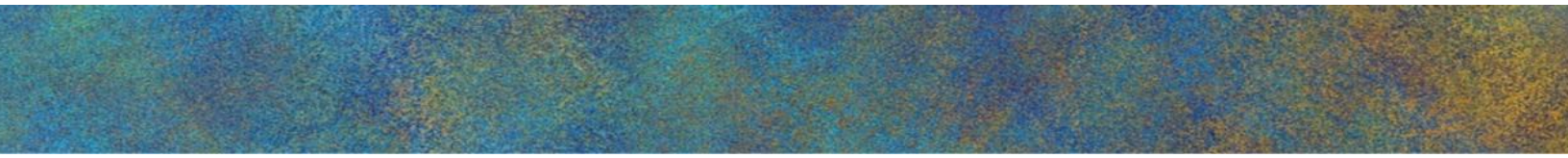
# Chapter 1. Introduction



Public health concerns the promotion and protection of health of people and communities. While a doctor treats people who are ill, those working in public health try to prevent people from getting ill, and to promote wellness by encouraging healthy behaviour (American Public Health Association, 2017). The practice of public health involves the organised efforts of society to promote the health of the population.

This report, from the Caribbean Public Health Agency (CARPHA), examines the State of Public Health across a small and very diverse region of the world. The countries of the Caribbean are small in population and geographical size, and highly vulnerable to external man-made and environmental shocks. The report examines major threats to the health of Caribbean people and the communities where they live, learn, work and play. The focus is on the situation in the three years 2014 to 2016. This involves examining some long-standing issues as well as things that happened in that period. Actions that have been taken to address threats are presented, along with examples of good practice and suggestions for the future.

We introduce this report by first giving a brief profile of the Caribbean and its people. Major health frameworks and public health institutions in the region are then described. We go on to present the Social Determinants of Health conceptual model that will be used for analysis throughout this report.

An overview of public health in the Caribbean is provided in Chapter 2. This involves looking at communicable and non-communicable diseases and injuries, risk factors and social vulnerabilities. Progress in meeting the recommendations and targets of some major health frameworks is presented.

Chapters 3 and 4 focuses on two key areas of public health significance for the 2014-'16 period. These are vector-borne diseases (VBDs) and childhood obesity (CO). The 2014-'16 period saw epidemics of chikungunya and Zika: both VBDs that had not been encountered in the Caribbean before. They placed additional strain on existing systems to prevent and treat VBDs and brought new health challenges. They underlined gaps in regional health security given the widespread distribution of the primary vector, the Aedes *aegypti mosquito.* Childhood obesity is an increasing threat; largely the outcome of health behaviours and an obesogenic environment that have previously manifested in non-communicable diseases (NCDs) mostly among older adults, and which are now affecting the next generation. How health is promoted to address CO will affect the economic and social development of the region.

The priority areas of VBDs and CO for the State of Caribbean Public Health Report covering 2014-16 were identified via a poll of Ministries of Health from Caribbean countries.[1] The decision to choose

[1] Participants in the poll of CARPHA Member States (CMS) comprised participants representing Ministries of Health from CMS. They were asked to allocate points to eight subject areas based on: relevance to CMS and regional development, Caribbean Cooperation in Health Priority Areas, economic impact, and alignment to events, partners and funding. The eight subject areas were: childhood obesity/non-communicable diseases, mosquito borne viral diseases, climate change and health, healthy ageing, violence and injury prevention, anti-microbial resistance, universal health coverage, tourism and health, Caribbean regional development through functional cooperation in health, and the Caribbean region's regulatory capacity. Representatives from 22 of CARPHA's 24 Member States responded. The two subject areas that attracted the most points were: childhood obesity/ non-communicable diseases and mosquito-borne viral diseases (Hunte, 2017). Arising from this consultation exercise, the two thematic areas for the SPHR 2014-2016 were determined to be VBD and CO.

areas of focus was based on the recognition that the boundaries of public health are wide and that the Caribbean is diverse. In focussing on one or two key areas while also providing a summary overview of public health issues, the State of Caribbean Public Health Report follows the usual practice of State of Public Health Reports (SPHRs) from around the world. A feature of this SPHR is the use of a social determinants of health framework, introduced in section 1.4, which enables critical analysis of health determinants at the individual, social and structural levels and the building of multi-sectoral alliances and approaches to improving public health.

## 1.1 The Caribbean Region

The Caribbean comprises multiple islands and low-lying mainland territories and countries. The Region is remarkably diverse, with a mix of languages and ethnicities. Countries have varying sizes, geographic landscapes and political systems.

Population sizes vary from extremely small (approximately 1,900 in Saba) to small (approximately 11.4 million in Cuba). Many of the states are Small Island Developing States (SIDS), which have been identified as facing development challenges resulting from small size, transport costs, coastal weather patterns, vulnerability to climate change, dependence on income from a small range of exports, and high dependence on imports to meet basic nutritional and other needs (International Labour Organization, 2014; United Nations Environment Programme, 2014). The Central America mainland country of Belize and the South American mainland countries of Guyana and Suriname are also considered part of the Caribbean, given a similar political history to the Caribbean islands.

The Caribbean is in the tropical zone and has little temperature variation throughout the year. There are two seasons; a rainy or wet season that runs roughly from June to December, and a dry season from November to May. The region is prone to tropical storms and hurricanes during the rainy season. It is also prone to earthquakes resulting from movement of the Caribbean tectonic plate. Some countries have experienced major natural disasters, and these have set back development, sometimes for several years, and brought grave public health consequences.

An extreme example is the 2010 earthquake in Haiti, which killed 230,000 and displaced 1.5 million people, and was followed by the largest cholera epidemic ever reported in a single country (Domercant et al., 2015). Health programmes, such as those aiming to prevent and treat HIV and tuberculosis, were disrupted, and risk of infection from these and other diseases increased as people were affected by post-traumatic stress and relocation to crowded “tent cities” set up for displaced people (Devieux, 2011; Ghose, Boucicaut, King, Doyle, & Shubert, 2013; Pape et al., 2010; Rahill, Joshi, & Hernandez, 2016; Rouzier, 2011a; Walldorf et al., 2012).

