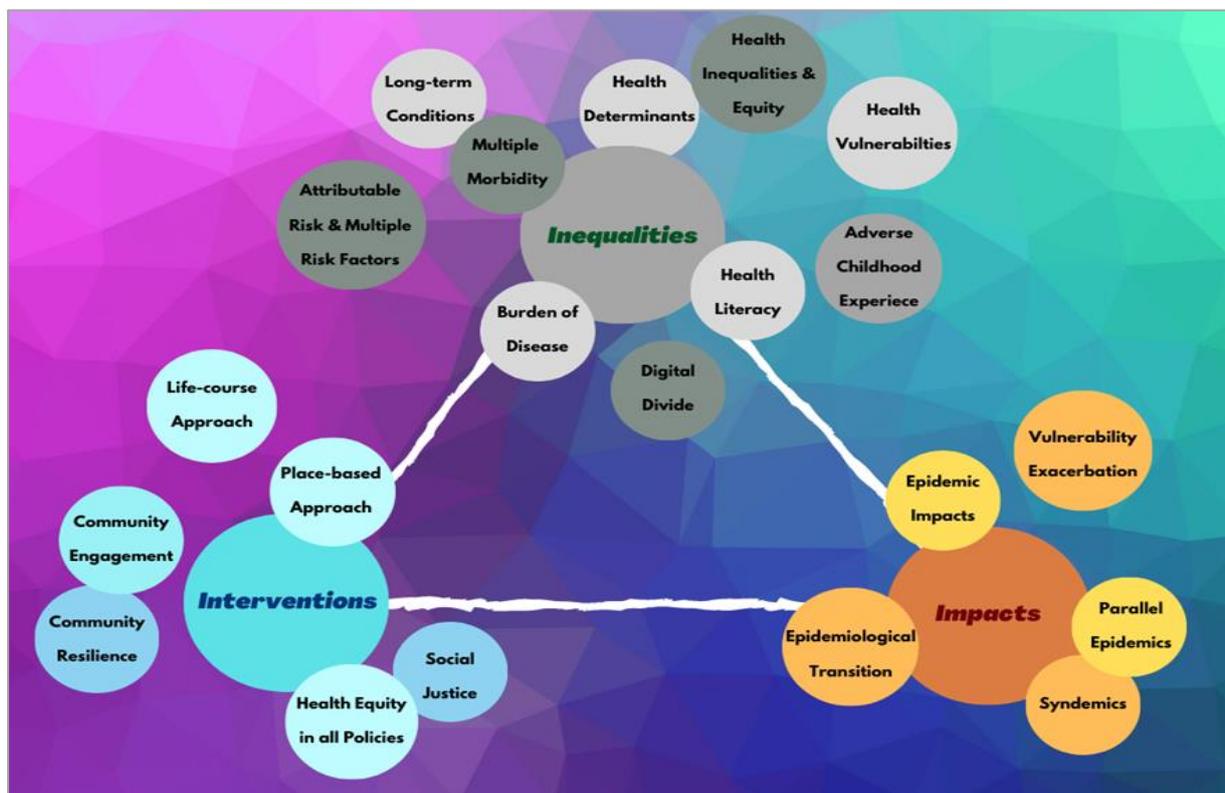


Figure 1. Inequalities Triangle. Developed by Anabelle Wong

## ***Which populations or groups are of major interest in addressing vulnerability and inequality?***

Every human life important. This includes people who may not previously have been specified when addressing vulnerability and inequality in the long list below. Efforts to support vulnerable groups are intended to help balance inequity, so that disadvantage does not accumulate, or can be reduced.

### **Vulnerable Groups**

#### **1. Workplace and occupational vulnerability**

- ***Health and social and care workers***, from their higher exposure to the coronavirus and to the distress and suffering they faced daily and tried to deal with. Carers can include informal and family carers who need to maintain close or intimate contact to support others.
- ***People in other high-risk occupations*** (unable to social distance, wear protective equipment or with other high risks such as shared worker accommodation, environments where the virus thrives) – we are still learning about groups such as those in meat processing plants.
- ***People unable to work from home*** – who must go out and travel and work alongside others to maintain essential services and infrastructure.
- ***Sex workers*** and places of work for sex workers, - which although may be reduced usage in some places nevertheless either involves personal exposure to virus or potential newer forms of exploitation such as online channels.
- ***Places of work with poor sanitation*** – good hygiene is vital as one of the key preventive measures whether for hand hygiene or disposal of infected materials.
- ***Unemployed people*** – including those who have lost employment or source of income as a result of the pandemic and suffer hardship.
- ***People travelling to work*** using high risk means/routes – as public transport was often congested in the early stages of the pandemic.

#### **2. Health and wellbeing status**

- ***People with long term conditions and chronic diseases*** such as COPD, diabetes, and circulatory disorders.
- ***People with a disability*** – whatever the underlying causes or impairments; and including those linked with sensory and communication impairments.

- **Older frail people** – where there is a steep rise as age group advances.
- **People with mental illness**, particularly those affected deeply by social distancing or loss of care during the pandemic.
- **People who use drugs/substances**, particularly those who were already dependent or newly arising dependencies during the pandemic.
- **People who are socially isolated** (any age).

### 3. Ethnic/racial minority groups and other minority communities

(any minority labelling can be a sensitive matter to those communities, and this may also show variations between different countries)

- **People of colour** in mainly white cultures in European countries.
- **People born outside** their current host country.
- **Asylum seeking and refugee people** – who may be in transit or are detained in suboptimal settings.
- **Traditional mobile groups** such as Gypsies, Roma, and Travellers.
- **Other language communities** – People who do not share the host language as their first language.
- **'Clandestine' people** – this can include those who are exploited by people smugglers or overseas kidnapping/grooming gangs, or belief groups who undertake self-exclusion from the rest of society.
- **Other people** who are in a minority ethnic group or faith.

### 4. Children and families

- **Families affected by abuse** – such as domestic violence, psychological or sexual abuse.
- **Children with underlying severe health problems** – whether this be chronic diseases or long-term disabilities or impairments.
- **Young Carers** – who are looking after family members with physical or mental disabilities.

### 5. Stigma and exclusion

- **People with gender variations** who may already be marginalised or need extra support during the pandemic's disruption.

- **People with low literacy and/or numeracy skills** – including those affected by the digital divide.
- **Modern slavery victims** – who may suffer severe isolation and exploitation already, and reduced access to help during a pandemic.
- **Homeless people** or experiencing housing exclusion (including new homeless).
- **People experiencing financial hardship** and material deprivation or food and basic living shortages, possibly aggravated by pandemic loss of income.
- **People already experiencing poor mental health** – apart from the newly created mental health problems associated with hits pandemic.
- **All other people affected by exclusion** or stigmatising conditions, circumstances, or characteristics.

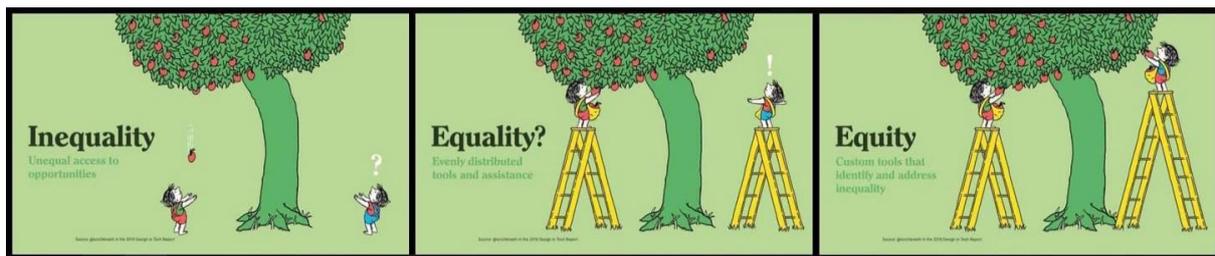
### Vulnerable Settings / Places

- People living in known deprived areas/communities
- People living in newly arising areas of high deprivation during the pandemic
- Cared for elderly (incl. those in care homes and supported in their own homes)
- Cared for younger adult settings
- Cared for children and adolescents
- Prisons and offender accommodation
- Isolated rural areas
- Places with poor sanitation and hygiene facilities
- Hospital and other healthcare settings; incl. those undertaking high risk procedures
- Long term healthcare facilities, including some mental health facilities
- Immigrant and asylum seeker formal and informal facilities (incl. detention centres)
- Migrant worker or seasonal worker group accommodation
- Homeless shelters and emergency centres
- International student group accommodation
- Accommodation for modern slavery captive victims
- 'Cuckoo' residences in illicit drug distribution networks (UK County Lines)
- Military encampments

## 1. HEALTH INEQUALITIES AND HEALTH EQUITY

### Standard Definition

**Health inequality** refers to the differences in health outcomes that are observable between populations and between subgroups within a population. When these inequalities are avoidable and arise from the unequal distribution of resources and the differing social conditions in which people are born, live, work and age in, they are **health inequities**<sup>1-3</sup>. Health inequities are unjust and can be found amongst different social groups categorised by a range of factors, such as income level, social class, sex, ethnicity, nationality, or level of education<sup>2</sup>. To achieve **health equity**, barriers to health must be removed and resources and supports must be justly distributed in society based upon the needs of the communities being served<sup>2-3</sup>. Two reports from England analyzing COVID-19 disparities highlighted the deep concerns for people in excluded and deprived groups, ethnic minorities and with vulnerabilities from age and longer-term conditions.



**Figure 2.** Inequality, Equality, Equity example (shorter) graphic extracted from - **Source:** Ruth T. Design in Tech Report 2019. Available from: <https://designintech.report/2019/03/11/%F0%9F%93%B1design-in-tech-report-2019-section-6-addressing-imbalance/>

### COVID-19 Context

**Health inequities** are being further exacerbated by the COVID-19 pandemic. Disadvantaged groups often have higher rates of pre-existing conditions such as heart disease, diabetes, and respiratory conditions. These increase the risk of serious complications or death due to COVID-19<sup>2, 4-6</sup>. Disadvantaged groups also experience higher rates of mental ill-health, which may be exacerbated by fear and insecurity due to COVID-19 and its economic impacts<sup>5-6</sup>. These economic impacts will be greater for people living on lower incomes and those working in jobs that do not offer paid sick leave.

Other groups that may be disproportionately impacted by COVID-19 include people living within overcrowded houses, prison facilities or shelters that are unable to practice social distancing, as well as people experiencing homelessness who are unable to access adequate handwashing and sanitation facilities<sup>7-9</sup>

*‘COVID-19 is painfully exposing the existing and persisting health inequalities in our societies. This pandemic will have the heaviest impact on the lives of people living in deprivation or facing difficult socio-economic circumstances. EuroHealthNet partners – the public bodies responsible for health – are doing their utmost to protect citizens and contain the outbreak. In the difficult days and months to come, the need to work together will be clear. Protecting health is the responsibility of all. Good health starts in the community. In the long term, we must consider how our health systems are structured, their sustainability, and their ability to protect all in times of crisis.’<sup>5</sup>*

Furthermore, it may be difficult for health and safety information and messages to reach certain groups, include migrants who may have difficulties reading or speaking the local language. The disproportional impacts of COVID-19 on disadvantaged groups highlights the vital and urgent need to develop and implement evidence-based policies and programmes to address health inequities and create a more equitable and just society for all.

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## 2. HEALTH VULNERABILITIES

### Standard Definition

‘Vulnerability is the degree to which a population, individual or organization is unable to anticipate, cope with, resist and recover from the impacts of disasters’ – World Health Organization<sup>1</sup>.

‘Vulnerability is defined as the quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally.’ – Oxford English Dictionary

### *Vulnerabilities in Health*

**Vulnerability** in the health care sector is a universal phenomenon. The lives of some patients rely on highly advanced treatment, extreme diagnosis, and a possibility of a potential life with a chronic illness, while others face treatments that offer a cure but can also cause significant adverse effects<sup>2</sup>. Vulnerabilities are closely linked with health inequalities and vulnerable populations. These vulnerable populations usually include racial and ethnic minorities, people with low socioeconomic status and those with no access to care, and those for whom health care initiatives fail to reduce barriers caused by vulnerability<sup>3</sup>.

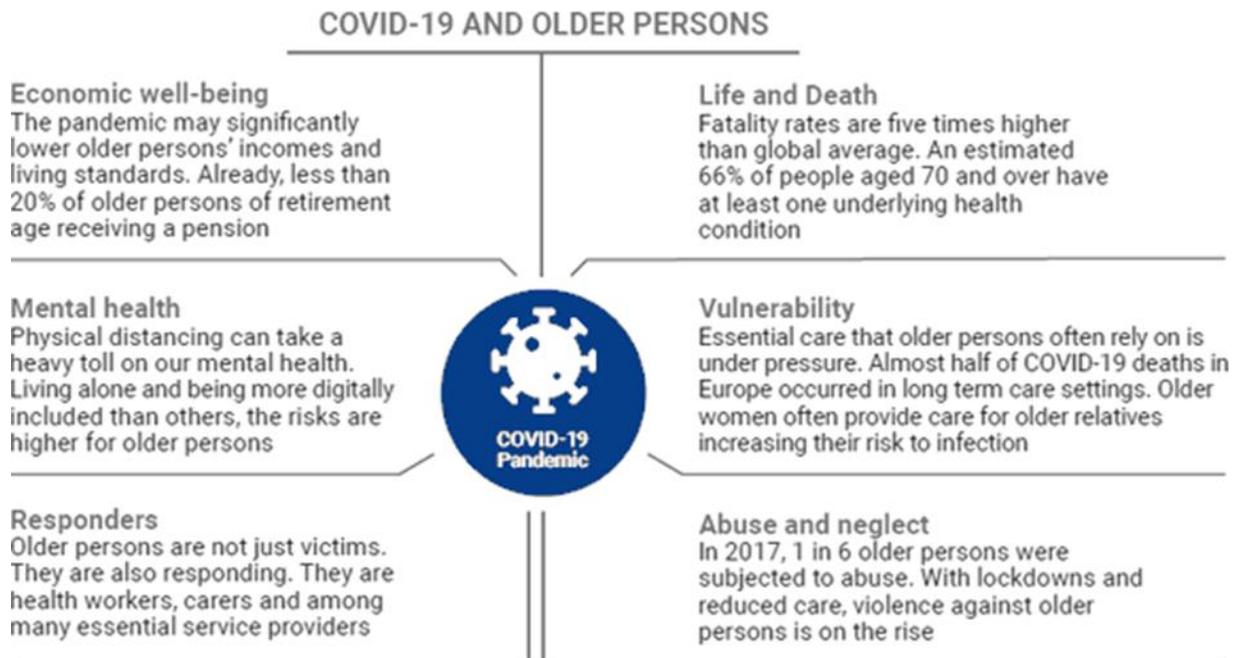
### COVID-19 Context

During the COVID-19 pandemic, vulnerable groups are not only the elderly, disadvantaged or homeless groups but also people of low socioeconomic status struggling financially, physically and mentally. Elderly people and those with pre-existing multi-morbid conditions are at higher risk of developing and dying from COVID-19<sup>4</sup>.

