HEALTH IN THE AMERICAS

Potentially avoidable premature mortality

PAHO
Pan American Health Organization
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Health in the Americas

Potentially avoidable premature mortality

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Foreword

Health in the Americas begins a new phase with this publication; a phase with better timing to address the dynamics of the issues important for the health agenda in the Americas, in which relevance remains critical, while at the same time ensuring the quality that has distinguished this flagship publication of the Pan American Health Organization is maintained.

This edition of *Health in the Americas* analyzes the standardized rate of potentially avoidable premature mortality (PAPM) as an indicator of health system performance, considering both its preventable component through public and intersectoral health interventions, as well as the treatable component, related to the effectiveness of health services, that is, the quality of health care. Understanding PAPM as deaths that should not occur if health interventions and technology are widely available and easily accessible through health systems in the countries, avoiding these deaths can result in accelerated strides to achieving universal health coverage that ensures effective access to health for countries.

Starting with a review of PAPM as an indicator of health system performance, this report discusses the magnitude and distribution of the issue in the Region, and the causes of death that contribute the most to PAPM. The report also reviews the evolution and the methodological challenges for the construction of the indicator, listing the conditions considered that result from the conjunction between international recommendations and available data for 33 countries within the Region of the Americas. With these data, PAPM trends and levels are analyzed, emphasizing equity in its distribution, and its relevant contribution to the goals of the Sustainable Health Agenda for the Americas 2018–2030 and to the targets of Sustainable Development Goal 3.

This edition of *Health in the Americas* focuses on presenting a route to advance the reduction of PAPM, for which the necessary elements are analyzed from the perspective of health system performance to strengthen actions in public health and the quality of health services, which is a central axis of the response.

As complete mortality data due to COVID-19 were not yet available to include in the analysis, the COVID-19 pandemic was analyzed from the perspective of the deaths that are the result of health emergencies and disasters that are generally avoidable and, therefore, to a large extent, part of PAPM.

It is important to note that the health emergency related to COVID-19 declared in January 2020 was by May 2023 no longer a public health emergency of international concern but an established and ongoing health issue.

Advancing toward universal health coverage is essential to guarantee the right to health for all people, with ensuring equity is at the forefront, leading to deliberate actions to reduce gaps between populations

The disruption in health services generated by the pandemic reminds us of the importance of having response plans and the need to implement such plans promptly and efficiently.

Advancing toward universal health coverage is essential to guarantee the right to health for all people, ensuring equity is at the forefront, leading to deliberate actions to reduce gaps between populations.

Jarbas Barbosa da Silva Jr.
Director
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Abbreviations and acronyms

2030 Agenda	2030 Agenda for Sustainable Development
AAPC	average annual percentage change
AIDS	acquired immunodeficiency syndrome
ASMR	age-standardized mortality rate
BCG	Bacillus Calmette–Guérin
CD	communicable disease
CIx	concentration index of health inequality
COVID-19	infectious disease caused by the SARS-CoV-2 virus
EAP	economically active population
GBD	Global Burden of Disease
GDP	gross domestic product
HIV	human immunodeficiency virus
ICD	International Classification of Diseases
IR	incidence rate
MMR	maternal mortality ratio
NCD	noncommunicable disease
NMR	neonatal mortality rate
PAHO	Pan American Health Organization
PAPM	potentially avoidable premature mortality
PHC	primary health care
RR	relative risk
SCI	service coverage index
SDG	Sustainable Development Goal
SDIx	Sustainable Development Index
SEDH	social and environmental determinants of health
SHAA 2030	Sustainable Health Agenda for the Americas 2018–2030
SII	slope index of inequality
WHO	World Health Organization

About *Health in the Americas*

One of the core functions of the Pan American Health Organization (PAHO) is "monitoring the health situation and assessing health trends" in the countries and territories of the Region of the Americas.[1] PAHO's flagship publication *Health in the Americas* responds to this mandate, examining health conditions, trends, and challenges in the Region.

In accordance with Resolution CD7.R23 of the 7th Directing Council of PAHO,[2] all countries and territories were asked to prepare four-year reports on health conditions, focusing on health statistics. That report, now known as *Health in the Americas*, has been published periodically since 1954. While it originally consisted of compiled data, over time, it has evolved into a key reference publication that brings together current knowledge on public health issues and related challenges, and on the guidance needed to address them.

The objective of *Health in the Americas* is to respond to the need to address important public health issues in an increasingly timely manner, while serving as a platform with a close focus on specific issues of regional importance. This edition provides a description and analysis of the key issues related to potentially avoidable premature mortality in the Region of the Americas. The publication is supported by the Health in the Americas+ virtual platform,[3] which offers interactive resources for data analysis and allows for the comparison of information disaggregated by subregions and countries.

1 Pan American Health Organization. Strategic Plan of the Pan American Health Organization 2020-2025. Equity at the heart of health. Washington, D.C.: PAHO; 2020. Available from: https://iris.paho.org/handle/10665.2/52473.

2 Pan American Health Organization. Technical Discussions at the XIV PSC [Resolution CD7.R23]. 7th Directing Council of PAHO, 5th Session of the WHO Regional Committee for the Americas. Washington, D.C.: 9–19 October 1953. Washington, D.C.: PAHO; 1953. Available from: https://iris.paho.org/bitstream/handle/10665.2/1867/CD7.R23en.pdf.

3 Pan American Health Organization. Health in the Americas+. Washington, D.C.: PAHO: 2022. Available from: https://hia.paho.org/en.

Executive summary

In recent decades, globally and in the Americas, a significant improvement in people's general health conditions has occurred, leading to an increase in life expectancy at birth in most countries within the Region. This progress has been the result of both health technology advances – antibiotics, vaccines, and other treatments – and improvements in the conditions in which people live, including increased access to improved drinking water and sanitation, and health services.

Nevertheless, progress has slowed in recent years, and achievements have varied among countries and territories, as well as within them. Regarding health, a country's ultimate goal is to guarantee the highest possible level of health for its population. Achievements to that end can be evaluated based on their ability to prevent premature deaths, mainly when they occur due to potentially avoidable causes. In this sense, potentially avoidable premature mortality (PAPM) is a performance indicator for healthcare systems. That is, adequate performance of health systems – concerning public health actions and those referring to health services – will allow all people to live with a high quality of life for a given number of years.

In recent decades, globally and in the Americas, a significant improvement in people's general health conditions has occurred, leading to an increase in life expectancy at birth in most countries within the Region

A country's ultimate goal is to guarantee the highest possible level of health for its population

Potentially avoidable premature deaths occur in people younger than 75 years of age and should not occur if health systems function correctly. These deaths comprise both the so-called potentially preventable ones (public health) and the so-called potentially treatable ones (health services).

Actions that health systems take have the potential to influence the causes that lead to PAPM, and if approached strategically, can contribute to reducing

PAPM and accelerate progress toward achieving the 2030 Agenda for Sustainable Development (2030 Agenda) and Sustainable Development Goal 3 (SDG 3).

For the analysis presented in this publication, a list of causes based on international recommendations and the most recent available data was prepared, resulting in 12 groups of causes of avoidable mortality coded according to the 10th version of the International Classification of Diseases.

The five leading causes of overall PAPM in 2019 in the Region of the Americas were: (1) ischemic heart disease (37 deaths per 100 000 people); (2) interpersonal violence (19 deaths per 100 000 people); (3) diabetes mellitus (18 deaths per 100 000 people); (4) stroke (16 deaths per 100 000 people); and (5) cancers of the trachea, bronchi, and lungs (11 deaths per 100 000 people). With the exception of interpersonal violence, these are consistently the leading causes of death for the Andean, Central American, Latin Caribbean, Non-Latin Caribbean, North American, and Southern Cone subregions of the Americas.

In 2019, 2 522 755 potentially avoidable premature deaths occurred in the Region, representing 35% of all deaths for the 33 countries analyzed, which is a reduction, considering that such deaths were 40% of total deaths in 2000. It is essential to note the differences for PAPM by sex, as potentially avoidable premature deaths for men are one-and-a-half times more than those for women (41% of all deaths among men versus 29% of deaths among women).

The mortality rate attributable to the low quality of care in the Region is high

The mortality rate attributable to the low quality of care in the Region is high, although it varies considerably between countries, with a range between 44.7 and 292.3 deaths per 100 000 population in 2019.

The decreasing trend in PAPM in the Region between 2000 and 2019 is shown in a –1.3% average annual percentage change (AAPC). Although external causes have had a marginal decrease, infectious diseases had the highest average reduction (–3.5% AAPC), while noncommunicable diseases were the leading cause of PAPM in the Region. Interpersonal violence was the leading cause of PAPM in 2019 for the Andean and Central American subregions. Drug use disorders were the second leading cause of PAPM in North America. Suicide was a major cause among adolescents and young people.

Reductions in PAPM have not been at the pace needed for achieving the 2030 goals. For example, causes related to noncommunicable diseases remain a priority challenge in the Americas, requiring action toward their risk factors throughout the life course.

Along with the decreasing trend in the PAPM rate, simultaneous intercountry reductions

in inequality occurred, both in absolute and relative gradients. However, for 2019, the analysis documented an inequality equivalent to 128 additional deaths per 100 000 people younger than 75 years of age (95% CI [–142.8, –92.4]) in Haiti compared to Canada – the countries at the extremes of the level of sustainable development.

As a direct expression of how countries prioritize health, public financing for health may affect PAPM. A person's ability to pay for health services also has an impact on their health care. Countries with higher mortality levels present higher catastrophic expenditure at the threshold of 25% of household consumption or income. This observation makes it clear that the relative poverty threshold leads to higher mortality in countries with lower financial protection for health.

Deaths resulting from health emergencies and disasters can be considered mostly preventable and, in that sense, a critical area to target in reducing potentially avoidable premature deaths. Of the six WHO Regions, the Region of the Americas is the third most affected by these events, which have increased by 44% in recent decades, mainly due to human action expressed in climate change. Earthquakes in recent years that have affected Chile, Ecuador, Haiti, and Mexico, among others, together with hurricanes and tropical storms, have strained the response capacity of health services. In this context of increasing disasters, the COVID-19 pandemic generated a multirisk situation for countries in the Region. From early 2020, the COVID-19 pandemic disrupted the supply of health services, affecting health care for acute events and the monitoring of chronic conditions and preventive actions.

The relative poverty threshold leads to higher mortality in countries with lower financial protection for health

The excess mortality documented in 2020 has generated a reduction in life expectancy, and it is estimated that the effects translate into a 20-year setback

The excess mortality documented in 2020 has generated a reduction in life expectancy, and it is estimated that the effects translate into a 20-year setback in the progress observed in reducing PAPM.

Building health systems according to an improved primary health care that is focused on universal and equitable access requires health sector reform processes

that are already in progress in the Americas to guarantee the right to health.

The countries and territories of the Americas must strengthen epidemiological surveillance, analytical capabilities, and PAPM monitoring to achieve the targets of SDG 3; and strengthen preventive and treatment interventions to reduce the burden of preventable mortality, which will allow progress in meeting the targets of SDG 3.

In order to enhance progress toward reducing PAPM in an equitable manner, seven considerations are proposed:

1. Prioritize and strengthen the implementation of the 2030 Agenda at national and subnational levels, especially the application of strategies and interventions focused on the reduction in PAPM and its inequalities.

2. Make PAPM visible in the context of health emergencies and disasters: all excess deaths resulting from social inequity in emergencies and disasters are potentially avoidable premature mortality.

3. Optimize health information systems and strengthen the processes of analysis, monitoring, and evaluation of PAPM, including the availability of disaggregated data.

4. Promote and institutionalize the monitoring of social inequalities in PAPM, allowing the systematic tracking of distributional changes and not only of changes in averages in the risk of death from potentially avoidable causes, facilitating the implementation of concrete proequitable interventions to reduce PAPM and leave no one behind.

Having a metric that allows comparisons and traceability across time is an essential tool for the accountability of health systems in the Region

5. Consolidate and strengthen the institutional capacities of the steering role of the health authorities to lead the formulation and implementation of health systems transformation policies that respond to the health needs of the population, distributive inequality, social, economic, and environmental determinants, risk factors, and the response capacity of the health services system.

6. Improve and increase the capacity of health systems by strengthening mechanisms for regulating and allocating critical health system resources, including health financing, human resources for health, and medicines and other health technologies.

7. Sustain and expand improvements in access to comprehensive, quality health services, including individual health services as well as those public health and intersectoral actions with an impact on PAPM.

On the path toward universal health, the ability to track progress on the ultimate purpose of health systems – healthy lives – is undoubtedly a must, and that is a goal to which the analysis of PAPM contributes. Having a metric that allows comparisons and traceability across time is an essential tool for the accountability of health systems in the Region. The analysis of PAPM also sheds light on the fact that in order to ensure equity, countries are called upon to invest both in healthcare services and, more broadly, in the social and environmental determinants of health.


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Introduction

The Region of the Americas and the world in general have seen significant progress in terms of the general health conditions of the population since the mid-twentieth century *(1)*. This progress has been reflected in increased life expectancy at birth, and has been the result of both technological advances that have led to antibiotics and vaccinations, and improvements in living conditions that have contributed to better hygiene and greater access to health services. However, the speed of this progress has slowed in recent decades, and the increase in life expectancy has not occurred homogeneously across countries *(2)*.

While the reduction in mortality from infectious conditions has been the major contributor to the increase in life expectancy, the resulting epidemiological transition process – the increase in the burden of chronic and noncommunicable health conditions – has brought new challenges to public health and health service systems in terms of their ability to prevent people from dying before their expected age.

The Region of the Americas and the world in general have seen significant progress in terms of the general health conditions of the population since the mid-twentieth century

Premature and potentially avoidable deaths have an unequal distribution among population groups, especially affecting those who present conditions of vulnerability due to gender, ethnicity, socioeconomic status, migratory situation, and deprivation of liberty

A death that occurs before a person reaches the age to which he or she was expected to live at birth can be considered a premature death, and from a health perspective, it is relevant to identify whether it was avoidable given the technology and means available, i.e., in terms of healthcare technology, public health policies and interventions, and social and economic development actions.

These premature and potentially avoidable deaths have an unequal distribution among population groups, especially affecting those

who present conditions of vulnerability due to gender, ethnicity, socioeconomic status, migratory situation, and deprivation of liberty, among others, regardless of countries' level of development *(3)*. The use of metrics to assess the performance of health systems in combination with an analysis of mortality that is preventable through public health programs or policies implemented outside the immediate scope of the health sector can offer a more complete picture of potential ways to improve population health.

Potentially avoidable premature mortality (PAPM) is an indicator that captures the broader action of health systems, as it includes both the performance related to action toward improving living conditions and addressing social determinants of health, as well as the performance related to the effectiveness of healthcare services.

Progress toward universal health coverage in the Region of the Americas requires health systems with the capacity to influence and avoid premature deaths in a framework that also considers interaction with other social sectors. A necessary element for this is to have information on the performance of these systems in terms of premature mortality, i.e., to know the magnitude and trend of this mortality.

In Chapter 1, there is a revision of previous analyses related to PAPM in the Region, and a description of the methodological approach used in this report to estimate PAPM, considering the available data that are consistent across countries in the Region, describing causes of death that are included.

Chapter 2 presents the trend in PAPM in the Region between 2000 and 2019, differentiating by preventable and treatable premature mortality, as well as by sex, showing the speed of reduction in the indicator. This analysis also reports results by subregion, detailing the differences and similarities in terms of causes of PAPM that represent different patterns.

Chapter 3 deals with inequality in the indicator (age-adjusted PAPM) between countries, considering the Sustainable Development Index (SDIx) as a stratifier, also showing the trends in inequality. Inequalities related to the distribution of PAPM between countries in the Region are reported using both the slope index of inequality (SII) and the concentration index of health inequality (CIx), which are standard metrics of inequalities. While the situation has been improving, PAPM is still unequally distributed in the Region, most affecting those countries with lower sustainable development.

Chapter 4 discusses the relationship between PAPM and the achievement of the Sustainable Development Goals (SDGs), using an analysis of three of the nine SDG 3 Indicators related to PAPM: SDG Indicator 3.1.1 maternal mortality ratio; SDG Indicator 3.2.2 neonatal mortality rate; and SDG Indicator 3.4.1 unconditional probability of dying attributed to cardiovascular diseases, cancer, diabetes mellitus, or chronic respiratory diseases. This chapter highlights the relevance of SDGs for addressing PAPM and provides evidence on how health systems actions have the potential to reduce PAPM.

In Chapter 5, there is a discussion on the role of health systems in reducing PAPM,

with a focus on universal health coverage. Access to quality healthcare services is key to addressing treatable premature mortality, as the evidence on the number of deaths in the Region that are due to low quality has signaled. Ensuring adequate and equitable financing of health systems has the potential to address both preventable and treatable premature mortality and, therefore, should be promoted.

Chapter 6 outlines the relationship between health emergencies and PAPM, with an emphasis on the lessons the world and the Region are learning from the COVID-19 pandemic, both in terms of its heavy burden on direct mortality and how it has disrupted health services and thus increased mortality for other causes. Overall, deaths related to health emergencies and disasters are mostly avoidable, so the response to these events is also a strategy to reduce PAPM.

Finally, Chapter 7 discusses actions for moving toward the reduction of PAPM and PAPM gaps in the Region, with a focus on achieving universal health coverage in the Americas. These actions are proposed from the perspective of the need to strengthen and prioritize the 2030 Agenda for Sustainable Development (2030 Agenda) at the national and subnational level in the Region. There is a call to strengthen health systems to address PAPM, as these are relevant components of overall mortality and are related to the SDGs. At the regional, national, and subnational levels, the imperative of leaving no one behind implies the need to monitor not only average progress but also how progress is distributed among social groups.

At the regional, national, and subnational levels, the imperative of leaving no one behind implies the need to monitor not only average progress but how progress is distributed among social groups

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Chapter 1

Potentially avoidable premature mortality: What is it and why is it relevant for analyzing health systems performance?

Health systems performance and potentially avoidable premature mortality

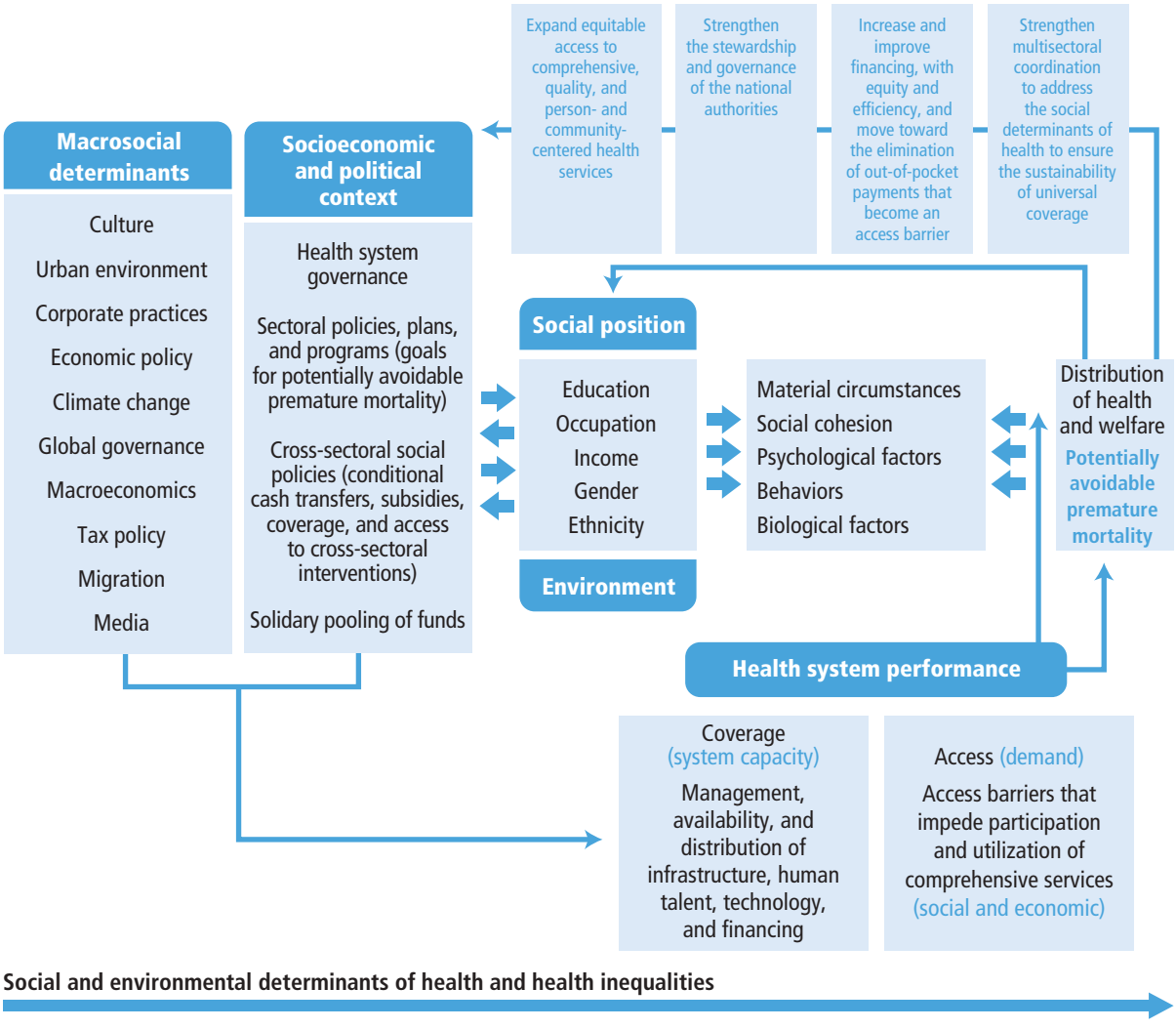
Indicators of PAPM are one part of health system performance[1] measures; these metrics provide a starting point for analyzing the effectiveness of public health policies and individual health service provision in terms of their ability to prevent premature mortality from preventable and treatable causes *(4)*.

1 Throughout, this report refers to health systems as the broad response that considers all institutions and resources that focus on improving health, i.e., healthcare services, as well as those that refer to health promotion and prevention through public health actions.

Figure 1 shows the interaction between the socioeconomic and political context, macro social determinants, and layers of demographic and individual characteristics that can improve or reduce the performance of health systems in terms of access and coverage, and the actions of other sectors to improve the living conditions of the population by reducing the possibility of premature death.

Assessing this performance in terms of the breadth of desirable outcomes is a methodologically complex task for which alternative approaches have been proposed. One of these focuses on

FIGURE 1 **Conceptual model of the social determinants of potentially avoidable premature mortality**



Source: PAHO.

the ultimate goal of the health function of states, namely, the provision of the means for a healthy life for the population – ensuring the highest possible level of health for their populations – and considers premature and potentially avoidable deaths as a performance indicator. It takes into account both deaths that can be avoided by available public health measures and those that depend on the effectiveness of healthcare services. The central assumption of this perspective is that adequate performance of health systems will allow all people to live at least the average number of years that would be expected for a given population – that is, life expectancy – with the best possible quality of life.

Although the PAPM metric does not provide a comprehensive measure of health system performance, it does provide an outcome measure to direct state interventions: if a harmful health event is avoidable with the application of available knowledge, death should not occur, and therefore its use has been widely accepted *(5)*. This metric then is a reasonable starting point to evaluate the results of public health and medical care policies in curbing premature deaths attributable to both preventable causes and those susceptible to care *(6)*.

The potentially avoidable premature mortality metric

The PAPM approach has its antecedents in the work of Rutstein and colleagues (Working Group on Preventable and Manageable Diseases – Harvard Medical School) with the concept of "unnecessary and untimely deaths," in which they called "avoidable mortality" those deaths caused by "... a set of adverse health conditions for which the disease, disability or death should not occur in the presence of timely and adequate medical care, given the existing knowledge and advances ..." until that time. For their identification, they proposed *(7)* a series of clearly identifiable health conditions for which effective interventions were known, including the availability of health services. From this, a list of causes was created based on the eighth edition of the International Classification of Diseases (ICD-8).

Based on the criterion of avoidability according to the effective interventions available, it is clear that this list needs to be updated in parallel with advances in knowledge and technology *(8)*. The first most widely accepted list of causes was assembled by Charlton *(9)* in 1983. Charlton's list was limited to deaths between the ages of 0 and 64 years and included only conditions with potential for medical or surgical treatment.

During the 1980s, the concept of "avoidable death" evolved to consider that those caused by causes modifiable through secondary prevention and medical interventions are "treatable," while those susceptible to public health and multisectoral interventions are "preventable."

Over the following two decades, the concept of avoidability was broadened. Based on a review of advances in medical and public health interventions in the early 2000s, Tobias and Jackson included other conditions, or groups of conditions, with the potential for primary prevention (avoiding the development of the condition), secondary prevention (early detection with the possibility of delaying the onset of the condition or its recurrence), and tertiary prevention (reduction of lethality by medical or surgical intervention) *(10)*.

Although a significant amount of literature related to PAPM has been developed in Europe, it is important to recognize that in the Region of the Americas there has been growing interest in the analysis and use of knowledge of this indicator for public health action planning purposes. Member States of the Pan American Health Organization / World Health Organization (PAHO/WHO) in Latin America have used it intermittently, and others such as Canada have used it continuously since 1979.

A brief account of experiences in the Region of the Americas

Many of the studies developed in the Region present ecological analyses of time series *(11)*, magnitude, distribution, and trends *(12, 13)*, and also explore social inequalities in health, and cost estimation as in the case of Brazil *(14)*, Colombia *(15)*, and Canada, where several analyses have been carried out including of immigrant populations and long-term residents *(16, 17)*.

In this same effort, PAHO/WHO Member States voted unanimously to include treatable premature mortality as part of the indicators for monitoring and evaluating the performance of the health systems and services of the Americas starting in 2014 in the framework of the Strategic Plan 2014–2019.[2] The indicator selected was "mortality from avoidable or healthcare-sensitive causes," defined as premature deaths (before the age of 75) that could have been prevented if timely, efficient, and effective health care had been available.

For this indicator, PAHO/WHO generated a list of potentially treatable and preventable causes based on the experiences of Australia, Brazil, Canada, Colombia, Mexico, New Zealand, and the United Kingdom of Great Britain and Northern Ireland. The list was presented and approved by the Member States. It was used to conduct a regional analysis of the status of mortality from these causes *(18)*. The analysis included data from 42 countries and territories in the Americas for which annual data were available from 2000 to 2009. Crude and age-adjusted rates were calculated by country and sex, and organized into 10 groups of events (circulatory, neoplasms, perinatal and maternal, infectious, respiratory, genitourinary, digestive, nervous, endocrine and metabolic, and external). In order to minimize the problem of fluctuations due to a small number of events in several countries, the data were grouped into two time periods: 2000–2004 and 2005–2009.

In the period 2005–2009, the vast majority of countries and territories (37 out of 42) showed lower rates, with a regional average reduction of 5.3%. Reductions were observed in maternal and perinatal events (14.1%), nervous system diseases (9.1%), circulatory system diseases (7.4%), infectious diseases (6.4%), and external causes (6.4%), while others showed increases: genitourinary system (5.4%),

2 The Strategic Plan 2014–2019 has been succeeded by that for the period 2020–2025: Pan American Health Organization. Strategic Plan of the Pan American Health Organization 2014–2019. Championing Health: Sustainable Development and Equity. Washington, D.C.: PAHO; 2014. Available from: https://www3.paho.org/hq/dmdocuments/2017/paho-strategic-plan-eng-2014-2019.pdf. Pan American Health Organization. Strategic Plan of the Pan American Health Organization 2020–2025. Equity at the Heart of Health. Washington, D.C.: PAHO; 2020. Available from: https://iris.paho.org/handle/10665.2/52473.

endocrine and metabolic (3.9%), neoplasms (1.0%), and respiratory system (0.4%).

Considering both periods and using 2000–2004 as a reference, the risk of dying from causes potentially treatable by health care in the period 2005–2009 was 30% higher in men compared to women with a relative risk (RR) for men of 1.3 (95% CI [1.2, 1.4]). The risks were similar when analyzed by cause group, ranging from 1.7 (95% CI [1.6, 1.8]) for circulatory causes to 1.1 (95% CI [1.0, 1.2]) for external causes, with the exception of mortality from neoplasms, where the risk of death was higher among females with an RR of 1.4 (95% CI [1.3, 1.5]).

In 2015, the regional analysis was extended to include PAPM, documenting its trend between 2001 and 2012, defining it as premature death (before the age of 75) due to health conditions that could be avoided by preventing both the onset of an adverse health event and delaying death through timely and quality access to health services. For this comparison, the years 2001 and 2010 were selected because they had the largest number of countries with mortality data available to assess change over time. Regardless of sex, for 2001 the regional average rate was 272.0 per 100 000 population, with significant variability between countries (range 83.4 to 748.7, median[3] of 245.5). By 2010, there had been a 10.5% decrease in the regional average rate to 230.9 per 100 000 population for preventable causes of death, maintaining the wide variability between countries (range 44.2–513.2, median 219.7) *(19)*.

3 The median is the value separating the higher half from the lower half.

A fairly consistent pattern is observed in the occurrence of a greater avoidable premature mortality according to belonging to ethnic groups, with social and economic disadvantages, and with difficulties in accessing quality health services

Several reports show downward trends among countries of the Organisation for Economic Co-operation and Development in avoidable mortality *(20, 21),* with a similar pattern in the Region of the Americas for treatable mortality *(20)*, and avoidable mortality as a whole *(18),* with a particular focus on chronic noncommunicable causes *(22, 23)*. In several countries, social, economic, and policy determinants appear to be related to these trends *(24–26)*. Income *(27)*, socioeconomic *(26, 28, 29)*, education *(30)*, migration *(16, 31, 32)*, poor-quality healthcare systems *(33–35)*, insufficient health spending *(24)*, and also the presence of nondemocratic political regimes *(4)* are among the most commonly considered.

Despite the different methodological approaches used in different studies, the existing variation in the definition of variables considered within the macrosocial determinants, the

socioeconomic and political context, and the individual level, including health services, in the different periods a fairly consistent pattern is observed in the occurrence of a greater avoidable premature mortality according to belonging to ethnic groups, with social and economic disadvantages, and with difficulties in accessing quality health services. In some studies, life expectancy tends to vary according to sex, time periods, and regions *(36–39)*.

Methodological approach to avoidable mortality in Health in the Americas 2000–2019

To estimate PAPM, an ecological study of trends was conducted, considering 33 Member States of PAHO as the unit of analysis. For the subregional analysis, the countries were grouped as follows: North America (Canada, United States of America); Mexico; Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama); Latin Caribbean (Cuba, Dominican Republic, Haiti); Andean Area (Bolivia [Plurinational State of], Colombia, Ecuador, Peru, Venezuela [Bolivarian Republic of]); Brazil; Southern Cone (Argentina, Chile, Paraguay, Uruguay); and Non-Latin Caribbean (Antigua and Barbuda, Bahamas, Barbados, Grenada, Guyana, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago).

Data sources

Mortality data were obtained from the WHO Global Health Estimates 2019, which provides a time series with annual frequency for the period 2000–2019 for the 33 countries listed. This provides a comprehensive, comparable, internally consistent set of cause-specific death data, incorporating the interagency scientific and technical work of other United Nations agencies that together provide estimates of population, births, and deaths from all causes and specific causes of death. The global health estimates are considered WHO's best estimates, based on evidence available up to November 2020 *(40)*.

The denominators for the calculation of mortality rates were obtained from the population estimates and projections prepared by the Population Division of the United Nations Department of Economic and Social Affairs for the 2019 World Population Prospects Review. With this information, age- and sex-adjusted mortality rates were calculated using the direct method according to the different levels of aggregation of causes. The reference population structure for the adjustment of rates was the one proposed by WHO and constructed for the period 2000–2025.

Causes and definitions

The set of these causes of potentially avoidable premature death has varied over time. For this reason, the lists of specific causes have been modified according to the context of the countries, their available medical technological advances, and the circumstances at the time of consolidating a list of causes. For the analysis of PAPM in the Region of the Americas presented in this publication, the most commonly used lists of causes were reviewed, including those of Australia, Brazil, Canada, Colombia, Mexico, New Zealand, the Organisation for Economic Co-operation and Development,

European consensus, and the Nolte and McKee list, as well as the list currently used in the PAHO Regional Strategic Plan.

The following definitions that integrate the concept of premature mortality with avoidability potential were used:

- **Premature deaths:** those occurring in individuals under 75 years of age.

- **Avoidable premature deaths:** those occurring in individuals under 75 years of age that should not occur if all levels of care by health systems functioned adequately (primary, secondary, tertiary prevention, and health care at all levels). The group of **avoidable deaths** considers two subgroups: (1) the so-called potentially **preventable** causes; and (2) the potentially **treatable** causes.

- **Preventable premature deaths:** deaths that occurred in those under 75 years of age and that could have been prevented through primary prevention efforts. A death is considered preventable if, in light of an understanding of its health determinants at the time of death, all or most deaths from that cause could be prevented by public health interventions, in the broadest sense.

- **Treatable premature deaths:** those deaths that occurred in those under 75 years of age that should not occur if, in the light of medical knowledge and technology at the time of death, they could be prevented by timely and good-quality medical care.

The 12 groups of causes of mortality are in turn made up of 50 subgroups of causes of mortality. The detailed list of these codes can be found in Annex 1.

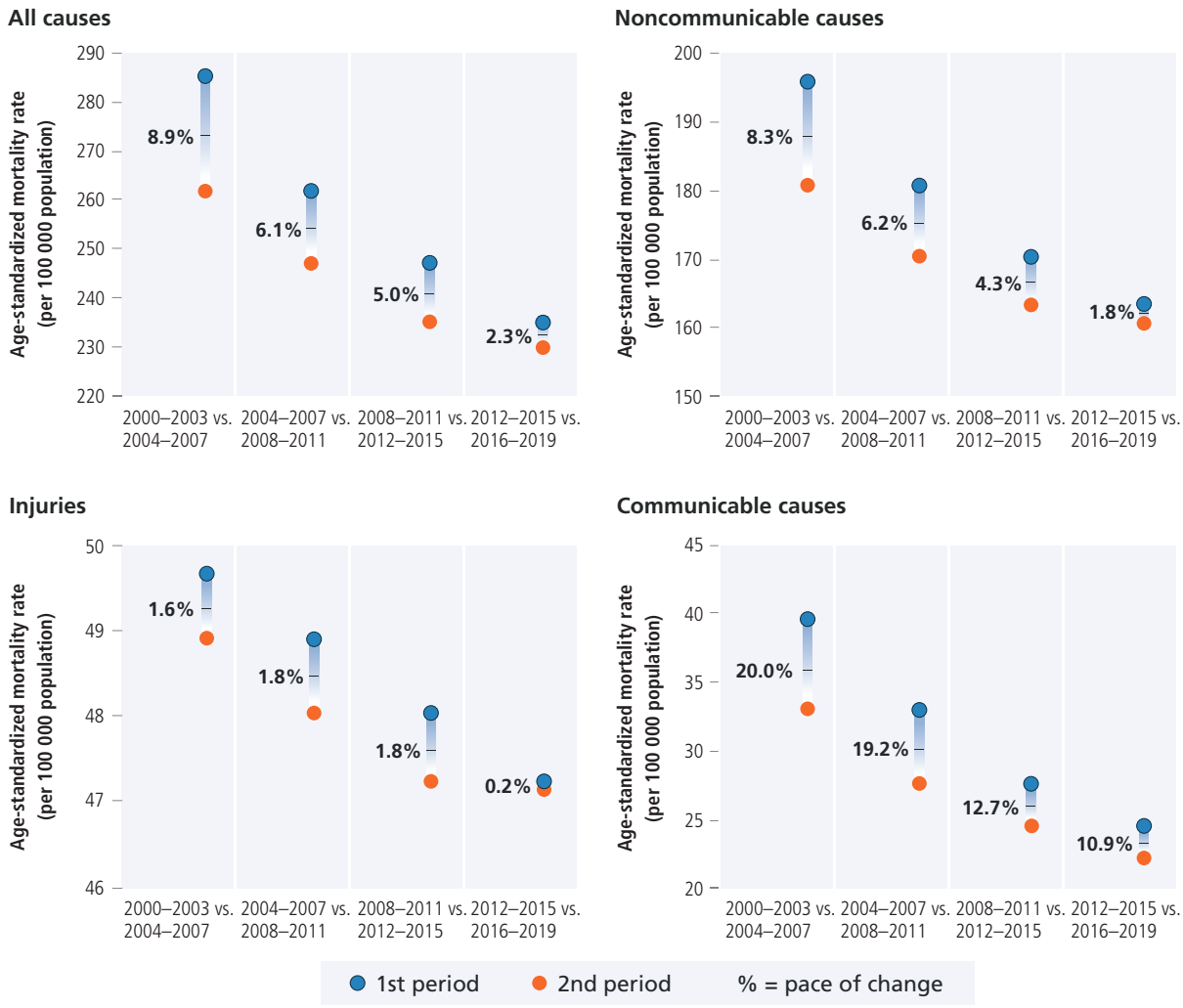
Data analysis

Data analysis included descriptive statistics by country, subregion, and region. Age-adjusted mortality rates were used for comparisons between subregions and at the regional level. The three categories that make up the overall burden of disease were used: (1) communicable, maternal, perinatal, and nutritional conditions; (2) noncommunicable conditions; and (3) injuries. The modified list is composed of 12 groups of causes of avoidable mortality coded according to ICD-10. According to the purpose of each chapter, data of a different nature were used to stratify according to social, economic, and development characteristics of the countries, including health services.

The question now arises as to how this pace of change has behaved in age-adjusted PAPM rates over time. Figure 2 show the results of the calculation of this speed (in percentage terms), at the regional level, and according to the three major groups of the Global Burden of Disease. For this estimation, data from the 2000–2019 series were grouped into four-year periods: 2004–2007 versus 2000–2003 (comparison base); 2008–2011 versus 2004–2007 (comparison base); 2012–2015 versus 2008–2011 (comparison base); 2016–2019 versus 2012–2015 (comparison base).

It is observed that PAPM has been decreasing independently of the three major groups

FIGURE 2 **Change in potentially avoidable premature mortality: Overall, by noncommunicable causes, by injuries, and by communicable causes, Region of the Americas**



Source: PAHO.

of causes, with a deceleration of change particularly in the periods 2012–2015 and 2016–2019. It is noteworthy that the greatest deceleration is observed in the group of accidents and injuries, with an intermediate pace of change in mortality due to noncommunicable diseases (NCDs), and the greatest pace of change in the group of communicable, maternal, perinatal, and nutritional diseases.

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Chapter 2

Magnitude, distribution, and trends of potentially avoidable premature mortality in the Region of the Americas

Assessing the performance of health systems is important in order to inform actions that promote well-functioning systems to respond effectively to the health needs of diverse groups of women and men. Furthermore, there is a growing consensus that many health problems require that their underlying social, economic, and environmental determinants be addressed. For this reason, multisectoral and intersectoral engagement

The mortality profile in the Americas has changed markedly in recent decades

is needed to ensure healthy lives and well-being for all in the Americas *(41)*.

The mortality profile in the Americas has changed markedly in recent decades. In most countries, NCDs and external causes have replaced communicable diseases (CDs) as the main causes of death. In 2000, neonatal conditions ranked third among the leading causes of deaths, but in 2019 were in seventh position. Among the factors contributing to this change have been the population aging, increased life expectancy, successful immunization programs, increased control of CDs such as intestinal diseases, improved nutrition, and the reduction in extreme poverty in the Region.

As discussed in Chapter 1, the analysis of premature mortality data disaggregated by preventable and treatable causes is an important tool to assess the effectiveness (and cost-effectiveness) of public health interventions, the access and quality of health services, and the need to address the social and environmental determinants of health related to this mortality.

In 2019, ischemic heart disease (37/100 000), interpersonal violence (19/100 000), diabetes mellitus (18/100 000), stroke (16/100 000), and trachea, bronchus, and lung cancers (11/100 000) were the five leading causes of death in the Region. Except for interpersonal violence, these same causes are consistently present as the leading causes of death in all subregions.