Climate change is having severe consequences for the Caribbean region via increased temperatures, intensity of storms and hurricanes, sea level rise, coral bleaching, and impact on food security. Effects may vary depending on geographic features and level of infrastructure such as drainage and solidity of building construction (Litchveld & Wahid, 2017). In the 2014-’16 period, Tropical Storm Erika and Hurricane Matthew were among the natural disasters experienced by Caribbean people, and highlighted the critical need to improve the precision of weather forecasts and for multi-sectoral collaboration in storm preparation and disaster preparedness. On August 27, 2015, Dominica

experienced Tropical Storm Erika, after which 574 people were left homeless and 713 were evacuated/ displaced, mostly because of flooding and landslides. Interviews with survivors and Ministry of Health officials revealed a need for additional mental health services following the trauma of displacement and destruction of homes and workplaces and loss of social support networks from their home communities. The informants also stressed needs for healthy foods and employment (Ravaliere & Murphy, 2017). In late September/ early October 2016, Hurricane Matthew was the deadliest Atlantic hurricane since 2005, killing 546 in Haiti, 47 in the United States, 4 in Cuba, 4 in the Dominican Republic, 1 in Colombia, and 1 in Saint Vincent and the Grenadines, and damaging many homes in The Bahamas. Preparations for Hurricane Matthew, such as evacuations and closures of airports, schools and businesses affected other Caribbean countries as well, including the Windward Islands, the Dominican Republic, Jamaica, Turks and Caicos and as far south as Aruba, Bonaire and Curacao. Schools and businesses were closed, and people sought shelter in preparation for the hurricane. Infrastructural damage was sustained in several of these countries (Wikipedia, 2017).

Caribbean countries have highly open economies. For historical reasons and because of their small size, their economies are highly import dependent. For instance, 70% of foods consumed are imported from outside the Region. This affects susceptibility to food-borne diseases (FBDs), and to non-communicable diseases (NCDs) associated with the consumption of processed foods high in fat, sugar, artificial flavourings and preservatives. Additionally, the major export of most countries is tourism, which accounts for 25-65% of GDP in most countries. While contributing to prosperity and cultural diversity, this also affects the range of goods available to local people and susceptibility to a wide range of pathogens from around the world.

The Caribbean has a rich mix of people of varying backgrounds. These include indigenous people, Africans, Asian Indians, Europeans, Chinese, Indonesian Javanese and many of mixed ancestry. The population of most countries comprises a mostly people of African descent, but in Guyana, people of Indian descent outnumber them, and in Trinidad and Tobago, the population of Indian descent is slightly smaller than that of African descent. There are four primary languages in the Caribbean: English, Spanish, French and Dutch, and several dialects including Patois, Creole and Papiamentu.

Politically, the countries can be grouped into the Caribbean Community (CARICOM) Member States, the United Kingdom Overseas Territories (UKOTs), the Dutch Caribbean (both municipalities in the Netherlands and countries), the French Departments and the Hispanic Countries. CARICOM consists of fifteen Member States, inclusive of the Organisation of Eastern Caribbean States (OECS), which is made up of nine-member countries that share a common currency and a common market and economy. The UK Overseas Territories (UKOTs) are associate Member States of CARICOM.

Countries vary widely in economic development, and in levels of health expenditure. The following table shows a wide variation in health expenditure as a percentage of government expenditure, bearing little relationship to the national income levels of each country.

**Table 1: GDP per capita, and health expenditure as percentage of government expenditure, 2014**

| | GDP per capita (Purchasing Power Parity, Current International Dollars) | Health expenditure as % of government expenditure |
|---|---|---|
| **Antigua and Barbuda** | 20,564 | 18.1 |
| **Barbados** | 16,114 | 10.9 |
| **Belize** | 8,480 | 13.8 |
| **Cuba** | N.A. | 18.0 |
| **Dominica** | 10,927 | 10.5 |
| **Dominican Republic** | 13,313 | 17.4 |
| **Grenada** | 12,683 | 9.2 |
| **Guyana** | 7,259 | 9.4 |
| **Haiti** | 1,741 | 6.1 |
| **Jamaica** | 8,483 | 8.1 |
| **St. Vincent and the Grenadines** | 10,858 | 14.8 |