Older persons in many countries live alone or in care homes and the COVID-19 pandemic has caused restriction on social activities and visitations. This restriction has affected the physical and mental health of older persons particularly those who are highly care dependent. Digital technologies have been widely used as an alternative to face-to-face meetings or conversations with family and friends. However, there is a divide in older people’s access to these digital technologies and most times lack the skill to use them. This digital divide has impeded on their access to COVID-19 related information available digitally and increased their vulnerability to COVID-19 (Figure 3).

For the millions of people living in highly dense communities with precarious or insecure housing, poor sanitation and less access to clean water, the strategies most recommended for controlling the spread of COVID-19 — social distancing and frequent hand-washing — are not easy<sup>5</sup>.

People living in such settings often suffer from malnutrition, non-communicable diseases, low immunity, and infectious diseases such as HIV / AIDS. All these factors make them vulnerable to COVID-19.



**Figure 3.** An example of the impact of COVID-19 on elderly persons.<sup>6</sup> **Source:** UNECE. Available from: <https://www.unece.org/info/media/news/population/2020/the-impact-of-the-covid-19-pandemic-on-older-persons/doc.html>

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### 3. HEALTH LITERACY

#### Standard Definition

**Health Literacy** is primarily about making informed decisions. It is ‘the personal characteristics and social resources needed for individuals and communities to access, understand, appraise and use information and services to make decisions about health.’<sup>1</sup>

It is more than communicating about illness, sickness, and disease. It is the knowledge, understanding and confidence of people, communities, and organisations to communicate and to make decisions about health, information, services, and systems. UNESCO advocate using good fact-based sources (Figure 4), promoting people having better Media and Information Literacy (MIL).<sup>2</sup>

#### COVID-19 Context

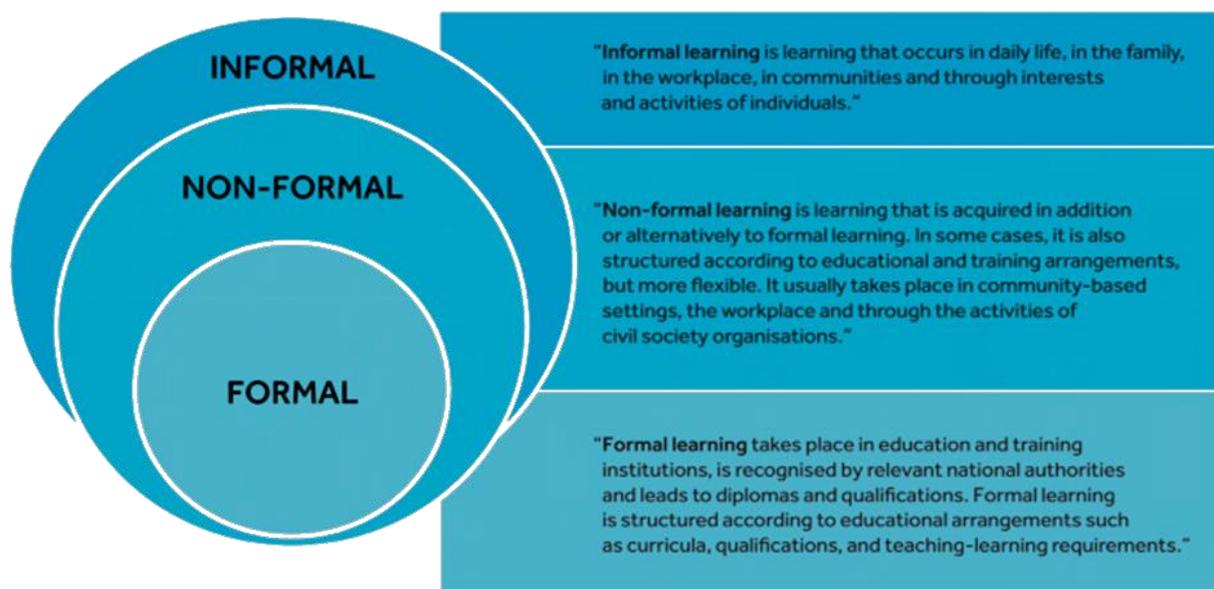
Lifelong learning includes formal, non-formal and informal learning. Where school education leaves gaps, adult learning and education (ALE) improves literacy, numeracy, and digital inclusion throughout a person’s life course with a cumulative effect. It can help contain pandemics like COVID-19 because its flexibility means it can be tailored to any situation and to any demographic, professional or non-professional, including vulnerable groups and key decision-makers/leaders. Both benefit most from both ALE and Health Literacy during international health crises.<sup>3</sup>



**Figure 4.** How to identify fact or fake?<sup>2</sup> **Source:** UNESCO. Available from: [https://en.unesco.org/sites/default/files/unesco-paragraphs/en\\_mil\\_9.png](https://en.unesco.org/sites/default/files/unesco-paragraphs/en_mil_9.png)

ALE, where Health literacy is one key aspect of ALE, can help with understanding information and countering misinformation. They make use of existing social networks and emerging networks in the virtual environment.

Creators of content as well as leaders, journalists and the public should benefit from correct and truthful knowledge and understanding. This applies to print, television, and radio as well as online platforms. 'In the current COVID-19 pandemic, the struggle will ultimately be won by training citizens how to avoid creating secondary transmission chains.'<sup>3</sup> Lower health literacy is associated with adverse health behaviours and outcomes. 'Although anyone can have low health literacy, it is central to addressing health inequalities – deprived or vulnerable groups, particularly those from disadvantaged socioeconomic backgrounds, disabled people, older people, and migrants and people from ethnic minority groups appear most at risk.'<sup>3</sup>



**Figure 5.** Adult learning and education as a tool to contain pandemics - The COVID-19 Experience.<sup>3</sup> **Source:** Lopes, H., McKay, V. DOI: <https://doi.org/10.1007/s11159-020-09843-0>

Communicating and making decisions about COVID-19 requires health literate politicians, professionals, journalists, and public. Most people are learning how to stop transmission chains. New terms and expressions have entered everyday language. Also, to counter misinformation in the 'COVID-19 infodemic'<sup>4</sup>, it must be acknowledged that humans process and personalise information before they decide what to do. Health literacy 'should be about social responsibility and compliance of all citizens and solidarity against false information.'<sup>5</sup> Professionals and leaders communicate with each other and with population groups.

Credible and reliable sources of information are needed, such as from Health Literacy Europe (see figure 6). Ability to understand and act on associated terms, numbers, projections, and probabilities, plans and instructions, is required across all population groups. Messages need to be consistent and unambiguous, harness trust and allow people and organisations to participate fully. Good health literacy can be viewed as a form of preparedness for such a pandemic.<sup>7</sup> Past lessons from failures of communication experiences from infections such as SARS in 2003 should have helped to pave the way for the epidemic response of COVID-19.<sup>8</sup>



**Figure 6. Source:** Sørensen K. Health Systems Health Literacy Covid-19. Presentation presented at; 2020; Online European Health Management Association. Available from: <https://ehma.org/webinar-health-systems-health-literacy-covid19/>

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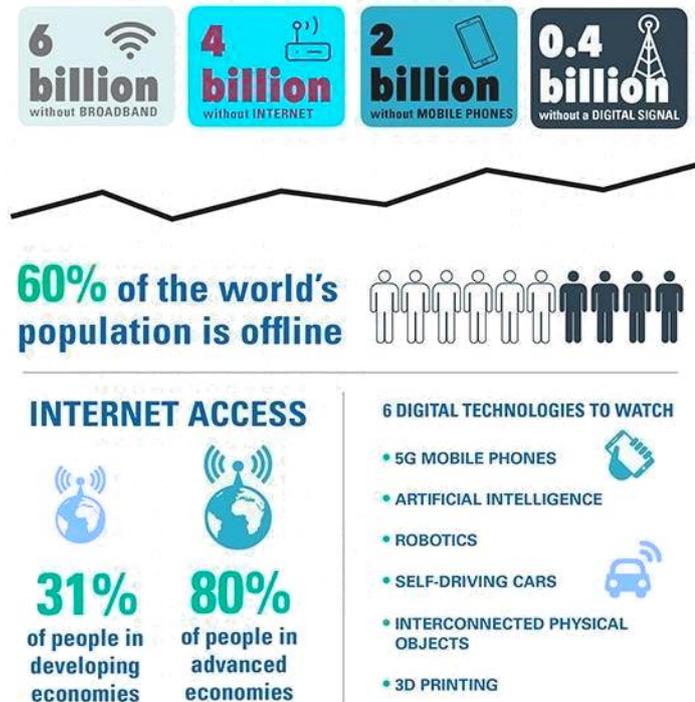
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## 4. DIGITAL DIVIDE

### Standard Definition

‘Digital divide is defined as the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access Information and Communication Technologies (ICTs) and to their use of the Internet for a wide variety of activities.’ – OECD, 2006<sup>1</sup>

Digital divide is prominent between socioeconomic groups; literate and non-literate populations; individuals living in urban areas and those living in rural areas; less economically developed countries and more economically developed countries<sup>5</sup>.



**Figure 7.** Digital Divide. **Source:** Ramírez-Djumena N, International Monetary Fund. Available from: <https://www.imf.org/external/pubs/ft/fandd/2016/09/picture.htm>

### Digital Divide in Health

Digital systems in health care are becoming relevant especially in crisis situations, as the COVID-19 pandemic. The advanced use of devices, systems and the internet has widened the digital divide between segments of the world’s population that lacks easy internet access due to cost, literacy or political barriers compared to others with good access<sup>4</sup>. Internet use is vital in accessing health information and knowledge resources relevant to health care and public health. This includes essential materials for health care practitioners such as databases of patient data, program and policy papers, statistics, scientific journals and analysis and clinical practice tools. Health information facilitates an individual’s transparent and well-informed choice on their health<sup>3</sup>.

### COVID-19 Context

During the COVID-19 pandemic, there has been a shift in use of online platforms to render health care services to patients. Telemedicine has become popular as health facilities strive to reduce in-person visits.

Video chat platforms like Zoom and other health apps are used by patients to connect with health professionals for diagnoses and managing conditions without physical consultation<sup>6</sup>. However, ‘virtual healthcare’ is not equally accessible to all. The digital divide between and within countries is more visible especially in least developed countries where averages of 2 in 10 people are online<sup>7</sup>. The COVID-19 pandemic re-emphasizes the challenge of access to ICTs in terms of health information and digital educational divide. Governments and organizations such as the World Health Organization used ICTs to provide accurate pandemic related information but with disproportionate access to these ICTs, many were unable to receive the right information.

**Table 1.** Categories of digital divide during the COVID-19 pandemic.

DIGITAL DIVIDE CATEGORIES	COVID-19 CONTEXT
<i>Educational access for students</i>	Some students lacked access to internet and other digital technologies to continue their classes online during and after the COVID-19 lockdown in many countries. This was largely due to poor broadband connectivity or lack of digital technologies such as laptops, tablets etc.
<i>Competition from multiple users in the same household</i>	There was competition for internet connectivity and use of digital technologies in many homes among parents and children. Parents who needed the internet for meetings and work and children who needed ICTs for online classes.
<i>Socioeconomic status</i>	Unemployed and low-income individuals or families experienced difficulty in paying for internet service costs and providing the needed technological support for their children to access online classes.
<i>Limited access to COVID-19 information, health, and social care services.</i>	With the new dependence on digital technologies for health consultations and relaying health information to the public, those without ICTs have limited access. Online applications for benefits and social services are also limited.
<i>Digital technology literacy</i>	Some persons do not have the skill or knowledge on the use of these digital technologies especially elderly persons and those in low- and middle-income countries.

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## 5. COMMUNITY RESILIENCE

### Standard Definition

Community resilience requires people, communities, as well as integrated accountable social systems to develop processes and skills so everyone can adapt and thrive with trust and respect. We sometimes call it the ability to 'bounce back' when we speak of individuals or of economies, but community resilience is about whole communities before, during and after crises. To emphasize that this is a proactive, positive, and inclusive concept, we tend to say, community resilience is the ability to bounce forward to become greener and fairer societies. It is a core foundation within the Global (Sendai) Framework for Disaster Risk Reduction (Figure 8).<sup>1</sup>



**Figure 8.** Sendai Framework.<sup>1</sup> **Source:** United Nations Office for Disaster Risk Reduction. Available from: <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>

The Resilience Model of Paton<sup>2</sup> is based on indicators, and the interactions between them. The most relevant indicators are:

- **Personal**, where people need to know that the small things, they do can make a positive difference for themselves, their families, and their neighbours (outcome expectancy and action coping).
- **Community**, where people actively participate within their communities to identify and discuss their issues and risks and determine collective solutions (community participation and problem articulation).
- **Institutional**, where communities are supported by civic agencies that encourage and empower community-lead initiatives and where mutual trust and respect exist (empowerment and trust)

These indicators are reflected in the WHO definitions (individual, community, system levels of resilience) which also explains that the capacities of resilience are absorptive, adaptive, anticipatory, and transformative.

‘Resilience is related to processes and skills that result in good individual and community health outcomes, in spite of negative events, serious threats and hazards.’<sup>3</sup> This definition has been broadened to include the desire and urgency to strengthen the resilience of various social systems, including health.’<sup>3</sup>

It is important to work together, ‘Communities and individuals harnessing resources and expertise to help themselves prepare for, respond to and recover from emergencies, in a way that complements the work of the emergency responders.’<sup>4</sup> Resilience requires accountable governance, which means multiple layers of authority, each of which need to be adaptive, making ongoing changes at different levels and times. ‘There is capacity for self-organisation, adaptability and experimentation.’<sup>5</sup>

### **COVID-19 Context**

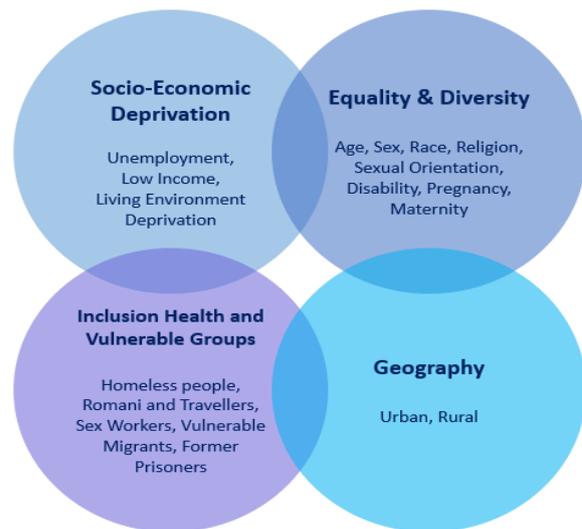
Despite our interconnectivity and shared burdens, COVID-19 has not affected us equally. Social, health and economic inequalities have been magnified. People already disadvantaged are at risk of becoming further disadvantaged. Good local governance, strengthened communities, and empowered people build community resilience, we must bounce forward to become greener and fairer societies.