This chapter aims to provide an overview of the magnitude, distribution, and trends of PAPM in the Region of the Americas.

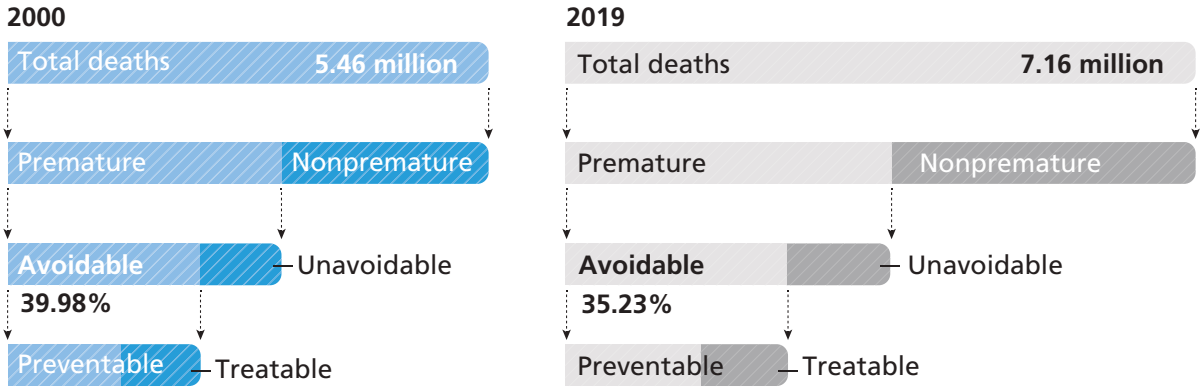
Potentially avoidable premature mortality: magnitude and trends

Despite improvements in avoidable mortality in the Region in the past two decades, avoidable causes of death still find a relevant place in the overall mortality in the Americas. In 2019, the 2 522 755 potentially avoidable premature deaths that occurred in 33 countries of the Region accounted for about 35% of the total number of deaths, compared with almost 40% in 2000 (Figure 3).

Differences by sex are evident, and Figure 4 shows that the proportion of men dying of avoidable causes represented 41% of overall deaths, while for women the figure was 29%.

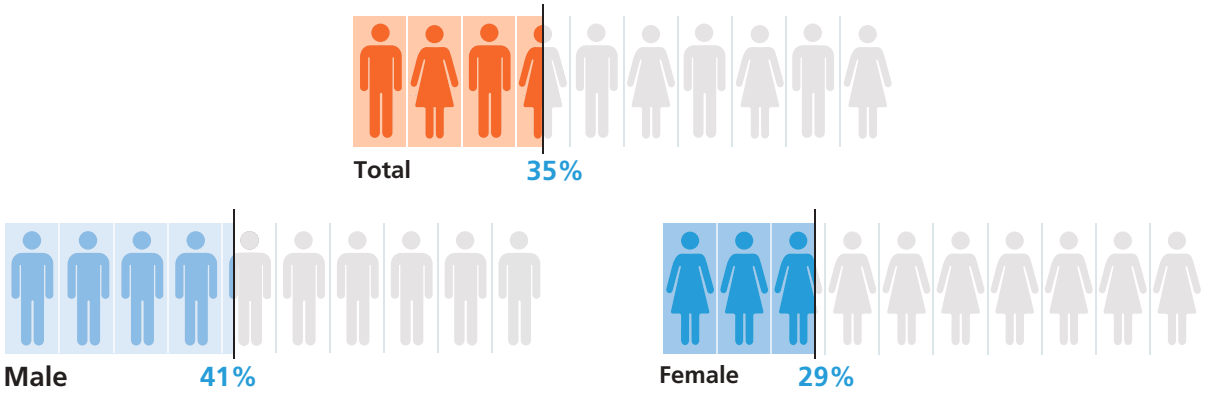
In 2019, the 2 522 755 potentially avoidable premature deaths that occurred in 33 countries of the Region accounted for about 35% of the total number of deaths

FIGURE 3 **Share of potentially avoidable premature mortality in total deaths, Region of the Americas, 2000 and 2019**



Source: PAHO.

FIGURE 4 **Proportion of potentially avoidable premature deaths in overall mortality, by sex, Region of the Americas, 2019**



Source: PAHO.

Magnitude of potentially avoidable premature mortality

In 2019, the risk of dying prematurely due to a potentially avoidable premature cause was 227 deaths per 100 000 (Table 1), with preventable causes being the major contributor, accounting for 60% of these deaths (137/100 000), while treatable causes represented the remaining 40% (90/100 000). While age-standardized mortality rates (ASMRs) are known to be higher among men than women, this difference is even higher among avoidable premature deaths: 1.7 times more among men than women. The PAPM ASMR for men was 290/100 000, while for women it was 167/100 000.

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TABLE 1 **General and avoidable mortality, by sex, Region of the Americas, 2019**

	GENERAL MORTALITY			POTENTIALLY AVOIDABLE PREMATURE MORTALITY		
SEX	DEATHS	%	ASMR (100 000)	DEATHS	%	ASMR (100 000)
Total	7 160 630	100	532	2 522 755	100	227
Male	3 803 552	53	641	1 551 235	61	290
Female	3 357 086	47	435	971 520	39	167

Note: ASMR: age-standardized mortality rate.

Source: PAHO.

Preventable and treatable causes of mortality also have relevant differences by sex. Among men, preventable causes of mortality are two times higher than treatable causes of mortality (194/100 000 and 96/100 000, respectively), with preventable external causes disproportionately affecting men. Among women, the components of preventable and treatable causes are similar (83/100 000 and 84/100 000, respectively). Preventive health services for women, such as screening services for breast and cervical cancers, are more accessible than similar services for men in most countries of the Region *(42)*.

Hegemonic masculine behavior has been related to the occurrence of specific health problems, such as risk-taking when driving, alcohol and drug consumption, unprotected sexual practices, and interpersonal violence

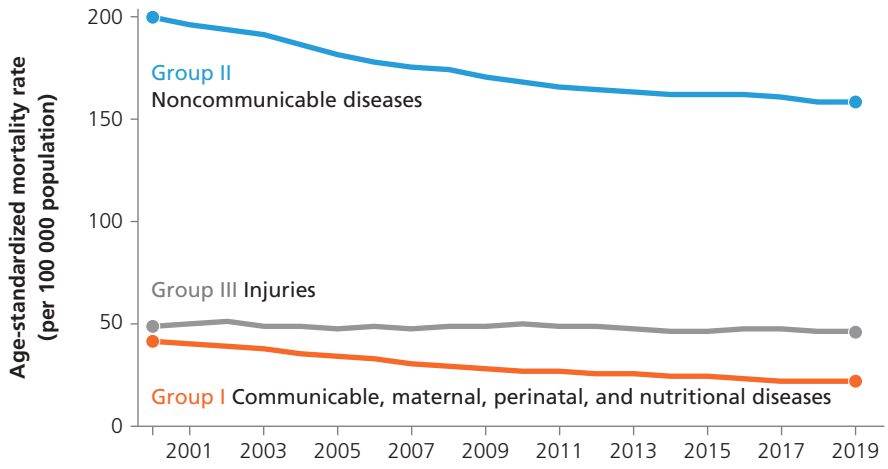
In addition, social norms, including the roles of men and women in the labor market and in seeking health services, could be also a factor *(43)*. In the Region, hegemonic masculine behavior has been related to the occurrence of specific health problems, such as risk-taking when driving, alcohol and drug consumption, unprotected sexual practices, and interpersonal violence *(43)*. The findings illustrate the need for targeted health promotion and disease prevention campaigns to address the gender gap detrimental to men.

Trends and leading causes of potentially avoidable premature mortality

The distribution of avoidable causes of deaths according to the three broad groups of causes used in the Global Burden of Disease (GBD) study *(44)* by sex revealed that the leading causes of PAPM were similar for males and females. However, in terms of magnitude, men showed higher PAPM from external causes and ischemic heart disease compared to women.

The trends of the GBD groups in Figure 5 show little change in mortality due to injuries and a steady decline in mortality due to CDs and NCDs in the 20-year period analyzed (2000–2019).

FIGURE 5 **Trends on avoidable mortality by Global Burden of Disease group, Region of the Americas, 2000–2019**



Source: PAHO.

Communicable diseases, maternal, perinatal, and nutritional conditions. In 2019, neonatal conditions were the first cause overall and for both males and females in this group. Diarrheal diseases, human immunodeficiency virus (HIV), and tuberculosis appear in the top five leading causes. Among women, deaths related to maternal conditions are also relevant (Table 2). From 2000 to 2019 (Figure 5), the PAPM ASMR significantly decreased, with an average annual percentage change (AAPC) of –3.5% (95% CI [–3.7, –3.4]), the highest decrease when compared to NCDs and external causes.

The lower rates and decreased trends show that most countries in the Region have been successful in reducing infant and maternal mortality and mortality due to infectious diseases, progressing in the elimination of vaccine-preventable diseases, and improving water and sanitation, among other factors. Despite progress, disparities among countries persist. SDG Target 3.1 calls for a reduction in maternal mortality to fewer than 70 per 100 000 live births by 2030, which requires that countries address the social determinants of health and provide all girls and women with equal access to good-quality reproductive health care and effective interventions.

Circulatory system diseases combined (ischemic heart disease and stroke) represent approximately 25% of all potentially avoidable premature deaths in the Americas

Diabetes mellitus has become an important cause of mortality in recent decades, linked to changes in patterns of food consumption, low physical activity, and increased prevalence of overweight and obesity

Noncommunicable diseases. Circulatory system diseases combined (ischemic heart disease and stroke) represent approximately 25% of all potentially avoidable premature deaths in the Americas (Table 2), also corresponding to the highest proportion of deaths in most countries. The trend analysis from 2000 to 2019 showed a decrease with an AAPC of –1.2% (95% CI [–1.4, –1.1]). Cardiovascular diseases, cancer, respiratory diseases, and diabetes share the same five risk factors: tobacco use; harmful use of alcohol; unhealthy diet; physical inactivity; and air pollution. Surveys showed that 8–30% of the population in the Americas have hypertension, a strong risk factor for heart disease and stroke *(45)*. Diabetes mellitus has become an important cause of mortality in recent decades, linked to changes in patterns of food consumption, low physical activity, and increased prevalence of overweight and obesity.

TABLE 2 **The top five causes of potentially avoidable premature mortality by Global Burden of Disease group and sex, Region of the Americas, 2019**

GBD GROUP	TOTAL (BOTH SEXES)			MALE			FEMALE		
	CAUSE OF DEATH	DEATHS	ASMR/ 100 000	CAUSE OF DEATH	DEATHS	ASMR/ 100 000	CAUSE OF DEATH	DEATHS	ASMR/ 100 000
Group I. Communicable, maternal, perinatal, and nutritional	Neonatal conditions	86 323	11.0	Neonatal conditions	48 675	12.2	Neonatal conditions	37 648	9.8
	Congenital anomalies	56 242	6.8	Congenital anomalies	31 073	7.4	Congenital anomalies	25 169	6.2
	HIV/AIDS	46 762	4.6	HIV/AIDS	31 244	6.2	HIV/AIDS	15 518	3.0
	Diarrheal diseases	17 343	1.8	Tuberculosis	10 127	2.0	Diarrheal diseases	8 477	1.7
	Tuberculosis	14 766	1.4	Diarrheal diseases	8 866	1.9	Maternal conditions	7 444	1.6
Group II. Noncommunicable diseases	Ischemic heart disease	448 773	37.2	Ischemic heart disease	300 177	52.5	Ischemic heart disease	148 596	23.2
	Diabetes mellitus	219 180	18.3	Diabetes mellitus	117 959	20.7	Diabetes mellitus – principal	101 222	16.1
	Stroke	184 835	15.5	Stroke	101 645	17.9	Stroke	83 190	13.3
	Trachea, bronchus, lung cancers	154 444	12.5	Trachea, bronchus, lung cancers	88 239	15.1	Breast cancer	73 348	12.2
	Chronic obstructive pulmonary disease	134 083	10.7	Chronic obstructive pulmonary disease	72 224	12.3	Trachea, bronchus, lung cancers	66 205	10.2
Group III. Injuries	Interpersonal violence	189 667	19.4	Interpersonal violence	166 486	34.1	Interpersonal violence	30 434	6.0
	Road injury	141 175	13.9	Road injury	110 741	22.1	Road injury	23 181	4.7
	Self-harm	89 503	8.7	Self-harm	68 613	13.6	Self-harm	20 890	4.0
	Falls	28 283	2.5	Falls	10 849	3.8	Falls	7 434	1.2
	Drowning	16 775	1.7	Drowning	13 800	2.9	Drowning	2 975	0.6

Treatable
Preventable
Both

Note: ASMR: age-standardized mortality rate.

Source: PAHO.

In 2017 the Americas registered the highest proportion of homicides in the world (37%), in a region that accounts for only 13% of the world's population

External causes. This group of preventable causes has remained a major health problem in the Region of the Americas (Table 2). The trend analysis from 2000 to 2019 showed just a slight decrease (AAPC –0.3%; 95% CI [–0.4, –0.2]), the lowest among the GBD groups. During this period, rates for road traffic injuries dropped modestly, homicides remained stable, and suicides increased. Countries need to urgently establish multisectoral policies to bring these mortality rates down. High levels of external causes have a negative impact on public health services, particularly in developing countries where resources are already scarce. In addition, these deaths occurred mainly among young people and those of working age (people aged 15–49), resulting in years of life being lost annually and shortening the life expectancy of the population.

The Americas is one of the regions in the world with the highest levels of violence. According to the United Nations, in 2017 the Americas registered the highest proportion of homicides in the world (37%), in a region that accounts for only 13% of the world's population *(46)*. Global homicides rates are falling, but not quickly enough to achieve the relevant targets under SDG 16.[4]

Potentially avoidable premature mortality throughout the life course

The age distribution of the population shapes the delivery of health services. In recent decades, the demographic transition, characterized by low fertility and decreasing mortality rates, has increased the proportion of older persons, and, at the same time, has decreased the share of young group in several countries. Population aging is a major factor in modulating health needs, social security, and social protection *(45)*. In this context, developing strategies that enable health systems to adapt to the demographic and epidemiological realities are needed more than ever.

To capture avoidable mortality differences over the life course, the mortality data were disaggregated by five age groups. As expected, the risk of dying from avoidable causes has important variations across the life cycle (Table 3). In 2019, older adults aged 65–74 years had the highest ASMR for PAPM

Population aging is a major factor in modulating health needs, social security, and social protection

4 Sustainable Development Goal (SDG) Target 16.1: Significantly reduce all forms of violence and related death rates everywhere; and the associated SDG Indicator 16.1.1: Number of victims of intentional homicide per 100 000 population, by sex and age.

TABLE 3 Potentially premature avoidable mortality by sex and age group, Region of the Americas, 2000 and 2019

	AVOIDABLE MORTALITY 2019				AVOIDABLE MORTALITY 2000			
	DEATHS	ASMR AVOIDABLE	ASMR PREVENTABLE	ASMR TREATABLE	DEATHS	ASMR AVOIDABLE	ASMR PREVENTABLE	ASMR TREATABLE
Sex								
Total	2 522 755	226.7	137.1	89.6	2 182 516	291.9	170.4	121.5
Male	1 551 235	290.2	194.0	96.3	1 329 335	369.2	239.2	130.0
Female	971 520	166.5	83.0	83.5	853 181	220.0	106.2	113.8
Age group by sex								
0–9 years	157 225	110.4	15.5	94.9	307 146	205.6	42.9	162.7
Male	88 479	121.5	17.2	104.3	172 923	226.9	47.0	179.9
Female	68 746	98.7	13.7	85.0	134 223	183.4	38.7	144.7
10–19 years	59 676	38.8	34.0	4.8	65 135	43.4	37.4	6.0
Male	45 049	57.5	52.8	4.7	47 116	61.9	56.5	5.4
Female	14 627	19.4	14.6	4.8	18 018	24.3	17.7	6.6
20–39 years	340 037	111.3	91.7	19.6	312 125	122.3	99.3	22.9
Male	252 366	164.9	146.6	18.3	228 236	179.7	159.4	20.2
Female	87 671	57.3	36.4	20.8	83 889	65.3	39.7	25.6
40–64 years	1 081 727	354.8	219.5	135.3	820 313	430.2	262.3	167.8
Male	658 625	446.8	305.8	141.0	501 174	541.6	367.7	173.9
Female	423 102	268.4	138.3	130.1	319 139	325.4	163.0	162.4
65–74 years	884 091	1 281.0	742.7	538.1	677 798	1 716.4	1 000.2	716.2
Male	506 716	1 585.5	975.1	610.3	375 885	2 123.9	1 318.7	805.3
Female	377 375	1 018.2	542.1	476.2	297 913	1 378.4	735.8	642.6

Note: ASMR: age-standardized mortality rate.

Source: PAHO.

causes (1281/100 000; 59% preventable causes and 41% treatable causes), followed by adults aged 40–64 years (355/100 000; 61% preventable causes and 39% treatable causes), infants and children less than 10 years old (110/100 000; 23% preventable causes and 77% treatable causes), and 20–39 years old (113/100 000; 19% preventable causes and 81% treatable causes). The 10–19 age group showed the lowest ASMR (39/100 000; 14% preventable causes and 86% treatable causes).

For all age groups, preventable causes were predominant, except among children less

The Region needs to continue improving the provision of quality health services, manage risk conditions, and reduce maternal and perinatal morbidity and mortality

than 10 years old, for whom treatable causes were significantly predominant, reflecting the relevance of perinatal causes, which are included among treatable causes. From 2000 to 2019, preventable causes declined by 64% and treatable causes by 42% in this age group. Despite this progress, the Region needs to continue improving the provision of quality health services, manage risk conditions, and reduce maternal and perinatal morbidity and mortality.

Although infant mortality is declining in the Region, conditions originating in the neonatal period and congenital anomalies still are leading

Conditions originating in the neonatal period and congenital anomalies still are leading the causes of death among children less than 10 years old

Homicides were the first cause of death for adolescent and young adult men and women

the causes of death among children less than 10 years old (61/100 000 and 32/100 000, respectively). Diarrheal diseases – associated with a lack of safe water and sanitation (which has plenty of evidence-based interventions through primary health care [PHC]) – ranked third (61/100 000). Mortality from external causes accounted for 74% of deaths among children and adolescents aged 10–19 years, and for 56% of deaths among young adults aged 20–39 years. Interpersonal violence (homicides) affects both age groups disproportionately, followed by road injuries and self-inflicted injuries. Of note, homicides were the first cause of death for adolescent and young adult men and women; however, men showed higher rates (1.7 times higher than rates among women of 10–19 years and 8.6 times higher among the 20–39 age group). Chronic NCDs rank first among the age groups of 40–64 and 65 and above. Ischemic heart disease, diabetes mellitus, stroke, cancer of trachea, bronchus, and lung, and chronic obstructive pulmonary disease are the top five causes of death in both age groups.

The trend analysis showed that all age groups have experienced a decline in their mortality in the past 20 years (from 2000 to 2019) with marked differences among them. The greatest decline was among children younger than 10 years (AAPC –3.2%; 95% CI [–3.7, –2.8]),

followed by older adults aged 65–74 years (AAPC –1.5%; 95% CI [–1.8, –1.3]). Adults in the 40–64 years age group presented an AAPC below the average for the Americas (AAPC –1.0%; 95% CI [–1.82, –0.8]). Slight declines were observed among children and adolescents aged 10–19 years (AAPC –0.6%; 95% CI [–1.1, 0.0]) and adults aged 20–39 years (AAPC –3.2%; 95% CI [–3.7, –2.8]), for whom external causes have historically contributed markedly to avoidable mortality in both sexes.

Potentially avoidable premature mortality by subregion

The risk of dying from a potentially avoidable premature cause of death varied widely among subregions (Table 4) and countries (Table 5) in the Region. North America and the Southern Cone showed rates below the regional average. The rate for the Andean Area was very close to the regional average. Regarding countries, most of them showed rates above the regional average (20 countries, 60%).

This wide variation among subregions and countries is an indication of health inequalities. For example, although immunization programs are well established in most countries of the Americas, new vaccines and technology are usually introduced in higher-income countries first, posing challenges for coverage among lower-income countries. In 2018, the coverage of a pneumococcal conjugate vaccine among children under 1 year of age, which is a relatively new recommendation to include in the immunization scheme, was 96% in Costa Rica, 92% in the United States of America, 44% in Jamaica, and 12% in Haiti *(47)*.

New vaccines and technology are usually introduced in higher-income countries first, posing challenges for coverage among lower-income countries

North America

Mortality data from North America revealed new challenges and the need to strengthen the mental health agenda at national and regional levels. In 2019, drug use disorders ranked second among overall causes of avoidable premature deaths (20/100 000) in the subregion, and second in the United States (22/100 000 overall; 28/100 000 among men and 15/100 000 among women). A survey in the United States carried out by the National Institutes of Health found that about 10% of adults in the United States have had a drug use disorder at some time in their lives *(48)*. In Canada, drug use disorders were the fourth cause of deaths (9/100 000 overall; 12/100 000 among males and 5/100 000 among females). This health issue is included in the 2030 Agenda and health-related SDGs as SDG Target 3.5 (Strengthen the prevention and treatment of substance abuse, drug abuse and harmful use of alcohol).

North America is the only subregion that has trachea, bronchus, and lung cancers, and suicide among the leading causes of avoidable deaths (17/100 000 and 14/100 000, respectively).

TABLE 4 **The top five causes of potentially avoidable premature mortality in the Region of the Americas and its subregions, 2019**

REGION OR SUBREGION	CAUSE OF DEATH	ASMR/100 000
The Americas	Ischemic heart disease	37.2
	Interpersonal violence	19.4
	Diabetes mellitus	18.3
	Stroke	15.5
	Road injury	13.9
North America	Ischemic heart disease	35.7
	Drug use abuse	20.2
	Trachea, bronchus, lung cancers	17.2
	Self-harm	13.9
	Chronic obstructive pulmonary disorders	12.9
Mexico	Diabetes mellitus	63.0
	Ischemic heart disease	40.8
	Interpersonal violence	25.5
	Stroke	14.3
	Road injury	12.4
Latin Caribbean	Ischemic heart disease	71.4
	Stroke	45.9
	Neonatal conditions	31.2
	Road injury	28.5
	Diabetes mellitus	23.2
Andean Area	Interpersonal violence	30.4
	Ischemic heart disease	30.0
	Road injury	19.2
	Diabetes mellitus	16.7
	Stroke	14.9
Brazil	Ischemic heart disease	39.9
	Interpersonal violence	32.2
	Stroke	25.0
	Diabetes mellitus	17.1
	Road injury	14.7
Central America	Interpersonal violence	39.4
	Ischemic heart disease	37.5
	Diabetes mellitus	34.5
	Other chronic kidney disease	22.7
	Stroke	20.5

TABLE 4 The top five causes of potentially avoidable premature mortality in the Region of the Americas and its subregions, 2019 *(continued)*

REGION OR SUBREGION	CAUSE OF DEATH	ASMR/100 000
Southern Cone	Ischemic heart disease	31.0
	Stroke	17.5
	Road injury	14.5
	Trachea, bronchus, lung cancers	12.5
	Chronic obstructive pulmonary disorders	11.8
Non-Latin Caribbean	Ischemic heart disease	43.3
	Diabetes mellitus	42.9
	Stroke	36.2
	Interpersonal violence	32.7
	HIV/AIDS	22.0

Note: ASMR: age-standardized mortality rate.

Source: PAHO.

TABLE 5 Potentially avoidable premature mortality by subregion and country, Region of the Americas, 2000–2019 trend

	POTENTIALLY AVOIDABLE PREMATURE MORTALITY 2019				POTENTIALLY AVOIDABLE PREMATURE MORTALITY 2000				TREND
REGION/COUNTRY	DEATHS	ASMR/100 000 AVOIDABLE	ASMR/100 000 PREVENTABLE	ASMR/100 000 TREATABLE	DEATHS	ASMR/100 000 AVOIDABLE	ASMR/100 000 PREVENTABLE	ASMR/100 000 TREATABLE	AAPC
The Americas	2 522 755	226.7	137.1	89.6	2 182 516	291.9	170.4	121.5	–1.3*
North America	963 036	194.8	128.5	66.3	794 934	232.0	144.3	87.8	–1.0*
Canada	68 634	125.6	80.9	44.7	63 177	178.0	109.6	68.4	–1.8*
United States of America	894 402	203.1	134.2	68.9	731 757	238.2	148.2	89.9	–0.9*
Mexico	298 328	254.5	137.1	117.4	210 194	280.9	146.7	134.2	–0.5
Latin Caribbean	125 336	379.5	209.0	170.5	112 752	457.7	271.3	186.3	–1.0*
Cuba	34 545	210.9	125.2	85.7	28 440	252.0	147.1	104.9	–0.8*
Dominican Republic	36 985	380.0	219.8	160.2	25 600	371.3	223.9	147.4	0.2
Haiti	53 806	606.5	314.2	292.3	58 712	877.8	526.9	350.9	–2.0*
Andean Area	292 897	218.1	127.9	90.2	290 964	324.0	191.1	133.0	–2.1*
Bolivia (Plurinational State of)	30 883	317.1	153.7	163.4	34 889	472.5	224.6	247.9	–2.1*
Colombia	92 244	183.7	113.2	70.5	110 354	340.9	226.8	114.2	–3.2*
Ecuador	30 432	194.2	102.0	92.2	29 317	290.0	152.8	137.2	–2.0*
Peru	48 490	153.7	83.3	70.3	55 005	257.2	135.7	121.5	–2.7*

TABLE 5 Potentially avoidable premature mortality by subregion and country, Region of the Americas, 2000–2019 trend *(continued)*

	POTENTIALLY AVOIDABLE PREMATURE MORTALITY 2019				POTENTIALLY AVOIDABLE PREMATURE MORTALITY 2000				TREND
REGION/COUNTRY	DEATHS	ASMR/100 000 AVOIDABLE	ASMR/100 000 PREVENTABLE	ASMR/100 000 TREATABLE	DEATHS	ASMR/100 000 AVOIDABLE	ASMR/100 000 PREVENTABLE	ASMR/100 000 TREATABLE	AAPC
Venezuela (Bolivarian Republic of)	90 848	337.9	213.6	124.3	61 398	330.2	197.4	132.8	0.1
Brazil	547 629	249.0	149.4	99.6	503 159	351.9	201.0	150.9	–1.8*
Central America	120 439	293.8	170.1	123.7	98 432	344.8	203.5	141.3	–0.8*
Belize	1 004	327.8	204.4	123.4	690	432.8	249.2	183.6	–1.4*
Costa Rica	8 360	155.9	87.4	68.4	6 248	200.1	113.2	86.9	–1.4*
El Salvador	18 395	312.4	200.0	112.5	17 060	347.2	229.8	117.4	–0.5
Guatemala	44 956	348.0	202.5	145.4	37 994	417.4	250.2	167.2	–0.9*
Honduras	26 272	381.2	231.7	149.5	19 834	422.4	258.4	164.0	–0.7
Nicaragua	13 583	272.4	129.9	142.5	10 766	308.6	150.2	158.5	–0.6*
Panama	7 868	195.7	108.4	87.3	5 840	232.9	124.0	108.8	–1.0*
Southern Cone	152 048	191.0	106.3	84.8	150 902	261.6	145.2	116.4	–1.6*
Argentina	96 888	203.0	112.0	91.0	100 941	278.4	152.4	126.0	–1.6*
Chile	30 364	139.1	79.1	60.0	27 961	200.3	119.0	81.3	–2.1*
Paraguay	15 744	263.4	140.1	123.4	12 035	295.8	154.1	141.7	–0.5*
Uruguay	9 053	218.0	133.3	84.7	9 966	266.4	150.4	116.0	–1.1*
Non-Latin Caribbean	23 042	322.4	172.7	149.8	21 180	417.6	231.1	186.5	–1.4*
Antigua and Barbuda	215	197.8	81.4	116.4	165	274.6	125.5	149.1	–1.5*
Bahamas	1 300	324.5	171.5	153.0	1 102	443.9	291.8	152.1	–1.6*
Barbados	781	198.5	88.6	109.8	776	281.5	162.5	118.9	–1.8*
Grenada	372	312.2	138.7	173.5	283	303.8	153.6	150.2	0.2
Guyana	4 393	614.6	326.9	287.7	3 764	708.0	370.0	338.0	–0.8*
Jamaica	8 326	284.5	159.3	125.2	7 497	338.8	199.9	138.9	–0.9
Saint Lucia	551	284.7	144.9	139.8	390	322.1	168.0	154.0	–0.5
Saint Vincent and the Grenadines	347	298.0	160.3	137.7	332	389.4	212.0	177.4	–1.4*
Suriname	2 144	392.4	206.5	185.9	1 787	466.7	261.8	204.9	–0.9*
Trinidad and Tobago	4 613	287.2	153.9	133.3	5 083	473.3	236.8	236.5	–2.7*

Note: ASMR: age-standardized mortality rate; AAPC: average annual percentage change.

* Statistically significant.

Source: PAHO.

The ASMR due to suicide in North America is 1.5 times the average for the Americas (9/100 000 in 2019). Suicides are preventable and undesirable outcomes of mental illness. More than 90% of suicide victims have a diagnosable chronic mental disorder such as depression and substance use disorders *(48)*. The estimated 12-month prevalence for mental, neurological, and substance use disorders in the Americas ranges from 18.7% to 24.2%; for anxiety disorders the range is 9.3–16.1%, for affective disorders it is 7.0–8.7%, and for substance use disorders it is 3.6–5.3% *(48)*.

Mexico

Diabetes mellitus is the leading cause of avoidable deaths in Mexico, for both men and women. In 2019, the ASMR was 63/100 000 overall, and 71/100 000 among men and 56/100 000 among women. These rates were the highest in the Americas and more than twice the rates of any other subregion, defining diabetes as a major public health problem in the country that requires a PHC approach to prevent and manage it. Ischemic heart disease, interpersonal violence, stroke, and road traffic injuries complete the list of the five leading causes of deaths in Mexico.

Unlike the trends observed for the Americas and subregions, avoidable mortality in Mexico remained stable (changes were not statistically significant), and the ASMR slightly increased (from 281/100 000 in 2000 to 298/100 000 in 2019) in the period studied. Mexico has experienced improvements in health outcomes and living conditions, but higher rates of mortality due to diabetes and interpersonal violence have slowed these improvements *(49)*.

Latin Caribbean

Data from 2019 showed that this subregion had the highest avoidable mortality rates for ischemic heart disease (71/100 000 overall, 89/100 000 among men and 56/100 000 among women) and stroke (46/100 000 overall, 48/100 000 among men and 45/100 000 among women) in the Americas. Within the subregion, Haitians have the highest risk of dying prematurely from ischemic heart disease (115/100 000) and from stroke (100/100 000). In 2019, Haiti's ASMR for ischemic heart disease was three times that of the Region's and the second highest among all countries.

Noteworthy is the fact that Latin Caribbean is the only subregion in which neonatal conditions are included among the five leading causes of avoidable deaths (31.2/100 000). This group of diseases was particularly important in the Dominican Republic and Haiti, while being quite low in Cuba (3.8/100 000). The Region of the Americas achieved Goal 4 of the Millennium Development Goals due to a 67% reduction in under-5 mortality rates between 1990 and 2015. However, this achievement was not equal among the countries in the Region. Interventions to eliminate these causes of death and diseases are well known, cost-effective, and within reach in most countries. The proposed SDG Target for child mortality aims to end preventable deaths of newborns and children under 5 years of age by 2030, with all countries with a reduction in neonatal mortality to 12 deaths per 1000 live births and in under-5 mortality to 25 deaths per 1000 live births.

The subregion experienced a decrease in PAPM between 2000 and 2019. The AAPC

was significant at –1.0 (95% CI [–1.1, –0.9]), except for the Dominican Republic, where PAPM showed no significant decline.

Andean Area

In 2019, homicide was the co-leading cause of avoidable deaths among the total population (30.4/100 000). The risk of men dying due to homicide (56/100 000) was 10 times higher than that for women (5.5/100 000), with the Bolivarian Republic of Venezuela having the highest homicide rates (64/100 000 overall; 123/100 000 among men; and 8.0/100 000 among women), followed by Colombia (37/100 000 overall; 69/100 000 among men; and 6.8/100 000 among women). From 2000 to 2019, homicides rates in Colombia decreased 2.6 times (from 98/100 000 for overall in 2000 to 37/100 000 in 2019) as a result of the implementation of successful policies. On the other hand, homicides rates in the Bolivarian Republic of Venezuela increased, in 2000 the ASMR was 44/100 000.

While ischemic heart disease was the second main contributor to avoidable deaths in the Andean Area in 2019 (30/100 000), it was the leading cause in the Plurinational State of Bolivia (46/100 000). Road injuries, diabetes mellitus, and stroke complete the top five contributors of avoidable deaths.

In the period 2000–2019, avoidable mortality declined in the subregion, with an AAPC higher than the average of the Americas (AAPC –2.1%; 95% CI [–1.8, –1.4]), as well as in all countries within the subregion except the Bolivarian Republic of Venezuela, which showed no significant decline.

Brazil

Similar to other countries and subregions, ischemic heart disease is the leading contributor to avoidable premature deaths in Brazil, with an ASMR higher for men when compared to women (40/100 000 for both sexes; 56/100 000 among men; and 26/100 000 among women). Interpersonal violence ranks second, although when it is disaggregated by sex, it is the highest contributor to the ASMR among men (32/100 000 for both sexes; 59/100 000 among men; and 6/100 000 among women).

As Table 4 illustrates, stroke, diabetes mellitus, and road traffic injuries complete the five leading avoidable mortality causes in the population. For women, the leading causes are ischemic heart disease (26/100 000), stroke (20/100 000), diabetes mellitus (15/100 000), breast cancer (13/100 000), and neonatal conditions (10/100 000).

A trend observed in the Region of the Americas is the rise in motor vehicle ownership, which is linked to increased urbanization. As a result, walking and cycling have become more dangerous. Road users, pedestrians, motorcyclists, and cyclists represented 45% of all road traffic deaths in the Region *(45)*. In Brazil, the number of motorcyclists has been increasing in recent decades. Studies show that, as a result, motorcycle and pedestrian fatalities have increased at a rapid rate *(50)*. Although road traffic mortality rates have been declining in Brazil, estimates suggest that, at the current pace, the country will not reach the SDG Target related to reduction of traffic road deaths *(50)*.[5] The urbanization process

5 SDG Target 3.6: By 2020, halve the number of global deaths and injuries from road traffic accidents.

is also related to increased air pollution, which is linked to mortality due to cardiovascular and respiratory diseases, as well as lung cancer *(51)*.

Trends in avoidable mortality have been declining in Brazil. From 2000 to 2019, the country showed an AAPC higher than the average for the Region of the Americas (AAPC –1.8%; 95% CI [–2.0, –1.7]).

Central America

In 2019, the leading cause of avoidable death for both sexes in this diverse subregion was interpersonal violence (39.4/100 000), almost twice as high as that for the Americas. In 2019, El Salvador (85/100 000) and Honduras (75/100 000) registered the highest homicide rates within the subregion (and the Americas). While homicide rates were higher among males, the rates for females were also high. For 2019, the homicide rate in El Salvador was 85/100 000, but it was 127/100 000 among men and 48/100 000 among women. In Honduras, the homicide rate was 79/100 000 (120/100 000 among men and 40/100 000 among women).

Countries with greater income inequality are more likely to have higher homicide rates than countries with less inequality. According to United Nations data, gang violence and organized crime are important contributors to mortality in Central America *(46)*. Alcohol and drugs are also contributors to violence and homicide. More in-depth analyses in collaboration with other sectors are recommended to better understand the roots of violence and to implement or scale up violence prevention programs *(46)*.

Central America is the only subregion in which chronic kidney diseases feature among the five leading causes of mortality. Chronic kidney diseases are considered an increasingly important public health issue affecting agricultural communities in the subregion. Their etiology is well understood but has not been completely established. They have been associated with environmental and occupational factors, such as misuse of agrochemicals, exposure to high temperatures, and insufficient water intake *(45)*.

Trends in avoidable mortality have been declining in this subregion, but at a slow pace compared to the average for the Americas. From 2000 to 2019, the AAPC for Central America was –0.8 (95% CI [–1.0, –0.7]).

Non-Latin Caribbean

The leading causes of avoidable deaths for both sexes in this subregion were ischemic heart disease, diabetes mellitus, stroke, interpersonal violence, and HIV/AIDS. The Non-Latin Caribbean is the only subregion where HIV/AIDS is included in the top five causes of avoidable mortality. This subregion showed the highest mortality rates in the Americas (22/100 000 overall; 30/100 000 among men and 14/100 000 among women). The Region has made improvements in the control of the HIV epidemic with reductions in the number of new infections and deaths. However, recent data show that more than one-third of new infections in adults are found in the young adult population (15–24 years); and two-thirds of these are in young men. Therefore, HIV continues to be an important public health problem in the Region, affecting morbidity and mortality. The data show that the Non-Latin Caribbean is especially affected. Jamaica (26/100 000 overall; 42/100 000 among men and 11/100 000 among women) and Suriname

(24/100 000 overall; 38/100 000 among men and 15/100 000 among women) are the countries most affected in the subregion.

Interpersonal violence has also been affecting the subregion. The homicide rate in Jamaica is the fourth highest in the Americas (43/100 000 overall; 68/100 000 among men and 20/100 000 among women).

Trends in avoidable mortality have been declining in this subregion. From 2000 to 2019, the AAPC was –1.4 (95% CI [–1.8, –1.0]). The greatest decline was seen in Trinidad and Tobago (AAPC –2.7; 95% CI [–2.8, –2.5]). No significant decline was observed in Grenada, Jamaica, or Saint Lucia.

Southern Cone

This subregion showed a lower ASMR compared to the average for the Americas, although with important variations among countries. For example, Chile has the lowest ASMR, which is almost half that of Paraguay's. The five leading causes of avoidable deaths for both sexes in this subregion are ischemic heart disease; stroke; road injury; trachea, bronchus, and lung cancers; and chronic obstructive pulmonary disorders. Smoking is a risk factor for several diseases, including lung cancer, chronic respiratory diseases, heart disease, and stroke. Tobacco use has been a major public health problem in the Southern Cone. The current prevalence of tobacco use among young people is especially concerning. A survey among students aged 13–15 years found the highest prevalence of current use of tobacco in Non-Latin Caribbean countries *(45)*. Smoking also poses a serious threat to the health of nonsmoking adults and children exposed to cigarette smoke. Implementing tobacco control policies will have a positive impact in reducing avoidable mortality in the subregion.

Trends in avoidable mortality have been declining in this subregion. From 2000 to 2019, the AAPC was –1.6 (95% CI [–2.1, –1.2]). Chile experienced a faster decline (AAPC –2.1; 95% CI [–2.4, –1.8]), which was faster than the average in the Americas.

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Chapter 3

Social inequalities in potentially avoidable premature mortality

While each death due to PAPM represents a challenge for health systems, this is aggravated when considering the inequitable distribution of these deaths due to the unequal distribution of power, resources, and wealth – and therefore of the opportunities for a healthy, productive, and rewarding life *(22, 33, 52–54)*.

Health inequity – unfair and avoidable inequalities – is a distinctive peculiarity of the Region of the Americas

Health inequity – unfair and avoidable inequalities – is a distinctive peculiarity of the Region of the Americas. It is a consequence of the social inequity that has characterized the Region, and which has previously been documented in *Health in the Americas (45, 55–57)* as well as in other important flagship publications of regional organizations *(58–64)*, and most recently in the Report of the Pan American Health Organization Commission on Equity and Inequalities in Health in the Americas, *Just Societies: Health Equity and Dignified Lives (65)*.