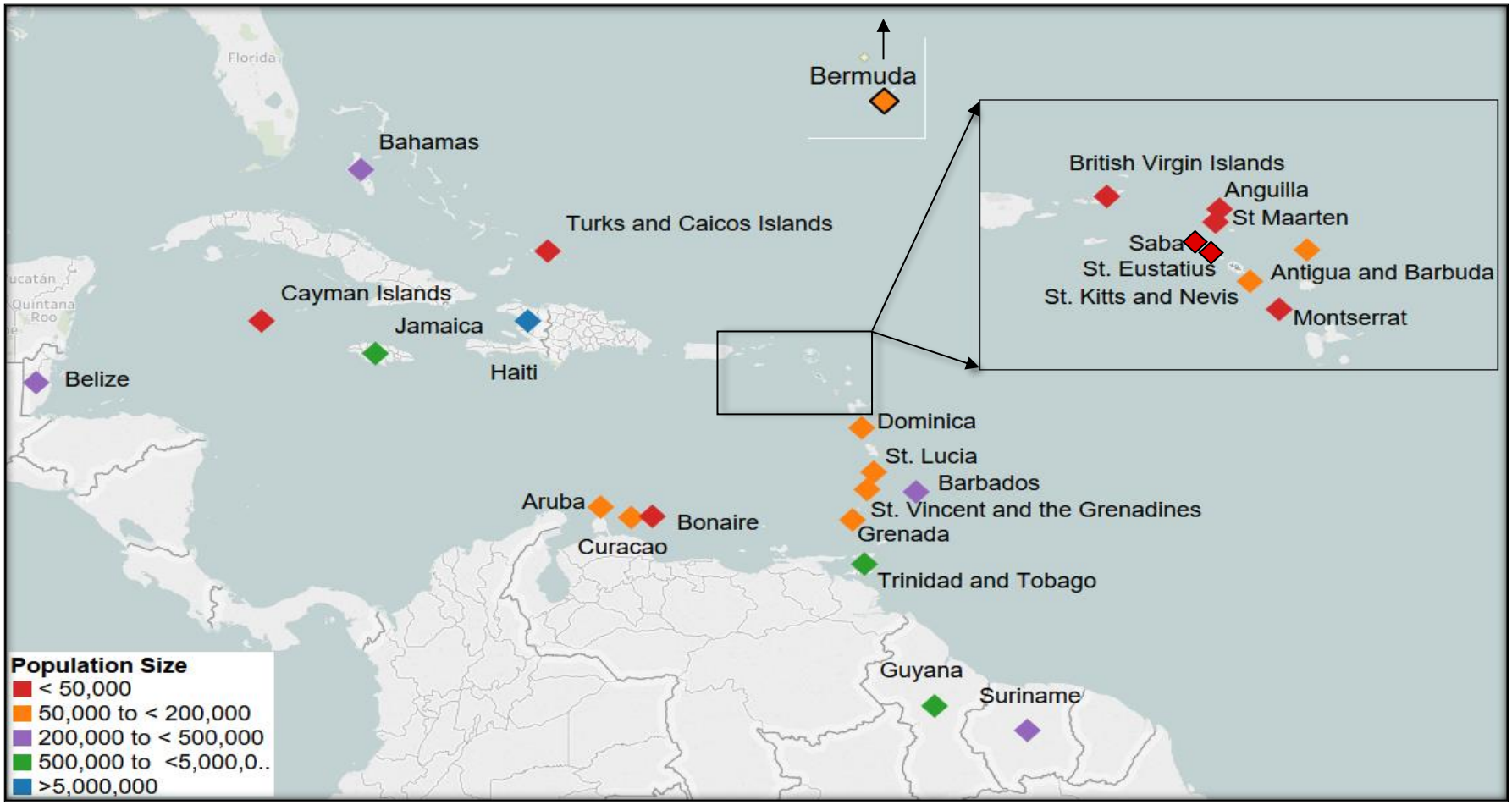
Source: World Bank Databank

This report focuses mostly on Member States of the Caribbean Public Health Agency (CARPHA Member States - CMS). CARPHA, established in 2013, merges pre-existing specialist Caribbean public health agencies, each with a proud history of cooperation and achievements in health. This agency is described in more detail in section 1.3.2. The issues highlighted in this report are likely to be similar in Caribbean countries and territories that are not part of this grouping. CARPHA membership currently includes all CARICOM Member States and associate Member States as well as the Dutch Caribbean (Table 2).

**Table 2: CARPHA Member States (CMS)**

| CARICOM Member States | CARICOM Associate Members | Dutch Caribbean |
|---|---|---|
| Antigua and Barbuda* | Anguilla* | Aruba |
| Bahamas | Bermuda | Bonaire |
| Barbados | British Virgin Islands* | Curacao |
| Belize | Cayman Islands | Saba |
| Dominica* | Turks and Caicos Islands | St. Eustatius |
| Grenada* | | Sint Maarten |
| Guyana | | |
| Haiti | | |
| Jamaica | | |
| Montserrat* | | |
| Saint Lucia* | | |
| St. Kitts and Nevis* | | |
| St. Vincent and the Grenadines* | | |
| Suriname | | |
| Trinidad and Tobago | | |
| *** OECS Member States** | | |