Robinson<sup>6</sup> in June 2020 highlighted the importance of resilience in ‘aftershock’. *‘Capacities, assets, and systems that can be enhanced. When strategies, plans and projects intentionally assess, design for, and invest in them – before, during, and aftershocks – these capacities can enable people, communities, and systems to recover, adapt, and even transform, in ways that protect lives, restore livelihoods, and maintain well-being.’*

Human Rights are critical in the integrated cycle of disaster prevention, preparedness, response, and recovery. This was laid out by the UN Secretary General in May 2020 *‘Disasters magnify social inequalities and further disadvantage those who are already vulnerable. In the case of COVID-19 these inequalities are glaringly obvious.’*<sup>7</sup> The Royal College of Physicians of London have expressed serious concerns on further practical difficulties facing those already suffering from inequalities.

*‘The economic and social response to COVID-19 has the potential to exacerbate health inequalities. Those in low paid or insecure work, or with existing health conditions or who were already socially isolated, may find it increasingly difficult to afford rent, bills and food and struggle to access the services they need. This is likely to have a significant toll on both their physical and mental health.’*<sup>8</sup>

The various ways people in communities help each other and influence institutions are especially important. When people and groups are respected as experts in their own lives, their environments, and futures, they are most likely to become resilient communities. Community participation means that people and groups are at the heart of identifying issues that they articulate. Communities can learn about each other and institutions (public or private) can learn about communities. Co-created solutions that have their foundations in the lived experiences of communities are more likely to be successful. For example, culturally appropriate information about social distancing and infection control is better than information that cannot be understood or acted on.



**Figure 9.** Some groups within the population may be disproportionately affected by COVID-19.<sup>8</sup> **Source:** Royal College of Physicians London. Adapted from: <https://www.rcplondon.ac.uk/news/covid-19-and-mitigating-impact-health-inequalities>

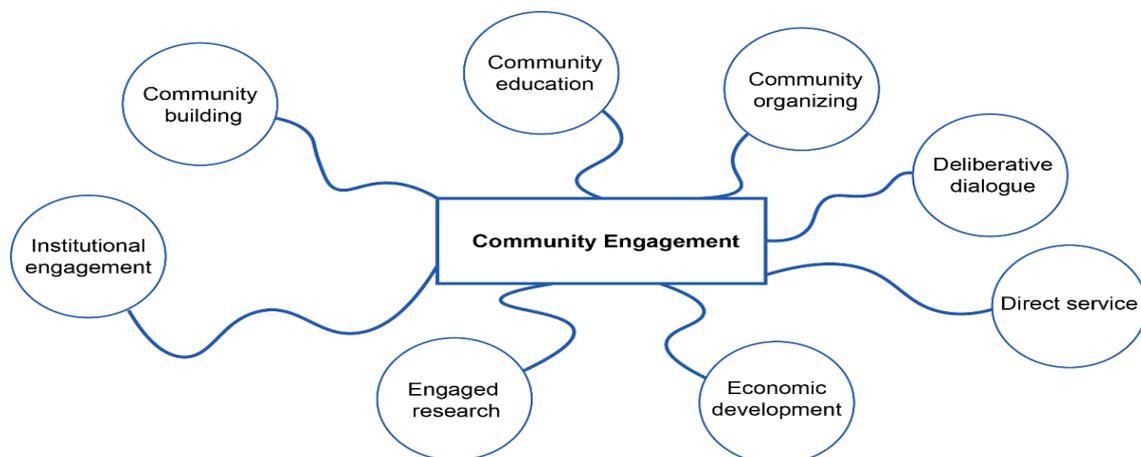
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## 6. COMMUNITY ENGAGEMENT

### Standard Definition

The word ‘community’ refers to a group of people affiliated by geographic proximity, special interest, or similar situations, which can include stakeholders, interest groups, or citizen groups.<sup>1</sup> Community engagement involves including the community in discussions, decision-making, processes in order to achieve long-term and sustainable outcomes.<sup>1</sup> To ensure success, the unique context of a community should be kept in mind. For instance, different strategies should be used when addressing black, Asian, and minority ethnic communities, the autism community, or the immunocompromised community. Community engagement is a potent method and process for achieving environmental and behavioural changes that can enhance the health of a community and its members. It frequently involves partnerships, collaborations, and coalitions that help organize resources and influence systems, alter relations between partners, and serve as incentive for changing policies, programs, and practices.<sup>2</sup> There are many ways of illustrating levels and types of engagement since Arnstein and Sherry’s ladder of citizen participation in 1969, based on levels of community power and control.<sup>3</sup>



**Figure 10.** Approaches to community engagement<sup>1</sup>. Developed by Robin van Kessel

Current approaches to community engagement can be visualized in Figure 10.<sup>4</sup> Community building involves intentionally bringing people together to become familiar with each other. Community education refers to plans that deliver instructional services or curricula or serve to educate the community about a social issue. Community organizing comprises of projects that bring people together with the goal of solving a community issue. Deliberative dialogue involves initiatives that intentionally bring people together to build understanding across differences. Direct service refers to actions that provide a service or product to an individual, group, or the community as a whole. Economic development entails efforts that work on developing the regional economy in a sustainable way.

Engaged research relates to research that directly benefits the community by clarifying the causes of a community challenge, mapping a community's assets, or contributing to solutions to current challenges and fits a faculty member's research agenda. In the best-case scenario, organisations, and institutes with research expertise work alongside community members and students on the respective projects. Finally, institutional engagement involves resources intentionally being offered without undue barriers to the community.

### **COVID-19 Context**

In the face of COVID-19, the approach to community engagement has been somewhat counterintuitive, as the way to engage the community was to make sure that every community member would keep a safe distance and not get together. During the pandemic, community education has been largely digitized, with the World Health Organisation's broadcasts, national news outlets, and scientific publications all being disseminated digitally. Ironically, the community engagement required during the COVID-19 pandemic is for most communities to not gather physically and to keep safer distances from each other.

#### **Interagency Standing Committee 2020. COVID-19: How to include marginalized and vulnerable people in risk communication and community engagement<sup>5</sup>**

*Women, the elderly, adolescents, youth, and children, persons with disabilities, indigenous populations, refugees, migrants, and minorities experience the highest degree of socio-economic marginalization. Marginalized people become even more vulnerable in emergencies. This is due to factors such as their lack of access to effective surveillance and early-warning systems, and health services. The COVID-19 outbreak is predicted to have significant impacts on various sectors. The populations most at risk are those that:*

- *depend heavily on the informal economy*
- *occupy areas prone to shocks*
- *have inadequate access to social services or political influence*
- *have limited capacities and opportunities to cope and adapt and*
- *limited or no access to technologies. By understanding these issues, we can support the capacity of vulnerable populations in emergencies.*

The Inter-Agency Standing Committee also advocate that agencies respond to the pandemic using principles of 'inclusive programming'.<sup>5</sup> As communities are emerging from lockdown into more limited restrictions there may be increased opportunities for safer gathering. However, there are concerns about the second and further waves of COVID-19 that may lead to resuming physical isolation or lockdown across communities. In the longer-term the nature of community engagement may be permanently altered given the digital engagement systems that have emerged.

Much of the dialogue is now about mixed or blended ways of communicating and interacting. Therefore, the **digital divide** must be tackled to promote inclusion and community empowerment (*see Basic Term 4*). It has been argued also that **communities' resilience** to disasters (*see Basic Term 5*) will be better founded when based on strong underlying and wider community engagement commitments and inclusive systems.

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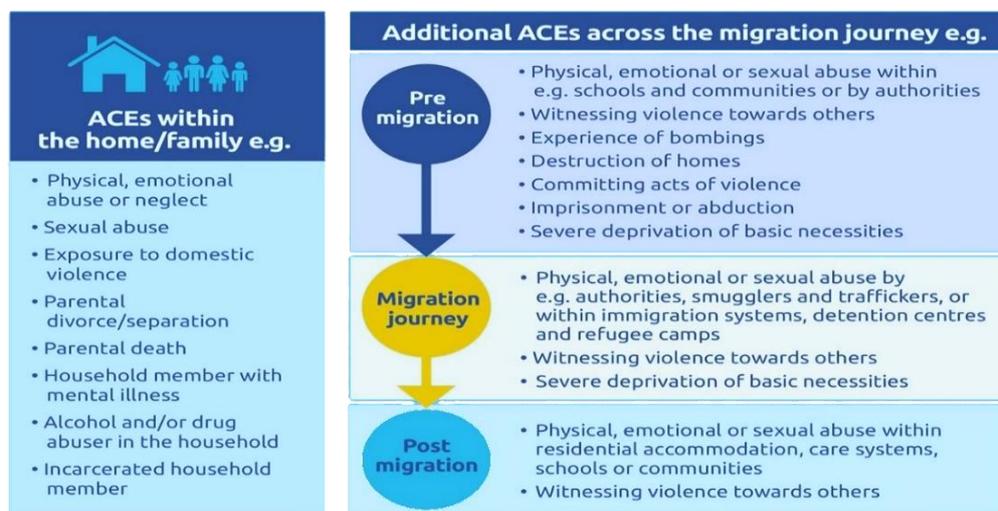
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## 7. ADVERSE CHILDHOOD EXPERIENCES

### Standard Definition

Adverse Childhood Experiences (ACEs) encompass sources of intense or frequent stress suffered by children<sup>1</sup>. Such experiences include abuse, household dysfunction, community violence, and neglect<sup>2</sup>. Prolonged exposure to these forms of stress in early life can exact long-term consequences on an individual's health<sup>2</sup>. ACEs have been linked to the disruption of brain development and pose risks to the function of both the nervous and immune systems<sup>2</sup>. ACEs also significantly affect mental health and adult behaviours, as those who have experienced ACEs have a significantly higher risk of alcoholism, depression, disordered eating, risky sex, HIV/AIDS, and chronic conditions like hypertension and cancer<sup>1,3</sup>. ACEs can be measured across countries to determine prevalence and allocate resources and interventions accordingly<sup>4</sup>. Possible interventions to mitigate the harmful effects of ACEs range from supporting engaged parenting; facilitating the creation of secure relationships and resiliency; and building the capacity of existing programs to identify and respond early to signs of trauma and adversity<sup>5</sup>. As an example for ACE, Figure 11 shows the multiple ACEs that children may experience during their migration journey.



**Figure 11.** ACE in child refugee and asylum-seeking populations.<sup>6</sup> **Source:** Wood S, Ford K, Hardcastle K, Hopkins J, Hughes K and Bellis MA. ACE in child refugee and asylum seeking populations 2020. Available from: <https://www.wmsmp.org.uk/wp-content/uploads/ACEs-in-Child-Refugee-and-Asylum-Seekers-Report-English-final.pdf>

### COVID-19 Context

As lockdowns and social distancing have been the main course of action for controlling COVID-19, schools, after-school programs, and other child-focused programming have been shuttered<sup>4</sup>.

While effective at reducing transmission of the virus, such containment methods can unwittingly place children already experiencing abuse and maltreatment in further danger<sup>5</sup>. The main risk factors for childhood maltreatment (social isolation, family stress, community disadvantage, poor social standing) are all experiences that have been exacerbated by mandatory lockdowns, school closures, and loss of social safety-net programs<sup>7</sup>. Without these programs and equitable access to the internet, the most vulnerable children are being exposed to intensified negative childhood experiences. Additionally, refugee, migrant, and displaced children may experience increased risk of contracting COVID-19, from overcrowding, confinement, neglect, and abuse because of lockdown and containment policies.

As the consequences of COVID-19 on child mental health and ACEs are significant and wide-ranging, the public health responses must be as well<sup>8,9</sup>. Officials must first assess the true impact of lockdown by determining the quantity of ACEs children have acquired during the pandemic, and which children are being most affected<sup>10</sup>. Additionally, further research into positive childhood experiences (PCEs) is needed to determine their protective power against the acquisition of ACEs. In sum, many children, especially the most vulnerable children, are undergoing intensified experiences of trauma, abuse, and isolation due to COVID-19-related shutdowns, and public health strategies and interventions must be deployed in order to both protect children and mitigate the negative effects of these experiences.

**Table 2.** ACEs and COVID-19 concerns.

TYPES OF ADVERSE CHILDHOOD EXPERIENCES THAT MAY BE EXPECTED	
<i>Emotional, physical abuse and neglect</i>	linked to increased tensions and stressors as well as increased time spent in homes rather than at school and social programs
<i>Sexual abuse</i>	linked to increased isolation, time spent at home, and less contact with support structures
<i>Domestic violence</i>	linked to increased household stress and anxiety during lockdown and increased time spent in homes
<i>Parental separation</i>	linked to lockdowns, quarantines, and hospitalisations
<i>Death of a parent</i>	linked to COVID-19-related fatalities of parents and caregivers
<i>Parental mental illness</i>	linked to increased financial, occupational, emotional, and familial pressures from lockdowns, economic downturn, and school closures
<i>Parental substance abuse</i>	linked to increased financial, occupational, emotional, and familial pressures, as well as lack of access to dependency support services
<i>Parental incarceration</i>	linked to lack of visiting/contact opportunities between children and incarcerated parents and other family members

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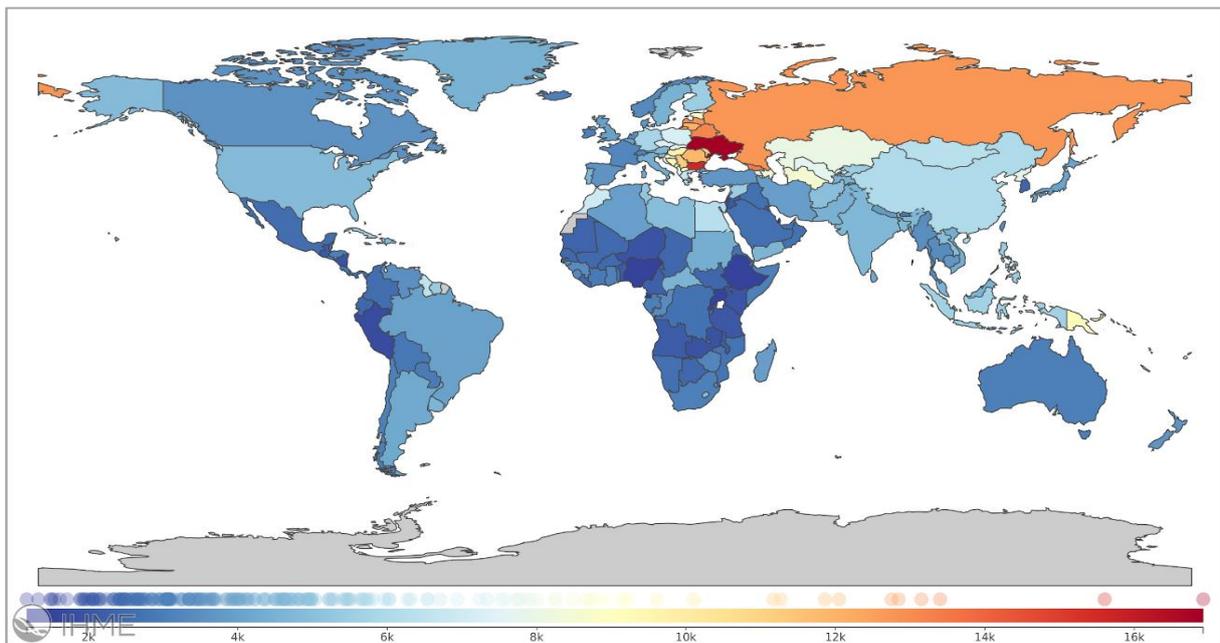
## 8. BURDEN OF DISEASE / HEALTH STOCK

### Standard Definition

Burden of disease is a measure of the impact that the presence of disease has on a population. The concept of a burden of disease was created to emphasize that mortality is not the only measure of population health, indeed, the experience and presence of disease impacts a population without that disease necessarily having to result in death. There are several ways of measuring the burden of disease, which can be split into two main groupings: biomedical and economic. Biomedically, burden of disease incorporates mortality, morbidity, trends, and risks. Economically, burden of disease focuses on the direct and indirect costs as a result of experienced illness<sup>1</sup>.