This chapter reports on the magnitude of and trends in inequalities in PAPM in the Region,

Equity in health implies that every person can reach their full health potential and that no person is excluded or disadvantaged from reaching that potential because of social position or other socially determined circumstances

adopting the level of sustainable development in the Region of the Americas as a stratifier, and using for that a standard methodology recommended by WHO and PAHO based on the social determinants of health approach *(66)*.

Equity in health implies that every person can reach their full health potential and that no person is excluded or disadvantaged from reaching that potential because of social position or other socially determined circumstances *(67, 68)*.

In the conceptual model of the social and environmental determinants of health (SEDH), social position (defined by the distribution of power, wealth, and resources) determines the inequality of population health *(69)*. Social inequities are expressed in differential outcomes in terms of the production, preservation, and recovery of health *(69)*. In order to measure inequalities, a common socioeconomic indicator is required to represent SEDH, that is, the equity stratifier or inequality dimension. This indicator is then used to order countries from the most socioeconomically disadvantaged to the most advantaged, thus, the distributional equity of PAPM is analyzed, describing the pattern and magnitude of its inequality, and summarizing it in standard metrics.

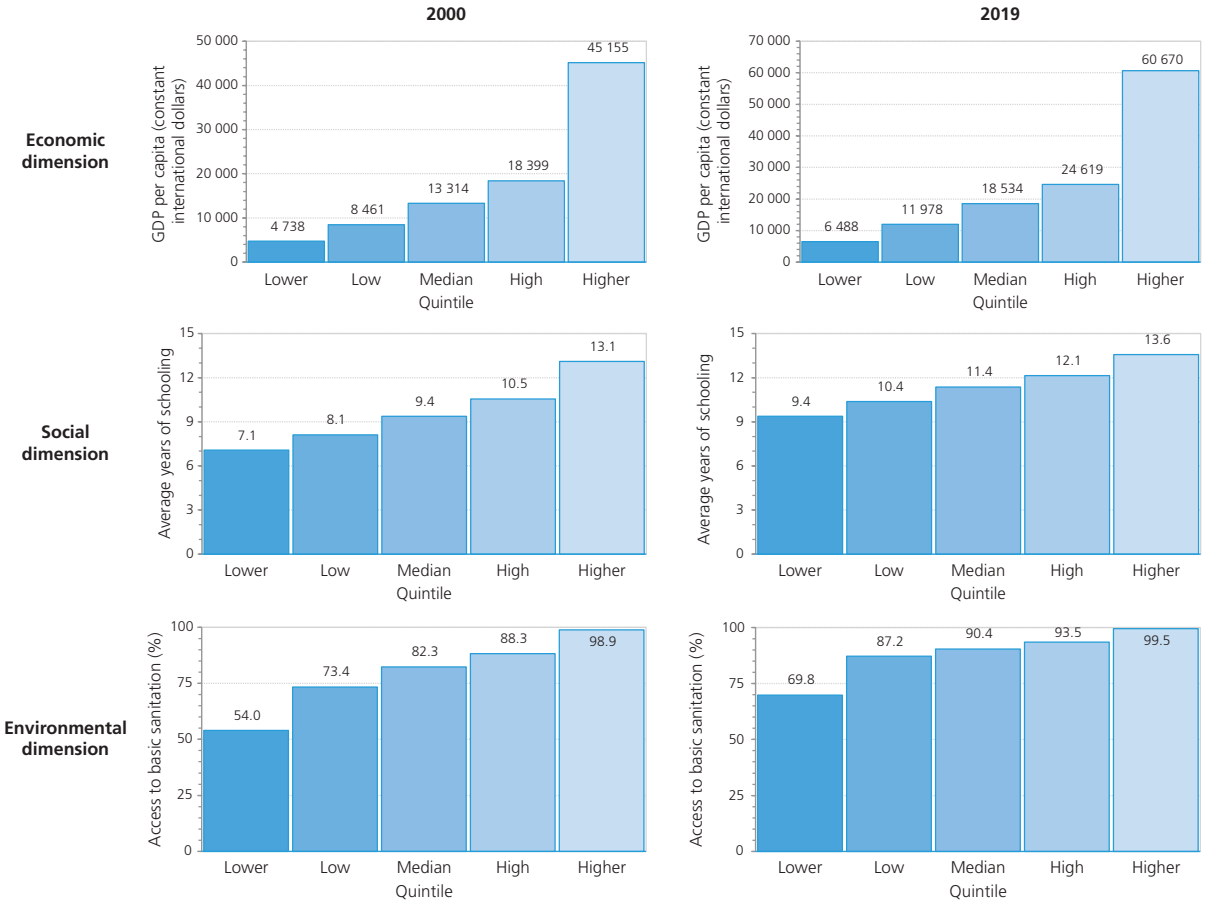
The three dimensions of sustainable development – economic, social, and environmental – are characterized by marked distributional inequality in the Americas, generating very clear population and territorial gradients. Figure 6 illustrates this situation with three standard proxy indicators for these dimensions: average gross domestic product (GDP) per capita, average years of schooling at age 25, and coverage of access to basic sanitation services, respectively, in the countries of the Region in 2000 and 2019.

Based on the three proxy indicators of the dimensions of development, the Sustainable Development Index (SDIx) was constructed as a stratifier for the analysis of inequalities in the regional distribution of PAPM.

Measuring social inequalities in potentially avoidable premature mortality

Two standard summary metrics are used to present inequalities in PAPM – their intensity, direction, and change over time: the slope index of inequality (SII), and the concentration index of health inequality (CIx) *(66, 70)*. Both metrics summarize the magnitude of distributional inequality in the absolute risk of PAPM (expressed as an

FIGURE 6 **Economic, social, and environmental gradients of countries, according to quintiles of average gross domestic product per capita, average years of schooling attained, and coverage of access to basic sanitation services, respectively, Region of the Americas, 2000 and 2019**



Source: PAHO.

age-standardized rate) in the social gradient defined by the SDIx among the countries of the Region for a specific year. The SII expresses, in absolute terms, the excess regional mortality that exists in that social gradient when moving from the position of less sustainable development to that of greater sustainable development. The CIx expresses, in relative terms, the lack of proportionality in the distribution of the regional mortality burden in the social gradient of sustainable development. In both metrics, a value closer to zero reflects less inequality in PAPM. Box 1 presents a synthesis of the methodology for measuring social inequalities in PAPM – applied in this chapter to a total of 33 countries with complete data for the health dimension (i.e., PAPM), as well as the three dimensions of sustainable development for the social stratifier (i.e., SDIx) and population weighting.

BOX 1 Measuring social inequality in potentially avoidable premature mortality: Basic methodological aspects

Measuring social inequality in potentially avoidable premature mortality (PAPM) among the countries of the Americas for a given year requires, in essence, a panel of data with four columns: the classes or units of analysis (i.e., the countries), the size of the classes (i.e., the base population), the equity stratifier (i.e., the IDSx), and the specific PAPM rate for that year. The panel data are sorted according to the distribution of the equity stratifier, from the country with the lowest IDSx to the country with the highest IDSx. It is from this configuration that the slope index of inequality (SII) and the concentration index of health inequality (CIx), the two summary inequality metrics used in this exercise, are calculated. These complex metrics correspond to the so-called inequality gradient metrics because they are constructed by taking into account information from all units of analysis as well as their relative size, which gives them the attribute of being robust.

The SII – or angular inequality index – is obtained by regressing PAPM rates on the relative social position of countries on the sustainable development gradient and corresponds, as its name indicates, to the regression parameter or coefficient that identifies its slope (the absolute change in PAPM rate per unit change in relative social position). The relative social position is a single value for each country, between 0 (most disadvantaged) and 1 (least disadvantaged), defined as a function of its SDIx and population size with respect to the regional set and obtained from the cumulative relative population frequencies. To control for the heteroscedasticity introduced by the different size of the units of analysis, a weighted least squares regression is run, and to control for the diminishing returns or marginal utility of the improvement in social position on mortality reduction, a logarithmic transformation is applied to the PAPM rates. An SII equal to 0 (horizontal slope) indicates equidistribution (i.e., no inequality); a negative sign for the SII indicates excess PAPM among countries with lower sustainable development (i.e., prorich distribution).

The CIx is a relative value ranging from –100 to +100 and indicates the degree of disproportionality in the distribution of mortality burden across the social gradient of the population. The CIx is constructed from the cumulative relative frequencies of the population and the potentially avoidable premature mortality burden and corresponds to the area between the concentration curve (resulting from contrasting the two cumulative relative frequencies mentioned) and the proportionality diagonal as a percentage of the total area. A CIx equal to zero (diagonal) indicates equidistribution (i.e., no inequality); a negative sign of CIx indicates disproportionate concentration of the PAPM burden among countries with less sustainable development (i.e., prorich distribution).

Source: PAHO.

The current state of inequality in potentially avoidable premature mortality

For 2019 – the most recent year in the time series of mortality data available – and as shown in the previous chapter, the Region of the Americas reached an average rate of 227 potentially avoidable premature deaths per 100 000 persons under 75 years of age. In the same year, the magnitude of absolute inequality (summarized in the SII) was –127.6, indicating an excess of PAPM equivalent to 128 deaths per 100 000 persons under 75 years of age (95% CI [–142.8, –92.4]) along the social gradient defined by the level of sustainable development among the countries (from the lowest to the highest SDIx). The CIx was –10.3 (95% CI [–12.3, –8.4]), indicating a moderately disproportionate concentration of the burden of PAPM in countries with lower sustainable development (Table 6).

TABLE 6 **Average rates of potentially avoidable premature mortality and its absolute and relative inequality in the gradient of sustainable development between countries (n = 33), by sex and age group, Region of the Americas, 2000–2019**

YEAR	AVERAGE RATE	LB	UB	SII	LB	UB	CIx	LB	UB
2000	293.5	293.1	293.9	–193.6	–205.1	–169.0	–11.8	–13.7	–9.8
2001	289.6	289.2	289.9	–186.6	–198.8	–160.6	–11.5	–13.5	–9.6
2002	285.9	285.6	286.3	–182.2	–194.6	–155.7	–11.5	–13.4	–9.5
2003	281.9	281.5	282.2	–177.0	–189.9	–149.5	–11.4	–13.4	–9.5
2004	274.6	274.2	274.9	–180.0	–191.3	–154.7	–11.9	–13.9	–10.0
2005	268.4	268.1	268.8	–168.6	–180.9	–141.7	–11.5	–13.4	–9.5
2006	264.0	263.6	264.3	–165.6	–138.1	–178.0	–11.5	–13.4	–9.5
2007	258.3	258.0	258.7	–163.1	–175.1	–136.1	–11.2	–13.2	–9.3
2008	257.2	256.9	257.5	–159.9	–172.5	–130.4	–11.4	–13.4	–9.5
2009	253.2	252.9	253.6	–173.1	–182.4	–151.1	–12.1	–14.0	–10.1
2010	250.4	250.0	250.7	–169.9	–179.4	–145.7	–12.5	–14.5	–10.6
2011	246.5	246.1	246.8	–162.2	–172.7	–136.2	–12.2	–14.1	–10.2
2012	243.8	243.5	244.1	–162.7	–172.5	–138.3	–12.1	–14.1	–10.2
2013	240.2	239.9	240.5	–154.5	–165.4	–128.2	–11.9	–13.9	–9.9
2014	238.2	237.9	238.5	–146.6	–158.8	–117.1	–11.6	–13.6	–9.7
2015	237.7	237.4	238.0	–135.3	–149.9	–101.5	–10.9	–12.8	–8.9
2016	239.1	238.8	239.4	–136.6	–151.2	–103.0	–10.7	–12.6	–8.7
2017	235.9	235.6	236.2	–131.3	–146.4	–96.8	–10.4	–12.4	–8.5
2018	232.7	232.4	233.0	–133.8	–147.8	–101.0	–10.7	–12.7	–8.8
2019	231.2	230.9	231.5	–127.6	–142.8	–92.4	–10.3	–12.3	–8.4

Note: SII: slope index of inequality; CIx: concentration index of health inequality; LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.

In fact, in that year, the PAPM rate was 382.1/100 000 in the quintile of countries with the lowest SDIx, and 192.9/100 000 in the quintile with the highest SDIx (Table 7).

Regional inequality in PAPM is not distributed homogeneously over the life course, but rather reproduces differentiated patterns. On the one hand, as Table 7 shows, absolute and relative inequality generate inverse gradients in all the age groups analyzed, reflected in the negative sign of their indices (SII, CIx): the greater the sustainable development, the lower the PAPM rate. On the other hand, the pattern of inequality in PAPM throughout life follows the shape of an inverted "U": absolute inequality (SII) is markedly more intense between 65 and 74 years of age; relative inequality (CIx) is more intense between 0 and 9 years of age. The gradient of inequality by age is greater for men than for women, especially absolute inequality. Annex 2 presents the detailed results for the years 2000, 2009, and 2019.

Inequality trends in potentially avoidable premature mortality

For the period analyzed (2000–2019), as presented in Chapter 2, the average rate of PAPM shows a sustained decline at the regional level. More importantly, there has been an equally sustained reduction in absolute and relative social inequality in PAPM between countries. Figure 7 illustrates these trends – found in a region that, in general, is characterized by very deep and persistent social inequalities in health. Indeed, between 2000 and 2019, the AAPC of the SII (–2.5%) was greater than the regional average rate (–1.40%); the AAPC of the CIx was markedly lower (–0.75%). Moreover, the rate of reduction of inequality in PAPM, both absolute and relative, was faster in the second half of the period analyzed, unlike the regional average rate, which fell more rapidly in the first half of that period. Thus, between 2000 and 2009, the AAPC of the SII was –1.24%, of the CIx +0.28%, and of the average rate –1.64%, while between 2010 and 2019 these rates of reduction were –3.18%, –2.14%, and –0.89%, respectively.

This favorable double trend of reduction of the average regional rate with simultaneous reduction of the gradients of absolute and relative inequality of PAPM between countries in the period 2000–2019 corresponds, in general, with the systematic reduction of the same in all quintiles of sustainable development over time (Table 6), and is reproduced in both sexes (Annex 3) as well as in preventable and treatable causes (Annex 3) in the economically active and nonactive age populations (Annex 4) and in all age groups analyzed – with the exception of two: adolescents (10–19 years of age), and older adults (65–74 years of age), where absolute and relative inequality increased markedly and systematically during the period; in the former, this was seen especially in men and at the expense of preventable causes, and in the latter, it was seen in both sexes and at the expense of treatable causes of PAPM (Annex 2).

Figure 8 plots the results of the decomposition analysis of absolute inequality in PAPM by preventable and treatable causes in men and women under 75 years of age. Three findings stand out: (1) the magnitude of absolute inequality (i.e., SII) in PAPM was systematically higher in men than in women across the years analyzed; (2) the magnitude of absolute

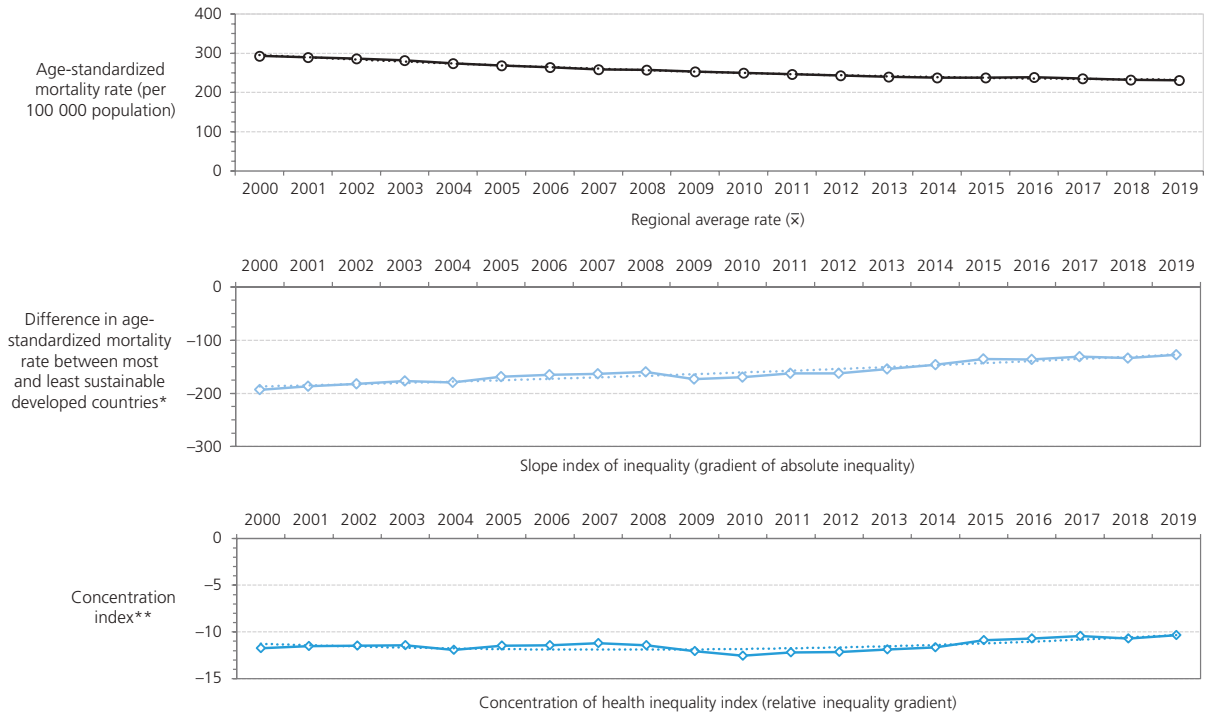
TABLE 7 **Average rates of potentially avoidable, preventable, and treatable premature mortality by quintiles of sustainable development, by sex and year, Region of the Americas, 2000, 2009, and 2019**

			QUINTILE OF SUSTAINABLE DEVELOPMENT				
POPULATION		YEAR	LOWER	Q2	MEDIAN	Q4	HIGHER
Total		2000	491.7	308.0	326.9	288.0	231.9
	ASMR avoidable	2009	436.2	260.7	278.4	255.9	196.6
		2019	382.1	265.9	248.9	193.6	192.9
		2000	283.9	184.2	182.2	164.7	143.7
	ASMR preventable	2009	246.1	141.6	162.1	151.1	125.2
		2019	210.4	157.9	142.7	113.1	126.4
		2000	207.9	123.8	144.7	123.3	88.2
	ASMR treatable	2009	190.0	119.1	116.2	104.8	71.4
		2019	171.7	108.0	106.2	80.5	66.5
Male		2000	548.0	393.1	413.4	379.0	295.5
	ASMR avoidable	2009	494.0	312.7	362.7	341.2	248.4
		2019	439.2	340.6	326.0	254.6	244.1
		2000	351.6	271.3	259.6	244.2	197.9
	ASMR preventable	2009	314.2	191.7	238.5	226.7	169.9
		2019	271.2	229.3	210.4	169.4	170.6
		2000	196.5	121.8	153.8	134.8	97.6
	ASMR treatable	2009	179.8	121.0	124.2	114.4	78.5
		2019	168.0	111.3	115.5	85.2	73.5
Female		2000	440.2	228.0	246.8	205.0	173.1
	ASMR avoidable	2009	383.9	209.9	200.5	177.1	147.3
		2019	331.2	194.6	177.5	138.0	143.6
		2000	222.3	102.7	110.5	91.5	93.3
	ASMR preventable	2009	184.8	92.9	91.5	80.6	82.5
		2019	155.8	89.7	79.6	61.5	83.6
		2000	217.8	125.3	136.3	113.5	79.9
	ASMR treatable	2009	199.1	117.1	108.9	96.5	64.8
		2019	175.3	105.0	97.9	76.5	60.0

Note: ASMR: age-standardized mortality rate.

Source: PAHO.

FIGURE 7 **Trends in the average rate of potentially avoidable premature mortality, its absolute inequality, and relative inequality in the gradient of sustainable development among countries (n = 33), Region of the Americas, 2000–2019**



* Negative values indicate excess of potentially avoidable premature mortality among countries with less sustainable development.

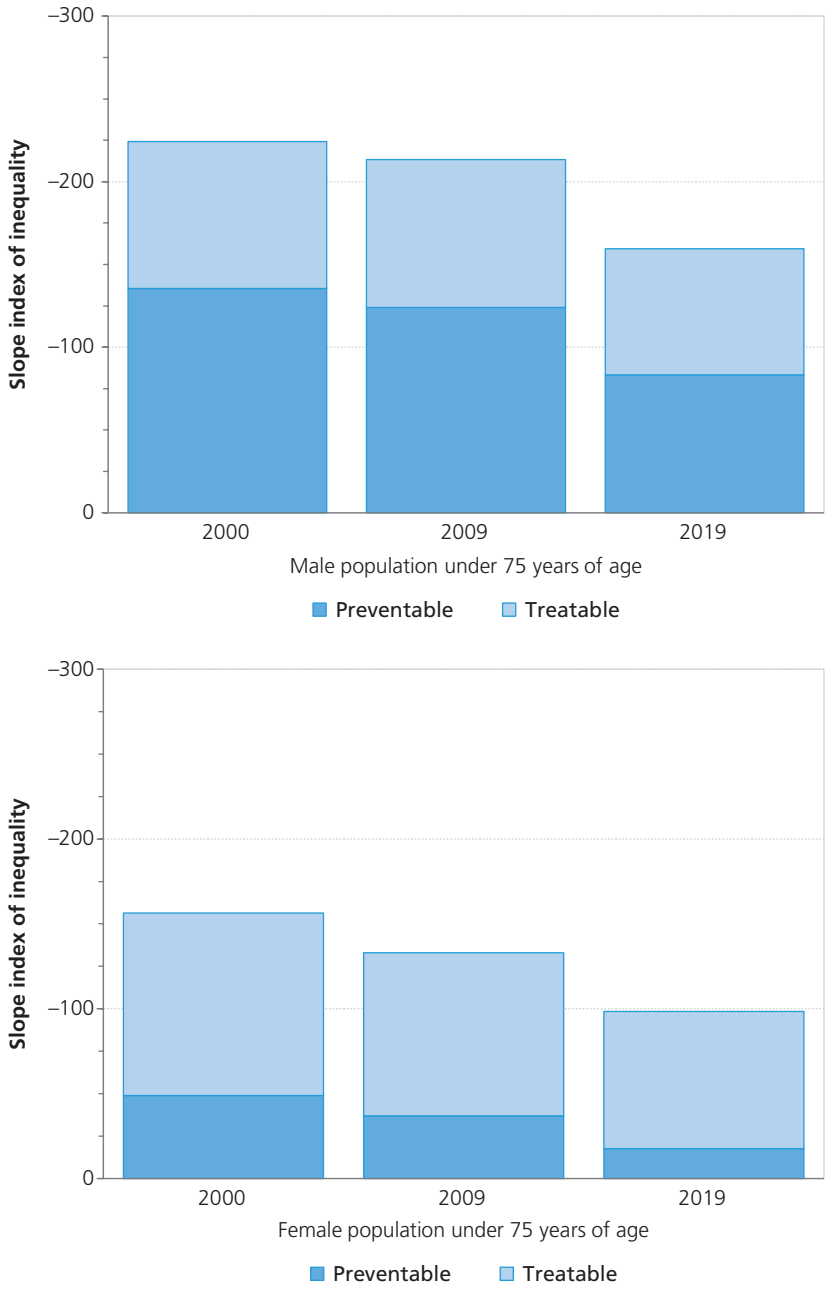
*** The concentration index is a relative value ranging from –100 to +100, with zero indicating no inequality and negative values indicating concentration of the potentially avoidable premature mortality burden among countries with less sustainable development.*

Source: PAHO.

inequality declined monotonically in both sexes (at a faster rate in women and especially at the expense of preventable causes); and (3) absolute inequality in PAPM between sexes is essentially determined by the excess of premature mortality from preventable causes in men.

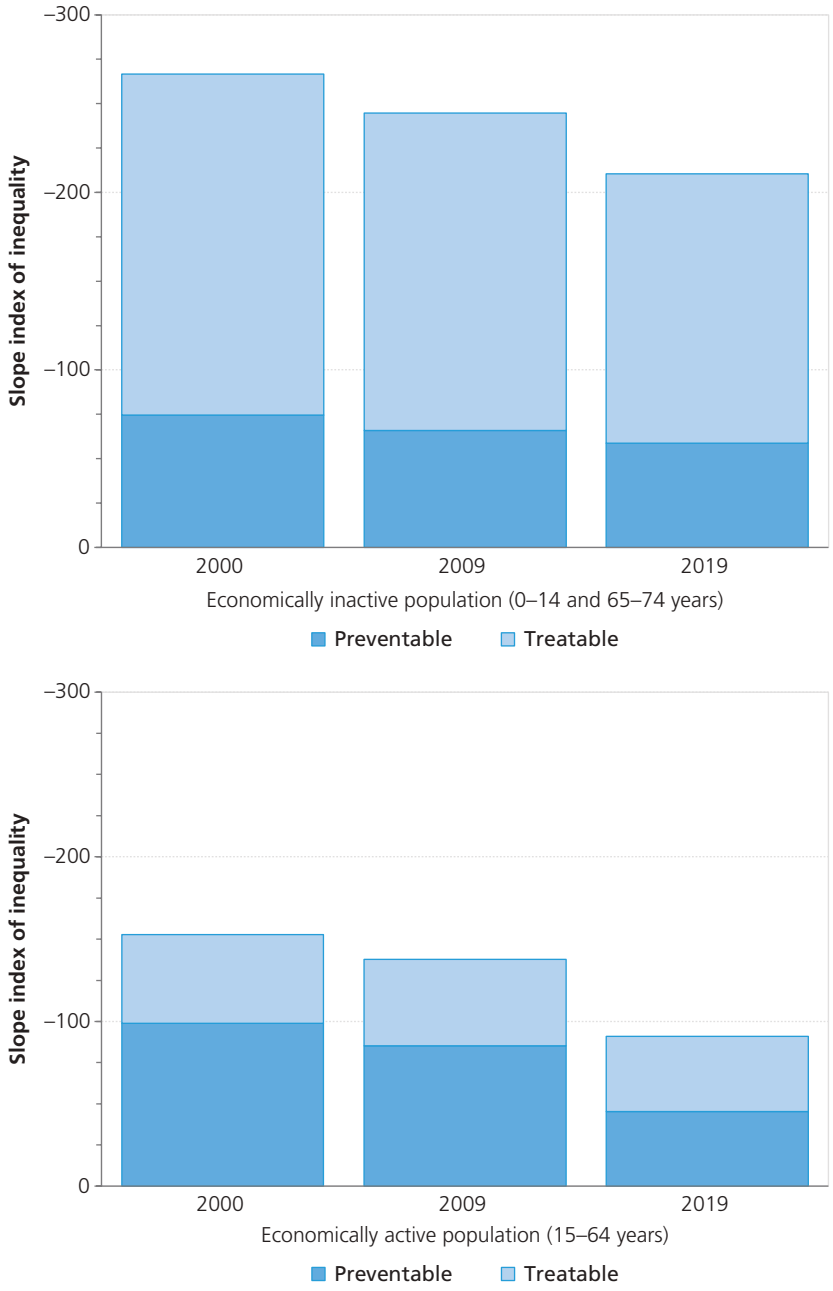
Similarly, Figure 9 illustrates the decomposition of absolute inequality in PAPM according to preventable and treatable causes in the economically active population (EAP; 15–64 years) and the economically inactive population (non-EAP; 0–14 years and 65–74 years) age groups. Three facts also stand out here: (1) the magnitude of absolute inequality in PAPM was systematically greater in the non-EAP than in the EAP throughout the years analyzed; (2) the magnitude of absolute inequality decreased monotonically in both populations (with greater speed in the EAP and especially at the expense of treatable causes); and (3) absolute inequality in PAPM between both populations is essentially determined by the excess of premature mortality due to treatable causes in the non-EAP.

FIGURE 8 **Decomposition of regional absolute inequality in potentially avoidable premature mortality by preventable and treatable causes by sex, Region of the Americas, 2000, 2009, and 2019**



Source: PAHO.

FIGURE 9 **Decomposition of regional absolute inequality in potentially avoidable premature mortality according to preventable and treatable causes and economically active and nonactive age population groups, Region of the Americas, 2000, 2009, and 2019**



Source: PAHO.

Inequalities in potentially avoidable premature mortality associated with specific causes

As discussed in Chapter 1, an ad hoc list of 50 causes of avoidable mortality is applied for this report: 23 are classified as preventable, 24 as treatable, and 3 as mixed (equal-weighted). In order to further explore inequalities in PAPM in the Region, four categories of specific potentially preventable and potentially treatable causes were identified, as shown in Table 8. These four selected categories account for 64% and 74% of the total preventable and treatable mortality burden, respectively.

Three observations stand out. First, with the exception of potentially preventable and treatable neoplastic diseases, the selected specific causes have a prorich distribution, i.e., inequality is disproportionately concentrated in countries with lower sustainable development. Second, between 2000 and 2019, the absolute and relative gradients of inequality in the four categories of PAPM explored attenuated markedly, with the exception of cardiovascular

TABLE 8 **Potentially avoidable premature mortality; selected categories of specific preventable and treatable causes**

POTENTIALLY PREVENTABLE CARDIOVASCULAR DISEASES	POTENTIALLY TREATABLE CARDIOVASCULAR DISEASES
Ischemic heart disease	Ischemic heart disease
Stroke	Stroke
POTENTIALLY PREVENTABLE NEOPLASTIC DISEASES	**POTENTIALLY TREATABLE NEOPLASTIC DISEASES**
Tracheal, bronchial, and lung cancers	Colon and rectal cancers
Stomach cancer	Breast cancer
Liver cancer	Cervical cancer
Esophageal cancer	Bladder cancer
Mouth and oropharyngeal cancers	Uterus cancer
Malignant melanoma of the skin	Thyroid cancer
Nonmelanoma skin cancer	Hodgkin lymphoma
POTENTIALLY PREVENTABLE INTENTIONAL INJURIES	**POTENTIALLY TREATABLE CHRONIC RISK FACTORS**
Interpersonal violence	Diabetes mellitus
Self-inflicted injuries	Hypertensive heart disease
POTENTIALLY PREVENTABLE INFECTIONS	**POTENTIALLY TREATABLE INFECTIONS**
HIV/AIDS	Tuberculosis
Diarrheal diseases	Pancreatitis
Hepatitis	Appendicitis
Childhood illness clusters	Malaria
Sexually transmitted infections, excluding HIV	Upper respiratory tract infections

Source: PAHO.

Inequality is disproportionately concentrated in countries with lower sustainable development

diseases. Third, in the scenario analyzed, only premature mortality from potentially preventable intentional injuries (i.e., interpersonal violence and suicide) declined significantly, and premature mortality from potentially treatable chronic risk factors (i.e., diabetes and arterial hypertension) increased their regional average rates (from 27.8 to 28.2, and from 16.1 to 16.4 per 100 000, respectively). In fact, among preventable causes, in 2019, self-inflicted injuries surpassed cardiovascular diseases in magnitude (28.2 vs. 27.6 per 100 000, respectively) (Table 9).

TABLE 9 **Average rates of potentially avoidable premature mortality and its absolute and relative inequality in the gradient of sustainable development between countries (n = 33), according to selected categories of specific preventable and treatable causes, Region of the Americas, 2000 and 2019**

			REGIONAL AVERAGE			SII			CIx		
		YEAR	ASMR	LOWER BOUND	HIGHER BOUND	INDEX	LOWER BOUND	HIGHER BOUND	INDEX	LOWER BOUND	HIGHER BOUND
Potentially preventable	Cardiovascular diseases	2000	40.9	40.8	41.0	–11.6	–17.7	3.3	–6.7	–17.6	4.2
		2019	27.6	27.5	27.7	–15.3	–17.3	–8.8	–11.3	–22.4	–0.3
	Neoplastic diseases	2000	33.1	33.0	33.2	20.5	8.9	39.1	12.0	1.9	22.0
		2019	23.9	23.8	24.0	7.6	0.6	19.7	7.1	–3.1	17.3
	Intentional injuries	2000	27.8	27.7	27.9	–31.5	–26.7	–30.9	–24.0	–35.2	–12.7
		2019	28.2	28.1	28.3	–21.2	–20.9	–13.4	–15.8	–26.9	–4.7
	Infections	2000	16.4	16.4	16.5	–27.5	–20.7	–34.2	–45.1	–57.6	–32.6
		2019	7.7	7.7	7.8	–14.0	–11.4	–16.5	–38.4	–49.5	–27.4
Potentially treatable	Cardiovascular diseases	2000	40.9	40.8	41.0	–11.6	–17.7	3.3	–6.7	–17.6	4.2
		2019	27.6	27.5	27.7	–15.3	–17.3	–8.8	–11.3	–22.4	–0.3
	Neoplastic diseases	2000	21.3	21.2	21.4	8.2	3.6	14.8	7.4	–2.8	17.5
		2019	18.2	18.1	18.3	–0.9	–3.6	3.4	–0.5	–10.8	9.9
	Chronic risk factors	2000	16.1	16.1	16.2	–16.5	–14.4	–14.4	–19.3	–30.3	–8.3
		2019	16.4	16.3	16.4	–14.5	–12.7	–10.0	–18.6	–29.6	–7.6
	Infections	2000	5.6	5.5	5.6	–18.6	–14.2	–24.1	–47.7	–58.2	–37.3
		2019	3.0	2.9	3.0	–8.3	–6.8	–10.1	–39.5	–48.3	–30.7

Note: ASMR: age-standardized mortality rate; SII: slope index of inequality; CIx: concentration index of health inequality; LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.

Inequalities in potentially avoidable premature mortality associated with Sustainable Development Goal 3

SDG 3 (ensure healthy lives and promote well-being for all at all ages) comprises 13 targets and 27 global indicators, of which nine indicators are mortality indicators: maternal (SDG Indicator 3.1.1), child (SDG Indicator 3.2.1), neonatal (SDG Indicator 3.2.2), chronic diseases (cardiovascular, cancer, diabetes, and chronic respiratory) (SDG Indicator 3.4.1), suicide (SDG Indicator 3.4.2), road traffic accidents (SDG Indicator 3.6.1), household and air pollution (SDG Indicator 3.9.1), exposure to unsafe water, sanitation, and hygiene (SDG Indicator 3.9.2), and unintentional poisoning (SDG Indicator 3.9.3). The burden of PAPM accumulated by these nine causes associated with SDG 3 (PAPM–SDG 3) together constitutes more than half of the total regional burden of potentially avoidable mortality. In fact, this proportion has declined slightly: from 62% in 2000 to 59% in 2019. Even more relevant, as shown in Table 10, is the disproportionate concentration of the burden in the lowest sustainable development country quintiles: in 2019, almost 75% of the burden of PAPM in the lowest sustainable development country quintile was from deaths associated with SDG 3, compared with 50% in the highest sustainable development country quintile. Between 2000 and 2019, the only quintile in which the proportion of potentially avoidable premature deaths associated with SDG 3 increased (albeit slightly) was in the most sustainably developed countries (which attenuated the inequality between extreme quintiles).

The PAPM–SDG 3 is dominated by chronic noncommunicable causes (SDG Indicator 3.4.1), whose relative weight has increased over time: from 61% in 2000 to 68% in 2019 (Table 11). Also noteworthy is the proportional increase in suicide (SDG Indicator 3.5.1) and mortality attributed to air pollution (SDG Indicator 3.9.1), along with the proportional reduction in neonatal deaths (SDG Indicator 3.2.2), child deaths (SDG Indicator 3.2.1), and deaths attributed to unsafe water and sanitation services (SDG Indicator 3.9.2). It also highlights the small proportional weight of maternal death (SDG Indicator 3.1.1) in the overall PAPM–SDG 3 burden over the period, as well

TABLE 10 **Burden of potentially avoidable premature mortality associated with SDG 3 as a percentage of the global burden of mortality, Region of the Americas, 2000, 2009, and 2019**

		QUINTILES OF SUSTAINABLE DEVELOPMENT				
YEAR	REGIONAL AVERAGE	LOWER	Q2	MEDIAN	Q4	HIGHER
			(%)			
2000	61.6	85.5	74.3	79.8	63.6	47.3
2009	60.8	79.5	73.1	72.6	60.2	49.9
2019	58.6	74.3	69.8	69.7	51.9	49.8

Source: PAHO.

TABLE 11 **Percentage contribution of SDG 3 mortality indicators to the burden of potentially avoidable premature mortality, Region of the Americas, 2000, 2009, and 2019**

SDG 3 TARGET	MORTALITY INDICATOR	2000	2009	2019
			(%)	
3.1.1	Maternal mortality	0.7	0.6	0.5
3.2.1	Under-5 mortality	4.5	3.7	2.7
3.2.2	Neonatal mortality	11.5	7.7	5.3
3.4.1	Mortality due to the four noncommunicable diseases	60.5	64.8	68.1
3.4.2	Suicide	3.9	4.8	5.5
3.6.1	Mortality due to road traffic injuries	8.9	9.5	8.6
3.9.1	Mortality attributed to household and ambient air pollution	6.8	7.1	8.2
3.9.2	Mortality attributed to exposure to unhealthy WASH services	2.9	1.5	1.1
3.9.3	Mortality attributed to unintentional poisonings	0.2	0.2	0.2

Source: PAHO.

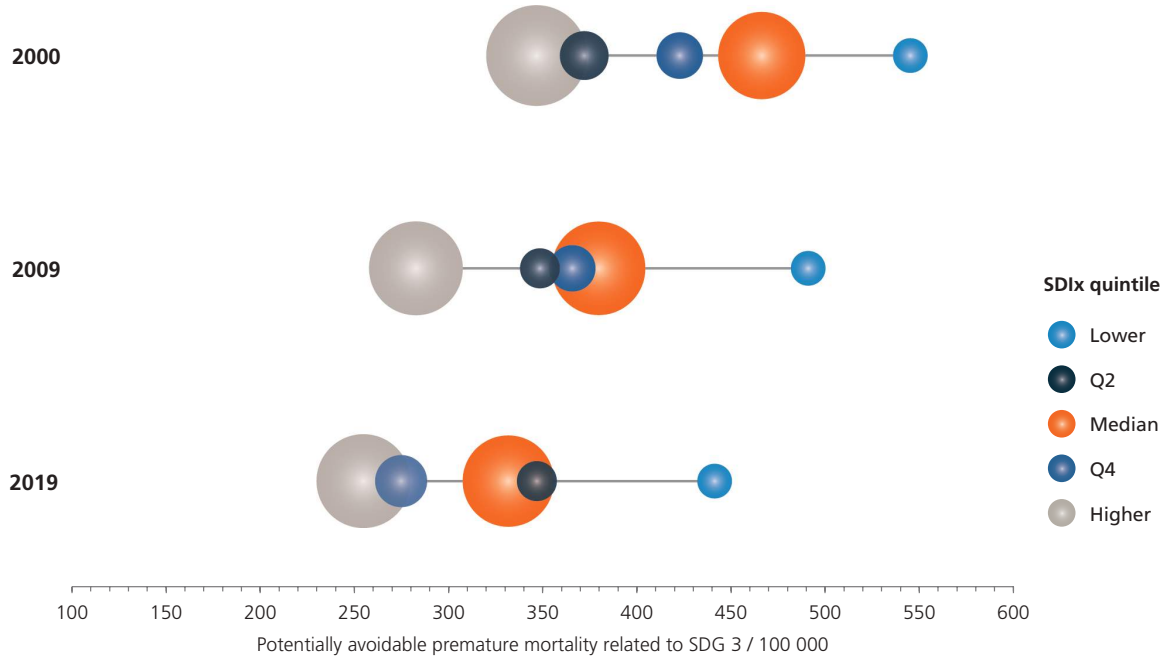
as the continued relative importance of road traffic deaths (SDG Indicator 3.6.1), which had become the second largest contributor to the PAPM–SDG 3 burden by 2019.