**Figure 1: Map showing population sizes among CARPHA Member States**

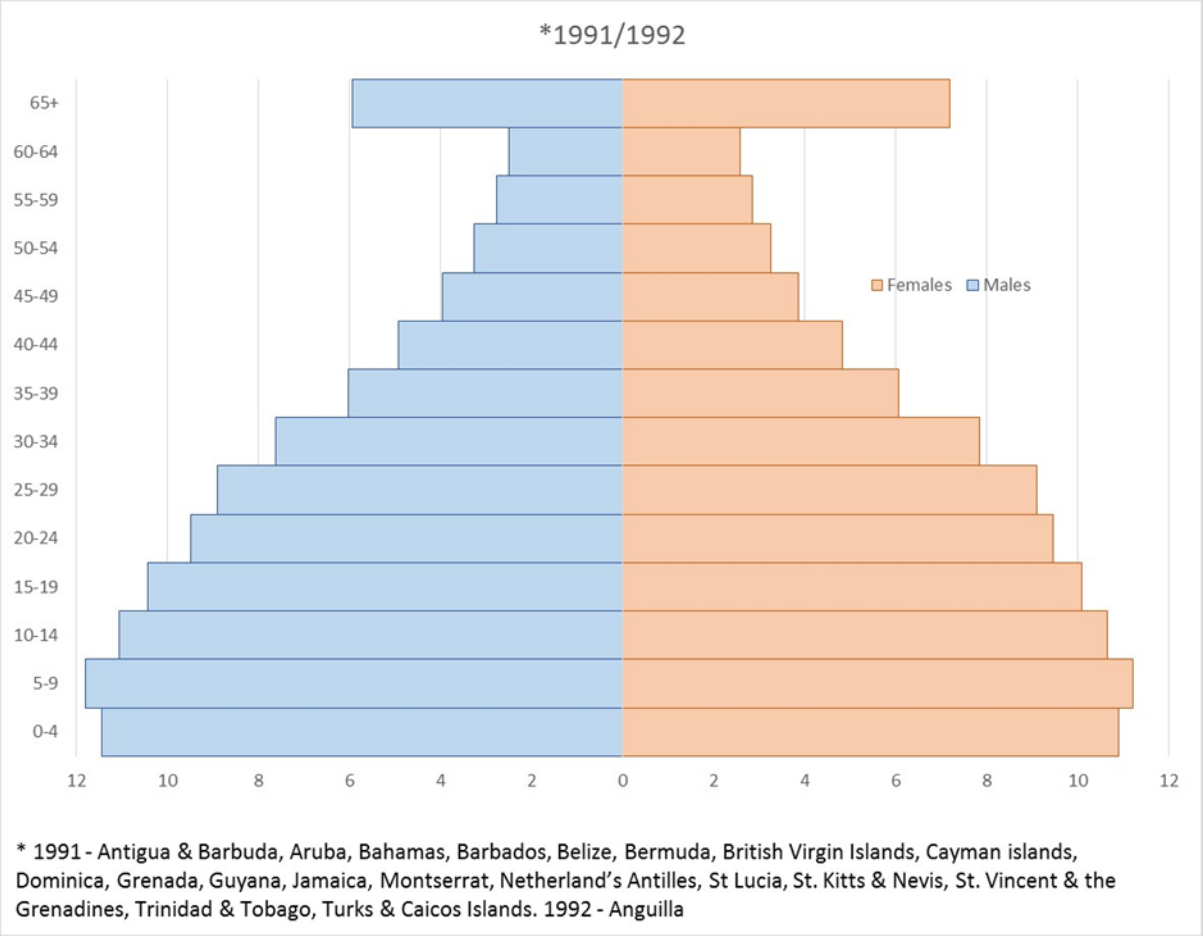


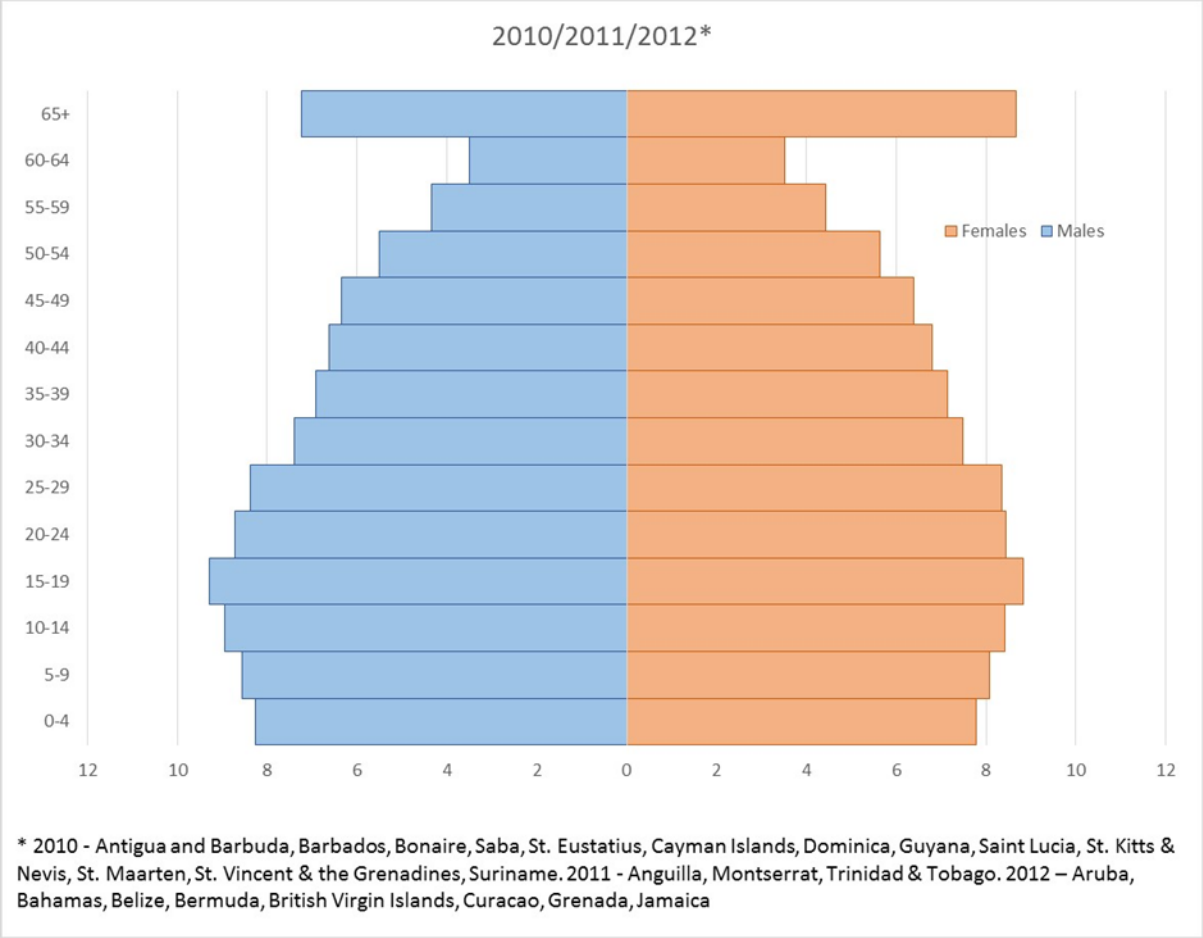
## 1.2 Demographic overview of CARPHA Member States

Population sizes in CMS range from approximately 1,900 on the island of Saba to over 10.5 million people in Haiti (Figure 2). Population ageing is occurring in almost all countries of the world and has major social, health and financial consequences. There is clear evidence of this effect in CMS when the combined population pyramid from censuses in CMS in the early 1990s is compared to that from censuses conducted two decades later, in 2010, 2011 and 2012 (Figure 2). In the early 1990s, the population aged 65 and over accounted for 6% of the male population and 7% of the female population. By the early 2010s, the oldest age group accounted for 7% of males and 9% of females. At the young end of the age spectrum, in the early 1990s children 14 years and under accounted for 34% of males and 33% of females. By the 2010s these percentages had shrunk to 26% and 24% for males and females respectively.

**Figure 2: Population Pyramids**

*(% distributions by age group and sex) for CARPHA Member States, 1991/1992 and 2010/2011/2012*






The demographic shift has resulted from a combination of factors including reductions in the number of children per woman (fertility) and a combination of economic and health care improvements that have tended to increase longevity and reduce infectious disease.

The changing age profile of the population is one of the factors that has given rise to a changing health and disease profile, entailing an increase in the burden of NCDs relative to communicable diseases (CDs) in the population. The specifics of this transition in the Caribbean region will be presented in more detail in Chapter 2.

## 1.3 Health Frameworks and Institutions

The Caribbean has seen the development of inter-governmental agreements, declarations and institutions which respond to regional needs and supplement those of hemispheric and global agencies. In the sphere of health, there are a number of frameworks to develop a collective and coherent response to health issues identified by governments as being priorities for the Region. Such cooperation is necessary given the small size of individual countries and their low capacity individually. Regional frameworks include, among others, the *Caribbean Cooperation in Health (CCH)* framework and the *Port of Spain Declaration on Non-Communicable Diseases*.

The Caribbean also has a long tradition of institution-building for public health across the region. For instance, a regional institution for medical research was established as early as 1955 and continues as part of the CARPHA today. Agreements, declarations and agencies will be described below.