Burden of disease is often measured using Disability-Adjusted Life Years (DALYs) or Quality-Adjusted Life Years (QALYs). DALYs and QALYs incorporate both the quality and quantity of life; however, DALYs are more commonly used to assess the global burden of disease. The lower the quality of life due to illness, or the more premature death is due to illness, the greater the burden of disease<sup>1</sup>.

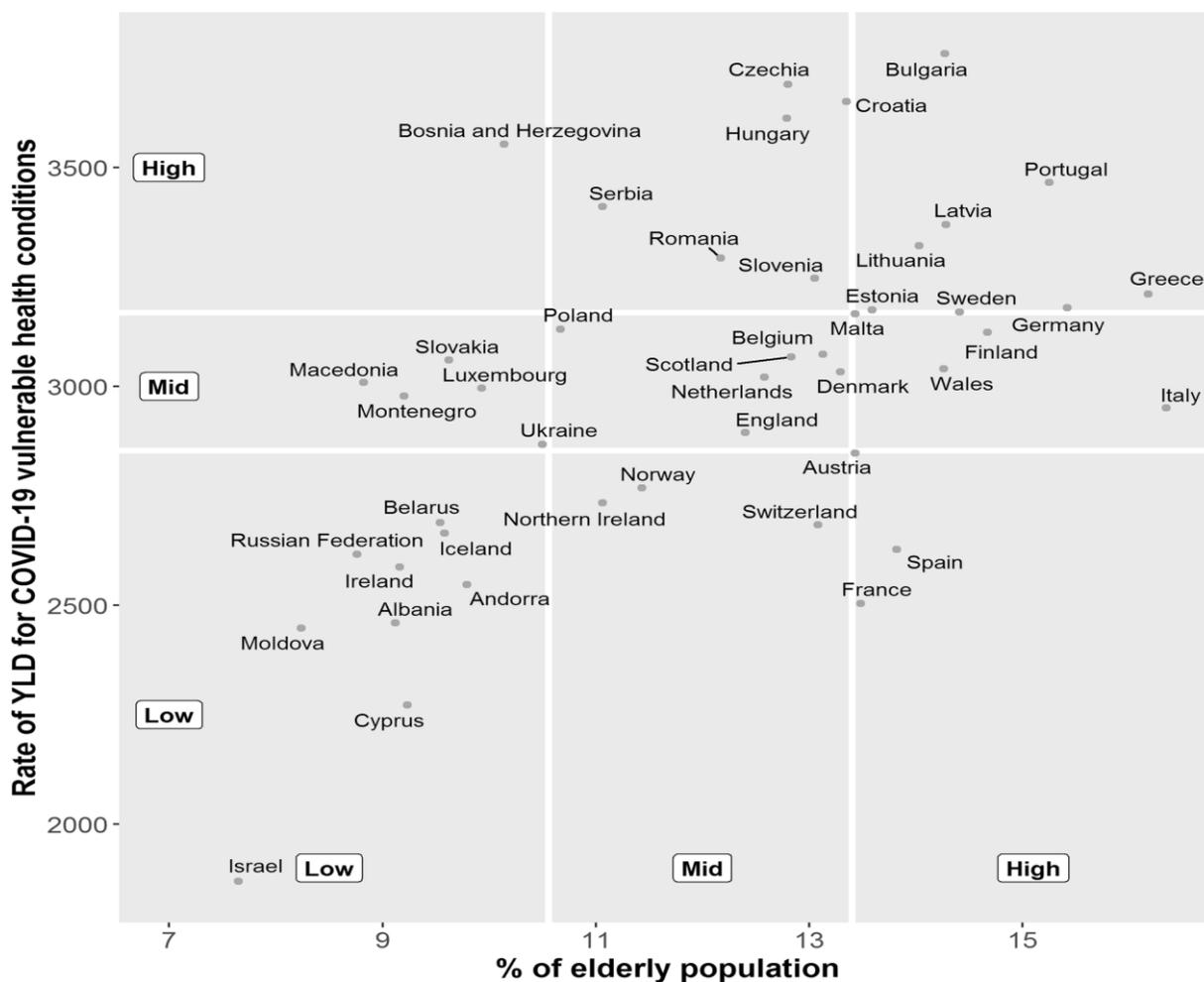
Burden of disease data is widely collected and analysed to decide and design interventions. The Institute for Health Metrics (IHME) works with the World Health Organization (WHO) to regularly release global burden of disease information, which can be used for local and global policy. The chart below was generated using their database to show where cardiovascular diseases have the highest burden, in terms of DALYs, on a global scale.<sup>2</sup>



**Figure 12.** Map of DALYs for Cardiovascular Diseases; 2017, DALYs per 100,000.<sup>2</sup> **Source;** GBD Compare 2020, IHME Viz Hub [Internet]. Available from: <https://vizhub.healthdata.org/gbd-compare/>

## COVID-19 Context

Across European countries there are notable variations in two key vulnerability components for severe COVID-19 infections – percentage elderly population (age over 70 years) and the rates of the Years Living with Disability (YLD) measure.



**Figure 13.** Population vulnerability to COVID-19 in Europe: a burden of disease analysis.<sup>3</sup> Source; Wyper, G.M.A., Assunção, R., Cuschieri, S. *et al.* (2020). DOI: <https://doi.org/10.1186/s13690-020-00433-y>

While the COVID-19 pandemic is still a novel phenomenon its global burden is constantly increasing and dynamic. Long-term side effects are not yet fully known, and measurements of morbidity and mortality are changing rapidly. However, it is reasonable to say that COVID-19 burden includes a variety of impacts ranging from physical, mental, social, and economic that are being experienced worldwide. These will include long-term physical and mental disabilities. Different burdens of disease should be studied intensively, including burdens inequalities within and between countries and regions.

There will be an inclination to overlook additional pandemic related disability in groups already suffering health inequalities. Overall, the BOD statistics will need to be systematically and comprehensively measured to account for pre-pandemic burden and the burden generated by the pandemic, looking across the four burdens shown below – Figure 14.

Pre-pandemic levels and variations in vulnerability and disability	New disability and vulnerability as a result suffering from COVID-19 infection
Those above with worsened vulnerability from poorer general health and social care during the pandemic	New disability and vulnerability from indirect impacts of COVID-19 pandemic including from lock-down, social distancing and economic hardships.

**Figure 14.** Total BOD physical & mental health measures to be followed up over the next ten years.  
 Developed by Ines Siepmann

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## 9. MULTIPLE MORBIDITY

### Standard Definition

Morbidity is the state of being sick or having a disease. Multiple morbidity refers to the state of having multiple medical conditions and often, the medical conditions interact with each other in one way or another. Other terms or related constructs, such as ‘comorbidity’, ‘morbidity burden’ and ‘patient complexity’ have been used too and there has not been a clear line drawn between these terms<sup>1</sup>.

One proposed definition for multiple morbidity is the existence of two or more chronic diseases; in contrast, comorbidity describes medical conditions that exist at the time of diagnosis of an index disease<sup>2</sup>.

### COVID-19 Context

While some individuals remain asymptomatic after being infected by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), while some develop the disease (COVID-19), showing a range of symptoms. The mild symptoms include cough, fever, fatigue, and loss of smell and taste; severe illness can lead to breathing difficulties, multi-organic failure and septic shock<sup>3</sup>.

As of today, released data and published literature have shown that the risk of developing severe illness from SARS-CoV-2 infection is increased in the presence of certain underlying diseases, such as chronic obstructive pulmonary disease (COPD), myocardial infarction and diabetes<sup>4,5</sup>.

The US Centers for Disease Control and Prevention (CDC) has published a list of underlying medical conditions that put individuals at increased risk for severe illness from SARS-CoV-2 infection<sup>6</sup>. The medical conditions are grouped by the level of support from existing evidence and below is the version based on the date from 1<sup>st</sup> of December 2019 to 28<sup>th</sup> of July 2020. Some status or condition, such as pregnancy, using corticosteroids or other immunosuppressive medications, and smoking, are also listed as having mixed evidence for increased risk of developing severe illness from SARS-CoV-2 infection while having bone marrow transplantation is listed as having limited evidence for increased risk of developing severe illness from SARS-CoV-2 infection.

**Table 3.** List of underlying medical conditions that put individuals at increased risk for severe illness from SARS-CoV-2 infection (as of July 2020).<sup>6</sup> **Source;** Centers for Disease Control and Prevention. 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/evidence-table.html>

LEVEL OF EVIDENCE	CONDITION
<i>Strongest / Most Consistent Evidence</i>	Serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies
	Cancer
	Chronic kidney disease
	Chronic obstructive pulmonary disease (COPD)
	Obesity (BMI $\geq$ 30)
	Sickle cell disease
	Solid organ transplantation
	Type 2 diabetes mellitus
<i>Mixed Evidence</i>	Asthma
	Cerebrovascular disease
	Hypertension
<i>Limited Evidence</i>	HIV infection
	Immune deficiencies
	Inherited metabolic disorders
	Liver disease
	Neurologic conditions
	Other chronic lung diseases
	Thalassemia
	Type 1 diabetes mellitus

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## 10. LONG-TERM CONDITIONS

### Standard Definition

According to the WHO, long-term or chronic conditions are conditions that require ongoing management over a long period of time, usually years or decades. The UK has defined long-term conditions or chronic diseases as conditions that cannot be cured currently but can be controlled with the use of medication and/or other therapies<sup>1</sup>. Although health authorities or organisations may offer definitions that are worded slightly differently, the essence of this term was highlighted in a series centring chronic conditions published by the European Observatory on Health Systems and Policies: long-term conditions require response and management over an extended period of time and often involve coordinated inputs from a multidisciplinary team of healthcare professionals<sup>2</sup>.

Long-term conditions can be non-communicable diseases or communicable diseases. Chronic infections such as chronic hepatitis B or HIV infections are considered long-term conditions because they require long-term or lifelong treatment as well as regular monitoring.

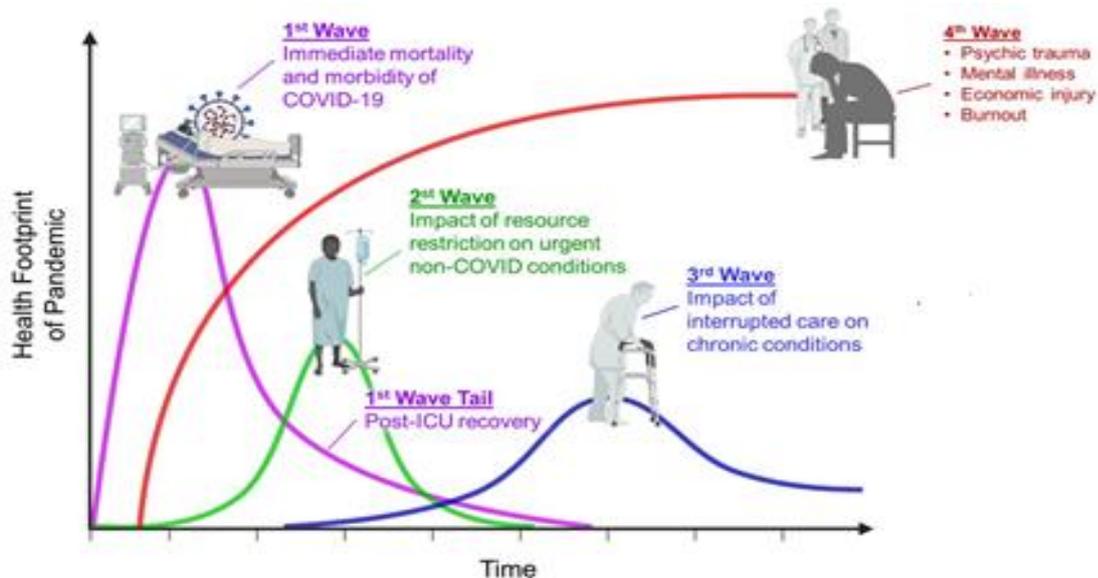
### COVID-19 Context

COVID-19 affects people with long-term conditions in many ways. Most chronic illnesses cause weaker immunity, that is always a risk factor for catching an infection and then having more severe illness. COVID-19 has caused immense pressure on the existing health system and health care workforce. As some non-essential medical services, such as elective surgeries and routine out-patient follow-up consultations might have been postponed, people with long-term conditions would suffer from the impact of delayed treatment.



**Figure 15.** Global predictive model on elective surgery cancellation due to COVID-19<sup>3</sup>. **Source:** Globalsurg 2020. Available from: <https://globalsurg.org/COVIDSurg/>

The interruption of the medical supply chain has reached a global level when freights were cancelled or delayed due to travel restrictions implemented as a response to COVID-19 pandemic, which in turn plays a role in drug shortage and difficulty in accessing medicine.