The absolute risk of potentially avoidable premature death associated with SDG 3, expressed by the corresponding adjusted rate (per 100 000), is also very unevenly distributed across the social gradient among countries as defined by the SII, despite a significant reduction in the regional average rate between 2000 and 2019. Figure 10 illustrates these average and distributional changes using weighted equiplots. Indeed, the regional average rate of PAPM–SDG 3 went from 409.6 (95% CI [409.2, 410.1]) to 304.2 (95% CI [303.9, 304.6]) per 100 000 between 2000 and 2019, respectively, while the SII went from –174.8 (95% CI [–206.6, –120.6]) to –151.7 (95% CI [–173.7, –108.0]) per 100 000, and the CIx from –7.8 (95% CI [–9.8, –5.9]) to –9.0 (95% CI [–10.9, –7.0]) over the period.

Table 12 presents the analysis of social inequalities in PAPM associated with three specific SDG 3 Indicators, selected for their regional relevance, and which are discussed in depth in Chapter 4: maternal mortality (SDG Indicator 3.1.1), neonatal mortality (SDG Indicator 3.2.2), and premature mortality from NCDs (SDG Indicator 3.4.1).

These results highlight three relevant findings: (1) the improvement in the regional average rate; (2) the presence of profound inequalities, absolute and relative, between countries (especially in maternal and neonatal mortality); and (3) the reduction over time of inequalities in maternal and neonatal mortality, together with the increase in inequalities in mortality from NCDs, more concentrated in the segments of less favored social positions (i.e., the phenomenon of pauperization of the poorest segments of the population).

FIGURE 10 **Inequalities in potentially avoidable premature mortality associated with SDG 3, according to quintiles of sustainable development among countries (n = 33) (weighted equiplots), Region of the Americas, 2000, 2009, and 2019**



Source: PAHO.

TABLE 12 **Average rates of potentially avoidable premature mortality due to maternal causes, neonatal conditions, and noncommunicable diseases, and their absolute and relative inequality in the sustainable development gradient between countries (n = 33), Region of the Americas, 2000, 2009, and 2019**

POTENTIALLY AVOIDABLE PREMATURE MORTALITY	SDG 3 INDICATOR	YEAR	REGIONAL AVERAGE			SII			CIx		
			RATE	LB	UB	INDEX	LB	UB	INDEX	LB	UB
Maternal causes	3.1.1	2000	72.7	71.4	74.1	–205.7	–152.6	–272.3	–41.1	–43.2	–39.0
		2009	64.6	63.3	65.9	–160.6	–123.9	–204.0	–39.8	–41.9	–37.6
		2019	57.2	56.0	58.4	–123.6	–101.9	–147.2	–39.9	–42.0	–37.8
Neonatal conditions	3.2.2	2000	12.9	12.9	13.0	–23.6	–20.3	–26.7	–26.0	–27.9	–24.1
		2009	9.1	9.1	9.2	–15.0	–13.6	–16.3	–26.3	–28.2	–24.5
		2019	7.4	7.4	7.4	–10.2	–9.2	–10.8	–23.7	–25.6	–21.9
Noncommunicable diseases	3.4.1	2000	181.7	181.5	181.9	–3.3	–34.1	46.5	–1.4	–3.3	0.5
		2009	158.3	158.1	158.5	–31.1	–51.1	1.9	–3.6	–5.5	–1.7
		2019	142.9	142.7	143.0	–36.0	–54.0	–3.7	–4.5	–6.4	–2.6

Note: SII: slope index of inequality; CIx: concentration index of health inequality; LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.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Chapter 4

Potentially avoidable premature mortality and the health targets of the Sustainable Development Goals

In 2015, the United Nations adopted the 2030 Agenda, providing an opportunity for countries to embark on a new path to effectively improve the lives of their populations, leaving no one behind. The 2030 Agenda has 17 SDGs that range from the elimination of poverty to climate action, as well as education, gender equality empowering women and girls, environmental protection, and the design of cities, among others. In relation to health, the key SDG is SDG 3: Ensure healthy lives and promote well-being for all at all ages *(71)*.

SDG 3 addresses country health priorities, including women's and children's health; CDs; NCDs; negative health impacts associated with environmental conditions; universal health coverage; and access to safe, effective, quality, and affordable medicines and vaccines. It comprises 13 Targets and 28 Indicators. While

SDG 3 has an intrinsic equity component by focusing on effective and universal access, the Targets set for 2030 are based on national and global averages and do not explicitly consider a focus on reducing health inequalities at national and subnational levels *(72)*.

The SDGs require a comprehensive approach; thus, a multisectoral approach is required in order to achieve the expected health outcomes. In particular, it is necessary to achieve SDG 1 (End poverty in all its forms everywhere), SDG 2 (End hunger, achieve food security and improved nutrition, and promote sustainable agriculture), SDG 4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all), SDG 5 (Achieve gender equality and empower all women and girls), SDG 6 (Ensure availability and sustainable management of water and sanitation for all), SDG 7 (Ensure access to affordable, reliable, sustainable, and modern energy for all), SDG 8 (Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all), SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation), SDG 10 (Reduce inequality within and among countries), SDG 11 (Make cities and human settlements inclusive, safe, resilient, and sustainable), SDG 12 (Ensure sustainable consumption and production patterns), and SDG 13 (Take urgent action to combat climate change and its impacts) *(72)*.

As can be seen, the comprehensive approach to SDG 3 is part of the process of social and environmental determination of health discussed in the previous chapter, and as noted, the measurement of health inequalities has as its conceptual and theoretical foundation the model of social determinants of health, which was proposed by the WHO Commission on Social Determinants of Health in 2008, and more broadly, the approach on SEDH referred to by the PAHO Commission on Equity and Inequalities in Health in the Americas *(65, 67)*.

In this framework, advancing in the 2030 Agenda implies – with regard to SDG 3 – focusing on avoidable mortality, considering that the starting point is precisely the fact that the tools and technology are available to reduce it. This chapter presents the results for three of the nine SDG 3 Indicators related to PAPM: SDG Indicator 3.1.1 Maternal mortality ratio (MMR); SDG Indicator 3.2.2 Neonatal mortality rate; and SDG Indicator 3.4.1 Unconditional probability of dying attributed to cardiovascular diseases, cancer, diabetes mellitus or chronic respiratory diseases, which have common modifiable and biological risk factors, and which are preventable and treatable. The three indicators analyzed can be directly related to the performance of public health and health services systems.

Avoidable maternal mortality

Maternal mortality is a key public health indicator for evaluating the performance of public health systems and health services in countries. It is widely recognized that the majority of maternal deaths that occur annually in the countries of the Americas could be avoided through various interventions, both in the health sector and more broadly through social measures.

Of the total of 925 915 avoidable deaths in women under 75 years of age in the Americas

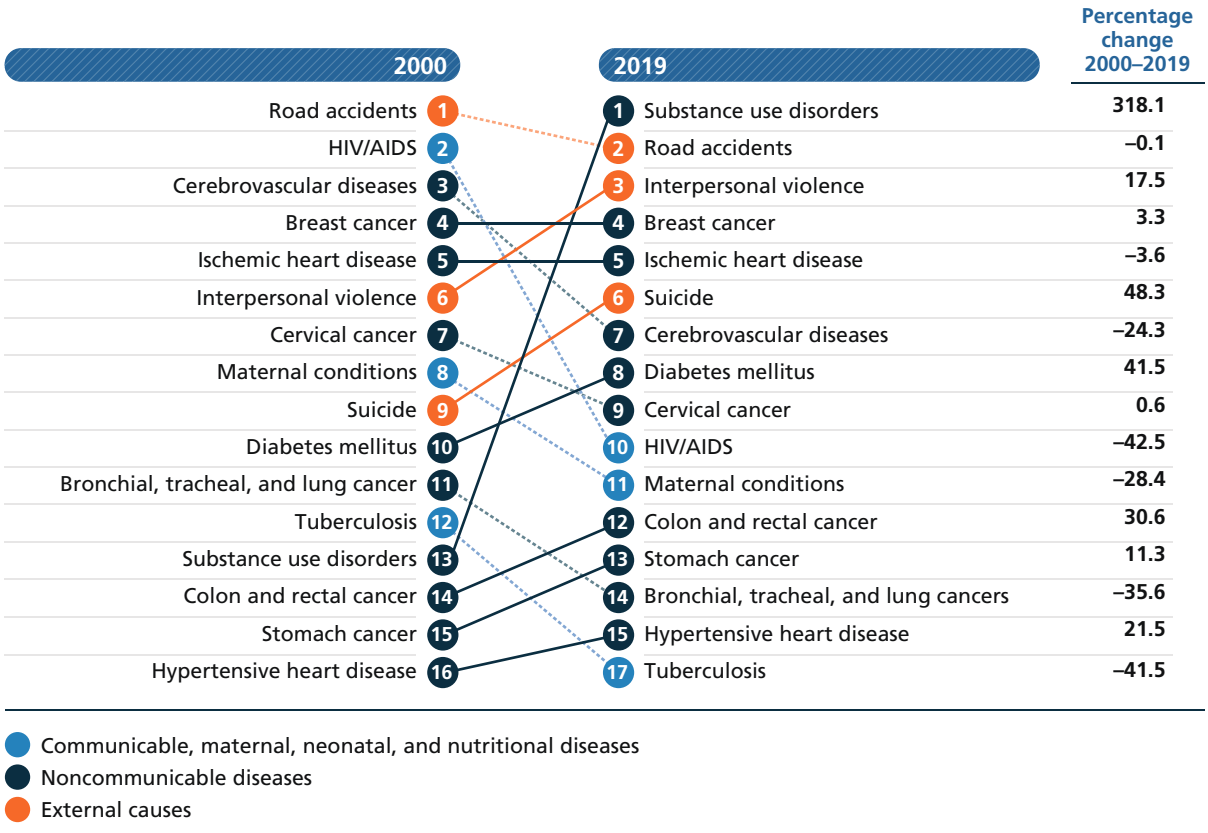
The majority of maternal deaths that occur annually in the countries of the Americas could be avoided

in 2019, maternal deaths from avoidable causes represented less than 1.0%. However, maternal deaths gain importance in the group of women of reproductive age (15–49 years), for which they are part of the leading causes of death, occupying eighth place in 2000 (Figure 11) and dropping to eleventh place in 2019 – with a reduction in the number of maternal deaths of 28.4% between 2000 and 2019.

Trends in the maternal mortality ratio

According to the latest estimate generated by the United Nations Maternal Mortality Estimation Interagency Group, the MMR in the Americas was 58 maternal deaths per 100 000 live births in 2017, which represented a decrease of 20.0% compared to the value of 70 maternal deaths per 100 000 live

FIGURE 11 **Leading causes of preventable death in women aged 15–49 years, Region of the Americas, 2000–2019**

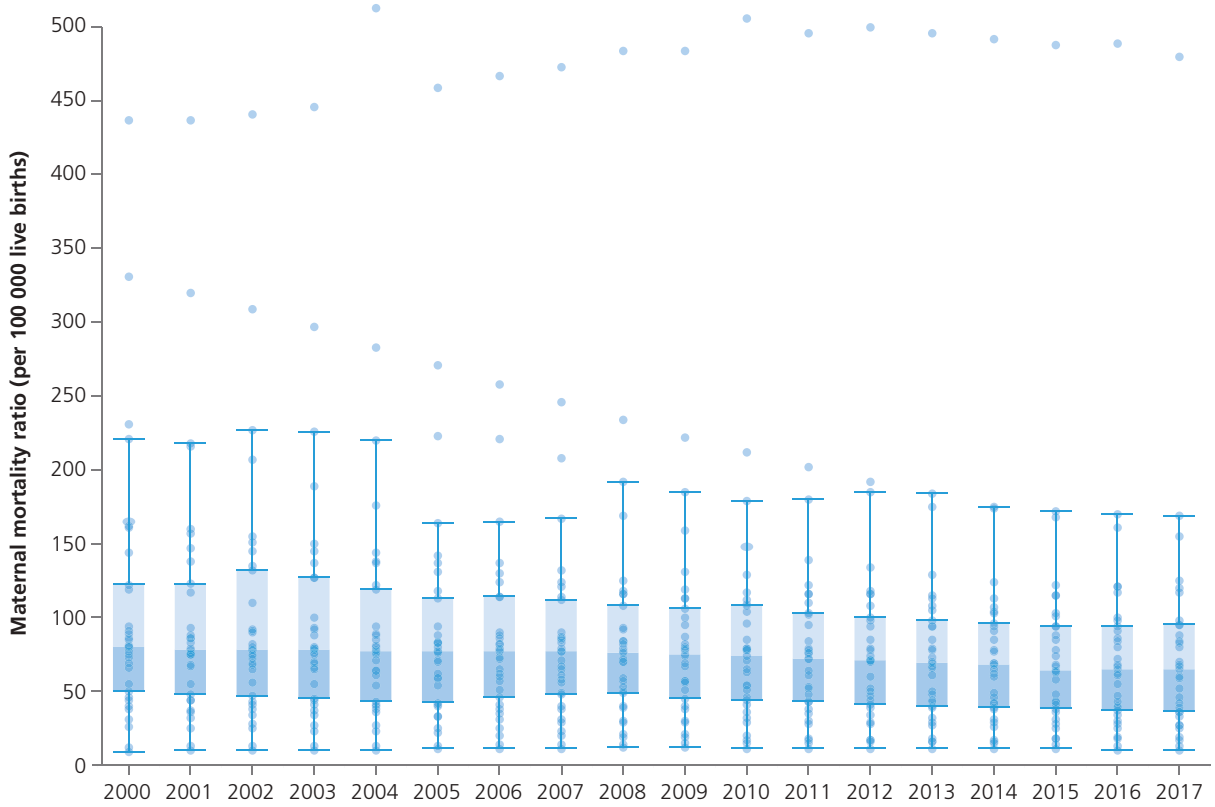


Source: PAHO.

births in 2000 *(73)*. However, although the trend for the MMR indicator in the Americas is downward, large differences in MMR between countries still persist (Figure 12).

SDG Target 3.1 is to reduce the global MMR to fewer than 70 maternal deaths per 100 000 live births by 2030 *(72)*. Taking the global MMR in 2015 as the baseline (219 maternal deaths per 100 000 live births), to achieve the global normative target by 2030, the global MMR must have an average annual percentage reduction of 7.6%. This would provide a baseline of what could be expected in the average annual reduction for each country in the world, and in particular for the countries of the Americas, in order to achieve the global MMR target established in SDG Target 3.1. However, the regional MMR target for 2030 established in the Sustainable Health Agenda for the Americas 2018–2030 (SHAA 2030) is to reduce the regional MMR to fewer than 30 maternal deaths per 100 000 live births by 2030 *(74)*. Based on the regional MMR in 2015 (59.4 maternal deaths per 100 000), the regional MMR should be reduced annually by 4.6% between 2015 and 2030 in order to reach the target set by SHAA 2030. If every country in the Americas

FIGURE 12 **Distribution of the maternal mortality ratio, Region of the Americas, 2000–2017**



Source: United Nations Children's Fund. Maternal mortality. New York, NY: UNICEF; 2019 [cited 17 November 2021]. Available from: https://data.unicef.org/topic/maternal-health/maternal-mortality/.

could reduce its MMR at this same rate (4.6% annually), then the regional target could be met. When studying the trend of the countries of the Americas over the last 15 years (from 2000 to 2015), it is observed that no country has been reducing its MMR at the overall rate that would be expected over the next 15 years (i.e., an average annual reduction of 7.6% between 2015 and 2030). Moreover, only two countries have reduced their MMR at the rate that would be expected in order to achieve the SHAA 2030 target (Table 13). The countries

TABLE 13 **Maternal mortality ratio in countries, Region of the Americas, 2000–2015**

COUNTRY	MATERNAL MORTALITY RATIO 2000	MATERNAL MORTALITY RATIO 2015	PERCENTAGE CHANGE 2000–2015	AVERAGE ANNUAL PERCENTAGE CHANGE 2000–2015
Chile	31	14	–54.8	–5.3
Belize	89	43	–51.7	–4.8
Bolivia (Plurinational State of)[1]	331	168	–49.2	–4.5
Ecuador	122	63	–48.4	–4.4
Paraguay[1]	165	88	–46.7	–4.2
Suriname[1]	221	122	–44.8	–4.0
Barbados	50	31	–38.0	–3.2
Argentina	66	41	–37.9	–3.2
Nicaragua[1]	162	101	–37.7	–3.1
Panama	91	58	–36.3	–3.0
Guatemala[1]	161	103	–36.0	–3.0
Peru[1]	144	94	–34.7	–2.8
Mexico	55	36	–34.5	–2.8
El Salvador	73	48	–34.2	–2.8
Granada	38	25	–34.2	–2.8
Uruguay	26	18	–30.8	–2.5
Costa Rica	40	28	–30.0	–2.4
Guyana[1]	231	172	–25.5	–2.0
Honduras[1]	85	67	–21.2	–1.6
Saint Vincent and the Grenadines	80	64	–20.0	–1.5
Cuba	46	38	–17.4	–1.3
Trinidad and Tobago	81	68	–16.0	–1.2
Colombia	94	85	–9.6	–0.7
Brazil	69	63	–8.7	–0.6
Venezuela (Bolivarian Republic of)	119	115	–3.4	–0.2
Antigua and Barbuda	44	43	–2.3	–0.2

TABLE 13 **Maternal mortality ratio in countries, Region of the Americas, 2000–2015 *(continued)***

COUNTRY	MATERNAL MORTALITY RATIO 2000	MATERNAL MORTALITY RATIO 2015	PERCENTAGE CHANGE 2000–2015	AVERAGE ANNUAL PERCENTAGE CHANGE 2000–2015
Bahamas	75	74	–1.3	–0.1
Jamaica	77	78	1.3	0.1
Haiti[1]	437	488	11.7	0.7
Dominican Republic[1]	80	94	17.5	1.1
Canada	9	11	22.2	1.3
Saint Lucia	86	115	33.7	1.9
United States of America	12	18	50.0	2.7

Note: [1] PAHO priority countries.

Source: PAHO.

with AAPCs of at least –4.0% are: Chile (–5.3%), Belize (–4.8%), Bolivia (Plurinational State of) (–4.5%), Ecuador (–4.4%), Paraguay (–4.2%), and Suriname (–4.0%). Of the 10 priority countries that PAHO has considered for accelerating the reduction of (preventable) maternal deaths, eight have been reducing their MMRs over the last 15 years, although some of them with slow average annual reduction rates. However, two priority countries showed an increase in their MMRs between 2000 and 2015 (the Dominican Republic and Haiti). Examples of very important efforts to reduce maternal mortality are the Plurinational State of Bolivia, Ecuador, and Paraguay, with a reduction of almost 50.0% in their MMRs between 2000 and 2015. However, recent studies in these countries show the existence of very high inequalities in MMR between social groups within them *(75–77)*, which allows the development of specific actions that affect the determinants of these inequalities to reduce this type of preventable death in the countries. Another element to consider is that, in the strategic prioritization exercise of almost all of the countries of the Americas for the 2020–2021 biennium for the PAHO Strategic Plan, the reduction of maternal mortality was not considered a priority to be addressed, which could have had a negative impact on the development of actions aimed at reducing maternal mortality in this period.

Correlations between maternal mortality ratio and other health indicators

To explore possible mechanisms for country action to accelerate the reduction in MMR, the correlation between MMR and indicators that can be considered under the control of health systems were analyzed from an ecological perspective (with countries as the unit of analysis): antenatal care on four or more occasions by skilled health personnel, delivery care by skilled health personnel (SDG Indicator 3.1.2), the use of modern contraceptive methods (SDG Indicator 3.7.1), and the adolescent fertility rate (15–19 years); the median of these indicators was calculated by country for the period 2000–2017.

The regional median for the percentage of women who received antenatal care on four or more occasions by skilled health personnel was 87.4%, ranging across countries from 60.2% to 100%. The median percentage of births attended by skilled health personnel was 98.0%, with a range between 37.3% and 100.0% across countries. The median percentage of women of reproductive age (15–49 years) using modern contraceptive methods was 80.1%, with a range of 41.2% to 90.7%. The adolescent fertility rate had a median of 65.6 live births per 1000 women aged 15–19, with a range across countries of 13.7 to 107.3.

By increasing antenatal care by skilled health personnel, increasing skilled attendance at birth, and increasing the use of modern contraceptive methods, countries can contribute to reducing preventable maternal deaths in the Americas

The results show a high negative correlation (inversely proportional) between MMR and the percentage of women who received prenatal care on four or more occasions by skilled health personnel, reaching a value of –0.837. Similarly, there is a high correlation (inversely proportional) between the MMR and the percentage of births attended by skilled health personnel and the percentage of women of reproductive age using modern contraceptive methods (Table 14). That is, by increasing antenatal care by skilled health personnel, increasing skilled attendance at birth, and increasing the use of modern contraceptive methods, countries can contribute to reducing preventable maternal deaths in the Americas. The use of modern contraceptive methods is considered an effective intervention in reducing unintended pregnancies, and therefore reducing maternal deaths.

Although in the countries of the Americas there has been an increase in the coverage of prenatal care by qualified health personnel, it is important to consider that adequate prenatal care must meet certain quality standards: it must be early, periodic, complete, and of wide coverage. The number of prenatal checkups is related to the risk of the pregnant woman. In its latest recommendations, WHO suggests a minimum of eight prenatal checkups by qualified health personnel. However, although PAHO promotes increasing the number of antenatal visits, in addition to improving the quality of the services offered, it maintains its indicator of at least four prenatal checkups by qualified health personnel in the countries of the Americas. In some countries, the strategy of "community outreach" has been used to achieve high coverage of early antenatal checkups so that pregnant women can seek health services in a timely manner. At the same time, skilled attendance at birth has also been increasing in the countries of the Americas in the last decade. Skilled health personnel should handle delivery and postpartum care, as most maternal deaths can occur during delivery

TABLE 14 **Description of indicators related to the maternal mortality ratio and the correlation between them, Region of the Americas**

INDICATOR	REGIONAL MEDIAN VALUE (MINIMUM–MAXIMUM)	CORRELATION COEFFICIENT WITH MATERNAL MORTALITY RATIO
Percentage of women who received prenatal care (four or more occasions)	87.4 (60.2–100.0)	–0.837
Percentage of births attended by skilled health personnel	98.0 (37.3–100.0)	–0.829
Percentage of women of childbearing age using modern contraceptive methods	80.1 (41.2–90.7)	–0.718
Adolescent fertility rate (15–19 years)	65.6 (13.7–107.3)	0.449

Source: PAHO.

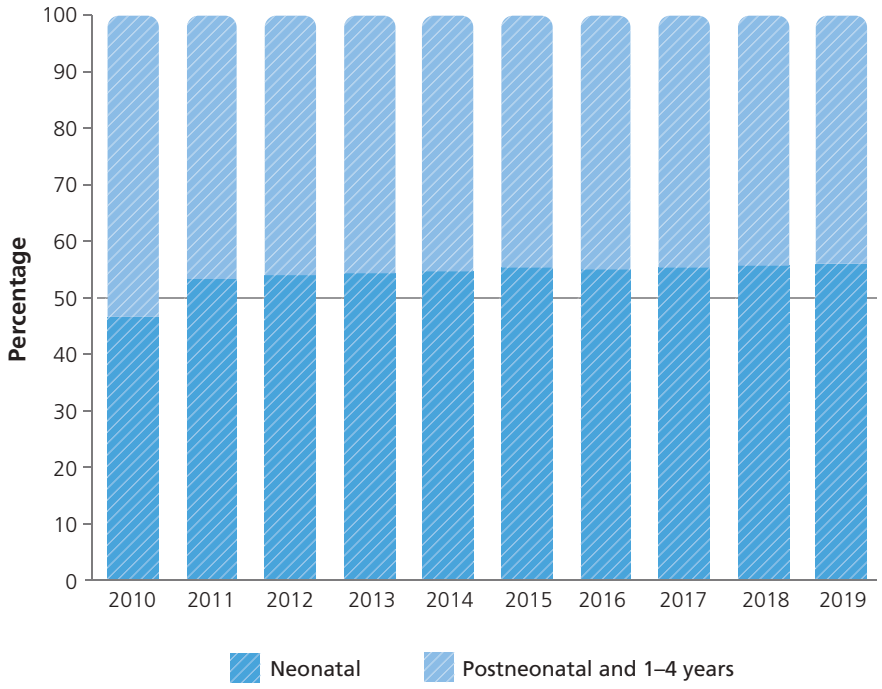
and in the first hours of the puerperium. In addition, it is very important that delivery care have an intercultural approach.

The MMR indicator makes it possible to account for the health conditions of women in the countries. In addition, this indicator alone allows understanding of women's inequalities due to poverty, economic income, educational level, and area of residence, among other social characteristics. It is important to mention that, in many cases, although the official data on maternal deaths presented by the countries are based on the analyses and opinions of the maternal mortality committees, the criterion of preventability should be incorporated in greater depth for each case, identifying delays in care and critical links to effectively prevent another maternal death from occurring. In this sense, it is key that countries further improve the study of maternal deaths, strengthen surveillance systems with immediate notification, and promote detailed analyses and studies by the committees.

Avoidable neonatal mortality

The Americas is a clear example of the decline in the under-5 mortality rate, mainly due to the decrease in deaths from acute diarrheal diseases, respiratory infections, and nutritional deficiencies, most of which are preventable causes of death. All countries, in addition to intensifying health actions, have improved environmental sanitation and economic conditions. The challenge faced, in order to strengthen and sustain the achievements made, is to improve the conditions that contribute to neonatal health and reduce the neonatal mortality rate (NMR), which progressively represents a greater burden within the deaths of children under 5 years of age (Figure 13). From 2011 onward, neonatal deaths accounted for more than half of under-5 deaths with a varied behavior among countries, and in some countries contributing to 70% of under-5 deaths (estimates by the Inter-agency Group for Child Mortality Estimation).

FIGURE 13 **Proportion of neonatal deaths in relation to deaths in children under 5 years old, Region of the Americas, 2010–2019**



Source: PAHO.

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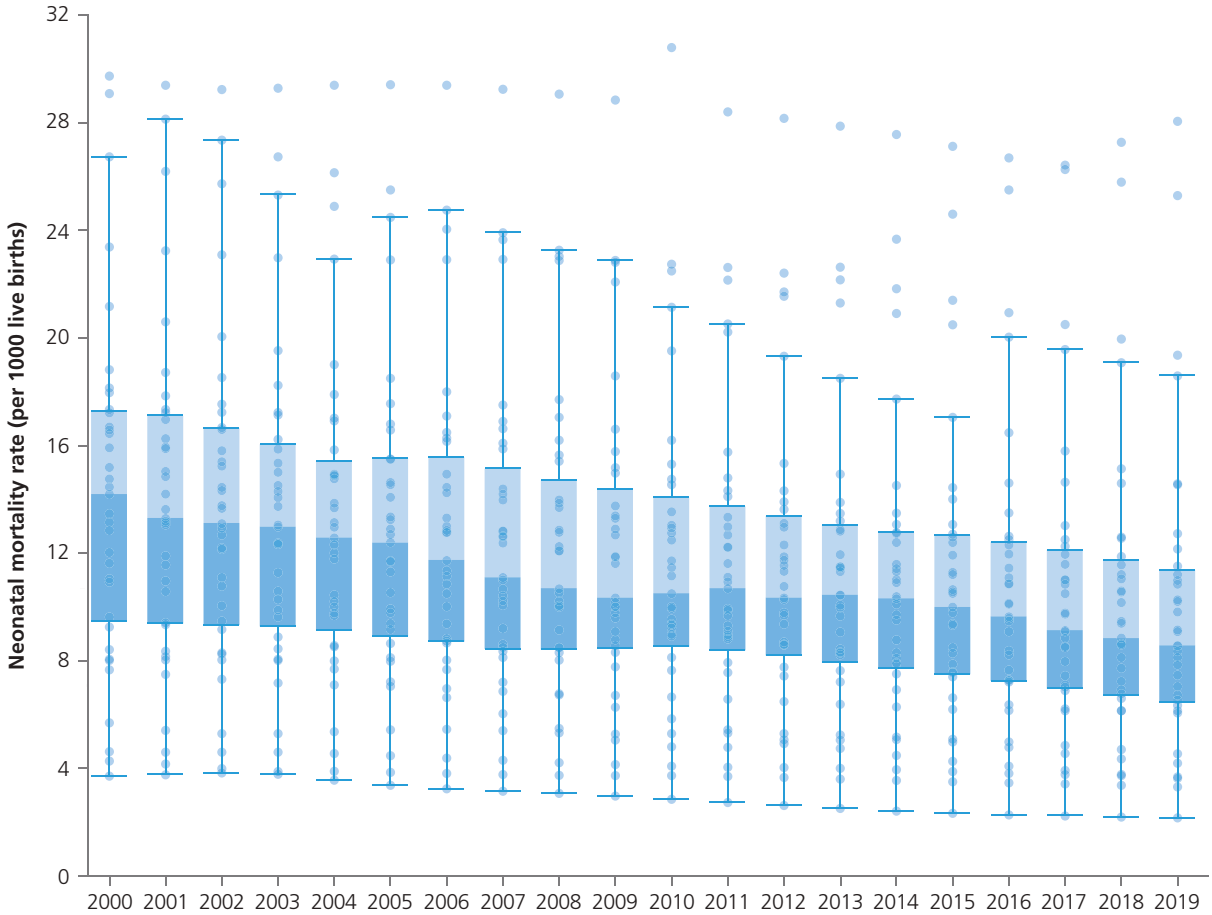
The Americas is a clear example of the decline in the under-5 mortality rate, mainly due to the decrease in deaths from acute diarrheal diseases, respiratory infections, and nutritional deficiencies

Neonatal mortality rate trends

A description of the NMR in the countries of the Americas for the period 2000–2019 shows a heterogeneous picture, with countries whose values are greater than 20 neonatal deaths per 1000 live births, and others with values of fewer than 5 neonatal deaths per 1000 live births. It can be seen from Figure 14 that although the median NMR in the Americas shows a decreasing trend, there is also a wide dispersion among countries.

FIGURE 14 **Distribution of neonatal mortality rate, Region of the Americas, 2000–2019**



Source: PAHO.

Neonatal deaths are caused by two major groups of health problems: (1) conditions originating in the perinatal period, which accounted for 76.0% in 2019; and (2) congenital malformations, which accounted for 23.0% in the same year. Both groups are considered avoidable causes of deaths, given that there are preventive and therapeutic interventions to avoid deaths in children under 28 days. However, different reasons, such as the significant inequalities that affect both access to health services and quality of care, among others, contribute to the persistence of still high rates. It is key to analyze within both groups of causes, in order to specifically identify those that are avoidable and effective interventions that need to be improved. One example is complications of preterm birth, which account for almost half of all conditions arising in the perinatal period both in 2000 and 19 years later. Another example is birth asphyxia, which ranks second in its group, and one newborn in four died from this avoidable cause. Moreover, neonatal sepsis still persists as an important avoidable cause (Table 15).

Within neonatal deaths due to congenital malformations, the group of heart anomalies has occupied first place over the last 20 years (Table 16), followed by neural tube defects, which show a proportional decrease in 2019 compared to the baseline value in 2000. In addition, other congenital anomalies represent an important burden and require detailed analysis. However, this analysis depends on the quality of medical certification of the cause of death. In several countries, there is still difficulty in certifying neonatal deaths because of the lack of additional information; in many cases the certifying physician only notes a congenital anomaly without further specification. If the congenital anomaly, chromosomal abnormality, or malformation could also not be adequately diagnosed at birth, then it is less likely to be clear at the time of death.

Correlations between the neonatal mortality rate and other health indicators

Following the approach previously mentioned for the MMR, the correlation between the NMR and indicators of actions under the control of health systems is analyzed. In this case, Bacillus Calmette–Guérin (BCG) vaccination coverage was added to the indicators of prenatal control,

TABLE 15 **Proportion of neonatal deaths due to conditions originating in the perinatal period, Region of the Americas, 2000 and 2019**

	2000 %	2019 %
All causes	100.0	100.0
Birth asphyxia and birth trauma	52.8	48.7
Neonatal sepsis	21.4	19.8
Other neonatal conditions	16.2	17.4
Complications of preterm labor	9.6	14.1

Source: PAHO.

TABLE 16 **Proportion of neonatal deaths due to congenital malformations, deformities, and chromosomal abnormalities, Region of the Americas, 2000 and 2019**

	2000 %	2019 %
All causes	100.0	100.0
Congenital heart abnormalities	35.0	35.0
Neural tube defects	13.3	9.9
Down syndrome	1.8	1.9
Cleft lip and cleft palate	0.4	0.2
Other congenital anomalies	45.1	45.8
Other chromosomal abnormalities	4.4	7.2

Source: PAHO.

childbirth care, use of contraceptive methods, and specific fertility rate (15–19 years).

The NMR and the percentage of women who received prenatal care on four or more occasions by skilled health personnel are highly correlated (inversely proportional) with a value equal to –0.765. There is a high correlation between the NMR and the percentage of births attended by skilled health personnel, with a value equal to –0.711. The NMR and the percentage of women of reproductive age using modern contraceptive methods have a moderately negative correlation. In the same direction, the NMR and BCG vaccination coverage in newborns is highly negative (Table 17). In addition, a high positive correlation (directly proportional) was found between the NMR and the adolescent fertility rate, with a value equal to 0.661. Based on these results, it is confirmed that an increase in prenatal checkups by qualified health personnel, delivery care by qualified health personnel, the use of modern contraceptive methods, and BCG vaccination coverage in newborns could contribute to a decrease in preventable neonatal deaths. Moreover, a decrease in the adolescent fertility rate would also help to reduce neonatal deaths.

Potentially avoidable premature mortality from noncommunicable diseases

NCDs – in particular the four included in SDG Indicator 3.4.1: cardiovascular diseases (ICD-10 codes I00-I99), cancer (ICD-10 codes C00-C97), diabetes mellitus (ICD-10 codes E10-E14), and chronic respiratory diseases (ICD-10 codes J30-J98) – are leading causes of mortality and morbidity in the adult population of the countries of the Americas.

With regard to the group of avoidable deaths in those under 75 years of age, the weight of deaths between 30 and 69 years of age was 66.5% for both sexes, with a similar value for women and men in 2019. In addition, deaths from avoidable NCDs accounted for 79.1% for both sexes, and for 87.8% and 73.7% for women and men, respectively, in the

TABLE 17 **Description of indicators related to neonatal mortality rate and the correlation between them, Region of the Americas**

INDICATORS	REGIONAL MEDIAN VALUE (MINIMUM–MAXIMUM)	CORRELATION COEFFICIENT WITH NEONATAL MORTALITY RATE
Percentage of women who received prenatal care (four or more occasions)	87.4 (60.2–100.0)	–0.765
Percentage of births attended by skilled health personnel	98.0 (37.3–100.0)	–0.711
Percentage of women of childbearing age using modern contraceptive methods	80.1 (41.2–90.7)	–0.529
Adolescent fertility rate (15–19 years)	65.6 (13.7–107.3)	0.661
Bacillus Calmette–Guérin vaccination coverage in newborns	98.0 (65.0–100.0)	–0.625

Source: PAHO.

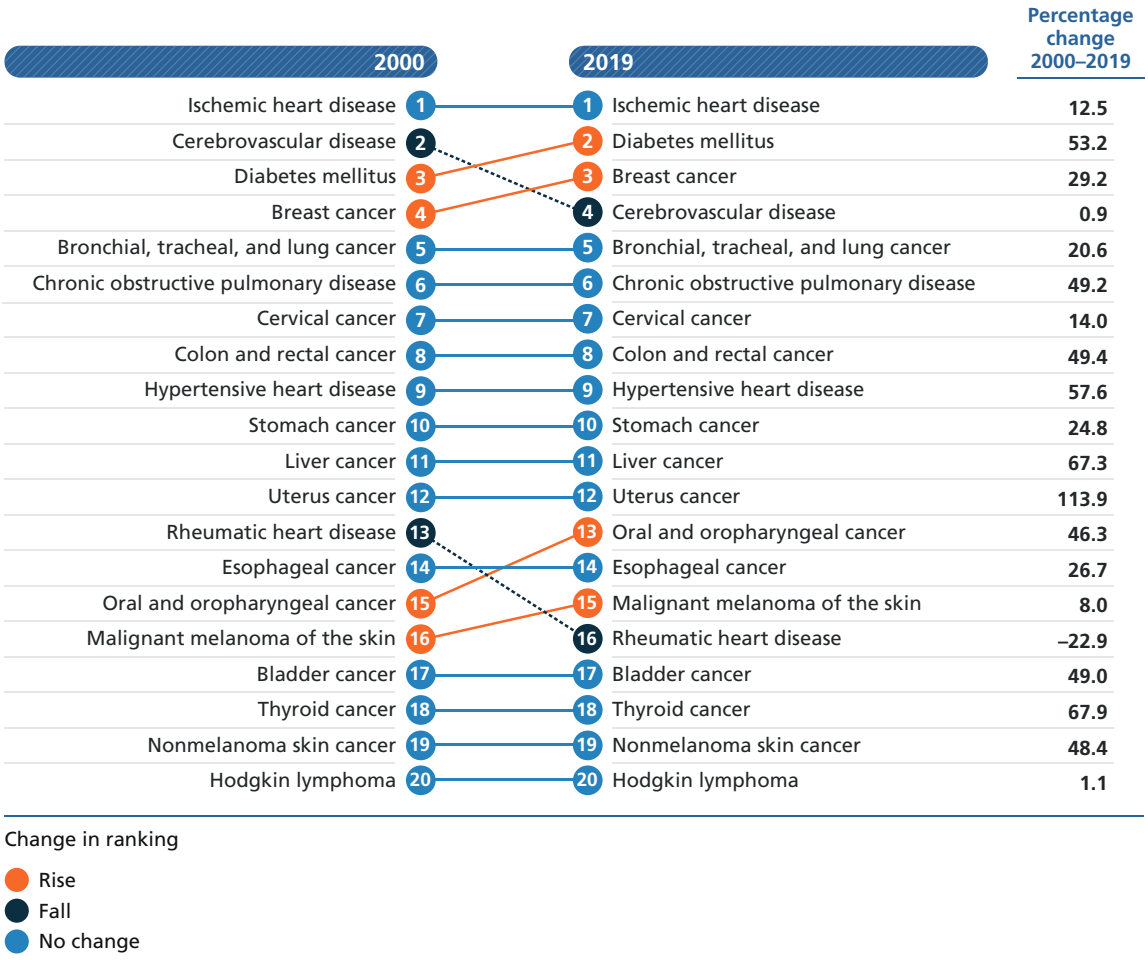
Americas in this age group. The causes of death included in SDG Indicator 3.4.1 accounted for the greatest weight, with 86.3% for both sexes and 88.4% and 84.5% for women and men, respectively, of avoidable premature (30–69 years) deaths from NCDs in 2019.

Figures 15 and 16 present the ranking of the avoidable causes of death from NCDs that are part of SDG Indicator 3.4.1 in women and men, respectively, for 2000 and 2019; in addition, the percentage change in the number of deaths between these two years is presented.

In women, ischemic heart disease occupies first place in both years of the period analyzed, with an increase of 12.5% in these deaths between 2000 and 2019. Deaths from diabetes mellitus increased by 53.2% between 2000 and 2019; in addition, these deaths moved up one place from 2000 to 2019, ranking second in 2019. Although 13 causes maintained the same place in both 2000 and 2019, they presented different increases in the number of deaths. The trend in uterine cancer stands out with an increase of 113.9% of deaths between 2000 and 2019. Only two causes showed a decrease, with rheumatic heart disease showing a decline in deaths of 23%.

In men, ischemic heart disease also ranks first, with a percentage change in the number of deaths of 16.4% between 2000 and 2019. Six causes moved up, including diabetes mellitus, which ranked second in 2019, and liver cancer, which is the cause with the largest increase in deaths – of nearly 105% over 20 years. While six causes moved down from 2000 to 2019, only trachea, bronchus, and lung cancer and rheumatic heart disease showed decreases in the numbers of deaths. If the population with these conditions had had access to preventive and treatment interventions, many lives would have been saved, considering that all of the causes analyzed are preventable.