The CARPHA Member States (CMS) are committed to many regional and international frameworks and agreements. Some of those relating to health are described in section 1.3.1, while others most pertinent to VBDs and CO are listed in the chapters dedicated to those topics. Additionally, there are regional institutions committed to conducting research, increasing surveillance and building collaboration among regional and international health partners. Some of these are described in section 1.3.2.

### 1.3.1 Regional health frameworks

#### Caribbean Cooperation in Health Frameworks

The Caribbean Cooperation in Health (CCH) frameworks were originally established in 1984 by agreement between CARICOM Health Ministers. The first framework, CCH I, was adopted in 1986 and went a long way in assisting in the region's eradication of measles. The evaluation of the CCH II (1999-2003) recognised the scaling up of the national and regional response to HIV and AIDS. The third in the series, CCH III, covered the years 2010 to 2015, and thus the years 2014-2016 which are the subject of this SPHR. The CCH III had five main areas of functional cooperation as follows:

- Creation of a healthy Caribbean environment conducive to promoting the health of its people and visitors.
- Improved health and quality of life for Caribbean people throughout the life cycle.
- Health services that respond effectively to the needs of the Caribbean people.
- Adequate human resource capacity to support health development in the region.
- Evidence-based decision making as the mainstay of policy development in the region.

The CCH III had eight priority areas – (1) communicable diseases, (2) non-communicable diseases, (3) strengthening health systems, (4) environmental health, (5) food and nutrition, (6) mental health, (7) family and community health, and (8) human resource development. An evaluation of CCH III is described later in this report (see section 2.5.3), and informed *CCH IV 2016-2025: Focussing on Regional Public Goods for Sustainable Health Development.* CCH IV was also framed in the context of the recently approved Sustainable Development Goals (SDGs) and the CARICOM Strategic Plan 2014-2019. https://issuu.com/caricomorg/docs/caribbean_cooperation_in_health_pha

#### The Nassau Declaration on Health 2001: The Health of the Region is the Wealth of the Region

The Nassau Declaration on Health was affirmed by the region's Heads of Government in Nassau in 2001. It was historic in establishing the principle of an expanded, multi-sectoral response to health, bringing together a variety of government ministries alongside other agencies within and outside government. It was also important in being based on the recognition of the profound costs of ill-health to Caribbean development.

Here, it was stated that, *"…HIV/AIDS may impede such [economic] development through the devastation of our human capital…"* and that the HIV/AIDS crisis was to be made a priority for the region. The Declaration, *"…formally institutionalized the operationalization of policy transfer by recognizing the importance of pan-Caribbean governance issues…"* by endorsing the Pan Caribbean Partnership Against HIV/AIDS (Wiseman, 2012, p. 271). There are seven fundamental tenets of the Nassau Declaration 2001 in which the Caribbean Heads of Government committed to pursue initiatives and targets to be implemented to achieve an improved health status of populations within the following five years, emphasising leadership, strategic planning, management, implementation and resource mobilisation in the context of health sector reform processes, building on current regional and sub-regional initiatives. These tenets can still be seen, for example in the recent formation of CARPHA through the amalgamation of five regional institutions in 2013. http://archive.caricom.org/jsp/communications/meetings_statements/nassau_declaration_on_health.jsp?menu=communications

### The Port of Spain Declaration on Non-Communicable Diseases 2007: Uniting to Stop the Epidemic of NCDs

In September 2007, a regional summit of the Heads of Government was held in Port of Spain, Trinidad and Tobago in acknowledgement of the threat to health and socio-economic development posed by the burden of NCDs. This was the world's first summit of regional heads of governments to be held specifically on NCDs. This led to the Port of Spain Declaration which called on the CARICOM Member States to strengthen regional health institutions, provide leadership to reduce the burden of chronic NCDs and establish NCD National Commissions. Again, a multi-sectoral approach was espoused.

Over the next four years CARICOM advocated for a United Nations (UN) high-level summit on NCDs in several international fora: the Fifth Summit of Americas (2009), Commonwealth Heads of Government (2009), with Brazil and the World Health Organisation (WHO) before the UN representatives (2010) and at the Second CARICOM-Japan Ministerial Conference (2010). At the Thirty-First Regular Meeting of the Conference of Heads of Government of CARICOM, UN Secretary General Ban Ki-Moon gave his full support and congratulated CARICOM on its efforts for addressing the issue of NCDs. Finally, in September 2011, 113-member states met at a UN High Level Meeting (UNHLM) on Non-Communicable Diseases in New York. Following this meeting, WHO agreed to a world-wide target of reducing premature mortality from NCDs by 25% between 2012 and 2025. Later in 2013, UN member states adopted further targets to reduce NCDs at the UN World Health Assembly (Samuels, Kirton, & Guebert, 2014). The mobilisation of international public health efforts around NCDs was a major achievement for the small Caribbean region.
http://archive.caricom.org/jsp/communications/meetings_statements/declaration_port_of_spain_chronic_ncds.jsp

**Figure 3: CARICOM Heads of Government at the meeting leading to the Port of Spain Declaration, 2007**


Source: Healthy Caribbean Coalition
https://www.healthycaribbean.org/declaration-port-spain/

## Millennium Development Goals (2000-2015) and Sustainable Development Goals (2015-2030)

While not focussing exclusively on health, the UN Development Goals are internationally-agreed overarching frameworks that seek to integrate health with other development concerns and which frame public health as a critical contributor to national development.

The Millennium Development Goals (MDGs), established in 2000 by the UN General Assembly were a commitment of eight goals by countries and development partners around the world to combat poverty and promote development in low- and middle- income countries. Three of the eight goals specifically focussed on health:

- MDG4: Reduce child mortality
- MDG5: Improve maternal health
- MDG6: Combat HIV/AIDS, malaria and other diseases

All the other MDGs could be said to be relevant to health as well, since they focus on social determinants of health such as poverty (MDG1), education (MDG2), gender equality (MDG3), environmental sustainability (MDG7) and global partnerships (MDG8). A Social Determinants of Health (SDH) conceptual framework is described below, in section 1.4.