**Figure 16.** The health footprint of COVID-19 pandemic.<sup>4</sup> **Source;** Victor T. Twitter Post [Internet]. Twitter.com. 2020. Available from: <https://twitter.com/VectorSting/status/1244671755781898241>

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## 11. HEALTH DETERMINANTS – wider and narrower

### Standard Definition

In doing public health analyses there is a fundamental need to lay out the full range of causation and opportunities to develop policies, strategies and interventions that are truly effective in the long-term. Avoiding these comprehensive analyses may be convenient in the short-term but ultimately, they will fail to prevent the problems from continuing/recurring. Examples of multi-level health mapping approaches can assist us, for example in Barton and Grant's health map (Figure 17).<sup>1</sup>

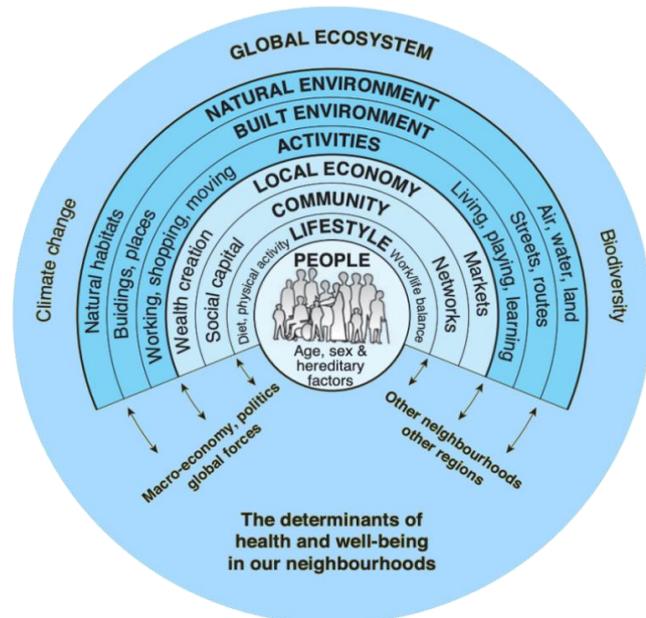


Figure 17. The Health Map.<sup>1</sup> Source; Barton H, Grant M. 2006. DOI: <https://doi.org/10.1177/1466424006070466>

Wider determinants of health, including social determinants of health, are the overarching social, economic and environmental forces and systems that can dictate and shape everyday life choices and conditions<sup>2,3</sup>. These non-medical, upstream forces include, but are not limited to, the conditions of an individual's environment (built and natural), education, income, labour market, and social capital<sup>3</sup>.

Health is often perceived as a result of individual behaviour and genetics. However, poor housing, air pollution, racism, poverty, inconsistent employment, and limited access to higher education are all risk factors for poor health outcomes that are independent of an individual's behaviour and genetics<sup>4</sup>. Living in such conditions places individuals and whole communities at greater risk for chronic health conditions, stress-related poor health outcomes, and early mortality<sup>4</sup>.

Moreover, systemic differences in these wider determinants of health directly create inequalities that result in disadvantaged communities experiencing significantly worse health outcomes than their more advantaged counterparts<sup>5</sup>. Thus, in order to adequately and effectively address health outcomes, especially in vulnerable communities, public health interventions must focus on these external and upstream factors that often lie at the root cause of the onset and subsequent more severe complications, morbidity, and mortality of disease in vulnerable population groups.

## COVID-19 Context

Under the context of the global pandemic of COVID-19, the behaviour, spread, and mortality of this virus are directly influenced by inequalities stemming from systemic inconsistencies in the aforementioned social determinants of health<sup>6</sup>. In countries around the world, those living below the poverty line are more at risk of having chronic health conditions like hypertension and diabetes, with those in minority or discriminated ethnic groups suffering the most from these conditions<sup>7</sup>. As COVID-19 is especially damaging and deadly to those with such pre-existing medical conditions, the poor, minority ethnic, and most deprived communities are experiencing more severe outcomes from COVID-19 than the general population<sup>6,8,9</sup>. Additionally, in many cases these individuals work in lower pay jobs that are classified as essential (e.g. drivers, supermarket attendants,) and are thus also at greater risk of acquiring COVID-19<sup>6,8</sup>. Lastly, the lockdowns and their economic price are exacerbating the social and monetary inequalities already experienced by those living under or near the poverty line<sup>6</sup>. In sum, social and medical inequities have left disadvantaged groups particularly vulnerable and at risk to the social and medical consequences of the COVID-19 pandemic.

**Table 4.** Examples of wider determinants in relation to COVID-19.

TYPES OF DETERMINANTS	
<i>Natural Habitats</i>	Air Quality and Pollution increase risks of respiratory infection; Water Quality affects immune system efficacy
<i>Built Environment</i>	Multi-Generational Housing and Overcrowding increase risk of community transmission; Roads and Infrastructure quality affect ability to access necessary medical care (testing, medicine, ventilators)
<i>Activities</i>	Those working 'essential jobs' are at greater risk of acquiring COVID-19; hourly and working-class individuals at greater risk of financial loss and job insecurity from lockdowns
<i>Local Economy</i>	Those with inherited wealth or the ability to save are better able to endure financial loss and uncertainty for longer than individuals with precarious income and without the ability to save for the future
<i>Community</i>	Marginalized communities (ethnic, religious, economic) are at greater risk of experiencing all of the upstream/downstream factors mentioned above/below due to institutionalized prejudice, financial inequality, and lack of social capital
<i>Lifestyle</i>	Unhealthy habits (i.e. smoking, vaping, poor diet) increase risk of acquiring infection, and experiencing complications and dying of COVID-19
<i>People</i>	Older individuals, men, and those with pre-existing conditions are all at higher risk of the health consequences of COVID-19

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## 12. ATTRIBUTABLE RISK AND MULTIPLE RISK FACTORS

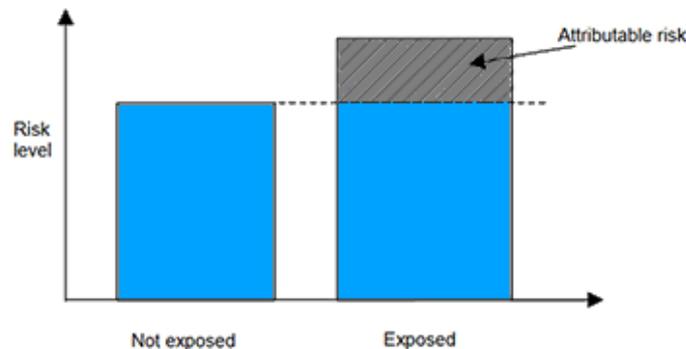
### Standard Definition

Attributable Risk = Proportion of event in exposed – proportion of event in unexposed

$$AR\% = \frac{\text{Proportion of event in exposed} - \text{proportion of event in unexposed}}{\text{Proportion of event in exposed}} \times 100\%$$

**Attributable Risk** is the difference in the rate of an event (e.g. a disease, a condition, or an outcome etc.) in the exposed and unexposed individual (Figure 18). It is sometimes also called the Risk Difference or Excess Risk.

**Risk factors** are factors that increase the likelihood of an event, for instance, a condition, a disease, an injury, or death. The term ‘risk factor’ has a broad sense and can include anything from a characteristic to a situation or a behaviour. For any disease, there can be multiple risk factors. It is not necessary for all known risk factors to exist for a disease to occur, but it usually requires more than one risk factor.



**Figure 18.** The Concept of Attributable Risk.<sup>1</sup> **Source:** World Health Organisation.  
Available from: [https://www.who.int/quantifying\\_ehimpacts/faqs/en/](https://www.who.int/quantifying_ehimpacts/faqs/en/)

### COVID-19 Context

The following two examples may help us understand the concept of ‘attributable risk’ in the midst of COVID-19.

In the first example, developing COVID-19 is the outcome and being a healthcare worker (HCW) is the risk factor. An analysis found that compared to the general public, HCW are more at risk of developing COVID-19. For example, in China-Hubei province, there were 154 cases more for every 10,000 population among HCW compared to non-HCW. In Italy, there were 240 additional cases per 10,000 population that occurred from HCW. The attributable risk appeared to be much lower in China outside Hubei province. This gives us a glimpse into how attributable risk may be different in different regions.

**Table 5.** Risk of developing COVID attributable to being a health care worker (HCW).<sup>2</sup> **Source;** Alberta Health Services COVID-19 Scientific Advisory Group2020. Available from: <https://www.albertahealthservices.ca/assets/info/ppih/if-ppih-COVID-19-hcw-risk-rapid-review.pdf>

Country / Region	Attributable Risk (per 10,000 population)
China-Hubei Province	153.7
Italy	240.1
Spain	323.5
Non-Hubei China	0.28
Philippines	8.25
Indonesia	0.23

There can be many reasons for such differences in the attributable risk in different areas. One observation made was that in areas where number of total cases relative to population is high (>0.1%), case increase is rapid and health system was overwhelmed, such as China-Hubei province, Italy and Spain, the risk of developing COVID-19 attributable to being a HCW is much higher than that in areas where number of total cases relative to population is low (<0.1%), case increase is slow and health system was not overwhelmed, such as areas outside Hubei province in China, the Philippines and Indonesia<sup>2</sup>.

In the second example, several risk factors were examined where hospital death was the outcome. For people who are hospitalised, we expect many to live and continue to receive treatment but we know some may pass away and the reason that one dies may or may not be related to the reason one gets admitted to the hospital. For example, if a person gets hospitalised because of a broken leg from a car accident but he dies because of pneumonia, then his death is attributable to pneumonia. The contribution from a variety of risks to dying from COVID-19 can be looked at individually in such large studies. Many people in England also died who did not get admitted to hospital which is another limitation of this preliminary study. The report from this large cohort of 17.4 million adults (over age 18) in the UK showed that 5683 hospital deaths were attributable to COVID-19 up to 25th April 2020.<sup>3</sup> The authors looked at individual risks associated with different risk factors such as ethnicity, male /female, overweight, and different underlying clinical conditions to help us understand their contributions to the COVID-19 deaths and to attribute each risk. To get a more complete picture the study was later extended to 6th May that also included the non-hospital COVID-19 deaths, so that 10,926 deaths were then analysed for such risks.<sup>4</sup> This gives an even more accurate representation of the risks from each factor and having such large databases gave us important early warnings of risks that are independent of each other but may cumulate in individuals or groups.

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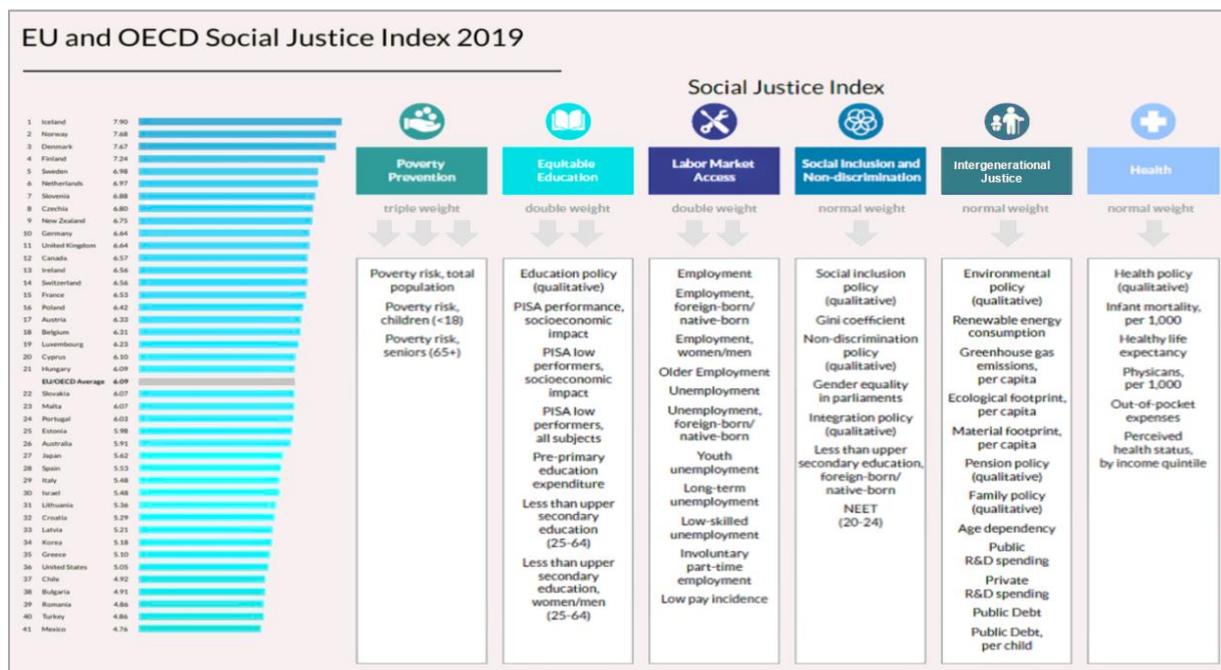
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## 13. SOCIAL JUSTICE

### Standard Definition

‘Social justice has been defined as the equal access to wealth, opportunities and privileges for individuals in a society, including good health’<sup>1</sup>.

People deserve to have a choice to either live or die not because of their social status, gender or race that limits their opportunities for health. Indicators of social injustice include widespread poverty, inadequate housing, poor education, unhygienic and toxic environments, and social disintegration that affect the health and well-being of individuals in society.<sup>4</sup> Policies and practices based on race, gender, social status and other factors result in unequal distribution of money, power and resources among societies<sup>2</sup>. This affects the accessibility and availability of health services to disadvantaged and vulnerable populations. To ensure more equal access to health, we must tackle social injustice and inequity in health and social care systems, and public health preventive intervention programmes<sup>2</sup>.



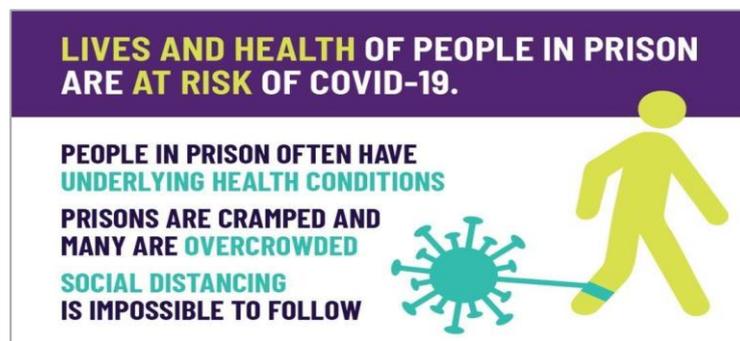
**Figure 19.** Indicators and Social Justice Index 2019 in EU and OECD<sup>3</sup> **Source:** Hellmann T, Schmidt P, Matthias S. 2020. Available from: [https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/SJI\\_2019\\_In\\_a\\_nutshell\\_Web.pdf](https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/SJI_2019_In_a_nutshell_Web.pdf)

### COVID-19 Context

Historically, disadvantaged individuals are more vulnerable to illnesses and least capable of accessing preventive public health measures, which hinders preventive action when they become sick. The COVID-19 pandemic is a social injustice crisis and a population health crisis.

It unequally affects disadvantaged and vulnerable population groups including, low income earners, prisoners, homeless people, aged population groups (e.g. in long-term care facilities), racial minorities or undocumented migrants. A recent survey showed that about 27% of African Americans knew someone who died or was hospitalized from COVID-19, compared to only 1 in 10 white people and Hispanic people<sup>6</sup>. Another is the disproportionate percentage of work-loss among urban and rural low-wage workers<sup>6</sup>. Social distancing measures being implemented may be enforced in ways that expose existing economic, racial, or ethnic disparities<sup>8</sup>. Vulnerable populations that are not able to adopt social distancing measures are at increased risk. It includes low-wage staff, inmates of prisons and other places of detention/confinement (Figure 20). Overcrowded prisons have poor health and sanitary living conditions for prisoners, increasing risk of COVID-19.