FIGURE 15 **Premature avoidable deaths from noncommunicable diseases in women (30–69 years), Region of the Americas, 2000 and 2019**



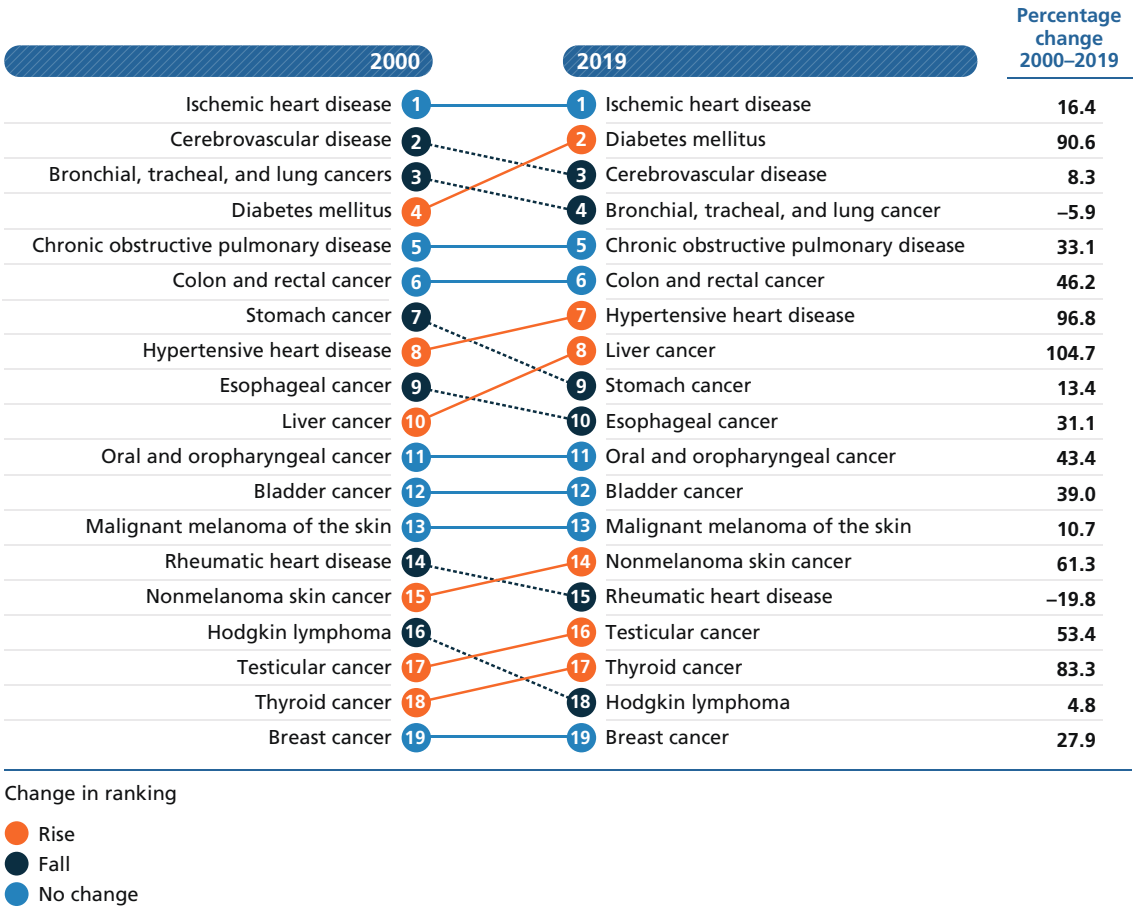
Source: PAHO.

Trends in unconditional probability of death from noncommunicable diseases

The indicator used is the unconditional probability of dying between the ages of 30 and 70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease, defined as the percentage of 30-year-olds who would die before their 70th birthday from one of these four diseases *(72)*. Figure 17 describes the regional trend for this indicator, where it can be seen that the unconditional probability is higher among men than women throughout the study period.

A reduction in the regional unconditional probability of 22.9% is estimated between 2000 and 2019, with an AAPC of –1.4% over the same period. If the value of the regional unconditional probability in 2015 (14.5%) is considered as the baseline, and assuming that the same annual reduction rate of the past 15 years (–1.5% between 2000 and 2015) is maintained from here to 2030, the value of the regional unconditional probability could be estimated at 11.6% by 2030. This estimated value is higher than what is expected in the target of "reducing premature mortality from noncommunicable diseases by one-third through

FIGURE 16 **Premature avoidable deaths from noncommunicable diseases in men (30–69 years), Region of the Americas, 2000 and 2019**

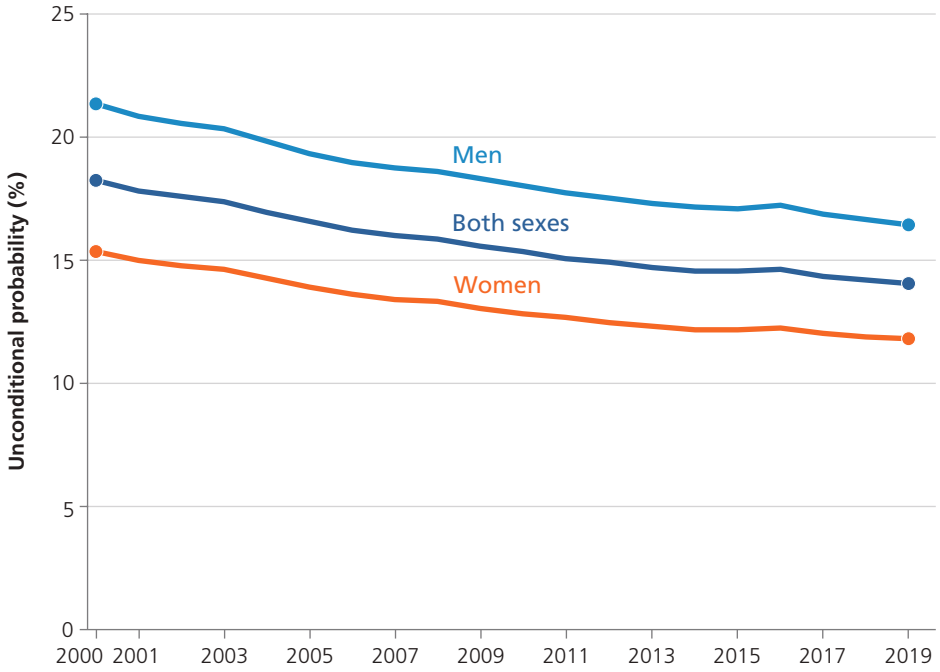


Source: PAHO.

prevention and treatment, and promoting mental health and well-being by 2030," which would be equal to 9.7% in the Region when considering as the baseline the value of 14.5% in 2015 (14.5 – 14.5 / 3 = –9.7). On the other hand, to reach the regional target of reducing its unconditional probability by one-third by 2030, i.e., a regional value in the unconditional probability of 9.7% in 2030, each country should reduce its unconditional probability with an AAPC = –2.7. From the information of the countries in the last 15 years (2000–2015), no country has been reducing its unconditional probability at this rate; the countries with the highest AAPC in this period were Colombia (–2.6), Trinidad and Tobago (–2.6), Belize (–2.4), and Canada (–2.2).

As is to be expected, not all countries reduce their unconditional probability indicator values at the same rate. Nine countries in the Region decreased the unconditional probability by more than the regional decrease between 2000 and 2019 (Table 18). On the other hand, seven countries increased their unconditional probability values, with one of them reaching an increase of 34.2% between 2000 and 2019, and with an AAPC

FIGURE 17 **Trend in the unconditional probability of dying among those aged 30–69 from any of the four main noncommunicable diseases in the Americas, 2000–2019**



Source: PAHO.

TABLE 18 **Unconditional probability of dying between the ages of 30 and 69 from any of the four main noncommunicable diseases in countries, Region of the Americas, 2000–2019**

COUNTRY	UNCONDITIONAL PROBABILITY 2000	UNCONDITIONAL PROBABILITY 2019	PERCENTAGE CHANGE 2000–2019	AVERAGE ANNUAL PERCENTAGE CHANGE 2000–2019
Trinidad and Tobago	28.7	17.1	–40.4	–2.7
Colombia	15.2	9.7	–35.8	–2.3
Canada	14.4	9.6	–33.3	–2.1
Chile	14.3	10.0	–29.8	–1.9
Belize	23.4	16.5	–29.7	–1.9
Brazil	21.7	15.5	–28.4	–1.8
Costa Rica	12.9	9.5	–26.0	–1.6
United States of America	18.1	13.6	–24.9	–1.5
Argentina	20.4	15.7	–22.9	–1.4
Uruguay	20.6	16.5	–19.9	–1.2
Peru	12.1	9.7	–19.3	–1.1

TABLE 18 **Unconditional probability of dying between the ages of 30 and 69 from any of the four main noncommunicable diseases in countries, Region of the Americas, 2000–2019 *(continued)***

COUNTRY	UNCONDITIONAL PROBABILITY 2000	UNCONDITIONAL PROBABILITY 2019	PERCENTAGE CHANGE 2000–2019	AVERAGE ANNUAL PERCENTAGE CHANGE 2000–2019
Guyana	35.7	29.2	–18.2	–1.1
Venezuela (Bolivarian Republic of)	17.4	14.8	–15.1	–0.9
Saint Vincent and the Grenadines	24.3	20.7	–15.0	–0.9
Ecuador	12.9	11.0	–14.1	–0.8
Panama	12.4	10.7	–13.8	–0.8
Bolivia (Plurinational State of)	20.8	17.9	–13.8	–0.8
Saint Lucia	20.3	17.7	–13.0	–0.7
Haiti	34.5	31.3	–9.1	–0.5
Cuba	18.2	16.6	–9.0	–0.5
Jamaica	18.2	16.9	–7.2	–0.4
Antigua and Barbuda	18.9	17.6	–7.1	–0.4
Mexico	16.8	15.6	–6.9	–0.4
Barbados	17.0	16.0	–6.0	–0.3
Suriname	24.0	22.7	–5.3	–0.3
Paraguay	16.8	16.0	–4.8	–0.3
Bahamas	19.9	19.9	0.3	0.0
Nicaragua	15.3	15.3	0.3	0.0
Grenada	23.0	23.4	1.6	0.1
El Salvador	10.5	10.7	1.9	0.1
Honduras	17.1	18.7	9.6	0.5
Guatemala	14.9	16.5	10.2	0.5
Dominican Republic	14.3	19.1	34.2	1.5
The Americas	18.2	14.0	23.1	–1.4

Source: PAHO.

of 1.5%. These results indicate the need to increase, on average in the Region, prevention and treatment efforts to reduce premature mortality from NCDs in the countries of the Americas, especially in countries where an increase in the unconditional probability is observed over time, in order to achieve the one-third reduction set in SDG Target 3.4.

Unconditional probability of noncommunicable diseases in relation to cost-effective policies

The four leading causes of premature death from NCDs that are part of SDG Indicator 3.4.1 are related to common risk factors that can be classified into two groups: potentially modifiable factors (tobacco use, harmful

use of alcohol, insufficient physical activity, and unhealthy diet); and biological factors (high blood glucose, high blood pressure, overweight, and obesity). Similarly, the relevance of environmental pollution as a risk factor for cardiovascular diseases has been pointed out. In addition, there is the great challenge that NCDs are the result of systems and structures strongly marked by inequity in health services.

No country will be able to achieve the target set for SDG Indicator 3.4.1 by 2030 by targeting only one specific disease or one of its common risk factors *(78, 79)*. The actions set out in global and regional plans for the control and prevention of NCDs aim to implement policies and interventions that lead to the reduction of modifiable and biological risk factors, which would result in the reduction of premature mortality.

To reduce the prevalence of risk factors in the countries of the Americas, it is necessary for each country to have the capacity to implement, finance, and maintain policies to address NCDs and their associated risk factors. A set of cost-effective measures, known internationally as "WHO NCD Best Buys," has been proposed to support countries in applying a comprehensive and integrated response. These measures relate to the implementation of policies on tobacco control, harmful use of alcohol, healthy eating, insufficient physical activity, and the response of services to NCD management *(80)*.

Among the measures that require more effort is the implementation of fiscal policies to reduce the consumption of tobacco, alcohol, and sugar-sweetened beverages

The cost of inaction is decreased quality of life and increased premature deaths, as well as socioeconomic impacts and overburdened health services

The implementation of country-level measures and interventions was assessed in 2019. Although the Americas is one of the regions with the greatest progress, the progress made by countries is not sufficient and varies greatly by subregion *(81)*. Among the measures that require more effort is the implementation of fiscal policies to reduce the consumption of tobacco, alcohol, and sugar-sweetened beverages, as well as to improve the response of services in the diagnosis, treatment, and control of hypertension and diabetes mellitus.

NCDs require a multisectoral response, not just from the health sector. The cost of inaction is decreased quality of life and increased premature deaths, as well as socioeconomic impacts and overburdened health services *(82)*.

Challenges by 2030

Based on the analysis presented for the selected SDG 3 Indicators, there is no denying the achievements that the Americas have made thanks to the efforts of the countries, but there are still avoidable causes of death that should not be taking lives because effective prevention and treatment measures are in place. Countries need to identify the causes of avoidable mortality that still represent the greatest burden and are negatively affecting the achievement of the SDG 3 Targets. Another important challenge is the reduction of health inequalities, which should not only be seen at the regional level, but also at the national and local levels, as the identification of specific population groups in situations of greater vulnerability is an essential step to reduce avoidable mortality. Inequalities in the perinatal period and even earlier are associated with adverse birth outcomes. In addition to their impact on mortality, there is evidence of their link to diseases that contribute to the burden of disease and disability, and ultimately contribute to greater health inequality.

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Chapter 5

Potentially avoidable premature mortality and health systems

The measurement of access to health services and that of their quality constitute important priorities for health systems transformation agendas in the Region and the world. Within that framework, PAPM constitutes a key indicator of the performance of public health systems and of health services with regard to their ability to ensure access to comprehensive and quality health services *(34, 83)*.

Based on the 1978 Declaration of Alma-Ata made at the International Conference on Primary Health Care, the countries of the Americas have made important efforts to guarantee universal and equitable access to quality health services and interventions, and to thus meet the health needs of their populations *(84)*. The achievement of universal and equitable access is fundamental, as the timely and effective use of comprehensive and quality health services can improve health outcomes substantially and thus contribute to avoiding premature mortality *(83)*.

The countries of the Americas have made important efforts to guarantee universal and equitable access to quality health services and interventions, and to thus meet the health needs of their populations

It was in this context that the concept of universal health coverage was adopted in 2005, and the commitment to it renewed through the approval of the political declaration of the high-level meeting on universal health coverage in 2019 *(85)*, assessing its contribution to the 2030 Agenda and the objectives to which the international community has committed itself *(71)*. The Region of the Americas has endorsed this commitment through the adoption by the Member States of PAHO of Resolution CD53.R14 (Strategy for Universal Access to Health and Universal Health Coverage) *(86)* and the Compact 30•30•30: PHC for Universal Health, which establishes the objective of reducing by 30% the barriers of access to health services by 2030 and increasing investment in primary care *(87)*.

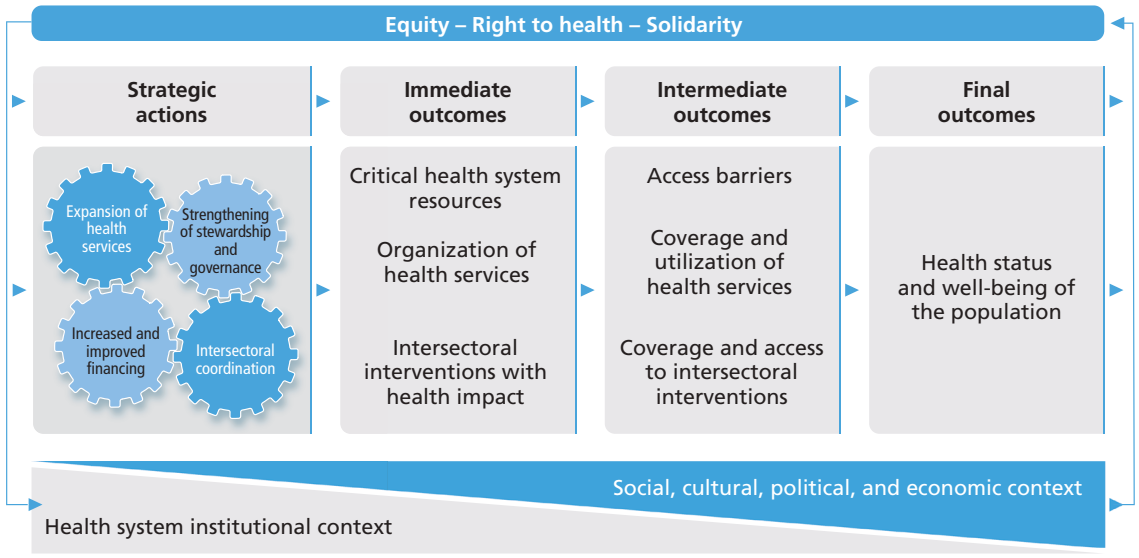
As pointed out in Chapter 1, it is considered that the PAPM metrics provide a robust indication of what health outcomes are achievable through policies and interventions that seek to improve the access to and quality of health services *(33, 34, 88)*.

Progress toward universal health and its relation to potentially avoidable premature mortality

The improvement of health systems' performance in the Region of the Americas requires multiple strategies to influence comprehensively its different components. The analytical framework used in this chapter is the Monitoring Framework for Universal Health in the Americas, developed by PAHO, and outlined in Figure 18 *(89)*.

Following the logic of this framework, the relation that exists among the indicators of potentially

FIGURE 18 **Analytical framework for analyzing the health systems' performance as a determinant of potentially avoidable premature mortality**



Source: Adapted from Pan American Health Organization. Monitoring Framework for Universal Health in the Americas. Washington, D.C.: PAHO; 2021 [cited 18 November 2021]. Available from: https://iris.paho.org/handle/10665.2/53918.

preventable and treatable premature mortality and the access conditions (barriers to access, and coverage and utilization of health services) is analyzed first. Next, there is a review of the strategic actions (policies, plans, or laws) through which it has been the goal to change health systems in the Region with a view to achieving universal access to health and universal health coverage. These strategic actions are grouped in accordance with Resolution CD53.R14 *(86)*.

The right to health, equity, and solidarity are fundamental principles of the health sector reform processes in the Region of the Americas. For the Member States of PAHO, universal access to health and universal health coverage (universal health) means that all people and communities have access, without experiencing any type of discrimination or barriers, to comprehensive health services that are appropriate, timely, and of good quality, without suffering financing difficulties and with access to interventions that permit a healthy life and well-being *(86)*. On the basis of these principles, the reforms of health systems have tried to achieve universal health through the progressive application of the comprehensive PHC strategy, the expansion of the coverage and capability of health systems, and the approach to the social determinants of health. Following the analysis framework, this section reviews how the conditions of coverage and access to comprehensive and quality health services influence PAPM.

Coverage and use of comprehensive quality health services

Although there is debate on the relative contribution of the individual healthcare services, the actions for population health, and the social determinants of the health of the population *(88)*, various studies demonstrate that access to quality health services helps to improve health outcomes for many conditions, such as infectious diseases, maternal and neonatal conditions, cancer, and many chronic diseases such as cerebrovascular diseases, diabetes, and chronic kidney disease *(34)*.

The foregoing underscores the importance of closing the gaps in achieving universal access to health and universal health coverage, and of fulfilling the promise of the 2030 Agenda to ensure no one is left behind in that effort. The data of the service coverage index (SCI), a synthetic measure of universal health coverage to measure progress with regard to SDG Indicator 3.8.1 *(90)*, are used to emphasize this need. The Region of the Americas had the highest level *(79)* of health services coverage in 2017, measured through the SCI *(90)*. Despite this, there exist important inequalities among

Studies demonstrate that access to quality health services helps to improve health outcomes for many conditions, such as infectious diseases, maternal and neonatal conditions, cancer, and many chronic diseases such as cerebrovascular diseases, diabetes, and chronic kidney disease

the countries of the Region, with SCI values that range from 80 (Canada) to 47 (Haiti), and where potentially preventable premature and treatable mortality tends to increase as the coverage of essential health services diminishes, as measured through the SCI (Figure 19).

Similarly, the results of the GBD study developed by the Institute for Health Metrics and Evaluation demonstrates a statistically significant correlation between the quality index and access to health care, a synthetic measure based on treatable mortality, and the indicators of universal health coverage and inputs of the health system *(33)*.

The causes of these differences are various but in many cases relate to the capacity of health systems to serve the needs of the population and expand with the necessary speed the level of coverage of comprehensive health services for the entire population. It is important to recognize the different factors that contribute to more or less progress toward universal health coverage, considering the different contexts in order to thus better report on the national strategies designed to advance toward universal health *(83)*.

Unmet health needs and barriers to access

Although it is recognized that improved health service coverage substantially reduces mortality from causes that are considered potentially avoidable *(83)*, increasing evidence demonstrates that the use of health services by itself is not sufficient to improve health outcomes, even for causes that are potentially avoidable. The persistence of barriers to access and to quality in health services indicates that the increase in the use of health services by itself is not sufficient to reduce avoidable mortality *(33)*.

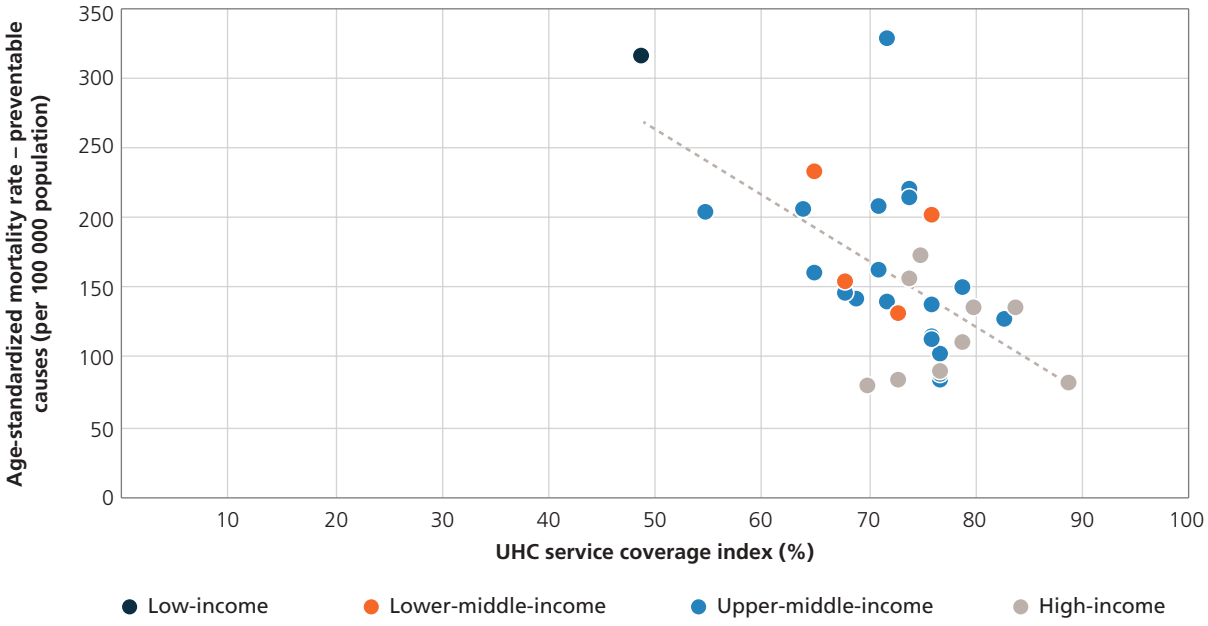
Health systems in the Region of the Americas face multiple challenges that hamper them in serving the health needs of the various groups of the population

Therefore, it is then necessary to include the different factors that influence and hinder access to and the quality of the health services in order to thus find sustainable solutions. However, this is no easy task as health systems in the Region of the Americas face multiple challenges that hamper them in serving the health needs of the various groups of the population and ensuring conditions of universal and equitable access.

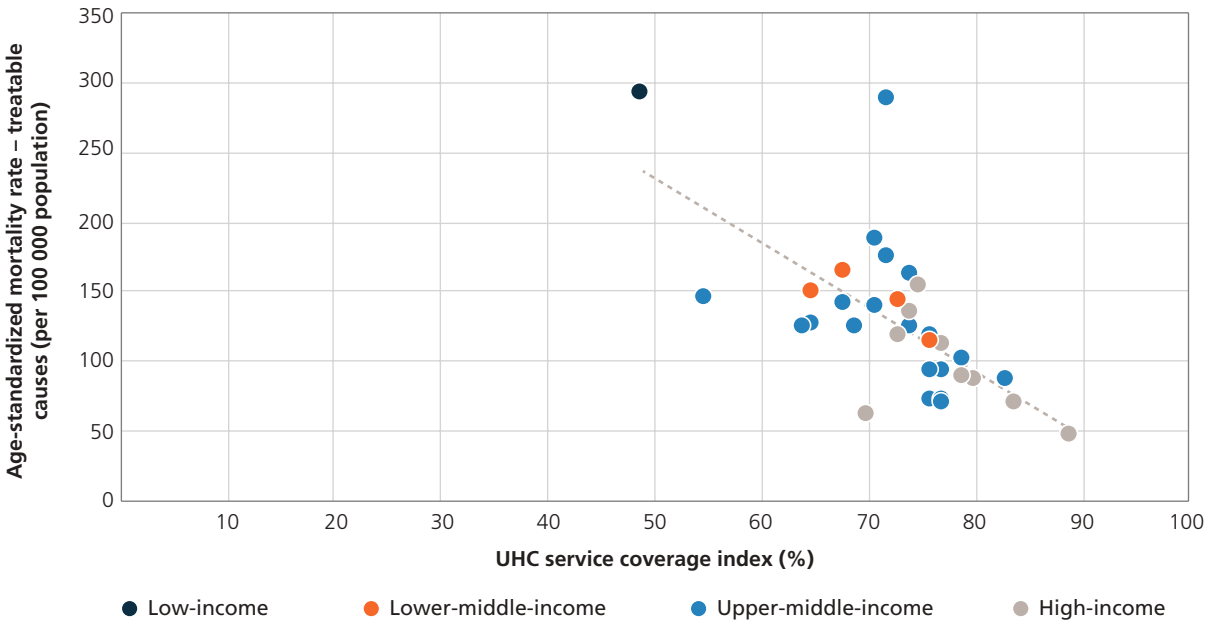
As an example of the magnitude of this problem, it is estimated that, on average, about one-third (29.3%; 95% CI [27.4, 31.3]) of people in the Americas do not seek adequate care when they need it *(91)*. This problem is due mainly to the numerous barriers that keep people from seeking and using health services, of the necessary quality, when they need them. Among those people who report not seeking care, 17.2% attribute their decision to administrative barriers (e.g., long waiting times, inadequate hours of care, and onerous administrative requirements). Financial barriers were reported in 15.1% of cases, inadequate availability of resources (e.g., health workers, drugs, and supplies) in 8.4% of cases, and geographical barriers in 5.4% of cases. It is important to point out that 8.0% cite

FIGURE 19 **Relationship between potentially avoidable premature mortality and the UHC service coverage index, Region of the Americas**

19A. Potentially preventable premature mortality



19B. Potentially treatable premature mortality



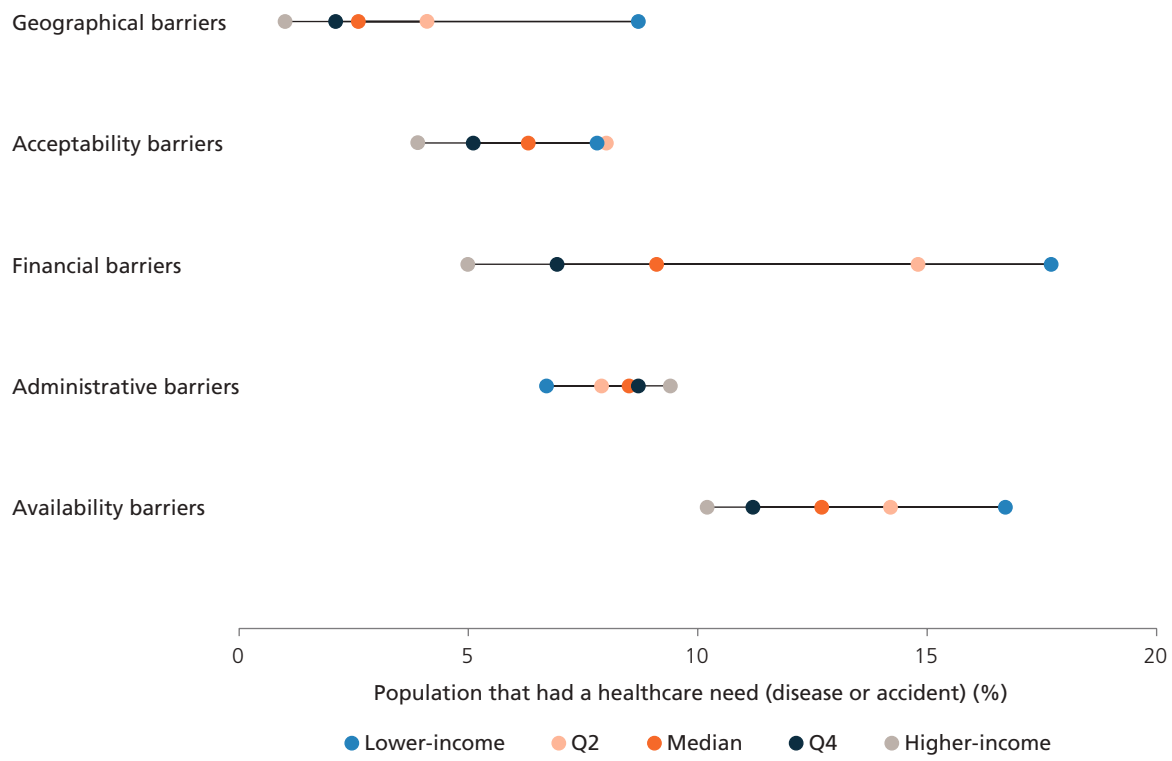
Note: The service coverage index integrates 14 tracer interventions for reproductive, maternal, neonatal, and child health; infectious disease control; and noncommunicable diseases; which are modifiable through health public initiatives and delivery of individual healthcare services.

Source: PAHO calculations based on the data of the WHO Global Health Observatory (https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4834) and PAHO data on potentially avoidable premature mortality.

acceptability barriers (e.g., linguistic barriers, lack of confidence in the health workers or abuse by the personnel, and preference for traditional and indigenous medicine). The people in poorer quintiles were more likely to experience barriers relating to acceptability, finance, geography, and lack of availability of resources (Figure 20).

These factors intersect with social systemic inequities, such as inequities related to ethnicity, gender, and the distribution of wealth, magnifying the barriers of access to quality health services. Recent estimates indicate that 29.1% of treatable mortality in Latin America can be attributed to the fact that people do not use the health services they need, while 70.9% can be attributed to the poor quality of the healthcare services that are available *(33)*. The Andean Area has the highest percentage of treatable mortality attributable to a lack of access

FIGURE 20 **Reasons why the population does not seek health care, Region of the Americas**



Note: The barriers that cause people not to seek care medical are classified according to the dimensions of access defined as follows: acceptability: the person does not trust the physicians, receives abuse from health workers, prefers to be cured with domestic remedies, or the standards of gender, language, and culture inhibit the search for care; administration: long waiting period, lack of time or cumbersome administrative requirements; availability: there are not enough physicians, drugs, or services in the health center; finance: the person does not have money or does not have insurance that covers the in-kind cost; and geography: the person lives far away from the health center or does not have transportation.

Source: PAHO calculations based on household surveys on health and living conditions. Báscolo E, Houghton N, Del Riego A. Leveraging household survey data to measure barriers to health services access in the Americas. Rev Panam Salud Publica. 2020;44:e100. https://doi.org/10.26633/RPSP.2020.100. The latest available survey includes 18 countries with household surveys, 2011–2019. The estimates are the weighted averages of each country by size of the population.

to health services (41.8%), and the Southern Cone the highest percentage attributable to the poor quality of health care (74.0%) *(33)*.

Figure 21 shows this relation, demonstrating that PAPM presents a statistically significant correlation with the unmet needs in health care (measured as the percentage of the population that does not seek health care despite reporting a health need). In that case, the countries of the Region with greater rates of potentially treatable and preventable premature mortality tend to have a greater percentage of the population that does not seek health care when it needs it due to multiple access barriers.

The high mortality rate due to the persistence of barriers to access and the poor care provided by health services suggests that the strengthening of health systems needs to be addressed using a systemic and integrated approach, as discussed in greater detail in the following section.

Strategies for strengthening health systems

The health sector reform processes in the Region of the Americas have focused on the construction of national health systems based on PHC and on access to the health services that is universal and equitable as a strategy to guarantee the full enjoyment of the right to health. Realizing these principles requires profound transformations, and the policies promoted result in the introduction of changes in the organization of the provision of health services through actions geared toward health promotion and disease prevention. Such transformations may need to improve the availability and organization of critical resources of the health system, as well as addressing the social determinants of health.

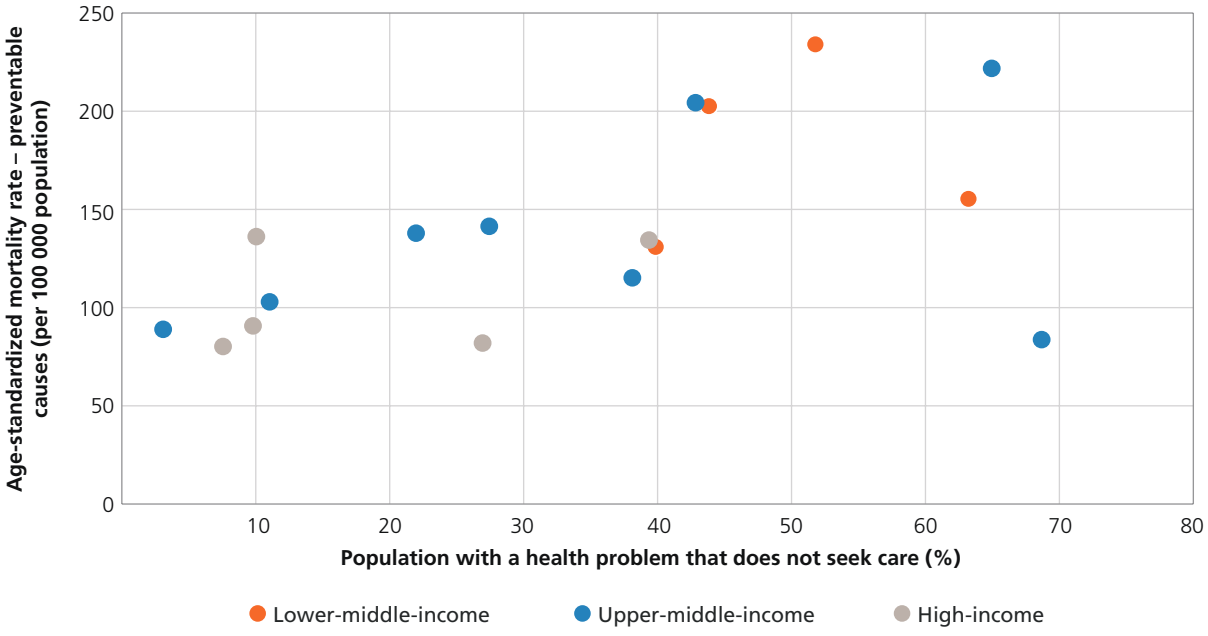
Below, the evidence on the scope and depth of these transformations is reviewed with a view to improving the coverage and capacity of health systems in the Region. The Member States of PAHO define coverage as "the capacity of the health system to serve the needs of the population, including the availability of infrastructure, human resources, health technologies (including medicines) and financing." Universal health coverage is understood as the existence of "organizational mechanisms and financing [...] sufficient to cover the entire population."[6]

On the basis of the foregoing, this section analyzes the relationship between PAPM and the processes that seek transformations directed toward the expansion and reorganization of the supply of services based on a model of care that is comprehensive, people- and community-centered, with strengthened primary care, and includes the elimination of direct payments with an increase in public health expenditure in order to prioritize the PHC. It also considers the introduction of different institutional mechanisms to strengthen the steering role of health authorities and increase coordination and social participation in health, such that they can generate significant improvements in the regulation of critical resources of the health system and in intersectoral governance for the formulation and implementation of policies that address the social determinants.

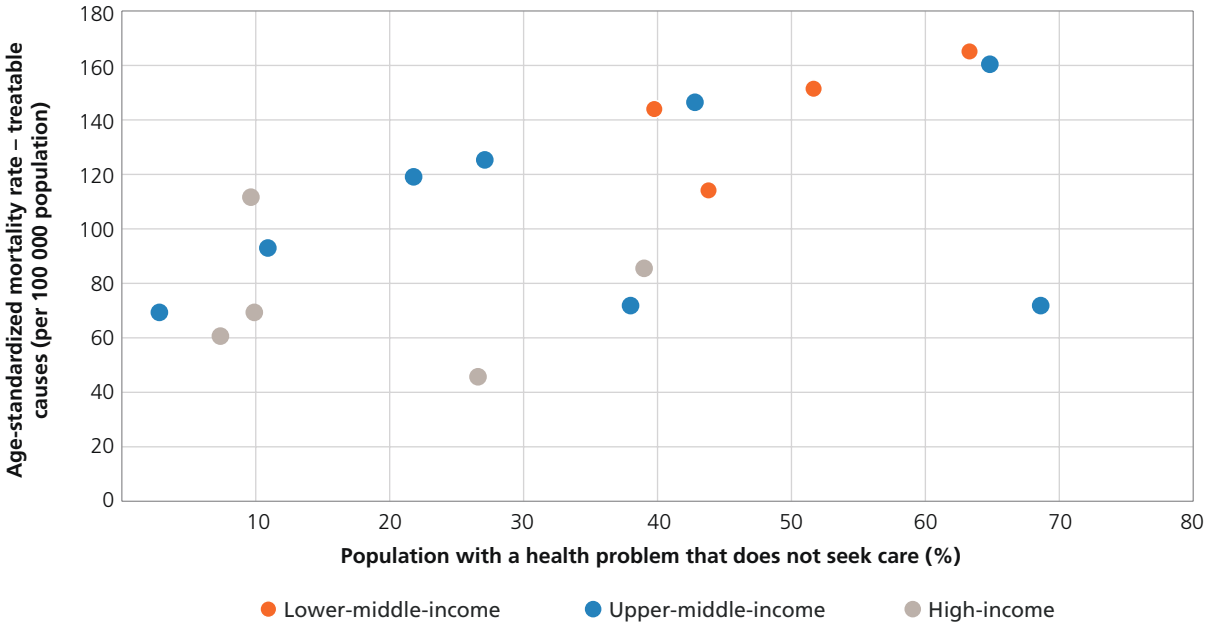
6 These definitions were expressed in Resolution CD53/5, Rev. 2 of the 53rd Directing Council of PAHO in 2014 regarding the adoption of PAHO's Strategy for Universal Access to Health and Universal Health Coverage. See: Pan American Health Organization. Strategy for Universal Access to Health and Universal Health Coverage. 53rd Directing Council, 66th Session of the Regional Committee of WHO for the Americas, Washington, D.C., USA, 29 September-3 October 2014. CD53/5, Rev. 2. Washington, D.C.: PAHO; 2014. Available from: https://iris.paho.org/handle/10665.2/28276.

FIGURE 21 Relationship between potentially avoidable premature mortality and unmet healthcare needs, Region of the Americas

21A. Potentially preventable premature mortality and unmet healthcare needs



21B. Potentially treatable premature mortality and unmet healthcare needs



Note: Unmet health needs are measured as the percentage of the population that reports a health need (disease or accident) and does not seek health care.