The Sustainable Development Goals (SDGs) adopted by the UN General Assembly in 2015, set out the new internationally agreed development agenda, *Transforming our world: the 2030 agenda for*

*sustainable development*. They integrate the dimensions of sustainable development -economic, social and environmental - and prioritise poverty and hunger, while also focussing on human rights. The SDGs consist of 17 goals with 196 targets. Among the 17 SDGs, only one, SDG3, focuses explicitly on health – *"Ensure healthy lives and promote well-being for all at all ages".* As with the MDGs, there are many linkages between the health goal and the other goals and targets, such as those on food security, gender equality, water availability and sanitation management, combatting climate change, and violence prevention. Achieving Universal Health Care (UHC), one of the 13 SDG3 targets, provides a framework for achieving SDG3 by 2030 (UNDP, 2015; WHO, 2015a).

### 1.3.2 Regional health institutions

#### Caribbean Public Health Agency

CARPHA is the single regional public health agency for the Caribbean. In 2002, CARICOM conducted a review of the five Regional Health Institutions (RHIs) to determine how best they could serve the needs of the Caribbean people. These RHIs were the Caribbean Environmental Health Institute (CEHI); the Caribbean Epidemiology Centre (CAREC); the Caribbean Food and Nutrition Institute (CFNI); the Caribbean Health Research Council (CHRC), and the Caribbean Regional Drug Testing Laboratory (CRDTL). The results of this review determined that the best way forward was to integrate these five agencies into a single regional public health institution in order to face present and emerging public health challenges.

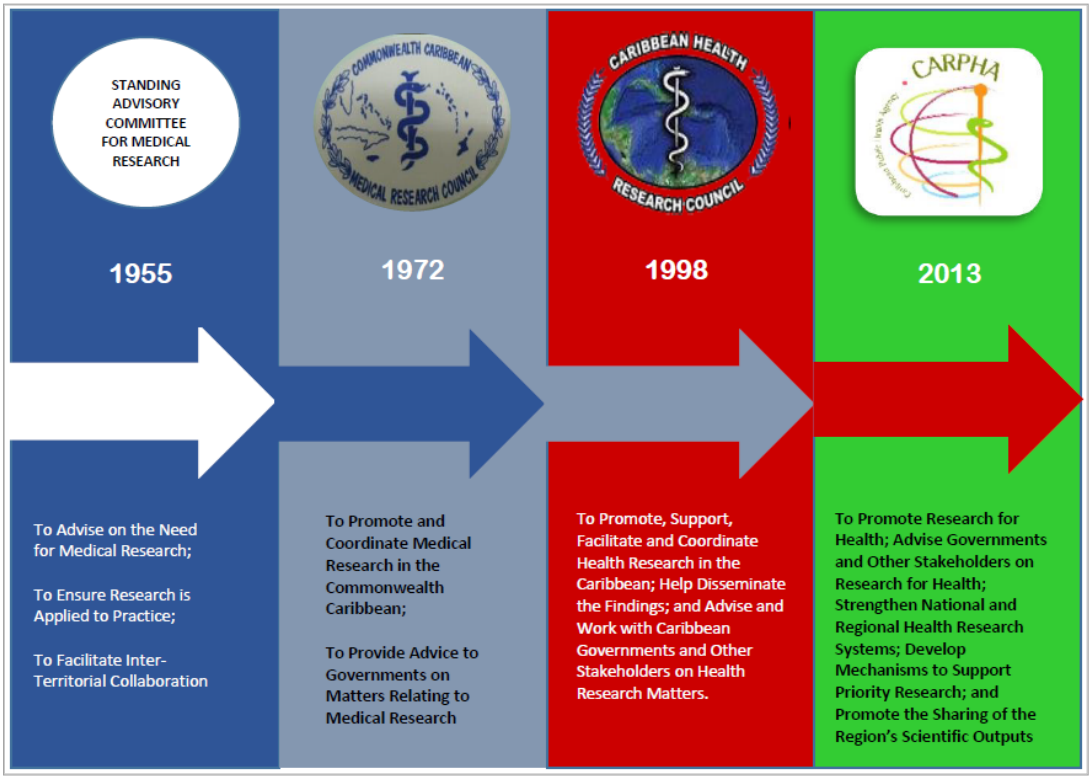
CARPHA was legally established in July 2011 by an Inter-Governmental Agreement (IGA) signed by CARICOM Member States. It began operation in January 2013. The Agency rationalises public health arrangements in the Caribbean by combining the functions of the five RHIs into a single agency, easing coordination of public health responses. As mandated by the IGA, one of its core functions is *"…to support the relevant objectives of the CCH…"* (CARICOM, 2011, p. 5). CARPHA provides technical support to 24 countries and territories throughout the Caribbean region and provides services to those CMS which are too small to have certain services of their own, such as laboratory testing, public health surveillance and information systems, and training and research programmes (CARICOM, 2011).

CARPHA represents the Caribbean Region's collective response to strengthening and reorienting the health system approach to address the changing nature of public health challenges. The objectives of CARPHA are to:

1) promote the physical and mental health and wellness of people within the Caribbean;
2) provide strategic direction, in analysing, defining and responding to public health priorities of CARICOM;
3) promote and develop measures for the prevention of disease in the Caribbean;
4) support CARICOM in preparing for and responding to public health emergencies and threats;
5) support solidarity in health, as one of the principal pillars of functional cooperation in CARICOM; and
6) support the relevant objectives of the CCH.

One example of CARPHA's achievements during the 2014-2016 period, which this SPHR covers, was the hosting of the 60th Annual Caribbean Health Research Conference in 2015 in Grenada. This is the longest-running health conference in Latin America and the Caribbean. The longevity of this annual event is testament to its regional and international value. As an international scientific meeting, it serves principally as a forum for sharing new health research findings from within the Caribbean. The medical and health research council has changed names over the many years of its existence, starting with the Standing Advisory Committee for Medical Research (1955); then to the Commonwealth Caribbean Medical Research Council (1972); the Caribbean Health Research Council (1998) and finally to the present day CARPHA after the historic merger of the RHIs in 2013.

**Figure 4: Timeline of the Regional Health Research Councils in the Caribbean**




*Source: (Hunte, 2015)*

## Caribbean Community

CARICOM was formed in 1973 through the signing of the Treaty of Chaguaramas by Prime Ministers from Barbados, Guyana, Jamaica and Trinidad and Tobago. It has since grown to include 20 countries – 15 Member States and 5 Associate Members. CARICOM works through four pillars – economic integration; foreign policy coordination; human and social development; and security. CARICOM is the oldest surviving integration movement in the developing world.