Global approaches must embrace collaboration, not protectionism, and focus on solidarity and a basic sense of global equity. Strong approaches towards social justice are crucial especially during times like the COVID-19 pandemic and recognize worsening of inequality related to race, age, class, gender and disability<sup>7</sup>.



**Figure 20.** Example of a social justice problem in COVID-19 context<sup>9</sup>

**Source:** Penal Reform International. Available from:

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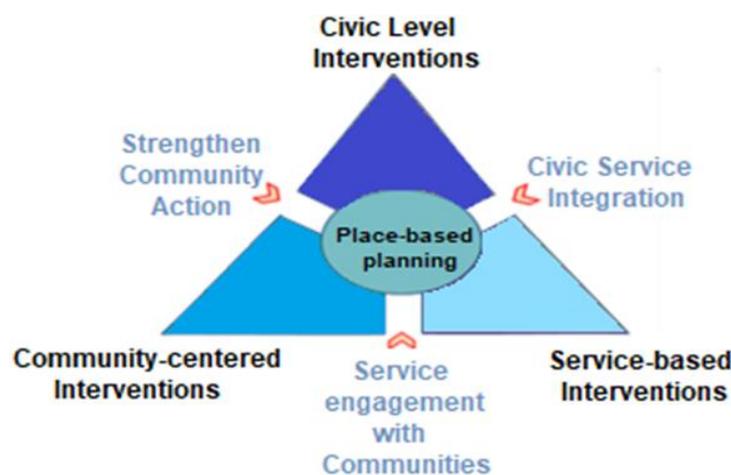
## 14. HEALTH IN ALL PLACES

### – A place-based approach to Health Inequalities

#### Standard Definition

‘Health in all places’ (HiAPI) is consequential of ‘health in all policies’, narrowing the focus to a place-based approach, which includes places of residence, work, using the right mix of capabilities, mindsets, policies and resources to build healthy, resilient and connected communities<sup>1</sup>. To effectively reduce health inequalities, *place* matters as *community* is essential for health and well-being. Interventions should not only focus on treating people but treating the whole *place* as inequalities thrive from complexities that impact our health, and stem from the wider determinants of health<sup>2</sup>.

HiAPI is driven by consideration that health is multi-factorial, and it is not the responsibility of any single sector, but rather acknowledging thinking beyond<sup>2</sup>. From a place-based approach, we consider the entire community to address issues that exist from the neighbourhood level such as poor housing, social isolation, fragmented service provision, to the wider surroundings, harnessing the concept that issues are not primarily labelled ‘health’ but have health impacts<sup>3</sup>. HiAPI recognizes the ‘critical stages, transitions and settings where large differences can be made in population health, rather than focusing on determinants at a single stage in life’<sup>2</sup>, which in turn empowers people to have a greater say in their lives and health.



**Figure 21.** The Population Intervention Triangle Model.<sup>2</sup> **Source:** Public Health England. (2019). <https://www.gov.uk/government/publications/health-inequalities-place-based-approaches-to-reduce-inequalities/place-based-approaches-for-reducing-health-inequalities-main-report>

## COVID-19 Context

In the sense of resilience, as the pandemic curve slowly flattens, community action and connection have been more prominent than ever, creating greater solidarity.

The concept of ensuring ‘no one is left behind’ is heavily felt in people’s minds, finding ways to mobilize to provide extra community-centred support for the vulnerable, isolated, and excluded groups. Volunteer and community groups are coordinating efforts across sectors to support community infrastructure and enhance supportive social networks to reach out in responsive and innovative ways. Can we provide an example? Epidemic resilience efforts should consider place-based planning that is integrated across agencies and sectors, delivered at a small neighbourhood level.

Figure 21 demonstrates place-based planning in a population intervention. Adapting to COVID-19, it demonstrates how important constituent elements work together to form the foundations of effective place-based working in a community-centred approach. Epidemic efforts are led by local authorities and the decisions need to consider the economic impacts of COVID-19 measures such as shutdown of non-essential businesses. Harnessing local authorities’ specialties can provide an array of considerations before introducing measures to have solutions and services in place. Service-based interventions consider the unmet need and demand, thinking about how communities will be impacted when face-to-face service connections are suspended, such as unemployment counselling or day-care services. Finally, at the community level, we see an increase of community-centred action with a focus on solidarity in the time of the unknown and allowing people to feel useful in a helpless situation<sup>4</sup>.

**Table 6.** COVID-19 and place-based approaches; need to work inclusively with whole populations and with high risk places.

WHOLE POPULATIONS		HIGH RISK PLACES
Neighbourhoods	and	Health Care settings
Local government areas		Prisons and places of detention
City and conurbations		Neighbourhoods or settings with crowded accommodation
Provinces or regions		Elderly and social care settings
Country-wide		Specified high risk occupational settings – i.e meat processing plants

The exposure of COVID-19 has adopted HiAPI by protecting global health through building design, operations, organizational policies, and practices. By emphasizing on the setting, epidemic prevention and control can present practical and actionable strategies. The connectivity of people and places matter more than ever, revealing the swift adaptation to meet residents' immediate needs in urban and rural areas who modified their work due to COVID-19.

Digital inclusion has been emphasized as a necessary need to provide access to low-cost, consistent internet access. Actions of place governance have been reinforced to advance transformative placemaking, strengthening existing collaborations and forging new relationships to see their communities through this time of need<sup>5</sup>. As the impact of COVID-19 grows, the challenges of social isolation, social-distancing and other NPM have implications for neighbourhood support that requires urgent action.

The danger of long-durations of constraint may create pressure for feeling disengaged, outbreaks of unrest, and suspicions in trust. *Place* needs to be presented as a solution, not a burden to society. We need to remove barriers to access, distribute resources and intervention to address needs, and recognize COVID-19 impacts in highly deprived areas.

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<https://www.brookings.edu/blog/the-avenue/2020/04/07/how-hyperlocal-organizations-are-pivoting-to-help-their-communities-through-COVID-19/>

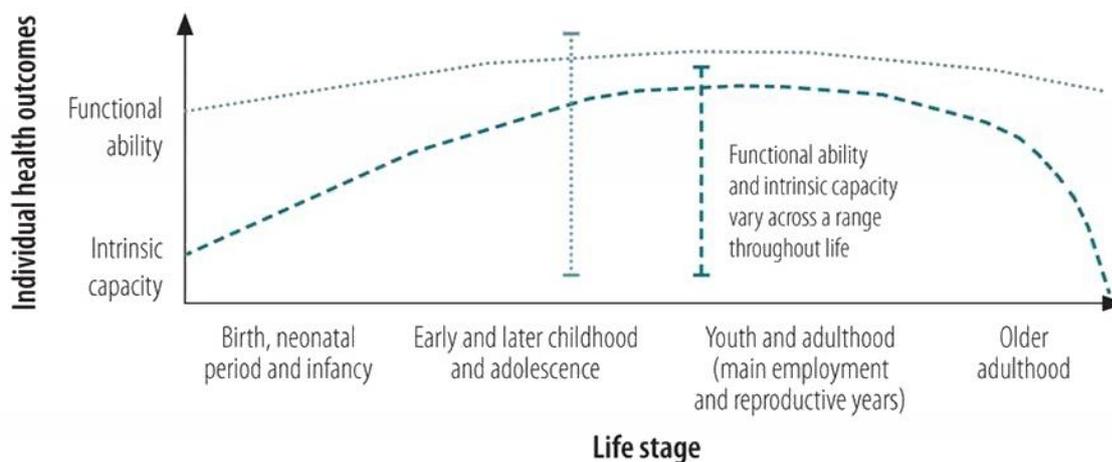
## 15. LIFE COURSE APPROACH

### Standard Definition

‘A life course approach is defined as a holistic view of people’s health and well-being at all ages’ – World Health Organization<sup>1</sup>.

Life course approach increases the effectiveness of interventions across a person’s life. It focuses on a safe start to life and reflects the needs of people during the critical times of their lives. By addressing health causes not consequences of ill health, there is a higher return on investment for public health and the economy<sup>2</sup>. The life-course approach aims to improve health and well-being, promote social justice, and contribute to sustainable development and inclusive growth and wealth in societies as shown in Figure 22 which derives from the WHO standard concept.

### *Conceptual framework for a life course approach to health*



**Figure 22.** Life course approach to Health (Public Health England).<sup>4</sup> **Source:** Gov.uk.2020. Available from: <https://www.gov.uk/government/publications/health-matters-life-course-approach-to-prevention/health-matters-prevention-a-life-course-approach>

Two perspectives inform life course approaches: **developmental** and **structural**. Development perspectives highlight how exposures to risk factors during critical life stages alter future health courses. Structural perspectives show how socioeconomic factors determine disproportionate allocation of resources leading to altered health courses<sup>3</sup>. Health inequalities caused by varying social determinants affect the courses and outcomes across a person’s lifespan, further impacting life expectancy. Addressing determinants of health using the life course approach can improve overall health and well-being at different stages, transitions, and settings in their lives<sup>4</sup>.

## COVID-19 Context

The pandemic has affected the mental health of populations both short term and long term across all ages. The effects may span across their life with some coping and others experiencing trauma, grief, distress, and more critical mental disorders. Further, the impacts of the pandemic will adversely affect people with learning disabilities such as autism and people diagnosed with chronic illnesses<sup>5</sup>. The disruption in people's daily routines and sleeping patterns has affected the mental health and well-being of both young and old and many might be diagnosed with varying disorders; even engaging in harmful behaviours. For older persons, it could lead to anxiety and stress of making major lifestyle changes at that age, (Figure 23).

### Example illustration of Mental Health Impacts of COVID-19 Across Life Course

	Pre-Term *	0-5 Years	School Years	Working Age Adults	Old Age
Key issues to consider	<ul style="list-style-type: none"> <li>Anxiety about impact of COVID on baby</li> <li>Financial worries</li> <li>Anxiety about delivery and access to care</li> <li>Isolation</li> </ul>	<ul style="list-style-type: none"> <li>Coping with significant changes to routine</li> <li>Isolation from friends</li> <li>Impact of parental stress and coping on child</li> </ul>	<ul style="list-style-type: none"> <li>School progress and exams</li> <li>Boredom</li> <li>Anxiety or depression or other MH problems</li> <li>Isolation from friends</li> <li>Impact of parental stress</li> </ul>	<ul style="list-style-type: none"> <li>Balancing work and home</li> <li>Being out of work</li> <li>Carer Stress</li> <li>Anxiety about measures and family or dependents or children</li> <li>Financial Worry</li> <li>Isolation</li> </ul>	<ul style="list-style-type: none"> <li>Isolation and disruption of routine</li> <li>Anxiety from dependent on services</li> <li>Financial worry</li> <li>Fear about impact of COVID if infected</li> </ul>
Staff/ Vols	Cumulative load of stress from significant changes. Traumatic incidents. Isolation from work colleagues. Having to manage working from home. Potential bullying from or to others as part of not coping				
Loss	Loss of loved ones dying may be particularly severe and grieving disrupted because of inability to do normal grieving rites eg as be physically close to dying person, have usual funeral rites, attend funeral etc				
Specific Issues	Impact of delayed diagnoses and treatment (eg chronic conditions,surgery, people living in pain). Suicide and self harm risk for most at risk populations. Members of faith communities may feel disconnected during closure of premises. Domestic abuse may be issues across lifecourse. Drug and Alcohol issues .				

\*refers to parents who are expecting a baby

**Figure 23.** An example graphic from Hertfordshire Council UK of the mental health impacts of COVID-19 across the Life Course.<sup>5</sup> **Source:** Local Government Association 2020. Available from: <https://local.gov.uk/public-mental-health-and-wellbeing-and-COVID-19>

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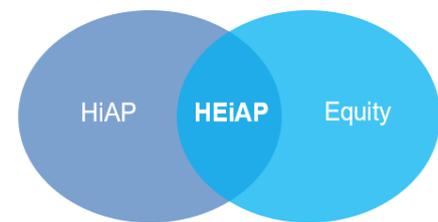
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## 16. HEALTH (EQUITY) IN ALL POLICIES

### Standard Definition

The Health in All Policies (HiAP) approach refers to a process which integrates health considerations into government policy-making across all sectors and policy areas. Its premise is that the most crucial factors affecting health are social, economic, and environmental (social determinants of health)<sup>1</sup>.

The HEiAP approach adds the dimension of equity to systematically address inequitable impacts of policies on vulnerable populations. The approach integrates the principle of equity with Health in All Policies but remains distinct, and worth of consideration. There are a variety of health impact analytical tools, that can help assess these policy areas retrospectively, or prospectively<sup>2</sup>



**Figure 24.** Health Equity in All Policies. Developed by Leo Gkekos and Suzanna Selig

### COVID-19 Context

There is a paradox in many health policies, which have been adopted to address the pandemic. These policies include shelter in place, physical distancing, work from home, using appropriate PPE, limitations on visits to those in nursing homes, hospital settings, prisons, testing, and contact tracing. For those segments of the population able to follow these policies, or for others who reside in areas where these are mandated, rates of COVID-19 disease have been more contained. However, for many segments of the population, these policies have had an unintentional negative impact, resulting in social isolation and economic hardships.

*'The collateral effects of the pandemic due to the global economic downturn, and social isolation and movement restriction measures, are unequally affecting those in the lowest power strata of societies, posing a major challenge to health equity. Examples include vulnerable populations; e.g. older adults, people living in densely populated areas, people with lower socio-economic status, migrants and minorities. Those holding essential roles, usually from lower paying jobs; e.g. public transportation operators or grocery stores/pharmacy clerks are more exposed to the public and are at higher risk of infection. Others may face language and/or cultural barriers limiting access to accurate information on prevention and mitigation leaving them to rely on social media which may be erroneous.'*<sup>3</sup>

Although the pandemic rages on and the story is still unfolding, there are reports of many countries attempting to ameliorate the negative effects of the policies to address COVID-19. Recognising the disproportionate impact, several countries have increased services to vulnerable populations, provided cash assistance, and paid particular attention to different beliefs and practices of religious groups, who are less inclined to follow precautions.

**Table 8.** Examples from several European countries.

<b>Italy</b>	Reduced funding for the health system, hospital mergers and closures, which occurred as a result of outsourcing policies have restricted access to medical care. The northern-most region of Lombardy has been one of the most affected provinces in the pandemic <sup>3</sup>
<b>Germany</b>	Lockdown measures do not affect all people in the same way. The ability to reduce social interactions and to ‘stay home’ is not distributed evenly in a society. The poorer people of society find themselves especially vulnerable because they lack the resources to mitigate the economic impacts of a lockdown <sup>4</sup>
<b>Spain</b>	The negative economic effects of the pandemic have forced several private hospitals in the region of Madrid to close for an indefinite time. Staff were also laid off or were encouraged to take on holiday leave. Although they were not in the frontline against the pandemic, they served the community as health professionals. The closures and the dismissal of staff only increase inequalities in the area <sup>5</sup>
<b>Sweden</b>	Sweden, in an effort to protect the economy, did not opt in for a lockdown. Instead, it relied on recommendations and its citizens to follow the social distancing guidelines. The highly controversial plan of the country led to a disproportionate high death rate at care homes and forced the government to adjust its approach to the pandemic <sup>6</sup>
<b>United Kingdom</b>	The transport industry is weakened due to the pandemic. In an effort to ensure its recovery, the free travel at peak times for disabled and people over 60 years old in London was planned to be temporarily suspended. Therefore, the accessibility of these vulnerable groups to health services was limited. The policy was ultimately changed to not affect disabled people after backlash and resistance by the public <sup>7</sup> .