Source: PAHO calculations based on household surveys on health and living conditions and PAHO data on potentially avoidable premature mortality. The data on unmet health needs were originally published in Báscolo E, Houghton N, Del Riego A. Leveraging household survey data to measure barriers to health services access in the Americas. Rev Panam Salud Publica. 2020;44:e100. https://doi.org/10.26633/RPSP.2020.100. The latest available survey includes 18 countries with household surveys, 2011–2019. The estimates are the weighted averages of each country by size of the population.

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Expansion of equitable access to comprehensive, quality health services

The achievement of universal access to health depends crucially on the availability of comprehensive health services and on their quality and timeliness, with a special emphasis on the availability of services in the primary care sector to respond adequately, with equity and efficiency, to the specific and differentiated health needs of the population and communities. With regard to the foregoing, health sector reforms have tried to address several weaknesses that limit the response capacity of the health services to growing morbidity and mortality, including inequities in coverage and access to services; insufficient and deteriorated infrastructure, mainly in the rural and poorer areas; fragmentation and poor quality in service provision; the predominant emphasis on cure; and limited intersectoral approaches and community participation with regard to health.

Within the framework of the Strategy for Universal Access To Health and Universal Health Coverage, the quality of health services consists in meeting the health needs of people, families, and communities based on best practices, ethics,

The achievement of universal access to health depends crucially on the availability of comprehensive health services, and on their quality and timeliness

and scientific knowledge, contributing to equity and well-being, and leaving no one behind. It implies particular care for diversity and for people and populations in conditions of vulnerability. Improving the quality of care in health services delivery requires the transformation and strengthening of health systems *(92)*.

In the Region, the mortality attributable to poor quality of care is high, although it varies considerably among countries, with a range between 44.7 and 292.3 deaths per 100 000 population in 2019. In addition, research on patient safety has shown the magnitude of the problem. A study conducted in 58 hospitals of five countries of the Region showed that 10% of patients had suffered an adverse event as a product of care in the 24 hours prior to the review (the prevalence increased to 20% when the entire duration of the stay was considered), with 60% of these events qualified as avoidable *(93)*. Another study, in 22 centers of ambulatory health care in four countries of the Region, observed a prevalence of adverse events of 5.2% in the previous six months, with a proportion of avoidable events of 44% *(94)*.

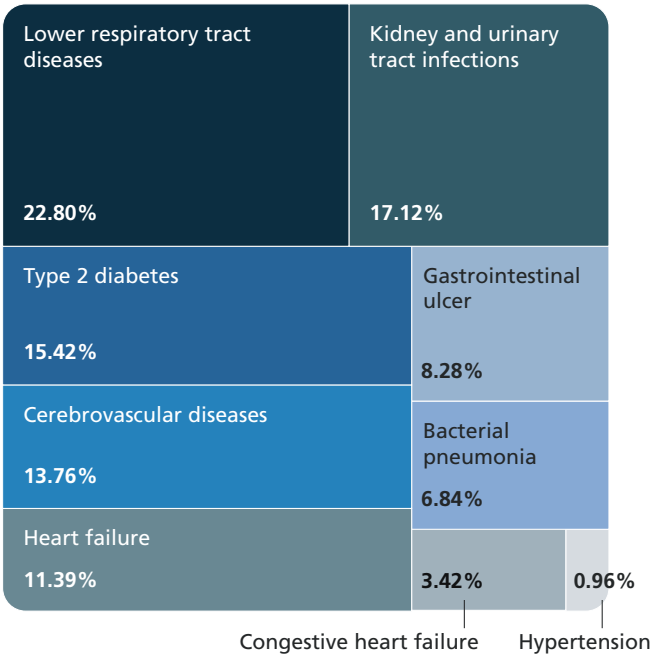
Research on the experience and confidence of people, families, and communities in health services shows high levels of dissatisfaction. The analysis of population surveys in seven countries of the Region (representative of three-quarters of its population) showed that 30% of the population lacks access to preventive health services and treatment. Only 39% of those surveyed considered that the quality of care was good, and 61% reported that the provider did not provide assistance in the coordination of care *(95)*.

In the Region, the mortality attributable to poor quality of care is high

A comprehensive and systemic approach to improve the quality of care requires the strengthening of the primary care response capacity, within integrated health services networks. Consequently, hospitalizations for disorders that can be resolved in outpatient care (avoidable hospitalizations) are indicators of opportunities for improvement in the quality, opportuneness, and efficiency of the systems. Accordingly, it is no surprise that up to 45% of avoidable hospitalizations are from diabetes and cardiovascular pathologies (Figure 22), consistent with the main causes of PAPM.

In the Region, education in health sciences has grown rapidly in recent decades, but the regulation of such processes is proving insufficient and there are concerns regarding the quality of the education, the importance of many academic programs, and the consequent professional practice. The supply of human resources has not been aligned with the needs for health systems based on PHC with integrated health services networks. Health workers mainly try to devote their professional careers to the area of hospital specializations, and this continues to affect the availability and retention of adequate human resources for health, especially in primary care. In many countries, health authorities do not have sufficient information or advanced methodologies on monitoring and evaluation of human resources for health in order to support decision-making *(96)*. Figure 23 highlights the relationship between PAPM and the availability of physicians.

FIGURE 22 **Principal causes of avoidable hospitalizations, aggregating data for the Plurinational State of Bolivia, Chile, and Colombia, 2017–2018**



Source: Data from the PAHO web tool for the registry of hospitalizations susceptible to care in primary care (https://hevi.paho.org/). The hospital data in the web tool were sent by the ministries of health of each country (Bolivia [Plurinational State of], Chile, Colombia).

In many countries, health authorities do not have sufficient information or advanced methodologies on monitoring and evaluation of human resources for health in order to support decision-making

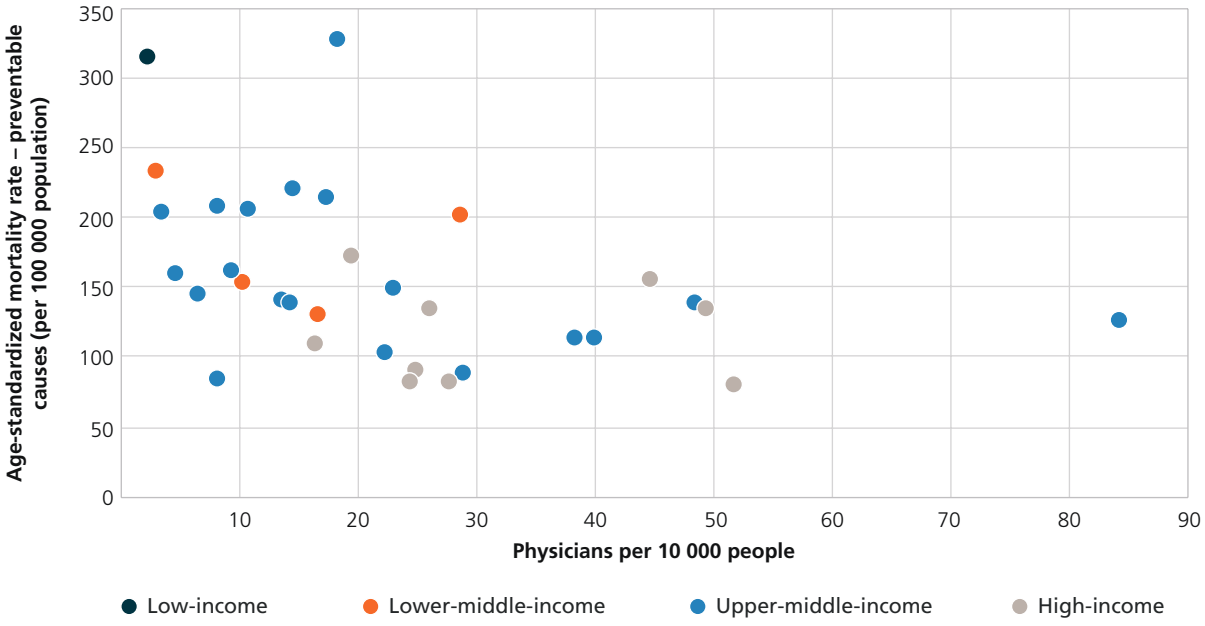
In 2015, only 42.9% of the countries in the Region had adopted standards and procedures for the preparation of directives on clinical practice. The prescription, dispensing, and use of inappropriate drugs and other health technologies contribute to deficient health outcomes *(97)*. The unjustifiable variability in clinical practice and overutilization of technology, such as the high rate of cesarean sections in the Region (40.5% in Latin America and the Caribbean in 2015), increases unnecessarily the risks and costs in health systems *(98)*.

Strengthening leadership and governance

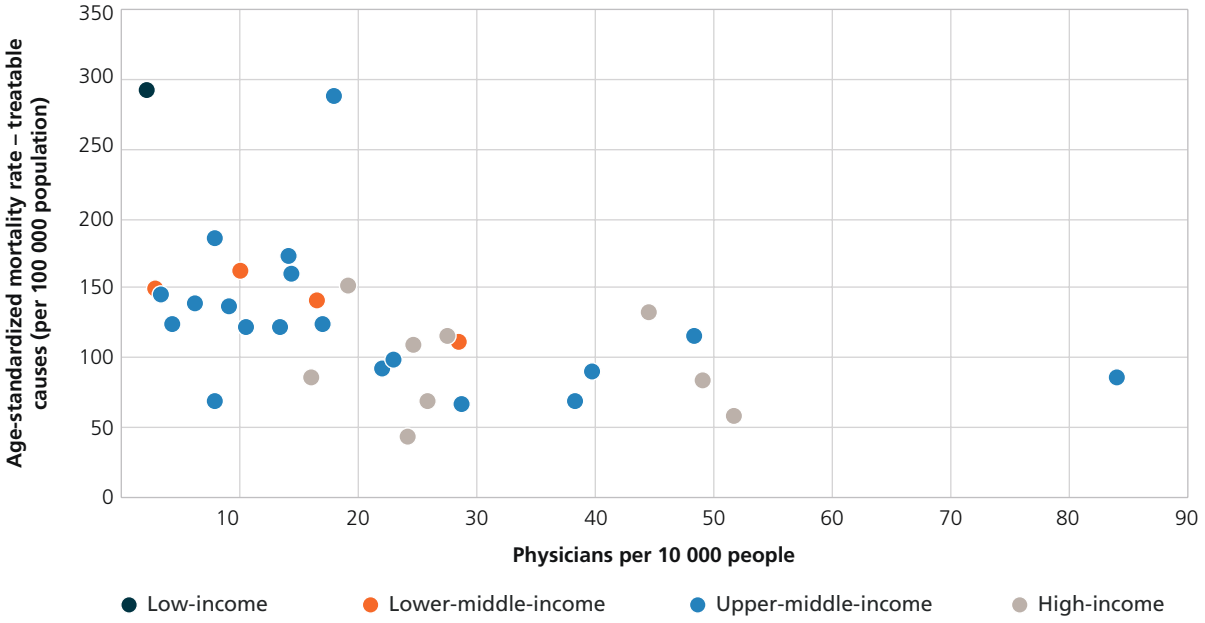
The reforms of health systems toward universal health in the Region of the Americas have been guided by objectives and principles defined by the leadership of the health authorities, prioritizing changes in governance structures

FIGURE 23 **Relationship between potentially avoidable premature mortality and availability of human resources, Region of the Americas**

23A. Potentially preventable premature mortality



23B. Potentially treatable premature mortality



Source: PAHO calculations based on data on density of personnel in health obtained from Health Information Platform for the Americas: Core Indicators 2019 (https://opendata.paho.org/en/core-indicators), and premature mortality data potentially avoidable of PAHO.

Institutional innovations have shown limitations in addressing structural inequalities in the allocation of critical resources

of health systems.[7] These innovations in the governance of health systems include a variety of institutional structures that include governance of collective interventions, management of individual health services, insurance of the population, and intersectoral coordination mechanisms that promote the addressing of the social determinants of health. These different institutional innovations have different levels of effectiveness in improving the conditions of access and health outcomes, depending on their influence on the organization of health services and the allocation of critical resources (financial, human resources, technological, and infrastructure), the presence of intersectoral actions, and the development of interventions that address the social determinants of health.

However, these institutional innovations have shown limitations in addressing structural inequalities in the allocation of critical resources. These conditions of inequality have had a significant influence on PAPM (Table 19). It is clear that the institutional configuration of the health system, the resources allocated, and the governance structure of the financing and the delivery of the health services have much influence in determining the access conditions as well as the health outcomes of the population.

Furthermore, evidence indicates that the evolution of barriers to access and especially the impact on conditions of equity depend on the type of reforms implemented *(99)*. Reforms centered on the policy promotion of PHC have revealed better levels of effectiveness, due to an orientation focused on strengthening the primary care response capacity in those territories with populations in higher-level conditions of social vulnerability. However, some countries, such as El Salvador and Paraguay, have managed to reduce inequities in the barriers of access despite unfavorable social conditions (Table 20). These cases stand out for their implementation of primary care policies in areas with greater health needs. However, some upper-middle-income countries with greater levels of resource allocation have experienced greater difficulties in reducing health inequities when the policies implemented have been restricted to the expansion of the conditions of insurance coverage and the promotion of competition between private actors.

Strengthening the institutional capacities of health authorities is an essential condition to guarantee a logic of reform and health systems strengthening that can serve the health needs of the population, and address the risk factors, whose determinants are environmental and social.

Following this logic, a new approach to the essential public health functions tries to construct an agenda for developing the capacity

7 For the purposes of this report, leadership is understood as the capacity for leadership of the health authorities in order to form and support a joint action that permits the creation, the strengthening, or the change of the governance structures of the health system. Governance is understood as the institutional arrangements that regulate the actors and the critical resources that have influence on the conditions of coverage of and access to the health system.

TABLE 19 Inequality of potentially avoidable premature mortality according to allocation of critical resources of the health system, Region of the Americas

	REGIONAL AVERAGE	LB	UB	SII	LB	UB	CIx	LB	UB
Health expenditure	138.6	138.3	138.8	–36.3	–55.1	2.5	–7.1	–18.3	4.2
Out-of-pocket health expenditure	138.6	138.3	138.8	–24.0	–46.4	21.1	–4.9	–15.9	6.2
Health professional density	138.6	138.3	138.8	–34.1	–53.6	5.8	–5.5	–16.5	5.6

Note: SII: slope index of inequality; CIx: concentration index of health inequality. LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.

TABLE 20 Clinical course of the conditions of access and coverage in selected countries of Latin America

		POPULATION WITHOUT ACCESS TO SERVICES			INSURANCE COVERAGE		
COUNTRY	YEAR	AVERAGE	POOREST 20%	RICHEST 20%	AVERAGE	POOREST 20%	RICHEST 20%
		(%)					
Chile	2013	7	7	6	95	96	95
	2015	7	7	6	98	98	98
Colombia	2010	21	26	14	89	85	95
	2016	26	32	19	96	94	97
El Salvador	2011	43	46	43	17	5	36
	2016	41	42	37	24	7	43
Guatemala	2011	46	52	37	11	4	20
	2014	47	56	39	11	2	27
Mexico	2012	12	15	8	76	76	77
	2014	20	25	14	80	78	81
Paraguay	2012	32	43	24	24	3	58
	2016	25	27	22	24	3	58
Peru	2010	68	76	62	63	72	61
	2016	66	69	61	76	82	74
Uruguay	2012	7	9	6	97	96	98
	2016	5	8	5	98	97	99

Source: Báscolo E, Houghton N, Del Riego A. Types of health systems reforms in Latin America and results in health access and coverage. Rev Panam Salud Publica. 2018;42:e126. https://iris.paho.org/handle/10665.2/49472.

Strengthening the institutional capacities of health authorities is an essential condition to guarantee a logic of reform and health systems strengthening that can serve the health needs of the population

of health authorities through a process of health policymaking with a comprehensive perspective, one that addresses access to services for individuals and the population, and intersectoral interventions that impact the social determinants of health *(100)*.

For this process, four major interrelated aspects need to be considered:

- The evaluation of health conditions and their determinants: This incorporates the capacities related to the institutionalization of the processes of analysis, monitoring, and evaluation, as well as the conditions of access to the health services the different types of barriers, the quality of the services, and inequities and their determinants.

- Policymaking: This refers to the capacities that the health authorities should have in order to lead health policymaking that prioritizes tackling the causes, risk factors, and determinants identified, adopting a comprehensive perspective in order to guarantee access to services to individuals and groups, and implementing intersectoral actions associated with social policies that impact the social determinants of health. This stage requires the formation and consolidation of political partnerships with other actors, and the social construct of voice mechanisms that facilitate the viability and adaptation of the implementation to the health needs of the population.

- The allocation of resources: This refers to the ability to have governance of the administration and allocation of critical resources that should give backing to health policymaking and guarantee the feasibility of its implementation. These resources should include the range of public health interventions, protecting especially the allocation of resources to interventions directed to risk factors, population health services, and intersectoral action that affect PAPM.

- The guarantee of access to health: This refers to the abilities to organize public health interventions. These capacities assume a substantive role as they make it possible to recognize the actors and the structures and agencies responsible for the management of the conditions to guarantee effective access through the set of public health interventions.

Increase in and improvement of financing, with equity and efficiency, and elimination of direct payment

The countries of the Region have achieved great progress concerning health financing, including the reduction of out-of-pocket

The countries of the Region have achieved great progress concerning health financing

expenditure in health. This has been possible based on promoting the elimination of direct payments and on promoting services that are free at the point of delivery. However, direct payment at the point of service delivery (or out-of-pocket expenditure) continues to be an important source of resources (more than one-third of total health expenditure in the Region) and increases the risk of households facing financial catastrophe, of them falling into poverty (or their poverty being exacerbated), and shows a relationship with PAPM *(92)*.

Furthermore, the segmentation of financing means that different population groups have different degrees of access and coverage, with a limited distribution of risks and solidarity, which increases inequity and produces inefficiencies in the management of the resources that could be avoided. In the Region, public health expenditure is, on average, barely 4.1% of GDP, and remains far short of the regional goal of at least 6% of GDP *(45)*. In addition, corruption affects the institutional culture and diverts necessary resources aimed at health care, with damaging impacts that habitually affect more those people in conditions of vulnerability.

The form in which financial resources in the sphere of health are collected, assigned, distributed, and organized has direct and indirect impacts on the quality of the services provided *(92)*. In the allocation of resources, historical budgeting and the fee-for-service mechanism or by service continue to prevail. The development of resource allocation mechanisms aligned with the objectives of the health system and the rationalization of the introduction of new technologies are still areas in which few countries show significant progress *(92)*.

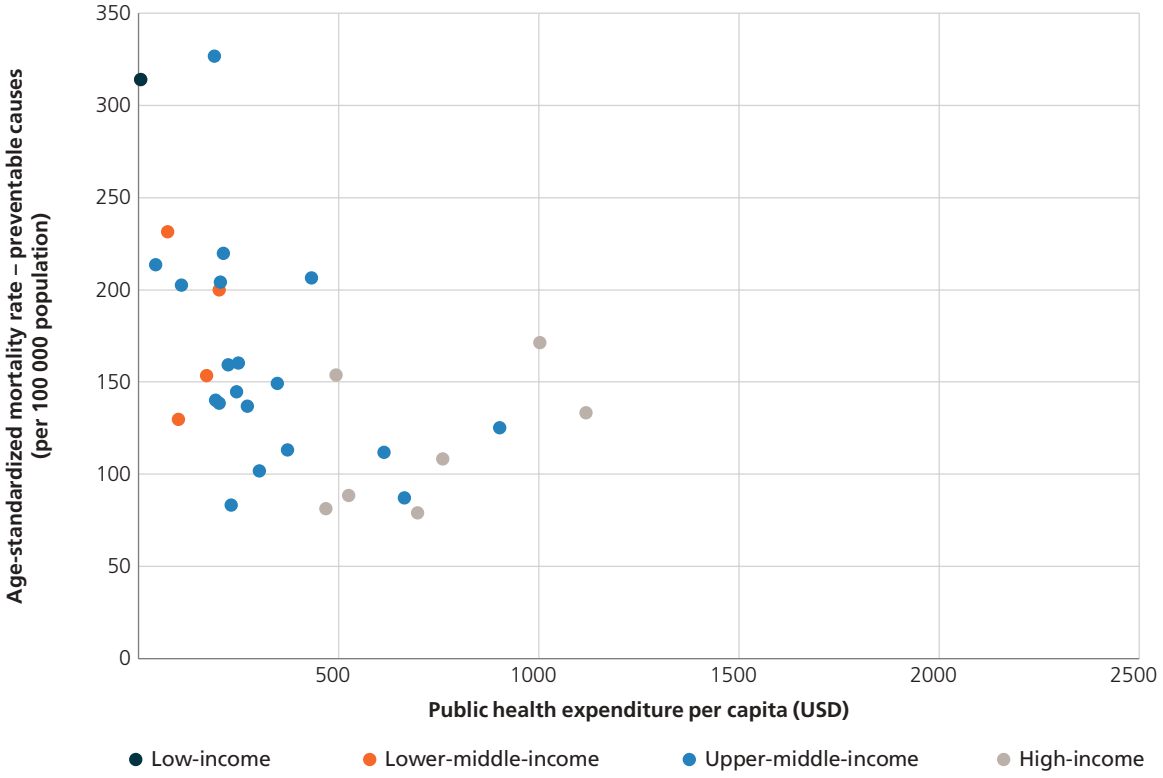
In order to increase public investment in health with efficiency and equity, it is necessary that the resources available for health be distributed toward the organization of the services and their providers, so that they produce services and take necessary health actions for diminishing significantly morbidity and mortality, together with increasing the financial protection of households, which allows access with equity to those quality health services *(101)*.

Figure 24 exemplifies this relationship, showing that PAPM presents an inverse correlation with public health expenditure measured in per capita values (and adjusted by purchasing power parity). The countries of the Region with a higher percentage of PAPM, both with respect to preventable and treatable, tend to present a lower per capita public health expenditure, and vice versa.

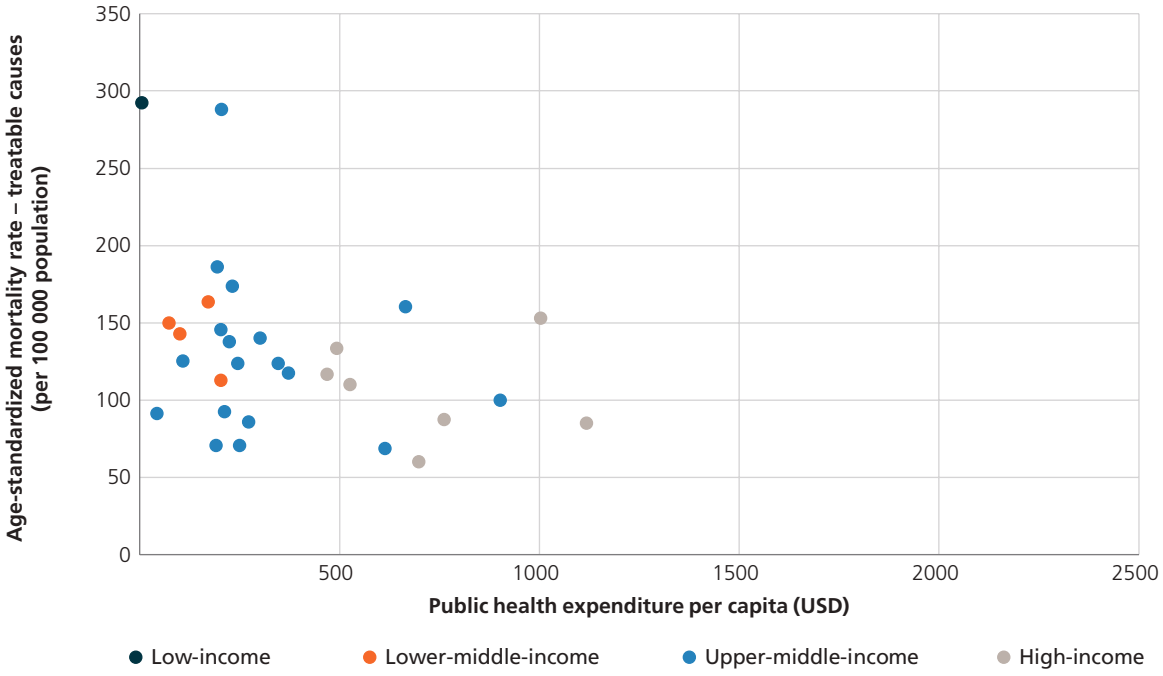
However, where there is an established relationship between PAPM and measured out-of-pocket expenditure as a percentage of the total current expenditure, there is a direct correlation. In this case, the countries of the Region with higher PAPM tend to have a greater share of out-of-pocket expenditure in the total health expenditure (Figure 25).

FIGURE 24 **Relationship between potentially avoidable premature mortality and per capita health expenditure, Region of the Americas**

24A. Potentially preventable premature mortality



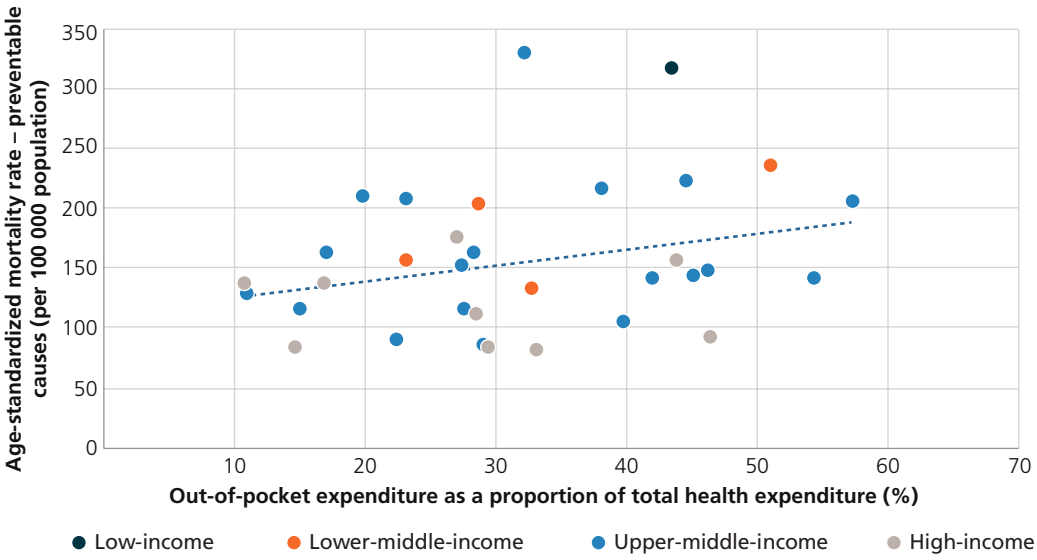
24B. Potentially treatable premature mortality



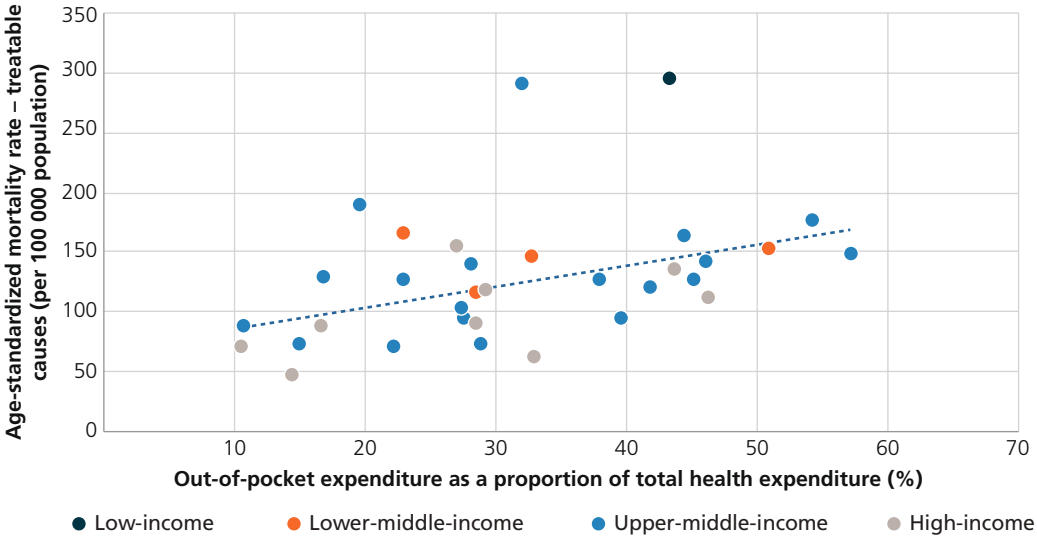
Source: PAHO calculations based on data obtained from the WHO Global Health Expenditure Database (https://apps.who.int/nha/database), and PAHO data on potentially avoidable premature mortality.

FIGURE 25 **Relationship between potentially avoidable premature mortality and out-of-pocket expenditure, Region of the Americas**

25A. Potentially preventable premature mortality



25B. Potentially treatable premature mortality

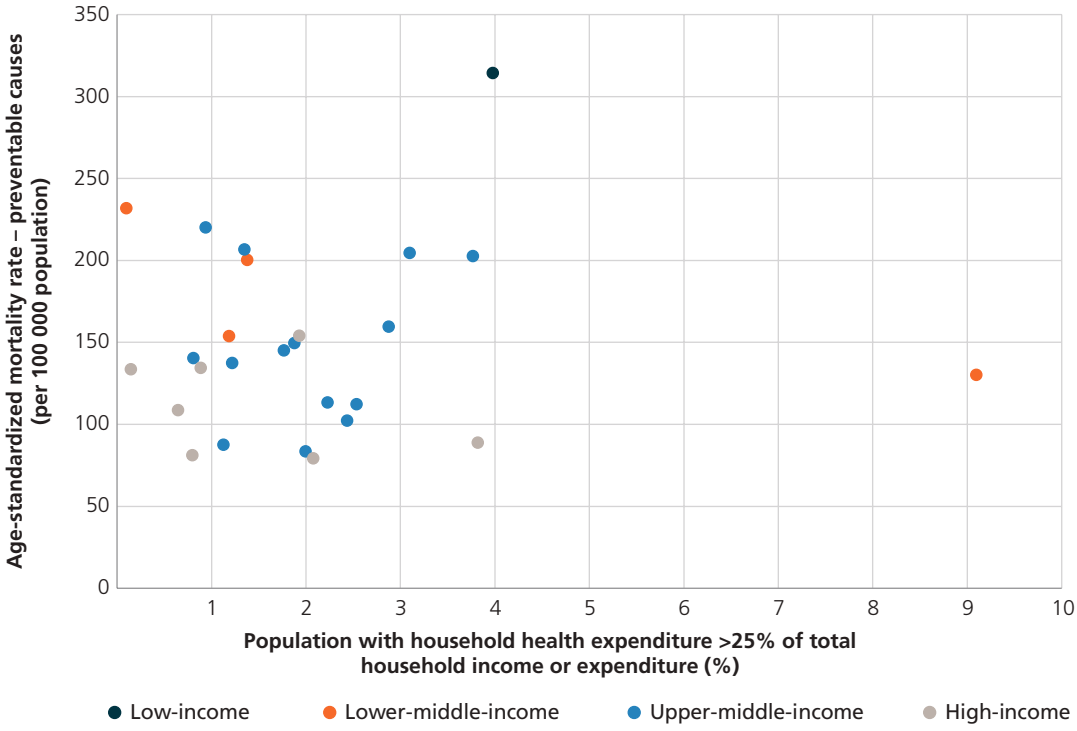


Source: PAHO calculations based on data obtained from the WHO Global Health Expenditure Database (https://apps.who.int/nha/database), and PAHO data on potentially avoidable premature mortality.

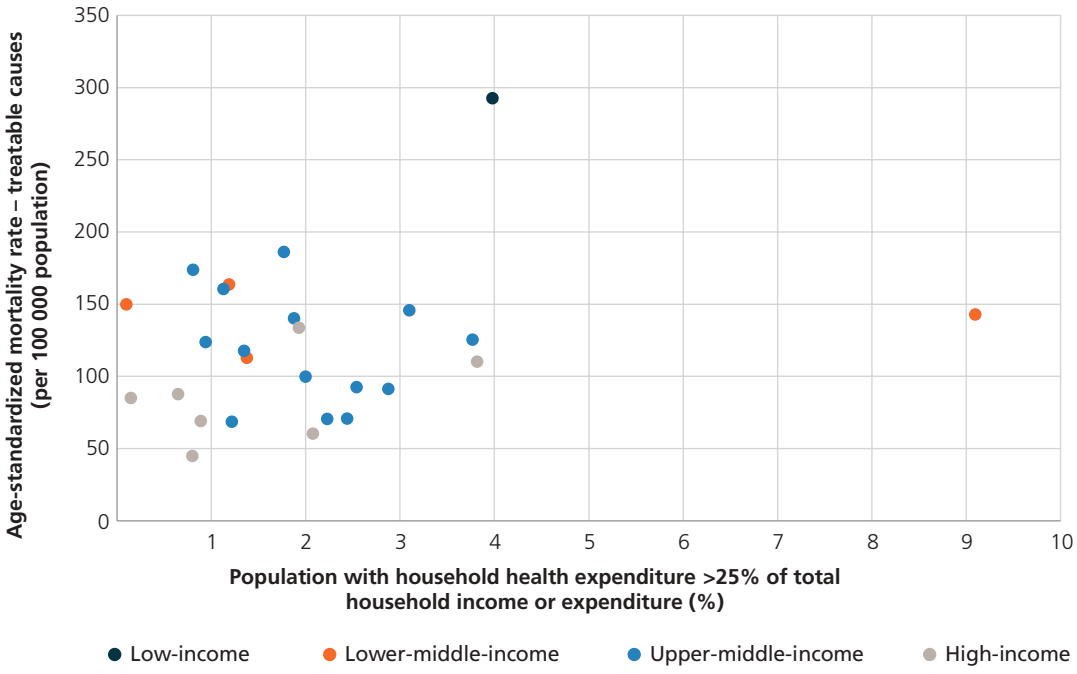
When analyzing PAPM by the level of financial protection, a marginal trend is identified, with countries with higher levels of mortality having greater catastrophic expenditure to the threshold of 25% of consumption or income of the households, and a clearer trend when including the relative poverty line, that is, higher PAPM when there is lower financial protection (Figure 26).

FIGURE 26 **Relationship between potentially avoidable premature mortality and financial protection in health of households, Region of the Americas**

26A. Potentially preventable premature mortality and impoverishing health expenditure



26B. Potentially treatable premature mortality and impoverishing health expenditure



Source: PAHO calculations based on data obtained from the WHO Global Health Observatory (https://www.who.int/data/gho/data/major-themes/universal-health-coverage-major), and PAHO data on potentially avoidable premature mortality.

The results presented on out-of-pocket expenditure, financial protection, and the relation to PAPM require a deeper reflection. There is evidence that catastrophic expenditure leads to inequitable use of the health services *(102)*.

Strengthening of intersectoral coordination to address the social determinants of health

Intersectoral action to address the social determinants of health is a responsibility of health authorities. In order to fulfill this function, it is necessary to identify these determinants and implement actions of cooperation and/or articulation with other institutional sectors that implement interventions with potential impact on these determinants and mortality. Table 21 presents the weight of the social determinants through the incidence of some structural stratifiers on PAPM in the Region.

This line of argument justifies the need for expanding the influence of ministries of health in order to contribute to the development of social protection systems that make it possible to mitigate the poverty levels, inequalities, and inequities that prevail in the corporate and economic structure of several countries of the Region. This approach should begin with an analysis of the territorial situation, considering the particular condition of each country or region *(45)*.

The interventions included in social protection schemes include contributory and noncontributory components and, in both cases, the exercise of leadership by the health authorities assumes different types of responsibility. Among noncontributory interventions, one can mention transfers, in cash or in kind, subject or not to shared responsibility (programs of conditional transfers, social pensions, or others), consumption subsidies, emergency jobs, and promotion of and access to social services. In the case of conditional transfers, the role of health authorities has been essential in identifying requirements in terms of health checkups and care that need to be monitored in the beneficiary population. These types of measures have made it possible to facilitate access to health services for vulnerable populations, especially for groups of children and pregnant women.

TABLE 21 **Structural stratifiers of potentially avoidable premature mortality and relation to the capacity of health systems, Region of the Americas**

STRUCTURAL STRATIFIERS OF PAPM	REGIONAL AVERAGE	LB	UB	LINEAR EFFECT INDEX	LB	UB	ASYMPTOTIC EFFECT INDEX	LB	UB
Gross domestic product	138.6	138.3	138.8	–0.006	–0.0012	0.0	–59.9	–97.1	–22.6
Schooling years	138.6	138.3	138.8	–10.1	–16.3	–3.9	–275.5	–430.0	–121.0
Sanitation coverage	138.6	138.3	138.8	–1.9	–3.0	–0.7	–333.4	–521.6	–145.2

Note: LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.

Among the contributory components, one can mention contributory pension systems (old age, disability), health insurance, unemployment benefit, and leave (maternity/paternity, sickness). Associated to these is also the possibility to integrate regulation of the labor market, including regulation and supervision of labor standards aimed at promoting and protecting decent work: with the provision of contracts, collective bargaining on working conditions, occupational safety, minimum wage, elimination of child labor, and political antidiscrimination. Although the share of health authorities in the contributory component occurs in various ways, it is necessary to point out that health authorities are responsible for regulating and coordinating the social security system for health, through the development and expansion of the system of health coverage in the formal labor market, with the strengthening of the regulation of the working conditions of the members and the living conditions of every member of their family group.

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Chapter 6

Potentially avoidable premature mortality in the context of health emergencies and disasters

Health emergencies and disasters are direct contributors to PAPM, as deaths resulting from such events are mostly avoidable, and thus require a strengthened response capacity to reduce the consequences. This response should rely not only on the public health and healthcare systems but also on a broader national approach acting in a coordinated and timely fashion to face those events.

The increasing burden of such events could be described by the number of emergencies. Between 2000 and 2020, a total of 13 884 disasters were reported throughout the world, an increase of 44% from the previous two decades. The Region of the Americas was the third most affected (19%) by disasters after Asia and Africa, with more than 288 798 deaths, and faced the highest financial toll of more than

USD 1.26 trillion. The most common events were hydrometeorological, which caused 82% of damage throughout this period *(103)*.

Earthquakes in Chile and Haiti (2010) and Ecuador (2016) caused considerable damage that affected health services by reducing their capacity to provide effective care for the population *(104)*. In September 2017, two earthquakes struck Mexico and caused 457 deaths. A total of 250 000 individuals were provided with shelter, and the economic losses were calculated at USD 1.5 billion *(105)*. In the same month, the category 5 hurricanes Irma and Maria struck Puerto Rico. These hurricanes severely affected the provision of basic services, disrupting businesses, schools, healthcare institutions, individuals, and governments at all levels *(106)*. Beyond the catastrophic social and economic effects on the island, the excess mortality in the following six months was estimated to range between 22% and 26% as compared to deaths in 2016 *(107, 108)*, with one-third of those deaths attributable to delayed or interrupted health care *(109)*.