Within the governance structure of CARICOM, the Council for Human and Social Development (COHSOD) consists of regional Ministers of Health, Human and Social Development. Their role is to

promote the development of a healthy human environment through the improvement of policies and programmes in health, education, living and working conditions, culture and sports for all citizens of CARICOM, especially the youth and women, and to encourage their participation in social, cultural, political and economic activities.

With regard to health, CARICOM has been responsible for the formation of CARPHA. It also helped establish the Pan Caribbean Partnership Against HIV/AIDS (PANCAP) PANCAP was formed in February 2001 and was endorsed by regional government heads via the Nassau Declaration on Health 2001. PANCAP was one of the first multi-sectoral, multilevel, regional AIDS partnerships. It includes regional governments, regional and international organisations from both health and non-health sectors, organisations of people living with and affected by HIV, donors, UN agencies, and business and religious organisations, working together to reduce the spread and mitigate the impact of HIV and AIDS on human development. http://caricom.org/

### Healthy Caribbean Coalition

The Healthy Caribbean Coalition (HCC), arising from the 2007 Port of Spain Declaration on NCDs, was formed in 2008. HCC is a civil society alliance established to combat NCDs and their associated risk factors and conditions. It is the only regional umbrella organisation for civil society organisations doing such work. HCC's membership consists of over 60 Caribbean-based health NGOs, over 65 non-health NGOs and more than 350 individual members regionally and internationally.

HCC collaborates closely with national, regional and international partners from Ministries of Health throughout the Caribbean, inter-governmental organisations such as CARPHA, PAHO and WHO and international NGOs such as the NCD Alliance (Healthy Caribbean Coalition, 2017c). HCC's objectives are to:

(1) contribute and participate in all aspects of advocacy as a tool for influencing positive change around NCDs through mobilisation of Caribbean people and the creation of a mass movement aimed at responding to the NCDs;
(2) develop effective methods of communication for and among members of the Coalition and the people of the region;
(3) build capacity among health NGOs and civil society in the region.;
(4) contribute to NCD public education campaigns and programmes;
(5) advocacy and support for NCD risk factor reduction through: (a) tobacco control and implementation of the Framework Convention on Tobacco Control (FCTC); (b) increased physical activity; (c) improved dietary intake including reduction of salt and sugar, elimination of trans fats, and responsible alcohol use; (d) support of initiatives, plans and programmes at country and organisation level; and (e) advocacy and support for enhanced detection and management of chronic diseases https://www.healthycaribbean.org/

### University of the West Indies

The University of West Indies (UWI) serves 18 English-speaking countries and territories in the Caribbean. It has three physical campuses in Barbados, Jamaica and Trinidad and Tobago and several satellite campuses in other countries. Additionally, there is an Open Campus which has a physical site in each of the 18 states.

This regional institution plays an important role in human resource capacity building for health. This includes public health teaching programmes in the Faculty of Medical Sciences and through its various other academic programmes oriented to human development. It is also the site of influential health research, conducted by staff of the Faculty of Medical Science and the Faculty of Social Science. The Health Economics Unit (HEU) is a specialist Unit within the Faculty of Social Science, conducting research, training and projects in areas including social insurance, poverty, health and sustainable development, equity, health policy and management. Public health areas of interest include HIV, NCDs, aging, and children and women. https://sta.uwi.edu/fss/heu/

The history and characteristics of the agreements and institutions for public health set up by Caribbean people demonstrate their appreciation that health and development are intrinsically linked, and that multi-sectoral and multi-faceted approaches are necessary to address many health challenges. In the following section we present a theoretical framework to conceptualise such expanded approaches to public health. The framework will be used throughout this document to assist in the analysis of determinants of, and strategies for, public health.

## 1.4 The Social Determinants of Health

In 2005, the then Director-General of the WHO set up the Commission on the Social Determinants of Health (CSDH). The Commission's mandate was to assist in tackling the social causes of poor health and avoidable health inequalities through the gathering and review of evidence on what has to be done to reduce health inequalities within and between countries, and to identify recommendations (WHO, 2017a). The CSDH defined the SDH as, *"the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems"* (WHO, 2017e). For a long time, it had been widely accepted that the SDHs play a large role in the existence of health inequities, defined as, *"…the unfair and avoidable differences in health status seen within and between countries."* (National Academies of Sciences Engineering and Medicine, 2016; WHO, 2008, 2017g). In order to achieve SDG targets, and in particular, UHC, the SDHs and issues of health equity must be addressed in an "integrated and systematic manner." (WHO, 2017g).

The 2008 report by the CSDH recommends that in order to achieve health equity three principles of action must be adhered to (WHO, 2008, p. 2):

1. Improve the conditions of daily life – the circumstances in which people are born, grow, live, work, and age.
2. Tackle the inequitable distribution of power, money, and resources – the structural drivers of those conditions of daily life – globally, nationally, and locally.
3. Measure the problem, evaluate action, expand the knowledge base, develop a workforce that is trained in the SDH, and raise public awareness about the SDH.

The report also emphasises that, *"action on the SDH must involve the whole of the government, civil society and local communities, business, global fora, and international agencies. Policies and programmes must embrace all the key sectors of society not just the health sector"* (WHO, 2008, p. 1).