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## 17. SYNDEMICS

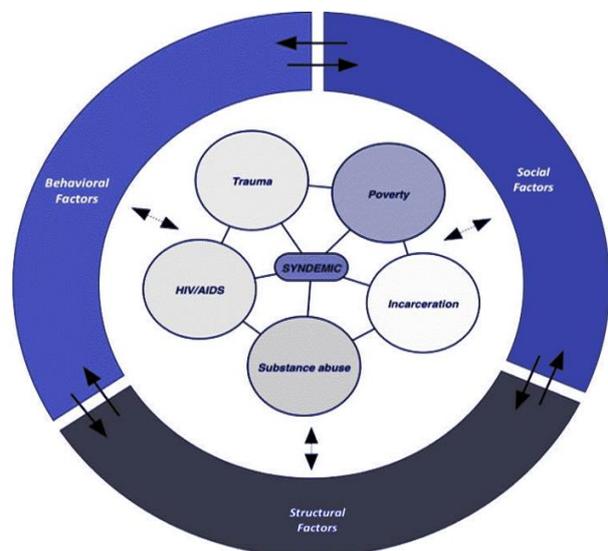
### Standard Definition

The term 'syndemic', sometimes referred to as 'synergised', describes the interactions between diseases and multiple factors including social, environmental, political, and economic determinants.

### *Syndemics in Health*

This way of looking at disease recognises that health is not only defined by biological factors, but also by outside determinants. Merrill Singer first described syndemic theory in the 1990s as a contrast to the existing frameworks for medicine and public health<sup>1</sup>. A syndemic approach utilises characteristics beyond morbidity and mortality, as many medical approaches do not account for wider determinants. It acknowledges that things like climate change, war, and natural disasters have impacts on individual and population health. A multitude of factors may occur simultaneously, increasing disproportionately the burden of disease<sup>2</sup>. Utilising a syndemic approach to health issues may increase the efficiency and effectiveness of interventions, as an intervention could be designed knowing many of the possible interacting factors<sup>1</sup>.

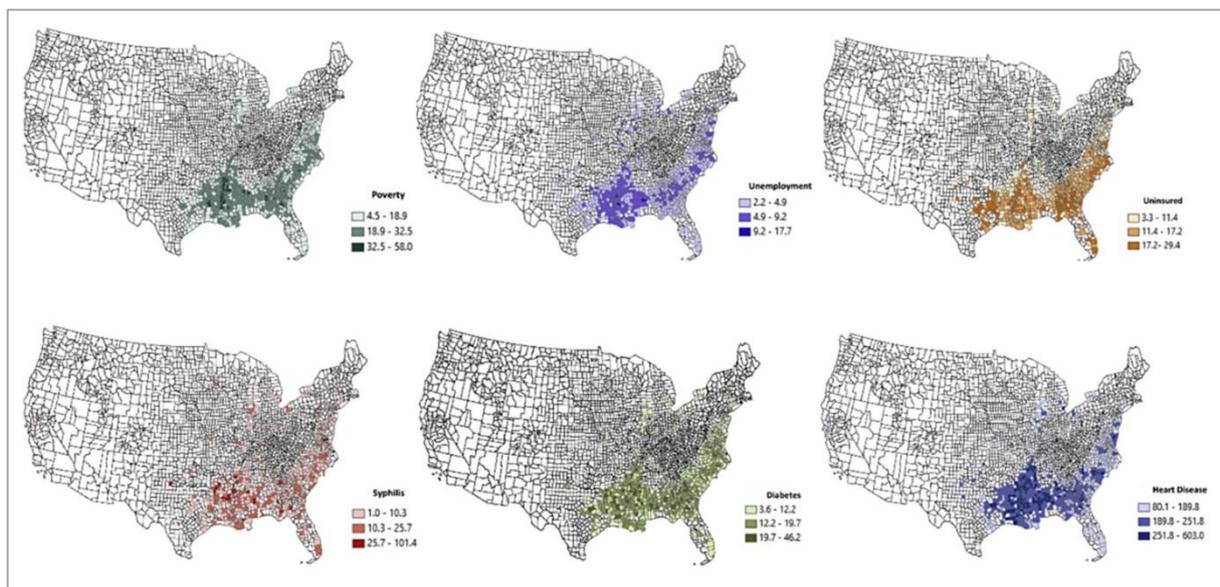
**Example:** The first described syndemic was that of substance use, violence, and AIDS (SAVA)<sup>1</sup>. It recognised that the interactions between environmental factors and the disease both exacerbated and caused the disease itself. Some of these factors are described in the syndemic framework (Figure 25), which demonstrates the synergistic interactions between the multiple factors, all of which are constantly responding to one another<sup>3</sup>. This HIV/AIDS syndemic approach included some additional interactions beyond those of SAVA, demonstrating the flexibility of a syndemic framework. Also, diseases addressed do not have to be infectious<sup>1</sup>.



**Figure 25.** A Syndemic Framework.<sup>3</sup> **Source;** Wilson PA., Nanin J., Amesty S., Wallace S., Cherenack EM., Fullilove R. 2014. DOI: <https://doi.org/10.1007/s11524-014-9895-2>

## COVID-19 Context

The syndemic approach (Figure 25) is relevant to responding to and approaching COVID-19. Recognising that multiple factors are causing communities to experience the pandemic differently allows interventions to be community-relevant and aware of the many other present factors. For example, Poteat et al.<sup>4</sup> analysed the intersecting factors of poverty, unemployment, lack of insurance, syphilis, diabetes, and heart disease in Black communities in America (Figure 26). These same regions are now experiencing disproportionately high rates of COVID-19 infection and mortality.



**Figure 26.** Overlapping socioeconomic and health conditions (syndemic) in US counties with a >13% black population.<sup>4</sup> **Source:** Poteat, T, Millett GA, Nelson LE, Beyrer C. 2020. DOI: <https://doi.org/10.1016/j.annepidem.2020.05.004>

Perspectives and evidence on this topic is still emerging. For further reading we recommend *Richard Horton – Offline: COVID-19 is not a pandemic*. Available from: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)32000-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32000-6/fulltext)

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## 18. EPIDEMIC IMPACTS

### Standard Definition

Epidemic impacts are multidimensional and multi-phasic. McMillen's FIVE FACETS concept addresses fundamental population features that can be impacted: FINANCIALLY, POLITICALLY, DEMOGRAPHICALLY, CULTURALLY, BIOLOGICALLY<sup>1</sup>.

Other than loss of lives, epidemics affect population health in all aspects, especially when health resources are stretched thin and the local health system is overwhelmed. Urban population density and rural displacement has increased; impacts of epidemics have evolved and become more complex. In the 21st century, international trade and travel have grown rapidly; globalisation has made economic and societal impacts from epidemics more visible than ever. A pandemic is 'an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people'<sup>2</sup>. Estimates of economic costs of a pandemic range in many billions<sup>3</sup>, resulting from health care costs, loss of productivity, stagnation of economic activities, and the fear and confusion of the public and sometimes of leaders in systems. These pose a detrimental effect on the local, regional, and global economic situations.

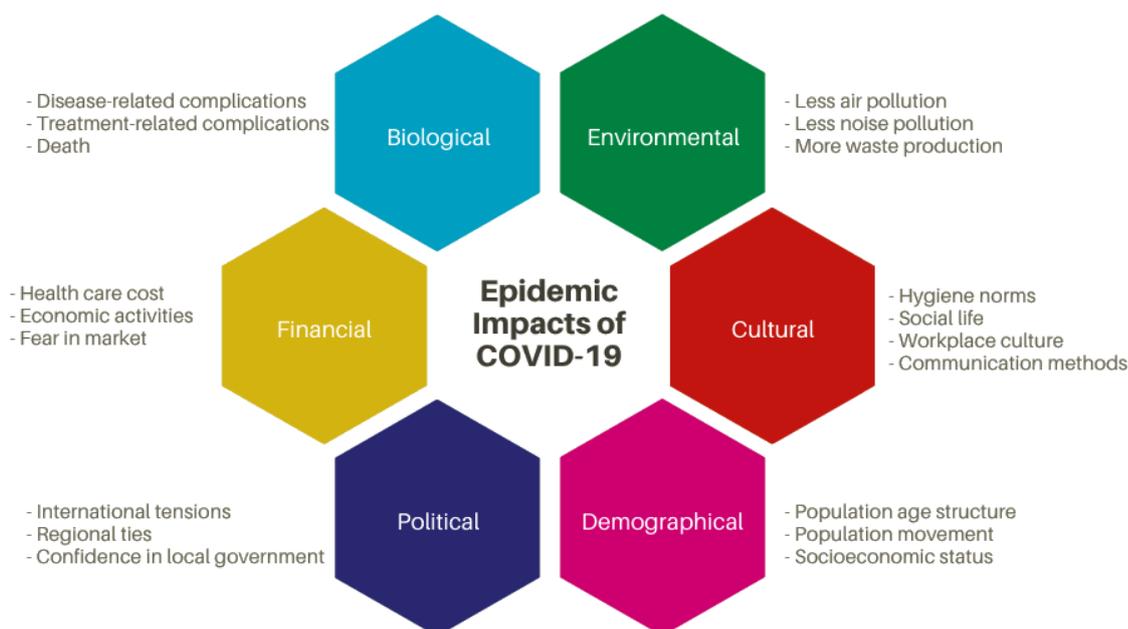
The impact of epidemics on political stability was observed in the outbreaks of Ebola, Zika and SARS, regardless of the income level of the countries and regions<sup>4</sup>. Epidemics also influence interpersonal relationships and the dynamics between humans and the environment. The transmission of epidemic diseases is not random but driven by risk factors. That said, there are pre-existing vulnerabilities specific to the areas where the diseases spread<sup>5</sup>. The public reaction as well as the subsequent pandemic responses or policies will further shape the society and social norms.

### COVID-19 Context

Today, the world's population is 7.7 billion<sup>6</sup>. As technology advanced and trade increased, all nations were drawn nearer and more interdependent than ever. Consequently, the pandemic impacts of COVID-19 are unprecedented. Pandemic impacts are still expanding. By August 2020, 21.5 million cases were confirmed and about 770,000 lives were lost to COVID-19<sup>7</sup>. Although many survived the disease and regained good health, some cases face short-term complications like acute kidney or liver injury and cardiovascular complications<sup>8</sup>. Emerging evidence indicates neurological and neuropsychiatric complications too<sup>9</sup>. The global economic outlook grows grim as economic activities stagnate. The World Bank forecasted 5.2% contraction in global GDP in 2020 and the pandemic to force most countries into recession; the greatest contraction in per capita income since 1870<sup>10</sup>.

COVID-19 shocks are expected to be larger for emerging and developing economies. Limited health care capacity and detrimental impacts on economic growth may last longer in these economies<sup>10</sup>. COVID-19 triggers discussions about national security as States announced travel restrictions and updated border control policies. International tension increased as national leaders' disagreements intensified<sup>11</sup>. Regional ties can be strengthened with collaborative efforts combating the pandemic and maintaining trade or weakened by existing frictions or mistrust<sup>12</sup>. Pre-existing vulnerabilities to COVID-19 are encapsulated in demographic data of an area and show niches where coronavirus spreads. It affects different groups differentially, and in turn influences local demographics. Fatality rates of COVID-19 are much higher in older populations, especially age over 80; therefore, there is a potential for 'dramatically higher fatality in countries and localities with older populations'<sup>13</sup>. Population growth of a country may be slowed down by reduced immigration, and also by reduced fertility in that country's population as more people defer pregnancy until after social distancing measures are eased or economic uncertainties are lessened<sup>14</sup>.

Overall COVID-19 has shaped the world and human activities in many ways. As the pandemic goes on, new norms about social distance, personal hygiene, work routine and communication have been established and the new norms will continue to evolve. Pandemic control and preventive measures as well as the new norms are affecting the environments in different ways. Owing to social distancing policies and travel restrictions, tourists and traffic have decreased and hence the reduction in air pollution and noise pollution<sup>15</sup>. On the other hand, increased use of hygiene products and personal protective equipment (PPE) has led to more waste production and impeded efforts in raising awareness against plastic waste<sup>16,17</sup>.



**Figure 27.** Expanding from the FIVE FACET concept -The epidemic impacts in the context of COVID-19. Developed by Anabelle Wong (original source: <https://www.oxfordbibliographies.com/view/document/obo-9780199743292/obo-9780199743292-0155.xml>)<sup>1</sup>

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## 19. MULTIPLE & PARALLEL EPIDEMICS – *Impact Multidimensionality*

### Standard Definition

**Parallel epidemics** implies an overlap over time of at least two epidemics that share some common origins. This could be due to a similar communicable disease pathogen occurring in different geographies, or a shared set of causes and/or population groups affected by different pathogens/hazards. It is particularly relevant where disadvantaged and excluded groups have or are experiencing yet another added burden of ill health in addition to pre-existing ones. Its chief utility is to signal a possible silent or actually hidden epidemic. This raises the need for active investigation and advocacy to find evidence and solutions. This could also signal where one epidemic is given greater attention, engagement, and resources, compared to the other one that is being more neglected or less visible.