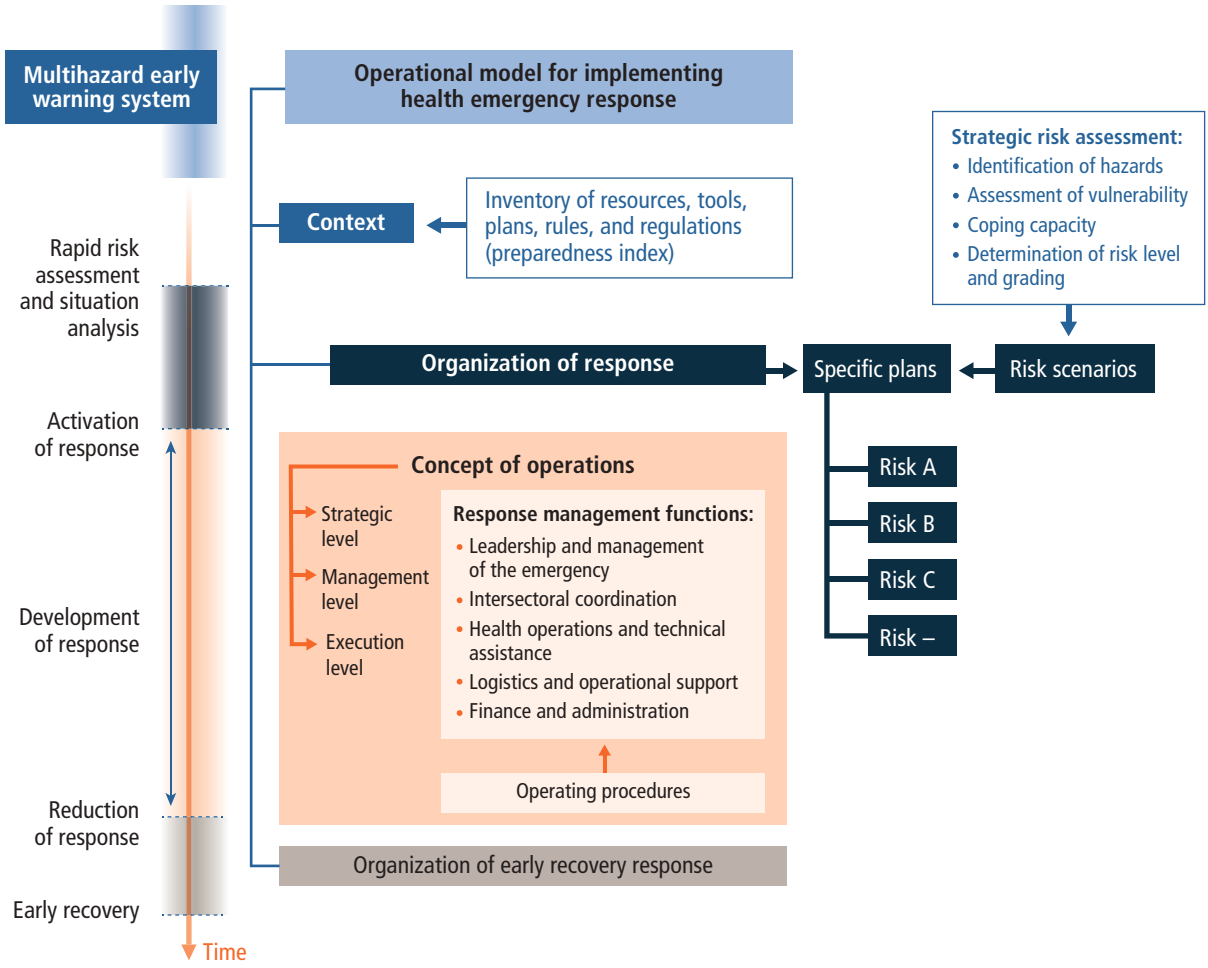
A common, efficient, coordinated multisectoral approach, comprising all-hazard and hazard-specific measures, is needed to ensure preparedness for all types of emergencies at the community, national, and international levels. At the national level, preparedness requires a continuous process for strengthening governance capacities and resources *(110)*. As outlined in the PAHO Health Sector Multi-Hazard Response Framework (Figure 27) *(111)*, in a health emergency or disaster, it is necessary to have the participation of multidisciplinary teams for a comprehensive and integrated approach, looking for a "substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries" *(112)*.

To attain this, countries are expected to continue implementing efforts to prevent new, and reduce existing, disaster risks through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political, and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience, with health resilience strongly promoted.

Faced with an epidemic, the application of procedures and protocols directed by professionals and national authorities should reduce the number of casualties, accelerating emergencies control, avoiding their growth to pandemic levels, and resulting in a lower fatality rate. In the event of a disaster, preventive measures and rapid response also contain damage to health.

These events entail both direct effects in terms of PAPM, and indirect effects due to the impact on health and public health systems, which reduces their response capacity for all conditions. Faced with events that generate disruptions in the provision of health services, the lethality of all conditions tends to increase. This is evident in the case of acute conditions, but it also occurs in chronic conditions when treatment is disrupted. Indirect deaths due to emergencies and disasters are therefore part of PAPM. In a scenario of important social inequalities, with poverty, a fragile

FIGURE 27 **Multihazard response framework with operational model for implementing health emergency response functions**



Source: PAHO.

economy, and a significant prevalence of risk factors (such as low rates for immunization coverage, tuberculosis, obesity, diabetes, hypertension, mental health), the unfolding of emergencies such as the COVID-19 pandemic tends to increase the toll on health.

Responsiveness status

The panorama in the Region prior to the arrival of the COVID-19 pandemic in early 2020 showed significant challenges in the

The panorama in the Region prior to the arrival of the COVID-19 pandemic in early 2020 showed significant challenges in the capacity to respond adequately to emergencies and disasters

capacity to respond adequately to emergencies and disasters, as evidenced by the effects caused by previous events, as disasters have affected the health infrastructure in several countries in the Region.

According to the monitoring of the implementation of the Plan of Action for Disaster Risk Reduction 2016–2021, approved by the Ministers of Health in 2016, the risk assessment and the preparation of the response plan are two critical aspects in which the countries of the Region presented areas for improvement of their critical capacities. Regarding the lines of action and objectives of the plan of action, significant progress was observed by 2020 on governance, such as the strengthening of structures in ministries of health for disaster management and multisectoral mechanisms for coordination in the field. By December 2020, an assessment of emergency and disaster risk had been carried out in 15 countries and territories, and was in progress in another 14. In 2016, six countries and territories in the Region reported having multihazard emergency response plans. As of 2020, nine countries had fully achieved this critical capacity, and 17 additional Member States were about to achieve it.

Regarding the countries and territories that include criteria for disaster mitigation and climate change adaptation in the planning, design, construction, and operation of health services, 10 countries from the Caribbean have achieved this indicator and another five are moving forward to its completion by the end of 2021.

Population at risk

Disasters affect the well-being and safety of persons, their communities, and countries, and represent a heavy burden in terms of human lives, quality of life, and economic costs. New risks have arisen in recent decades, as the exposure of individuals and assets has increased faster than decreases in vulnerability. Data from the *World Disasters Report 2018* show an increase in the number of events that required an emergency response, with the largest increase being biological operations, such as a response to epidemics *(113)*. For an integral approach and to appropriately address these events, a multihazard approach is required, one that considers biological, climatological, geophysical, hydrological, meteorological, nontechnological and human-caused, and technological and human-caused among other risk types. Biological emergencies imply, as a starting point, that the entire population is susceptible, which certainly represents a major challenge, as confirmed by the recent emergence of COVID-19. In these cases, the magnitude of the challenge depends on the transmissibility and severity of the new conditions, as well as the interplay of overlapping disasters such as hurricanes and volcanic eruptions.

A multihazard scenario: COVID-19 and disasters

On 3 November 2020, Hurricane Eta – a category 4 storm – impacted the coasts of Central America, leaving more than seven countries affected. A week later, the same Central American countries and the insular department of San Andres and Providencia (Colombia) would be affected by another category 4 storm, Hurricane Iota. The passage

of both hurricanes through Central America left more than 9.9 million people affected, dozens of communities isolated and inaccessible due to floods and landslides, and 740 health facilities affected – some with very severe damage and reported as inoperative *(114)*.

The countries affected present a multihazard scenario, where, in addition to the impacts of both Hurricanes Eta and Iota, the countries faced an ongoing COVID-19 pandemic that had been saturating their already vulnerable health services for months. The situation was worsened by preexisting epidemiological situations (dengue, malaria, leptospirosis) in some countries. Moreover, there were existing risks related to COVID-19 shelter management owing to insufficient access to personal protective equipment and the difficulties in implementing COVID-19 preventive measures, in addition to the limited access to health services and the difficulties of physical access due to flooding and road damage *(114)*.

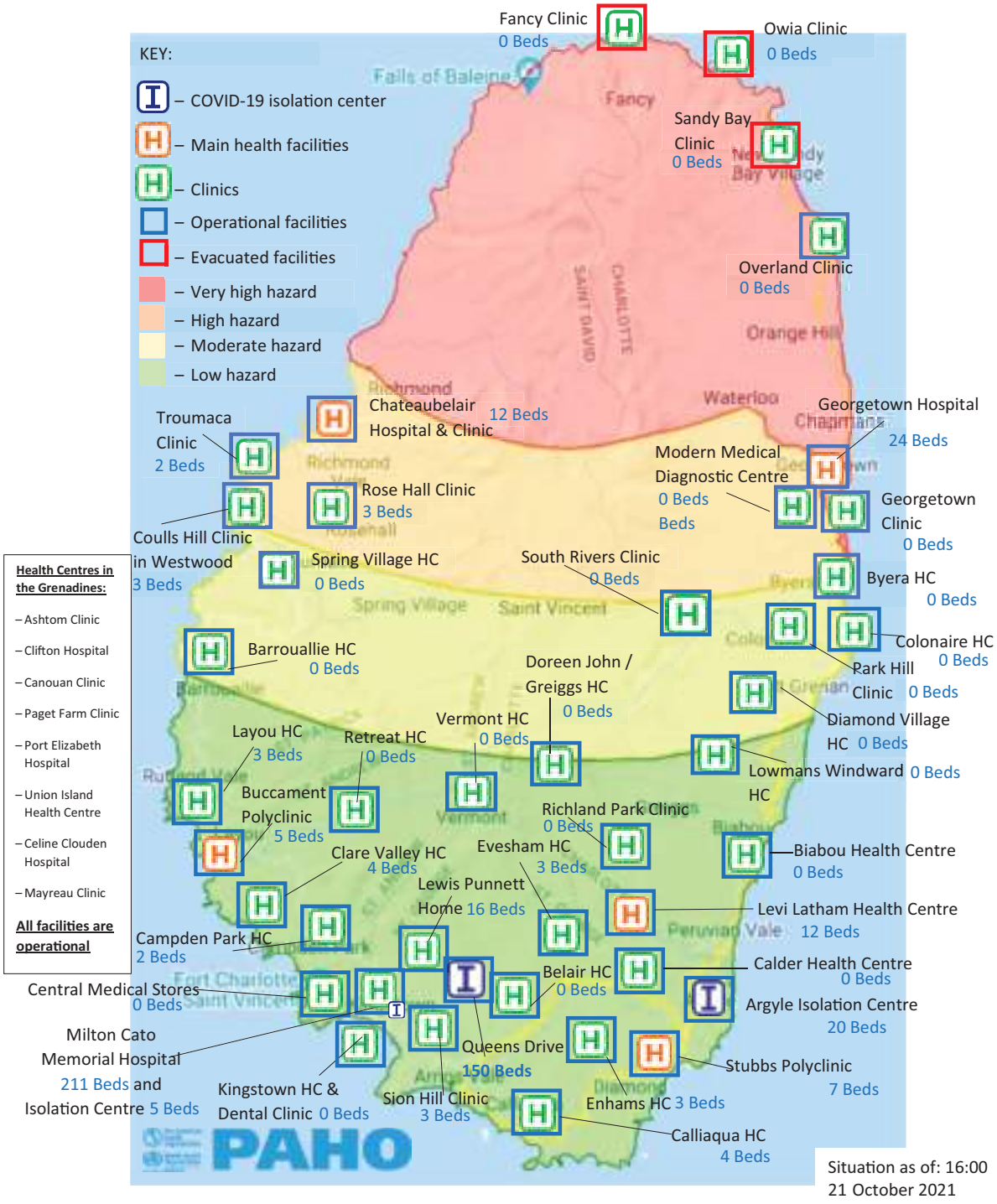
La Soufrière volcano, located in Saint Vincent and the Grenadines, began eruptive activity on 27 December 2020, with effusive eruption and the formation of a volcanic dome *(115)*, as well as changes to the crater lake and seismic events *(115)*. Finally, an explosive eruption occurred on 9 April 2021. By 12 April, the event had caused the evacuation of about 16 000 persons (approximately 14% of the country's population of 110 589). Significant disruption and restriction of access to health services has been observed due to the impact of the eruption on transportation as well as damage to health facilities. Figure 28 represents a powerful tool used by PAHO during emergency response. It supports health situation analysis, operations research, and surveillance for the prevention and control of health problems. Moreover, it provides analytical support for planning activities and interventions. Geographical information systems support the detection of urgent health needs and gaps, which revolve around ensuring safe and adequate shelter for the evacuated persons, and strengthening the health system's surge capacity to ensure continued access to essential and emergency care for vulnerable individuals and potential victims in the aftermath of the eruption while maintaining capacity to detect and treat COVID-19 patients.

The COVID-19 emergency

The COVID-19 pandemic has tested the effective response capacity of countries in the event of emergencies, while it has also made visible the magnitude with which an emergency can affect the health sector and the health of populations. The damage to the health of populations caused during 2020 by COVID-19 catapulted this previously nonexistent condition to one of the main causes of death in the Region. At the same time, the pressure that this emergency has exerted on the health services in the Region has generated very significant attrition in services that were already in a deteriorated situation.

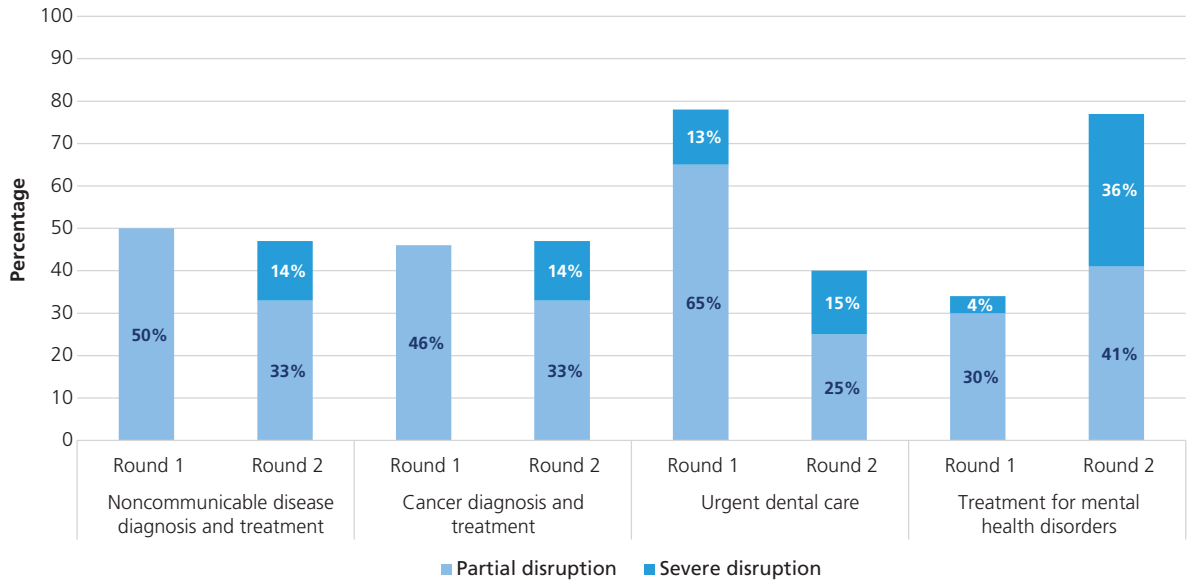
The disruption in the supply of services (Figure 29) because of the pandemic has resulted in not only the interruption of treatment and postponement of programmed interventions; it has also affected the screening and early detection of health conditions, as has been documented for several countries. Interruptions in the care process by service

FIGURE 28 **A risk map for implementing health emergency response functions, La Soufrière volcano, Saint Vincent and the Grenadines, October 2021**



Source: Reproduction of image from: Pan American Health Organization. La Soufrière volcano, Saint Vincent and the Grenadines. Situation report no. 38. Barbados: PAHO; 2021. Available from: https://www.paho.org/en/documents/ecc-vct-soufriere-volcano-situation-report-38.

FIGURE 29 **Percentage of countries reporting disruptions in noncommunicable disease and mental health services, Region of the Americas**



Note: Comparison between rounds 1 and 2 of the national surveys on the continuity of essential health services during the COVID-19 pandemic. Preliminary data pending validation and final analysis.

Source: PAHO.

providers have been a consequence of the suspension of elective procedures, a reduction in staff due to their reassignment, and supply problems, among other factors.

In the Region, among the countries for which information is available, the interruption in health services has affected between 24% and 80% of services, with a higher percentage among lower-income countries. Vaccination campaigns, checks on healthy children, prenatal checks, institutional care at childbirth, and family planning actions, among other services, have been interrupted. As illustrated in Figures 30 and 31, administration of DTP3[8] and MMR1[9] vaccines during 2020 was below the level in 2019 as well as the target population for the year.

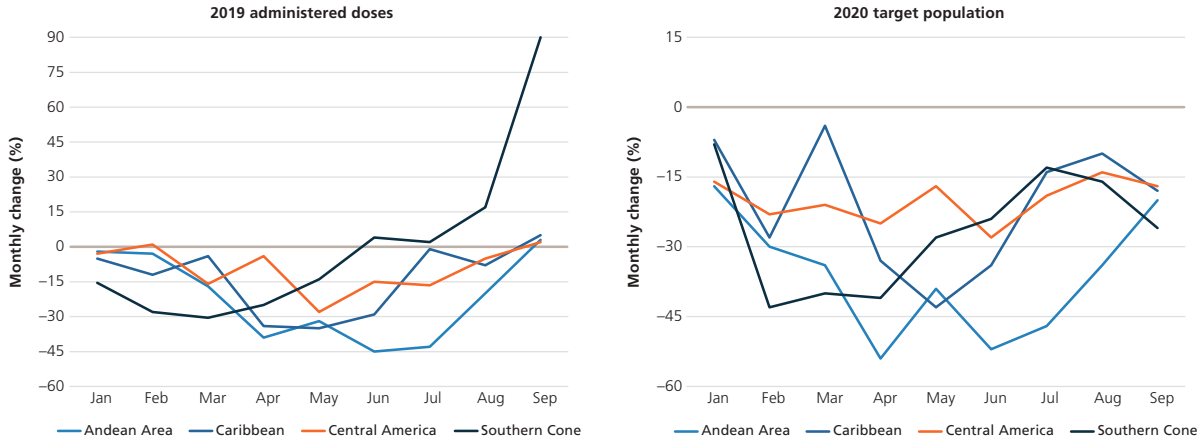
Similarly, the detection actions of both infectious conditions such as HIV, tuberculosis, and malaria as well as chronic conditions such as diabetes, hypertension, and obesity have been affected. For example, in the United States, it had been estimated by September 2020 that 41% of adults had forgone health care, both due to fear and misinformation, as well as mobility limitations due to the pandemic, affecting both routine and emergency care. The percentage of adults forgoing attention is even higher for socially vulnerable groups and for people with chronic conditions and mobility limitations *(116)*.

As shown in Figure 32, in 2020, it is estimated that 890 000 direct deaths in the Region

8 Vaccine against diphtheria, tetanus, and pertussis (whooping cough).

9 Vaccine against measles, mumps, and rubella.

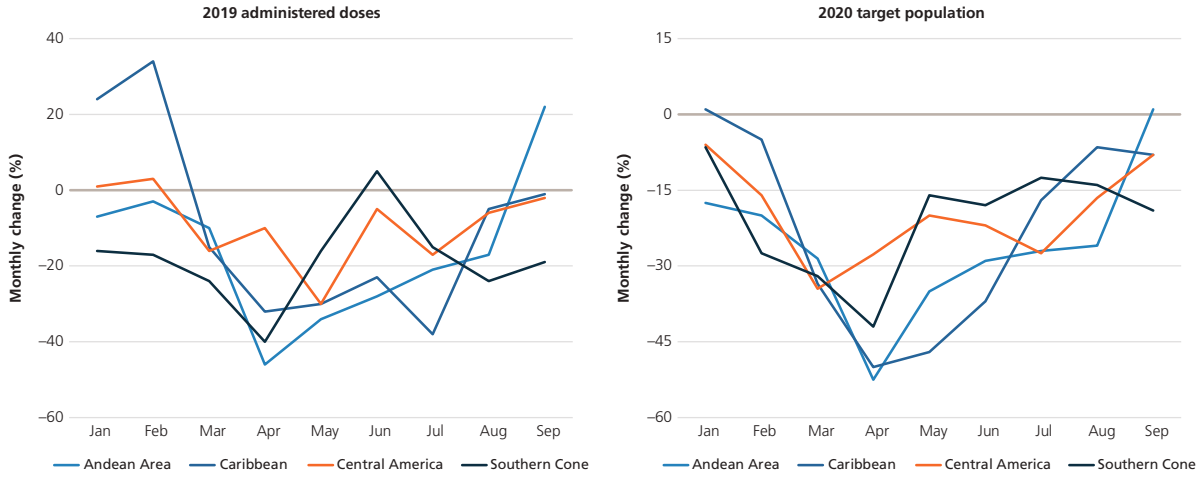
FIGURE 30 DTP3 vaccine 2020 relative shortfall distribution by subregions of Latin America and the Caribbean



Note: Number of DTP3 doses administered by month.

Source: Data provided by 28 Member States representing 70% of the total population.

FIGURE 31 MMR1 vaccine 2020 relative shortfall distribution by subregions of Latin America and the Caribbean



Note: Number of MMR1 doses administered by month.

Source: Data provided by 28 Member States representing 70% of the total population.

FIGURE 32 Forecast of leading causes of death, Region of the Americas, 2020

2020

	Causes	No.	Percentage
1	Ischemic heart disease	1 101 131	15.2
2	Stroke	481 933	6.7
3	Alzheimer disease and other dementias	393 987	5.5
4	Chronic obstructive pulmonary disease	381 710	5.3
5	Lower respiratory infections	319 730	4.4
6	Diabetes mellitus (excluding chronic kidney disease due to diabetes)	286 605	4.0
7	Tracheal, bronchus, and lung cancers	258 414	3.6
8	Kidney diseases	256 314	3.5
9	Interpersonal violence	195 485	2.7
10	Hypertensive heart disease	158 710	2.2
11	Road injury	156 173	2.2
12	Cirrhosis of the liver	144 343	2.0
13	Colon and rectal cancers	134 939	1.9
14	Breast cancer	110 446	1.5
15	Prostate cancer	98 415	1.4
16	Self-harm	98 215	1.4
17	Neonatal conditions	87 112	1.2
18	Drug use disorders	86 758	1.2
19	Pancreatic cancer	86 659	1.1
20	Falls	81 271	1.1
	Total	7 225 073	100.0

2020 (forecast)

	Causes	No.	Percentage
1	Ischemic heart disease	1 101 131	13.6
2	COVID-19	890 000	11.0
3	Stroke	481 933	5.9
4	Alzheimer disease and other dementias	393 987	4.9
5	Chronic obstructive pulmonary disease	381 710	4.7
6	Lower respiratory infections	319 730	3.9
7	Diabetes mellitus (excluding chronic kidney disease due to diabetes)	286 605	3.5
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16	Prostate cancer	98 415	1.2
17	Self-harm	98 215	1.2
18	Neonatal conditions	87 112	1.1
19	Drug use disorders	86 758	1.1
20	Pancreatic cancer	86 659	1.0
	Total	8 115 073	100.0

Communicable, maternal, perinatal, and nutritional conditions
Noncommunicable diseases
Injuries

Source: PAHO.

were caused by COVID-19, a condition that was nonexistent until 2019. In this scenario, COVID-19 would have become the second cause of death in the Region by 2020, and the first for some countries.

The negative impact of the COVID-19 pandemic

The deaths from the pandemic are generating a setback in life expectancy at birth in 2020. The negative impact of COVID-19 is also affecting the structure of populations. In the United States, initial estimates of this show a life expectancy at birth with the lowest levels since the beginning of the twenty-first century, regardless of sex and ethnicity *(117)*.

Evidence from different countries indicates that those people with a greater degree of social vulnerability have a higher incidence of COVID-19 and, once infected, a higher probability of dying from this condition, after controlling for sex and age *(118–122)*.

Furthermore, the sequelae of COVID-19 will increase the burden of the disease in the coming years, both in terms of people who have had the disease and present sequelae of it, and in terms of aspects of mental health more broadly. The confinement and in general the uncertainty caused by the pandemic are causing an increase in symptoms of depression and anxiety. For example, in Argentina (Figure 33), it is estimated that 47% of the population presents symptoms of depression and 53% of anxiety *(123)*, and medical human resources are facing the same situation *(124)*.

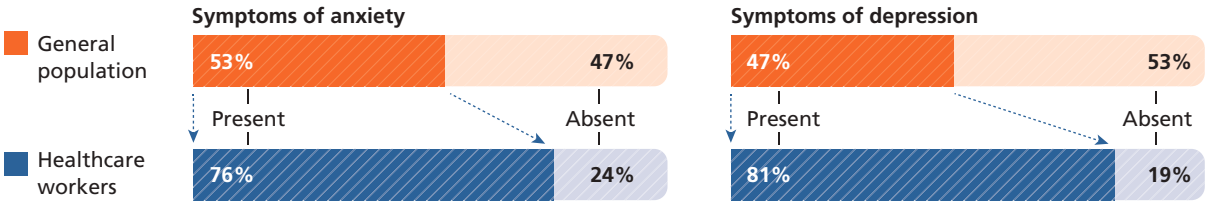
Evidence from different countries indicates that those people with a greater degree of social vulnerability have a higher incidence of COVID-19 and, once infected, a higher probability of dying from this condition

The excess mortality from other causes than generated by COVID-19 is closely related to the disruption in the provision of health services that the pandemic has caused

The excess mortality from causes other than those generated by COVID-19 is closely related to the disruption in the provision of health services that the pandemic has caused, due to mobility restrictions and the perception of risk, both of which have reduced demand, as well as the reconversion of establishments and personnel restrictions, which have limited the offer of services.

As of April 2021, eight countries in the Region had provided information on excess mortality: Brazil, Canada, Chile, Colombia, Ecuador, Mexico, Peru, and the United

FIGURE 33 **Mental health among general population and healthcare workers in Argentina, 2020**



Source: Based on information provided in Badellino H, Gobbo ME, Torres E, Aschieri ME. Early indicators and risk factors associated with mental health problems during COVID 19 quarantine: Is there a relationship with the number of confirmed cases and deaths? Int J Soc Psychiatry. 2021;67(5):567–575. Available from: https://journals.sagepub.com/doi/10.1177/0020764020966020; Giardino DL, Huck-Iriart C, Riddick M, Garay A. The endless quarantine: the impact of the COVID-19 outbreak on healthcare workers after three months of mandatory social isolation in Argentina. Sleep Med. 2020;76:16–25. Available from: https://doi.org/10.1016/j.sleep.2020.09.022.

States for the year 2020. Deaths from these countries comprise around 82% of deaths occurring in the 33 countries of the Americas that are reported in the WHO Global Health Estimates. The information can be accessed on the websites of the ministries of health of the countries as preliminary data.[10] Despite differences in methodological approach, the results give an idea of the magnitude in excess mortality from deaths related to COVID-19 and from other causes. Figures show that excess mortality in these countries ranged from 4.9% to 84.7%, with a total of 1 322 674 deaths over the 5 609 097 expected by 2020.

10 All the systems were most recently accessed on 27 April 2021.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Chapter 7

Prospects for reducing potentially avoidable premature mortality by 2030

As documented in the preceding chapters, over the past two decades, the countries of the Americas have achieved significant reductions in the levels of both PAPM and distributional inequality. Although these achievements cannot be attributed exclusively to the performance of health systems, the evidence presented in this report indicates that the guarantee and quality of access and universal coverage play fundamental roles.

PAPM represented 35% of all deaths in the Region in 2019, with a higher share for males compared to females (41% vs. 29%). External causes, particularly interpersonal violence and road injuries, contributed to this difference. Men are at higher risk of dying prematurely from an avoidable cause compared to women, with this difference being more marked among preventable causes. Targeted health policies should be developed for both women and men.

Between 2000 and 2019, there was a dual trend in the Region of a reduction in the average regional PAPM rate with a simultaneous reduction in the gradients of absolute and relative inequality of PAPM between countries; that is, a scenario

of reduction in premature mortality and inequality in its distribution. Nevertheless, most countries showed rates above the regional average, indicating that inequities within the Region persist and should be addressed.

The expansion of access to health services and improvements in their quality, as well as the positive transformation of the social determinants of health – especially the removal of barriers to health opportunities and effective health coverage – are essential conditions for progress in reducing the risk of PAPM in an equitable manner, in terms of both preventable and treatable causes, thus contributing to the expansion of healthy lives, well-being, and sustainable development.

The countries of the Americas need to strengthen epidemiological surveillance, analysis, and monitoring of PAPM in order to achieve the SDG 3 Targets and strengthen preventive and treatment interventions to reduce the burden of preventable mortality, which will allow progress toward the achievement of the SDG 3 Targets.

However, the COVID-19 syndemic has dramatically exposed critical realities and weaknesses in both population health status and health systems and services, highlighting the ubiquity, persistence, and depth of social inequalities in health and the limited systemic resilience to ensure continuity of health services.

The effect of the pandemic is estimated to imply a regression of 20 years in the progress observed in PAPM, both in terms of the preventable and the treatable components.

The COVID-19 syndemic has dramatically exposed critical realities and weaknesses in both population health status and health systems and services

The persistence of inequalities in health coupled in a syndemic effect with the COVID-19 pandemic has put the effective response capacity of countries to the test.

Overall, aspects that show an important resilience of health systems are identified in order to face emergencies, particularly when these have a massive impact – as opposed to situations focused on vulnerable populations – and, in this sense, a broad organizational response is generated.

The response to the pandemic has shown that certain organizational barriers and restrictions (reallocation of resources, training strategies, etc.) can be addressed effectively, which is learning for future events. At the same time, it has shown that socially vulnerable populations tend to be more affected by emergencies, both because of their already reduced ability to access quality services, and because their living circumstances cause them greater exposure to emergencies and disasters.

From this perspective, this final chapter proposes seven considerations for action to promote the reduction of PAPM in the Region

of the Americas by 2030, the target year for the transformative actions committed to in the global 2030 Agenda and SHAA2030.

1. Prioritize and strengthen the implementation of the 2030 Agenda at national and subnational levels, especially the application of strategies and interventions focused on the reduction of PAPM and its inequalities.

As documented in Chapter 3, 59% of the current mortality burden explicitly prioritized under SDG 3 (Ensure healthy lives and promote well-being for all at all ages) corresponds to PAPM (75% in countries with lower levels of sustainable development, and 50% in those with higher levels of sustainable development), which, in turn, is dominated by noncommunicable causes (68% of the 1.5 million potentially avoidable premature deaths associated with SDG 3) – cardiovascular disease, cancer, chronic respiratory disease, and diabetes, as well as suicide, traffic collisions, and air pollution. In this regard, it is strategic to focus efforts to reduce PAPM on the implementation of cost-effective interventions aimed primarily at the most socially disadvantaged and/or vulnerable populations and territories, including the promotion of health, the guarantee of rights, and the improvement of living conditions.

Prioritize and strengthen the implementation of the 2030 Agenda at national and subnational levels

2. Make PAPM visible in the context of health emergencies and disasters: all excess deaths resulting from social inequity in emergencies and disasters are PAPM.

As has been clearly observed since 2020, the probability of death from COVID-19 has not been distributed homogeneously throughout the population, but has been disproportionately concentrated in the most socially disadvantaged segments. This reality is observed in all health emergencies and disasters, events that tend to generate instantaneous increases in premature mortality, which are potentially avoidable when considering the challenges observed in the response to them. In order to minimize the risk of PAPM and its consequences in situations of health emergencies and disasters, it is essential to undertake cross-sectoral actions that develop knowledge, skills, aptitudes, and other individual abilities to manage adversity in a healthy manner; in other words, human capital. It is also essential to strengthen the pool of common social resources, based on norms of reciprocity, which generates social cohesion, credibility, and trust in institutions and a sense of solidarity and general concern for the collective well-being, i.e., social capital. In addition, it is important to influence the mechanisms that lead to the implementation of plans, i.e., that they are not only strengthened but also put into practice when emergencies and disasters occur.

3. Optimize health information systems and strengthen the processes of analysis, monitoring, and evaluation of PAPM, including the availability of disaggregated data.

Improving access, coverage, and quality of health services is the priority measure for

reducing the magnitude of PAPM. However, it is currently difficult to assess the real impact of the conditions of access, coverage, and quality that determine the behavior of the indicator, as the level of detail of the data available to measure PAPM does not make it possible to distinguish which causes of mortality are most closely related to the different levels of care or types of possible interventions (i.e., individual services or population-based services). Thus, for example, access to cancer treatment may depend on the availability of equipment or specialists at the point of care, while access to cancer prevention and early detection services may be influenced by factors such as the capacity of facilities at the first level of care, the scope of health promotion campaigns, the type of prevention interventions implemented, and the degree of knowledge of the population about cancer, among others.

In this sense, addressing PAPM and adequately guiding the health response based on evidence require reliable data, robust metrics, and hard indicators that capture the effect of access, coverage, and quality conditions on mortality, for example, barriers to access, the capacity of the first level of care, and the quality of health services received. Given that the availability of this type of information is scarce, it is essential to implement radical changes in data capture systems – guaranteeing their quality attributes – and information management processes so that the information can be used effectively for the quantification and systematic tracking of PAPM, enabling robust analyses in terms of magnitude, trend, and distribution, including the analysis of its social determinants. In this framework, it is important to recognize that the capacity of health systems to ensure conditions of access to different quality health services and public health interventions may vary according to the particular local contexts at each territorial scale. Therefore, it is necessary to promote actions for monitoring and evaluation of PAPM and its causes at the subnational level, using mixed-methodological approaches that allow characterization of the factors that affect the capacity of health systems from the perspective of users and health personnel at those levels.

In support of the need to strengthen information systems, PAHO has four active resolutions whose normative influence impacts PAPM, as described in Table 22.

4. Promote and institutionalize the monitoring of social inequalities in PAPM, allowing the systematic tracking of distributional changes and not only of changes in averages in the risk of death from potentially avoidable causes, facilitating the implementation of concrete proequitable interventions to reduce PAPM and leave no one behind.

As documented in Chapter 3, in the Americas by 2019, the absolute risk of potentially avoidable premature death was twice as high in the lowest sustainable development quintile of countries as in the opposite quintile, representing an excess of 189 deaths per 100 000 people. To be able to "take the pulse" of social inequality in PAPM not only between countries but also mainly within each country, it is essential to institutionalize the monitoring of health inequalities as part of the exercise of the first essential function of public health, the analysis of the health situation. This implies strengthening health information systems to disaggregate data at the territorial level

TABLE 22 **Active mandates and resolutions of the Pan American Health Organization related to information systems and their normative influence on potentially avoidable premature mortality**

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY (PAPM)
Information management	
CD57.R9 – Plan of Action for Strengthening Information Systems for Health 2019–2023	It establishes the approach of information systems as fundamental tools for health decision-making, policy formulation, monitoring and evaluation – the impact of which affects PAPM – based on reliable, available, and timely data.
CSP29.R4 – Plan of Action for the Strengthening of Vital Statistics 2017–2022	It establishes the relevance of national and sectoral statistics to strengthen health information systems and thus the monitoring of PAPM.
CD48.R15 – Public Health, Innovation, and Intellectual Property: A Regional Perspective	It recognizes the central strategic interaction between public health, innovation, and intellectual property rights, highlighting the need to promote research and technological innovation in the pharmaceutical, scientific, and industrial sectors, the results of which will impact population health and, consequently, PAPM.
CD49.R10 – Policy on Research for Health	It recognizes research as an essential function of public health, promoting its approach as a tool to elucidate the nature and extent of health problems, including PAPM, identify effective, safe, and appropriate interventions and strategies, and promote equity in health through action on the social determinants of health.

Source: PAHO.

and, in the case of death certificates, at the individual level to capture information on social determinants, such as level of wealth, level of schooling, sex, age, and ethnicity, among others relevant to the national context. It is also necessary to invest in strengthening the analytical skills of human resources for the implementation of a methodology to summarize in standard metrics the magnitude and trends of inequalities in PAPM, as well as to generate advocacy and inform decision-making on equity, especially in the monitoring of the nine SDG 3 Indicators directly related to mortality.

5. Consolidate and strengthen the institutional capacities of the steering role of the health authorities to lead the formulation and implementation of health systems transformation policies that respond to the health needs of the population; distributive inequality; social, economic, and environmental determinants; risk factors; and the response capacity of the health services system.

The strengthening of the stewardship and governance of the health system should take as a general reference the new framework of essential public health functions, to recognize the institutional capacities of the health authorities necessary in (1) the analysis and evaluation of health conditions and their determinants; (2) the processes of formulation and implementation of health policies; (3) the regulation of mechanisms for the allocation of critical resources that serve

Consolidate and strengthen the institutional capacities of the steering role of the health authorities to lead the formulation and implementation of health systems transformation policies

to strengthen the effectiveness of the policies; and (4) the management of the conditions that guarantee access to health interventions. These interventions should include (1) public health actions that affect risk factors, vector control, and environmental determinants; (2) individual health services integrated into priority health programs and with a model based on people and communities; and (3) the necessary complementation of intersectoral interventions that address the social determinants of the population's health.

To carry out this process, it is necessary to influence the general framework that defines the institutional norms determining the mechanisms for allocating resources and regulating the behavior of the actors involved in the production of the aforementioned health interventions. In a complementary manner, the process of policy formulation and implementation requires the existence and/or strengthening of political capacities to guarantee the viability of the transformation processes and their adaptation to the needs and expectations of the population. In this framework, the configuration of collective alliances of public and private actors is recommended that they, together with social participation processes, guarantee the accountability of the promoted institutional transformation processes.

Finally, it is essential to strengthen the structural institutional capacities of the State – in the health sector and other institutional sectors. This requirement refers to the need for all health sector agencies and organizational structures to have the human, financial, and infrastructure resources necessary to interpret and integrate the analysis of health problems and their determinants with the set of conditions related to the interventions to be implemented.

In support of the need to strengthen health services and systems, PAHO has 13 active resolutions whose normative influence has an impact on PAPM, as detailed in Table 23.

6. Improve and increase the capacity of health systems by strengthening mechanisms for regulating and allocating critical health system resources, including health financing, human resources for health, and medicines and other health technologies.

It is necessary to increase public resources for health through the expansion of fiscal space to enhance the positive effects of this spending on health outcomes and, in turn, to tend to eliminate the effects of out-of-pocket expenditure on household access and well-being as financial catastrophes and impoverishment. Public spending in this case is an investment that can support efforts to improve the health system as a whole and models of care guided

TABLE 23 Active mandates and resolutions of the Pan American Health Organization related to the performance of health services and systems and their normative influence on potentially avoidable premature mortality

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY (PAPM)
Health services and health systems performance	
CD53.R14 – Strategy for Universal Access to Health and Universal Health Coverage	It establishes the global approach to ensure that individuals and communities enjoy timely and equitable access to comprehensive, adequate, timely, quality health services without barriers to access, through instruments of governance, health stewardship, and management of services that impact population health and, consequently, PAPM.
CD55.R8 – Resilient Health Systems	It recognizes the vulnerability of health systems to health risks (i.e., disease outbreaks, pandemics, disasters caused by natural phenomena, among others), weakening their response capacity and worsening health outcomes such as PAPM. It highlights resilience as a fundamental attribute of well-developed health systems.
CD57.R13 – Strategy and Plan of Action to Improve Quality of Care in Health Service Delivery 2020–2025	It recognizes quality of care in the provision of health services as a determinant of population health and quality problems as barriers to access to comprehensive health services, especially for vulnerable populations, worsening outcomes such as PAPM.
CD45.R7 – Access to Medicines	It establishes the approach to access to medicines and other public health supplies as essential elements in the treatment of diseases and the reduction of PAPM, emphasizing the need to guarantee their availability under the principles of safety, quality, and efficacy.
CD50.R9 – Strengthening National Regulatory Authorities for Medicines and Biologicals	It recognizes the importance of the regulation and control of drugs and biological products – with the support of the Pan American Network for the Harmonization of Pharmaceutical Regulation (PARF Network) – to ensure safety in the treatment of diseases. The proper functioning of regulatory mechanisms positively affects potentially treatable premature mortality.
CD45.R9 – Observatory of Human Resources in Health	It recognizes human resources in health as a crucial element for achieving universal access to good-quality health services and, consequently, impacting PAPM, while stressing the need to strengthen human capacities in terms of availability, composition, distribution, and performance.
CD52.R13 – Human Resources for Health: Increasing Access to Qualified Health Workers in Primary Health Care-based Health Systems	It recognizes the strategic importance of human resources for health (and their impact on PAPM) in order to achieve the goal of universal health coverage based on the development of health systems based on primary health care, taking into account the Strategy for Health Workforce Competency Development in Health Systems Based on Primary Health Care and the WHO Global Code of Practice on the International Recruitment of Health Personnel.
CSP29.R15 – Strategy on Human Resources for Universal Access to Health and Universal Health Coverage	It establishes a comprehensive approach to human resources management within the framework of the Strategy for Universal Access to Health and Universal Health Coverage, which requires sufficient, equitably distributed, and adequately skilled human resources, in accordance with the needs of the communities, in order to impact health outcomes such as PAPM.
CD56.R5 – Plan of Action on Human Resources for Universal Access to Health and Universal Health 2018–2023	It establishes three strategic lines for the management of human resources in health: strengthening governance and stewardship; developing conditions and capabilities to expand access and health coverage with equity and quality; and coordinating with the education sector to respond to the needs of health systems undergoing transformation toward universal access and coverage.