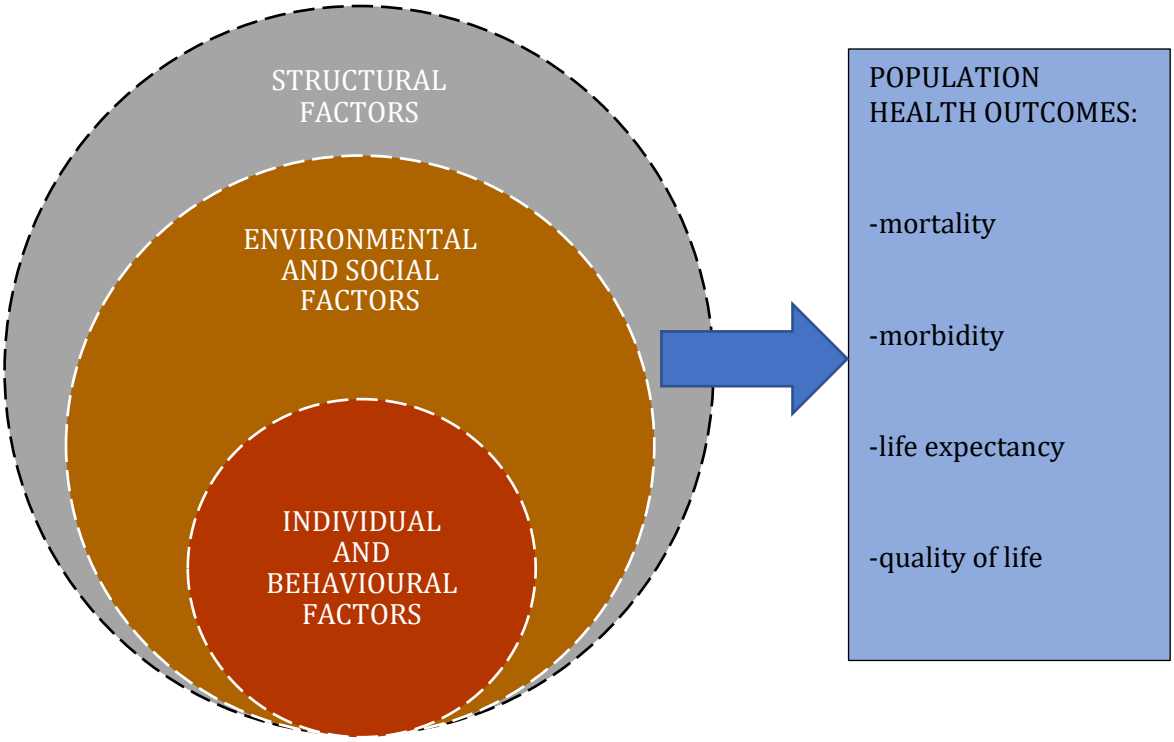
The use of models, or frameworks, can assist in understanding how the SDH impact on individuals, communities, and the population as a whole. They can also assist with policy planning and development by identifying areas of opportunities for both health and non-health sectors to work together in reducing health inequalities as experienced both within and between countries and regions (Canadian Council on Social Determinants of Health, 2015).

There are several models that can be used to depict the SDH. The ecological model used for this report is an adaptation of several models (Framework for addressing the Social Determinants of Health and Well-Being, Queensland Health, 2001; Wider Determinants of Health Model, Dahlgren and Whitehead, 1991; Commission of Social Determinants on Health Conceptual Framework, WHO, 2007;

A Heuristic Framework for the Social Epidemiology of HIV/AIDS, Poundstone et al, 2004; and The Socio-Ecological Model, McLeroy et al, 1988) and uses three basic levels to describe the SDH(Canadian Council on Social Determinants of Health, 2015; McLeroy, Bibeau, Steckler, & Glanz, 1988; Poundstone, Strathdee, & Celentano, 2004; Ruderman, 2013; UNICEF, n.d.):

(1) individual and behavioural;
(2) environmental and social; and
(3) structural.

**Figure 5: An Ecological Model to Frame the Social Determinants of Health**




Generally, the structural factors are thought of as influencing the environmental and social factors, which in their turn influence the individual and behavioural factors and thereby health outcomes. For example, in considering childhood obesity, one structural factor is macroeconomic policy and how this influences the range and prices of food imported and available in a country. There may also be policies on school feeding. These factors will influence environmental and social factors such as the school "food environment", including the range of foods available in school and the environs of the school premises (such as private food stalls and vendors), their relative prices and scarcity. Individual and behavioural factors may include the types of food chosen, the quantity and frequency of eating, all of which are associated with childhood obesity. Chapter 3 includes more in-depth analysis of the various levels of factors influencing childhood obesity.

It is important also to observe that the different levels are nested within one another, depicting that individual characteristics and behaviour contribute to the environment and society which in turn contribute to the structural factors. Additionally, the dotted lines between each level indicate that the borders between each level are porous and that the various factors may move between the different levels depending on the priority population, the context and the health issue being examined. This ecological model will be used in the analysis of this report's thematic areas – CO and VBDs – to organise the information presented on the various levels of influence and interventions to promote better health outcomes.

Table 3 gives examples of factors at each of the levels. Note that the examples are illustrative only and the list of issues is not comprehensive across all health conditions which may be examined; each health condition will be affected by specific factors at each level. Chapters 2 and 3 present specific ecological frameworks for the analysis of VBD and CO.

**Table 3: Examples of Factors at Levels of the Ecological Model for Health**

| Individual and Behavioural Factors | Environmental and Social Factors | Structural Factors |
|---|---|---|
| *Biological & Demographic*<br>• Age<br>• Biological sex<br>• Race/ethnicity<br>• Genetics<br>• Blood pressure<br>• Blood lipid levels<br>• Blood sugar levels<br>• Body mass index<br>*Psychosocial*<br>• Self esteem<br>• Emotional state<br>• Mental state<br>• Addiction<br>*Health behavioural*<br>• Diet and nutrition<br>• Smoking and drug consumption<br>• Alcohol consumption<br>• Physical activity<br>• Self-harm and addictive behaviours<br>• Sexual behaviour<br>• Preventative health care use<br>• Adherence to health recommendations<br>• Hygienic and environmental practices | • Social networks and support systems (including family, friends, peers, co-workers, religious networks)<br>• Behaviour of significant others, e.g. peer pressure, violence<br>• Social norms<br>• Stigma associated with disease<br>• Family and personal income<br>• Community connections<br>• Work environment<br>• School environment<br>• Health care setting environment<br>• Education<br>• Employment/ unemployment<br>• Environmental factors (e.g. climate, green spaces)<br>• Housing<br>• Agriculture and food security<br>• Health care availability and access<br>• Water and sanitation<br>• Distribution of vectors<br>• Population density<br>• Media | • International, regional, and national health policies<br>• International, regional, and national policies in non-health sectors such as trade, agriculture, sanitation, and security.<br>• Global forces (including patterns and dynamics of investment, migration, and conflict)<br>• Allocation of resources to health care<br>• National income, income distribution and poverty<br>• Discrimination and social exclusion based on gender, race, disability, sexual orientation, and other dimensions of social difference<br>• Interventions to alter environmental, social, individual, and behavioural factors |