#### **'PARALLEL EPIDEMICS WITH A NEED FOR PARALLEL RESPONSES'**

In the USA, the opioid epidemic overlaps with the HIV/AIDS epidemic. Both have similar victims: young, previously healthy, and already stigmatized. However, while HIV/AIDS 'has transitioned from a veritable death sentence to a chronic condition for which most live a normal life', opioid addiction has not been effectively addressed yet. Although these epidemics are different in their nature, the highly coordinated response to HIV/AIDS by affected communities, the public health system, physicians, and government agencies could provide valuable insights for the opioid epidemic.<sup>1</sup>

### COVID-19 Context

Fairly early in the pandemic, in the UK there were warnings about missed or disrupted normal healthcare, and delays and backlogs (**Source:** Triggler N. BBC News 29<sup>th</sup> April 2020)<sup>2</sup>:

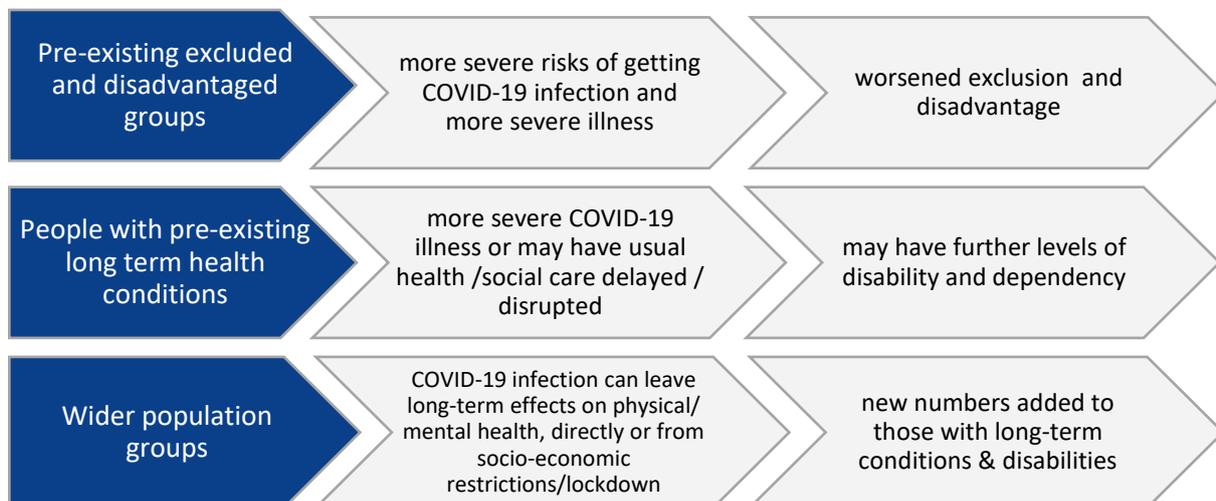
*'The rising death toll from coronavirus is never far from the headlines but hidden behind the daily figures is what public health experts refer to as the "parallel epidemic". This is the wider impact on people's health that is the result of dealing with a pandemic. UK chief medical adviser Prof Chris Whitty has been referring to this with increasing frequency during the daily briefings, speaking about the "indirect" costs of coronavirus. But what is it, and how significant could it be? Not getting NHS care. The focus on ensuring there were enough beds in hospitals to care for coronavirus patients led the NHS to carry out a series of unprecedented steps. Routine treatments, such as hip and knee replacements, were cancelled across the UK. This alone will have a significant impact on people's lives, though it is unlikely to kill anyone.' .....*



*'Prof Derek Alderson, of the Royal College of Surgeons, said this will be having a "major impact" with patients left in pain and suffering disability. The backlog in surgical work will be "gigantic", with more than 700,000 routine treatments a month affected. The pandemic has also had a knock-on effect on emergency care. Data collected by Public Health England from a sample of A&E departments in England shows attendances have halved since the pandemic started. The fear is that people who are suffering serious problems, such as heart attacks and even strokes, may be put off seeking treatment. There is evidence this has happened for children too, with doctors reporting children were being brought in late with conditions such as ruptured appendixes and blood poisoning.'*



The pandemic has been described as a 'perfect storm for mental health'. This could be through many factors such as increased social isolation, loneliness, health anxiety, stress and an economic downturn.<sup>2</sup> Thus, COVID-19 'has caused a parallel epidemic of fear, anxiety, and depression. People with mental health conditions could be more substantially influenced by the emotional responses brought on by the COVID-19 epidemic, resulting in relapses or worsening of an already existing mental health condition because of high susceptibility to stress compared with the general population'.<sup>3</sup>



**Figure 28.** COVID-19 Parallel Epidemics. Developed by John Reid and Tara Chen.

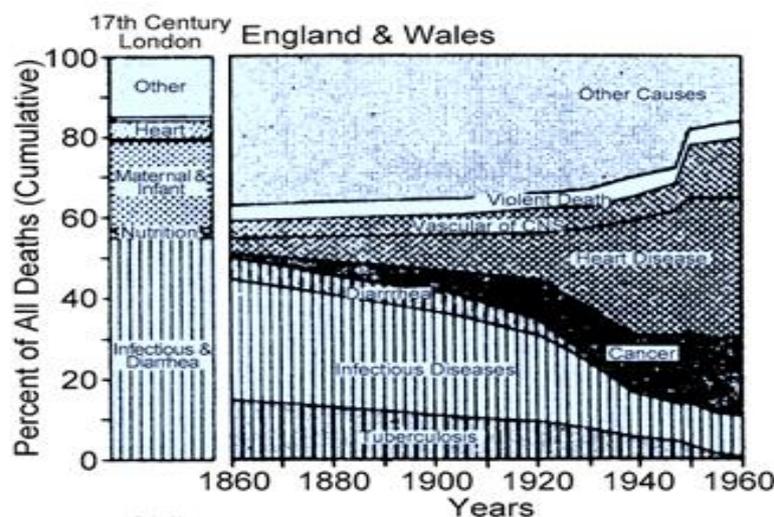
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## 20. EPIDEMIOLOGIC TRANSITION THEORY – and why ‘modern’ societies become highly susceptible to pandemics

### Standard Definition

Epidemiologic transition theory predicts long-term changes in mortality, health and disease in population, as socioeconomic, political, cultural, and public health systems evolve as a society modernises. Low-income countries are typically characterised by high fertility and high mortality rates with lower life expectancy. Generally, as societies industrialise, the population dynamics shift (including demographic transitions). Changes typically include an increase in overall life expectancy, a decrease in childhood mortality and a larger proportion of the population reaching old age. Greater economic stability and prosperity links to improved nutrition, better housing, better infrastructure, and often better medical and preventive public health services (including fertility control). Disease patterns alter and communicable diseases (CD) decrease in prevalence and non-communicable diseases (NCD) replace CD as the leading cause of mortality. Epidemiological transitions are still ongoing in less-developed societies alongside demographic and technological shifts<sup>1-2</sup>.

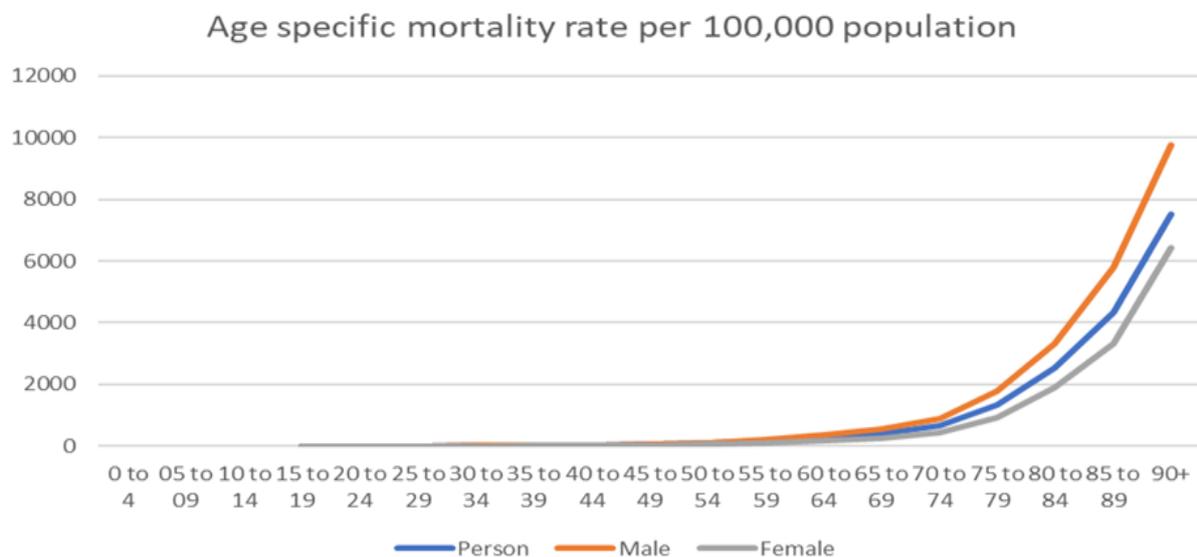


**Figure 29.** Cause-of-death statistics for England and Wales. Prevalence of communicable diseases decreases as industrialisation occurs over the 19th and 20th century.<sup>2</sup> **Source;** Omran AR. The Epidemiologic Transition: A Theory of the Epidemiology of Population Change, DOI: <https://doi.org/10.1111/j.1468-0009.2005.00398.x>

### COVID-19 Context

In the face of pandemics such as COVID-19, the social structures that are built as a result of an epidemiologic transition are challenged. In particular, as CD become less prevalent, the medical, healthcare and public health systems tend to focus more on the NCD leading causes of ill health and mortality instead.

The demand for investment on combating degenerative and man-made diseases, also drives less regard to CD. Despite experiencing two serious epidemics (SARS, MERS) prior to COVID-19, specific preparedness for a Coronavirus pandemic was still lacking<sup>3</sup>. In addition to that, groups highly vulnerable to COVID-19 are more prevalent as a large portion of the population has reached old age and experiences NCD, such as diabetes mellitus<sup>4</sup> or cardiovascular diseases<sup>5</sup> (Figure 30). Countries across the European region are in different stages of epidemiologic transition and those with the largest most elderly populations may have the highest overall mortality rates from COVID-19.



**Figure 30.** Age-specific mortality rates for deaths involving COVID-19 per 100.000 population, occurring in March and April 2020, registered up to 15 May 2020 in the UK. Males aged 90 years and over had the highest mortality rate due to COVID-19. **Source:** ONS Report. Deaths involving COVID-19, UK: deaths occurring between 1 March and 30 April 2020 Available from:

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deaths-involving-covid-19-uk/deaths-occurring-between-1-march-and-30-april-2020>

Basic Epidemiologic Transition theory helps us in two ways. It helps us anticipate that higher income societies will have large numbers of older people and many others with chronic NCDs who will be severely affected by pandemics. The theory does not readily show that health inequalities in higher income societies are also exacerbated by pandemics. Those inequalities typically apply to both CDs and NCDs. Pandemics also reveal the underlying need for dealing with deprivation, social exclusion, and inequities of access to health and social services.

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## 21. VULNERABILITY-IMPACT EXACERBATION CYCLE

### Standard Definition

COVID-19 is leading to even greater vulnerability and impact – in an exacerbation cycle. This cyclical concept is helpful in explaining how those populations' poorer pre-existing position is exacerbated by COVID-19 infections:

- as they already suffer from serious disadvantages before going through COVID-19 experiences,
- given they have worse levels of pre-existing long-term health conditions, such as lung, heart, or other circulatory problems,
- are exposed more often and get infected more often,
- have more serious illness,
- more often die or have longer term poorer health outcomes,
- suffer more long-term disability and have higher burden of care,
- are more affected by economic downturn and associated poverty
- and overall, they and their families and communities end up poorer and more disadvantaged by the completion of each part of the pandemic's waves.

This exacerbation-impact concept borrows from two uses of the term exacerbation:

#### ► **Medical exacerbation concepts**

There is much interest nowadays for clinicians in good management of common chronic lung conditions, particularly COPD and asthma. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) initiative is a major feature of modern care.<sup>1</sup> Prevention or early treatment of lung infections is vital to prevent exacerbations. This is not just because patients may die more than others. Each significant infection can leave each person with asthma and COPD worse off than before. Exacerbations should be avoided, and optimally managed by clinicians to minimise longer-term impacts. Patients with more severe COPD are in the most vulnerable groups who are 'shielded' during COVID-19 pandemic. Lung volume in all adults decreases with advancing age. Exacerbations from infections reduce the already limited lung volume of a COPD patient much further.

#### ► **Public health exacerbation concepts**

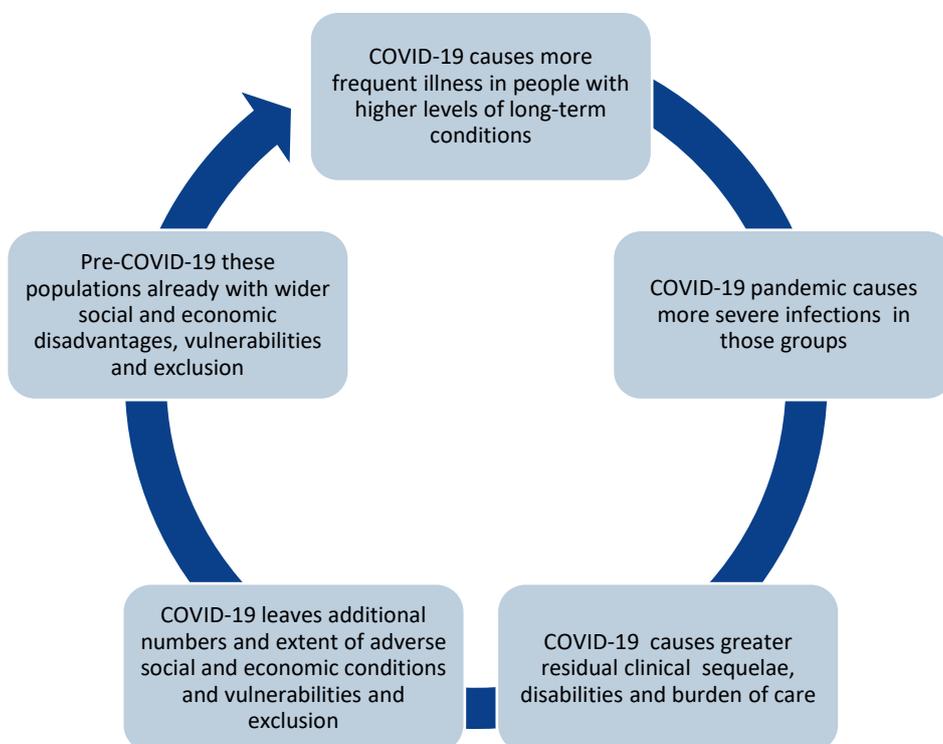
However, COPD is primarily caused by tobacco smoking in Europe, and tobacco related harms are more common in more deprived populations. Both COPD and asthma are also more frequently associated with poorer housing and living conditions.

Multiple adverse living, housing, and working conditions cause synergistic and cumulative impacts for low income families and communities. Poor housing is one fundamental feature for vulnerability and for a cycle of higher impacts.<sup>2</sup>

*'Poverty, poor housing, and poor health are usually linked, and this means that it is difficult to measure health gains from improvements to housing conditions alone. Although there is a need for more sound evidence of the health gains associated with housing interventions, the chapters of this report have shown that inadequate housing conditions are directly and indirectly linked to negative health outcomes. Inadequate housing conditions most often affect the less wealthy and the disadvantaged and are therefore most often suffered by the more vulnerable population groups. In addition, those who make the most use of, and most demands on, housing are the very young, the elderly, and the sick, and these are population subgroups most vulnerable to environmental risks.'*<sup>2</sup>

## COVID-19 Context

The mounting evidence on COVID-19 impacts show that poorer, excluded and minority groups have worse experiences. This includes multiple and synergistic factors. Policy makers will need to acknowledge that the extra pandemic effects will need to be mitigated and work with disadvantaged communities to prevent vulnerability and to improve underlying living conditions and protect those with pre-existing clinical vulnerabilities.



**Figure 31.** Vulnerability-COVID-19: Impact Exacerbation Cycle. Developed by John Reid and Tara Chen

## References

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