TABLE 23 **Active mandates and resolutions of the Pan American Health Organization related to the performance of health services and systems and their normative influence on potentially avoidable premature mortality *(continued)***

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY (PAPM)
CSP28.R9 – Health Technology Assessment and Incorporation into Health Systems	It establishes the approach to the rational use of health technologies in health systems and their potential impact on PAPM. It highlights the achievements and progress made by the Health Technology Assessment Network of the Americas (RedETSA) and the subregional health technology assessment networks.
CD55.R12 – Access and Rational Use of Strategic and High-cost Medicines and Other Health Technologies	It recognizes the need for rational management of high-cost drugs and technologies essential for the treatment of some diseases, significantly improving people's quality of life and impacting health indicators such as potentially treatable premature mortality.
CD57.R11 – Strategy and Plan of Action on Donation and Equitable Access to Organ, Tissue, and Cell Transplants 2019–2030	It recognizes access to this health technology as a determinant of social welfare and, consequently, potentially treatable premature mortality. It promotes the progressive expansion and equitable and quality access to organ, tissue, and cell transplantation based on the policy framework for human organ donation and transplantation.
CSP28.R15 – Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards	It establishes a comprehensive approach to ionizing radiation in the fields of medicine, industry, agriculture and livestock, and research in order to reduce its possible negative effects on health – including PAPM – by implementing safety and radiation protection standards and measures.

Source: PAHO.

by the PHC strategy to reduce morbidity and mortality in the population, especially those with potentially avoidable causes.

7. Sustain and expand improvements in access to comprehensive, quality health services, including individual health services as well as those public health and intersectoral actions with an impact on PAPM.

This requires a systemic approach to provide both individual and population-based services within the community, at each level and point of care, at transitions of care, and across the life course, with due attention to the specific and differentiated needs of different population groups. These conditions must also be met in emergency and humanitarian assistance situations. A comprehensive and systemic approach to improve the quality of care requires strengthening the response capacity of the first level of care, within integrated health services networks. A well-organized, well-managed, and well-resourced health services network is needed, with hospitals and other outpatient care facilities and public health interventions, to promote health and respond comprehensively to the needs and health problems of the population. This network should facilitate people's access to health services and reduce both hospitalizations for situations that can be resolved in outpatient care and PAPM. It is important to implement actions that facilitate the empowerment and participation of people and communities in self-care, especially those groups that are socially disadvantaged and/or in situations of social vulnerability, but also

BOX 2 Controlling noncommunicable diseases to reduce potentially avoidable premature mortality

Noncommunicable diseases (NCDs) impose a high burden in terms of potentially avoidable premature mortality (PAPM). Most of the deaths from NCDs would be largely preventable and treatable by enabling health systems to respond in a more comprehensive, effective, and equitable manner. In response to this scenario, global and regional commitments have been made over the past 20 years to raise the profile of NCDs and their risk factors in health, social protection, and economic development agendas. Several of these commitments and initiatives are specific to each disease or its risk factors and present a detailed road map for addressing the implementation of policies and interventions and the healthcare response. Examples include the World Health Organization (WHO) Framework Convention on Tobacco Control,[1] the United Nations Decade of Action on Nutrition,[2] the International Code of Marketing of Breast-milk Substitutes,[3] the Global Strategy to Reduce the Harmful Use of Alcohol,[4] the Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem,[5] the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition,[6] the Global Action Plan on Physical Activity 2018–2030,[7] the Global Hearts Initiative,[8] the WHO Global Diabetes Compact,[9] and the Global Initiative for Childhood Cancer,[10] among others.

Given the growing importance of comprehensively addressing NCDs and their risk factors, the 2030 Agenda for Sustainable Development includes a specific related indicator under Sustainable Development Goal 3 (SDG Indicator 3.4.1)[11] with explicit targets for reducing premature mortality from cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases. The action plan to achieve this goal is implemented through technical packages that facilitate countries' implementation of policies and interventions. To support effective policy implementation, these technical packages provide evidence of the effectiveness of recommended interventions and a framework that guides action planning, implementation, and monitoring, and supports strengthened leadership, governance, multisectoral partnerships, advocacy, surveillance, and improved information systems. In general, the technical packages cover the three main pillars of NCD action: risk factors, management, and surveillance.

The risk factors technical package promotes the implementation of population-based policies to prevent and protect people from the use of, exposure to, and harmful effects of NCD risk factors by establishing environments where healthy choices are the easiest option. The management technical package addresses the detection, early diagnosis, treatment, and care of cardiovascular diseases, diabetes, chronic respiratory diseases, and cancer. Finally, the surveillance

BOX 2 Controlling noncommunicable diseases to reduce potentially avoidable premature mortality *(continued)*

technical package promotes the strengthening of the surveillance and information system as a key element for assessing progress and tracking indicators and targets for NCDs and their risk factors.

Countries in the Region of the Americas have advanced with solid scientific evidence and political commitments in the prevention and control of NCDs; however, work remains to be done to close the gap between planning and full and effective implementation. To reduce cardiovascular disease, WHO's Global Hearts Initiative is being actively implemented in 12 countries and 371 health centers in Latin America and the Caribbean. To improve the cancer profile, the Pan American Health Organization (PAHO) promotes the implementation of the global resolution on cancer prevention and control and – given the regional profile of childhood cancer and in line with the WHO Global Initiative for Childhood Cancer – has developed the CureAll Americas[12] technical package to improve diagnosis and treatment of childhood cancer. On diabetes, PAHO promotes the Global Diabetes Compact initiative to guide countries in reducing the risk of diabetes and emphasize the need to prevent overweight and obesity, unhealthy diet, and insufficient physical activity. Finally, to impact chronic respiratory diseases, significant progress has been made in tobacco control by establishing laws to protect people from secondhand tobacco smoke. This measure has been implemented in accordance with the guidelines established in the Framework Convention on Tobacco Control in 23 Member States. With the decree approved by Paraguay in December 2020, South America is now smoke-free in indoor public spaces and workplaces.

[1] World Health Organization. WHO Framework Convention on Tobacco Control. Geneva: WHO; 2003. Available from: https://fctc.who.int/who-fctc/overview.
[2] United Nations. Decade of Action on Nutrition. New York: UN; 2023 [cited 19 July 2023]. Available from: https://www.un.org/nutrition/.
[3] World Health Organization. International Code of Marketing of Breast-milk Substitutes. Geneva: WHO; 1981. Available from: https://www.who.int/publications/i/item/9241541601.
[4] World Health Organization. Global strategy to reduce the harmful use of alcohol. Geneva: WHO; 2010. Available from: https://www.who.int/publications/i/item/9789241599931.
[5] World Health Organization. Global strategy to accelerate the elimination of cervical cancer as a public health problem. Geneva: WHO; 2020. Available from: https://www.who.int/publications/i/item/9789240014107.
[6] World Health Organization. Comprehensive implementation plan on maternal, infant and young child nutrition. Geneva: WHO; 2014. Available from: https://www.who.int/publications/i/item/WHO-NMH-NHD-14.1.
[7] World Health Organization. Global action plan on physical activity 2018–2030: more active people for a healthier world. Geneva: WHO; 2018. Available from: https://apps.who.int/iris/handle/10665/272722.
[8] World Health Organization. Global Hearts Initiative. Geneva: WHO; 2016 [cited 19 July 2023]. Available from: https://www.who.int/news/item/15-09-2016-global-hearts-initiative.
[9] World Health Organization. WHO Global Diabetes Compact. Geneva: WHO; 2021 [cited 19 July 2023]. Available from: https://www.who.int/initiatives/the-who-global-diabetes-compact.
[10] World Health Organization. Global initiative for childhood cancer. Geneva: WHO; 2023 [cited 19 July 2023]. Available from: https://www.who.int/initiatives/the-global-initiative-for-childhood-cancer.
[11] United Nations. SDG Indicators. New York: UN; 2023 [cited 19 July 2023]. Available from: https://unstats.un.org/sdgs/metadata/.
[12] Pan American Health Organization. CureAll Americas. Washington, D.C.: PAHO; 2023 [cited 19 July 2023]. Available from: https://www.paho.org/en/cureall-americas.

Source: PAHO.

TABLE 24 Active mandates and resolutions of the Pan American Health Organization related to noncommunicable diseases and their risk factors and their normative influence on potentially avoidable premature mortality

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY
Noncommunicable diseases (NCDs) and risk factors	
CSP28.R13 – Strategy for the Prevention and Control of Noncommunicable Diseases	It establishes a comprehensive approach to NCDs, their risk factors, and determinants to reduce potentially avoidable premature mortality, with special emphasis on the implementation of cost-effective interventions to prevent and treat them in a timely manner throughout the life course.
CD56.R9 – Action Plan on Cervical Cancer Prevention and Control 2018–2030	It establishes the approach to cervical cancer from its preventable perspective through cost-effective and affordable interventions that reduce incidence and mortality by promoting vaccination, screening, treatment of precancerous lesions, and timely treatment of invasive cancer.
CD48.R2 – The WHO Framework Convention on Tobacco Control: opportunities and challenges for its implementation in the Region of the Americas	It recognizes tobacco use and exposure to tobacco smoke as causes of morbidity, disability, and premature mortality, with a high prevalence of use among adolescents and prematurity at age of onset. It addresses this NCD risk factor through the package of six key measures contained in the WHO's MPOWER.
CSP29.R12 – Strategy and Action Plan to Strengthen Tobacco Control in the Region of the Americas 2018–2022	It establishes a comprehensive approach to tobacco use and exposure to tobacco smoke as common risk factors for major NCDs, prioritizing Framework Convention on Tobacco Control interventions for the prevention and control of NCDs.
CD51.R14 – Action Plan to Reduce Harmful Alcohol Consumption	It establishes the approach to the harmful consumption of alcohol as a risk factor for the main NCDs from its preventable mortality perspective.
CD57.R12 – Action Plan to Eliminate Trans Fatty Acids from Industrial Production 2020–2025	It establishes a comprehensive approach to diet, particularly the consumption of trans fatty acids, as a risk factor for premature mortality and especially for mortality attributed to coronary heart disease, highlighting the need to implement simple, low-cost policy measures that have important long-term health benefits.

Source: PAHO.

BOX 3 Promoting women's, children's, and adolescents' health to reduce potentially avoidable premature mortality

Significant progress has been made in recent decades in the health of women, children, and adolescents. Improvements in survival are visible when looking at changes over time in specific mortality indicators, such as the maternal mortality ratio, as well as neonatal and under-5 mortality rates. To accelerate progress and end all preventable deaths, the evidence points to the need to address socioeconomic and environmental determinants and ensure that quality services and support systems reach women, children, and adolescents at the right time at every stage of life.

BOX 3 Promoting women's, children's, and adolescents' health to reduce potentially avoidable premature mortality *(continued)*

Maternal mortality is one of the most relevant indicators in public health, among other things, because of its impact on potentially avoidable premature mortality (PAPM) – most of these deaths have a preventable or treatable cause – and its sensitivity for evaluating the performance of national health systems. Although this cause of death has decreased over time, its social distribution is profoundly unequal between and within the countries of the Region.

Neonatal mortality, as a cause of potentially treatable premature mortality, indirectly measures the response capacity of health systems. It is crucial to improve effective coverage and quality of care at the time of delivery as most stillbirths, neonatal deaths, and maternal deaths occur at this time. Similarly, birth defects are increasingly recognized as a cause of preventable death and disability; however, the availability of data on incidence by type of birth defect is limited in the Region.

Health promotion from an early age in children and adolescents is an effective strategy to reduce the impact of chronic diseases on PAPM. However, in the Region, this population faces a triple burden of undernutrition, micronutrient deficiencies, and overweight/obesity. Despite measures being implemented from legislation and regulation to promote breastfeeding and nutrition interventions for women, children, and adolescents, working with other sectors and stakeholders is recognized as a major challenge to accelerate progress, not only in the coverage of health-related interventions, but more importantly in building sustainable and resilient food systems for healthy eating and an enabling environment for nutrition at all ages.

In this regard, the Pan American Health Organization has implemented four major strategies and plans of action that impact the main axes of women's, children's, and adolescents' health.

Ensuring the survival of mothers, children, and adolescents is a crucial public health goal, and efforts to achieve zero preventable deaths must continue and be energized. However, in line with the 2030 Agenda for Sustainable Development[1] and the Survive, Thrive, and Transform goals of the Global Strategy for Women's, Children's and Adolescents' Health,[2] efforts to save lives are incomplete if the life prospects of those who survive remain constrained by factors that could be effectively addressed, such as poverty, poor access to and quality of health services, restrictions in social protection programs, discrimination, and stigma, among others.

[1] United Nations. Transforming our World: The 2030 Agenda for Sustainable Development. New York: UN; 2015. Available from: https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981.
[2] World Health Organization. Global Strategy for Women's, Children's and Adolescents' Health data portal. Geneva: WHO; 2023 [cited 19 July 2023]. Available from: https://platform.who.int/data/maternal-newborn-child-adolescent-ageing/global-strategy-data.

Source: PAHO.

TABLE 25 Active mandates and resolutions of the Pan American Health Organization related to health promotion and their normative influence on potentially avoidable premature mortality

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY (PAPM)
Health promotion	
CD57.R10 – Strategy and Action Plan on Health Promotion in the context of the Sustainable Development Goals 2019–2030	It establishes a comprehensive approach to health promotion under an intersectoral and community-based approach with emphasis on the social determinants of health to move from a curative approach to a health promotion approach in order to achieve the targets of the Sustainable Development Goals (SDGs). Its implementation aims to prevent disease, thus having an impact on PAPM.
CD56.R8 – Action Plan for the Health of Women, Children, and Adolescents 2018–2030	It establishes the approach to the health needs of these population groups by implementing specific interventions with a focus on equity that have a positive impact on health – and consequently, on PAPM – under the principles of solidarity, equity in health, universality, and social inclusion.
CD54.R18 – Method for Estimating Maternal Mortality for the Period 1990–2015	It recognizes maternal mortality as a potentially preventable cause of premature death, its importance for the achievement of the SDGs, and the need for follow-up and monitoring by implementing a standard and comparable measurement methodology to reliably assess the behavior of this cause of death.
CD52.R14 – Evidence-based Policy Formulation for National Immunization Programs	It recognizes vaccination as a disease-preventive mechanism with a direct impact on potentially preventable premature mortality. The ample evidence of the effectiveness of this priority public health measure supports the ProVac Initiative of the regional immunization program.
CD54.R8 – Action Plan on Immunization	It establishes the approach to immunization as an instrument for the elimination and control of vaccine-preventable diseases – with an impact on potentially preventable premature mortality – considering social determinants and the achievement of universal coverage.
CSP29.R11 – Action Plan for the Sustainability of Measles, Rubella, and Congenital Rubella Syndrome Elimination in the Americas 2018–2023	It recognizes the imperative of implementing sustaining interventions in the face of diseases in the process of elimination, whose endemic re-transmission would negatively affect potentially preventable premature mortality.

Source: PAHO.

BOX 4 Addressing violence and road safety to reduce potentially avoidable premature mortality

Addressing violence is not a new issue for the Region of the Americas. Its impact on potentially avoidable premature mortality is well known, and its preventable potential is also well known. Interpersonal violence and traffic collisions are among the leading causes of potentially preventable premature mortality. Multiple global, regional, and national strategies address interpersonal violence, such as the 2030 Agenda for Sustainable Development,[1] which includes multiple targets on violence; the Regional Strategy and Plan of Action on Strengthening

BOX 4 Addressing violence and road safety to reduce potentially avoidable premature mortality *(continued)*

the Health System to Address Violence against Women;[2] the WHO Global Plan of Action to Strengthen the Role of the Health System within a Multisectoral National Response to Address Interpersonal Violence, in particular against Women and Girls, and against Children;[3] and, the inclusion of specific indicators on violence in the Strategic Plan 2020–2025 of the Pan American Health Organization (PAHO),[4] among others. All of these provide a solid framework for action.

According to the 2020 regional situation report on preventing and responding to violence against children, 25 countries reported having at least one action plan for the prevention of violence against children, and 29 reported having a national or subnational coordination mechanism. With the publication of *INSPIRE: Seven Strategies for Ending Violence Against Children*,[5] countries have access to an evidence-based framework that can guide action and measure progress. Regional averages indicate that countries have made progress in providing support for implementation and enforcement of laws, accompanied by approaches that promote education and life skills, as well as response and support services. However, substantial gaps remain with regard to safe environments and economic empowerment. The report also warned of considerable constraints in reaching all those in need of these interventions, highlighting the presence of inequities in preventing and responding to violence against children and adolescents. To support national or multisectoral plans to address violence against women, PAHO works closely with countries to strengthen health services for survivors of violence following PAHO/WHO guidelines. In addition, with the recent publication of *RESPECT Women: Preventing Violence Against Women*,[6] PAHO has strengthened its collaboration with countries and partners in implementing prevention strategies informed by the latest evidence.

To prevent road traffic injuries and deaths, evidence suggests that the enactment, implementation, and enforcement of legislation on key risk factors (drink-driving, seat-belt use, helmet use, speed limits, and child-restraint systems) are effective. Therefore, several countries in the Region have included specific legislation to ensure the use of these safety measures, although implementation remains a major challenge. However, despite advances in the postcrash care process – such as the availability of dedicated emergency telephone lines and training of prehospital care providers – there remain challenges in the accessibility and quality of emergency care that need to be overcome.

PAHO has advocated for a public health approach to impacting road safety and mobility, including direct technical cooperation with ministries of health and ministries of transport for the development and implementation of plans, policies, and legislative improvements, strengthening data collection and analysis, and reviewing experiences to expand the evidence base on what

BOX 4 Addressing violence and road safety to reduce potentially avoidable premature mortality *(continued)*

works to prevent road traffic injuries in the Americas. It has also strengthened its collaboration with stakeholders through the establishment of the Latin American Parliamentary Network for Road Safety and, in line with the commitments made at the 3rd Global Ministerial Conference on Road Safety in Stockholm and the 2020 United Nations General Assembly Resolution Improving Global Road Safety, continues to collaborate on an interagency basis in preparation for the second Decade of Action for Road Safety (2021–2030)[7] and its global plan.

[1] United Nations. Transforming our world: the 2030 Agenda for Sustainable Development. New York: UN; 2015. Available from: https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981.
[2] Pan American Health Organization. Strategy and plan of action on strengthening the health system to address violence against women. Washington, D.C.: PAHO; 2015. Available from: https://iris.paho.org/handle/10665.2/18386.
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[4] Pan American Health Organization. Strategic Plan of the Pan American Health Organization 2020–2025: Equity at the heart of health. Washington, D.C.: PAHO; 2020. Available from: https://www.paho.org/en/documents/paho-strategic-plan-2020-2025.
[5] World Health Organization. INSPIRE: seven strategies for ending violence against children. Geneva: WHO; 2016. Available from: https://www.who.int/publications/i/item/9789241565356.
[6] World Health Organization. RESPECT women: preventing violence against women. Geneva: WHO; 2019. Available from: https://www.who.int/publications/i/item/WHO-RHR-18.19.
[7] World Health Organization. Decade of Action for Road Safety 2021–2030. Geneva: WHO; 2023 [cited 19 July 2023]. Available from: https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/decade-of-action-for-road-safety-2021-2030.

Source: PAHO.

TABLE 26 Active mandates and resolutions of the Pan American Health Organization related to mental health and violence and their normative influence on potentially avoidable premature mortality

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY
Mental health	
CD53.R7 – Plan of Action on Mental Health	It recognizes the contribution of the high prevalence of mental disorders and the use of psychoactive substances to morbidity, disability, and potentially preventable premature mortality, promoting the implementation of available interventions with special emphasis on suicide prevention.
CD48.R11 – Preventing Violence and Injury and Promoting Safety: A Call for Action in the Region	It recognizes external cause injuries as the main causes of potentially preventable premature death, highlighting the availability of preventive actions in human safety, road safety, and urban health on risk factors common to the occurrence of various forms of external cause injuries.
CD54.R12 – Strategy and Action Plan on Strengthening the Health System to Address Violence against Women	It establishes a comprehensive approach to violence against women, recognizing its deep roots in gender inequalities and power imbalances between men and women that are perpetuated over time, as well as the transcendental role of health systems in the prevention of this problem and its consequences in potentially preventable premature mortality.

TABLE 26 Active mandates and resolutions of the Pan American Health Organization related to mental health and violence and their normative influence on potentially avoidable premature mortality *(continued)*

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY
CD50.R2 – Strategy on the Use of Psychoactive Substances and Public Health	It establishes the approach to psychoactive substance use disorders through access to preventive interventions and timely treatment, with a potential impact on potentially preventable premature mortality.
CD51.R7 – Action Plan on the Use of Psychoactive Substances and Public Health	It establishes a comprehensive approach to the consumption of psychoactive substances through prevention, detection, early intervention, treatment, rehabilitation, social reintegration, and cooperation of support services with a direct impact on potentially preventable premature mortality.
CD51.R8 – Strategy and Plan of Action on Epilepsy	It establishes a comprehensive approach to epilepsy in terms of prevention, treatment, and rehabilitation through concrete actions based on scientific evidence, particularly as a potentially treatable cause of premature mortality.
CD52.R10 – Chronic Kidney Disease in Central American Farming Communities	It recognizes the impact of the unusually high burden of chronic kidney disease in agricultural communities in Central America on the regional burden of potentially avoidable premature mortality, and urges the strengthening of institutional capacities in environmental and occupational health and the implementation of preventive interventions.

Source: PAHO.

BOX 5 Eliminating communicable diseases to reduce potentially avoidable premature mortality

The Region of the Americas has a significant record of achievement in the elimination of communicable diseases (CDs). Examples include the eradication of smallpox, the elimination of polio and neonatal tetanus, and the elimination of the endemic transmission of measles, rubella, and congenital rubella syndrome. The potentially treatable premature mortality from CDs has declined over time, reflecting the commitment of countries to end epidemics such as HIV/AIDS, tuberculosis (TB), malaria, neglected infectious diseases (as neglected tropical diseases are usually known in the Americas), and hepatitis. However, HIV/AIDS and TB still account for a significant share of the leading causes of potentially preventable premature death from CDs and the Region is far from achieving the elimination targets.

Achieving the goal of eliminating HIV as a cause of potentially avoidable premature mortality (PAPM) imposes major challenges on health systems. For example, it requires the implementation of strategies to remove access barriers that hinder timely diagnosis and timely initiation of treatment; actions to strengthen retention and adherence to treatment of people living with HIV; and the removal of structural, social, and personal barriers – including

BOX 5 Eliminating communicable diseases to reduce potentially avoidable premature mortality *(continued)*

widespread stigma and discrimination – toward people living with HIV, and key populations in healthcare settings. To increase the effectiveness of HIV treatment services and accelerate their impact on reducing AIDS-related mortality, the Pan American Health Organization (PAHO) supports countries in implementing World Health Organization recommendations that include rapid initiation of antiretroviral therapy; use of new and more potent agents; comprehensive TB treatment; sustainable dispensing of antiretrovirals; and access to telemedicine, among other measures that seek to maximize patient adherence and retention in treatment. In this regard, it is important to consider that, in line with the integrated health services delivery network model, HIV services should be decentralized and integrated at all levels of care in the health system, ensuring that the drug supply chain functions efficiently and that the continuous and sustained availability of essential drugs and laboratory products is guaranteed.

With regard to TB as a cause of PAPM, PAHO supports countries in the implementation of the End TB Strategy.[1] The road to elimination involves moving from low incidence to preelimination. Currently, 14 countries and territories with low TB incidence (i.e., fewer than 10 cases per 100 000 population) are moving toward preelimination. Reaching the end of TB (which includes reducing TB deaths) requires accelerating the expansion of early diagnosis with new rapid molecular tests and increasing TB case detection and contact TB case detection; scaling up TB preventive treatment (primarily in children under 15 years of age and people living with HIV); incorporating innovations with new oral treatment regimens for multidrug-resistant TB; supporting the introduction of dispensable pediatric drugs; integrating the response to TB with the response to HIV and other chronic diseases such as diabetes, cancer, and mental health, among others; and addressing the social and environmental determinants of CDs. Last, given the financial gap that hinders the implementation of certain actions in the response to TB, several countries have financial support; therefore, sustainability plans should be implemented that allow for continuity in the actions in the face of the gradual withdrawal of donors. In this regard, it is recommended that the Multisectoral Accountability Framework to Accelerate Progress to End Tuberculosis[2] be implemented to facilitate the achievement of international goals and commitments to end TB.

Finally, reducing the burden of PAPM requires action on strategically important diseases such as chronic hepatitis B and C – the cause of liver cancer and cirrhosis – malaria, and neglected infectious diseases. Overall, there is a need to emphasize timely diagnosis and effective treatment, strengthening the core capacities of health teams, and upholding global commitments to the elimination of these diseases (e.g., the Sustainable Development Goals, the PAHO Disease Elimination Initiative: A Policy for an Integrated Sustainable Approach to

BOX 5 Eliminating communicable diseases to reduce potentially avoidable premature mortality *(continued)*

Communicable Diseases in the Americas,[3] and Ending the Neglect to Attain the Sustainable Development Goals: A Road Map for Neglected Tropical Diseases 2021–2030,[4] among others) to provide opportunities to address the root causes of these diseases through integrated, interprogrammatic, and intersectoral approaches in which interventions are people- and community-centered and tailored to their specific context.

[1] World Health Organization. The end TB strategy. Geneva: WHO; 2019. Available from: https://www.who.int/publications/i/item/WHO-HTM-TB-2015.19.
[2] World Health Organization. Multisectoral accountability framework to accelerate progress to end tuberculosis by 2030. Geneva: WHO; 2019. Available from: https://apps.who.int/iris/handle/10665/331934.
[3] Pan American Health Organization. PAHO disease elimination initiative: a policy for an integrated sustainable approach to communicable diseases in the Americas. Washington, D.C.: PAHO; 2019. Available from: https://www.paho.org/en/documents/paho-disease-elimination-initiative-policy-integrated-sustainable-approach-communicable.
[4] World Health Organization. Ending the neglect to attain the Sustainable Development Goals: a road map for neglected tropical diseases 2021–2030. Geneva: WHO; 2020. Available from: https://www.who.int/publications/i/item/9789240010352.

Source: PAHO.

TABLE 27 Active mandates and resolutions of the Pan American Health Organization related to communicable diseases and environmental determinants of health and their normative influence on potentially avoidable premature mortality

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY (PAPM)
Communicable diseases (CDs) and environmental determinants of health	
CD57.R7 – PAHO Disease Elimination Initiative: A Policy for an Integrated Sustainable Approach to Communicable Diseases in the Americas	It establishes the approach to CDs as a major cause of premature mortality, recognizing the centrality of the first level of care for their prevention and timely treatment and the need to strengthen health systems within the framework of the Strategy for Universal Access to Health and Universal Health Coverage.
CD55.R5 – Action Plan for the Prevention and Control of HIV Infection and Sexually Transmitted Infections 2016–2021	It establishes the approach to HIV infection and other sexually transmitted infections as main causes of potentially preventable premature mortality, considering both the availability of drugs and technologies for their treatment and the need to work on the social impact of these epidemics on key populations in vulnerable conditions.
CD55.R7 – Malaria Elimination Action Plan 2016–2020	It establishes the approach to malaria as a potentially preventable and treatable cause of premature mortality, highlighting the need to impact the social determinants of health, implement effective measures for the prevention of contagion, and guarantee the management of cases with timely antimalarial treatment.
CD55.R9 – Action Plan for the Elimination of Neglected Infectious Diseases and Post-Elimination Measures 2016–2022	It establishes the approach to neglected infectious diseases that markedly affect high-risk and vulnerable population groups, promoting the implementation of effective preventive and treatment measures as protective mechanisms against PAPM.

TABLE 27 **Active mandates and resolutions of the Pan American Health Organization related to communicable diseases and environmental determinants of health and their normative influence on potentially avoidable premature mortality *(continued)***

MANDATE OR RESOLUTION	REGULATORY INFLUENCE ON POTENTIALLY AVOIDABLE PREMATURE MORTALITY (PAPM)
CD56.R2 – Entomology and Vector Control Action Plan 2018–2023	It establishes a comprehensive approach to the prevention, control, and elimination of certain vectors and vector-borne diseases to reduce their impact on PAPM. It supports the Global Vector Control Response 2017–2030 promoted by the World Health Organization.
CD54.R15 – Action Plan on Antimicrobial Resistance	It recognizes the importance of preserving antibiotics as essential medicines, which contribute significantly to reducing morbidity and mortality from infectious diseases, recognizing that antimicrobial resistance is a threat to health and a potentially treatable cause of premature mortality.

Source: PAHO.

in the planning and management of health services. eHealth is a stimulus factor in the context of the innovative dynamism of health organizations, as well as a support for the management of knowledge and networked talent and the improvement of the quality of care in the provision of comprehensive health services. The COVID-19 pandemic has shown that digital transformation is essential.

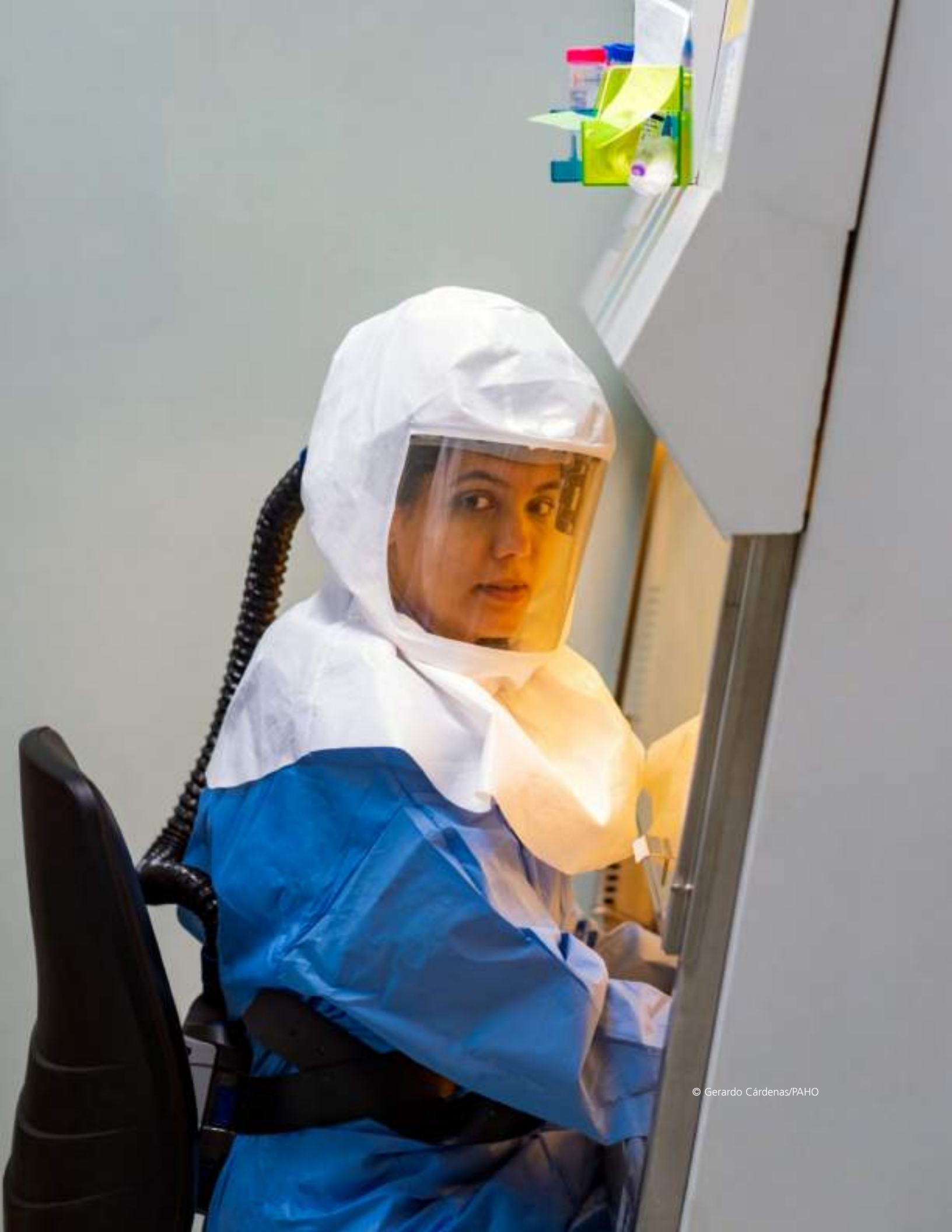
The heavy burden of NCDs on PAPM constitutes a major challenge for health systems. As previously documented, most premature deaths caused by NCDs can be prevented or treated by ensuring adequate health system performance along with multisectoral actions that include health across policy and social determinants approaches. Cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases, together with their four major commercially determined risk factors (alcohol consumption, tobacco use, diet, and physical activity) and their three major biologically determined risk factors (overweight and obesity, high blood pressure, and high blood glucose) have driven PAHO's framework for action on NCDs with important normative and operational developments (Box 2 and Table 24).

Similarly, as documented in Chapter 4 of this report, and recognizing the important moral and social burden that maternal mortality and neonatal mortality have on PAPM, PAHO has been vocal in advocating for the health promotion approach that seeks, under an intersectoral and community-based approach and with an emphasis on the social determinants of health, to move from a curative to a preventive approach to disease (Box 3 and Table 25). In the same vein, recognizing the burden of PAPM associated

Sustain and expand improvements in access to comprehensive, quality health services

with interpersonal violence and road traffic accidents, PAHO has developed a series of interventions and policy initiatives aimed at reducing suffering from these causes (Box 4 and Table 26). Finally, with regard to CDs, although the Region has made significant improvements, there is still an unfinished agenda that requires special attention to reduce their impact on PAPM (Box 5 and Table 27).

These seven considerations present a route for making a regional impact on PAPM, a goal aligned with the 2030 Agenda, specifically in the mortality component associated with SDG 3, and they are particularly relevant in the context of the COVID-19 pandemic. They are also a call to focus regional, national, and local efforts on fulfilling the commitments made by Member States in the Strategy for Universal Access to Health and Universal Health Coverage and on intersectoral action on the SEDH aimed at reducing the burden of PAPM and its social inequalities in order to fulfill the promise to leave no one behind on the path to sustainable development and social justice.



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Annexes

Annex 1. Causes of death included as potentially avoidable premature mortality

Causes of death included as potentially avoidable premature mortality

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE (INCIDENCE REDUCTION)	TREATABLE (CASE-FATALITY REDUCTION)	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1] RATIONALE FOR INCLUSION
I. Infectious diseases						
6	HIV/AIDS	100	B20-B24	x		This condition is preventable and will not require treatment if prevented.
1	Diarrheal diseases	110	A00, A01, A03, A04, A06-A09	x		Most of these infections can be prevented through prevention measures (e.g., improve water and food safety).
5	Hepatitis	185	B15-B19 (minus B17.8)	x		This condition is preventable and will not require treatment if prevented.
2	Tuberculosis	30	A15-A19, B90		x	Reduction in deaths from tuberculosis in several countries has been about evenly achieved through greater prevention (reduction in incidence) and earlier detection and more effective treatment (higher survival rates). J65: pneumoconiosis associated with tuberculosis
4	Sexually transmitted diseases, excluding HIV	40	A50-A60, A61, A62, A63, A64, N70-N73	x		These infections can be prevented through prevention measures.

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE	TREATABLE	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1]
				(INCIDENCE REDUCTION)	(CASE-FATALITY REDUCTION)	RATIONALE FOR INCLUSION
7	Childhood cluster diseases	120	A33, A34, A35, A36, A37, B05	x		Most of these infections can be prevented through vaccination. A80: acute poliomyelitis
3	Malaria	220	B50-B54, P37.3, P37.4		x	This condition is preventable and will not require treatment if prevented.
II. Neoplasms						
13	Lung cancer	680	C33, C34	x		This condition can be largely prevented through prevention measures (e.g., reduce smoking).
11	Colorectal cancer	650	C18-C21		x	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
16	Malignant neoplasm of breast	700	C50		x (female only)	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
12	Liver cancer	660	C22	x		This condition can be largely prevented through prevention measures (e.g., reduce smoking and alcohol consumption).
10	Stomach cancer	640	C16	x		This condition can be largely prevented through prevention measures (e.g., reduce smoking and alcohol consumption, and improve nutrition).
9	Esophageal cancer	630	C15	x		This condition can be largely prevented through prevention measures (e.g., reduce smoking).
17	Cervical cancer	710	C53		x	Cervical cancer can be prevented through vaccination and screening can also find precancerous abnormalities that can be treated to prevent cancer, but five-year survival after cancer detection is also relatively high and rising.

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE	TREATABLE	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1]
				(INCIDENCE REDUCTION)	(CASE-FATALITY REDUCTION)	RATIONALE FOR INCLUSION
8	Lip, oral cavity and pharynx cancer	620	C00-C14	x		These conditions can be largely prevented through prevention measures (e.g., reduce smoking).
18	Uterus cancer	720	C54, C55		x	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
20	Bladder cancer	750	C67		x	This condition can be largely prevented through prevention measures (e.g., reduce smoking).
14	Melanoma skin cancer	691	C43	x		This condition can be largely prevented through prevention measures (e.g., reduce sun exposure).
15	Nonmelanoma skin cancer	692	C44	x		Lack of evidence of preventability and insufficient deaths.
21	Thyroid cancer	754	C73		x	Case-fatality rates have been reduced through early detection and appropriate treatment.
22	Hodgkin lymphoma	761	C81		x	Case-fatality rates have been reduced through early detection and appropriate treatment.
19	Testicular cancer	742	C62		x	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
III. Diseases of the circulatory system						
26	Ischemic heart disease	1130	I20-I25	x (50%)	x (50%)	Reduction in deaths from ischemic heart disease over the past decades in several countries has been about evenly achieved through greater prevention (reduction in incidence) and earlier detection and more effective treatment (higher survival rates).

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE	TREATABLE	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1]
				(INCIDENCE REDUCTION)	(CASE-FATALITY REDUCTION)	RATIONALE FOR INCLUSION
25	Stroke	1140	I60-I69	x (50%)	x (50%)	Reduction in deaths from CVD over the past decades in several countries has been about evenly achieved through greater prevention (reduction in incidence) and earlier detection and more effective treatment (higher survival rates).
24	Hypertensive diseases	1120	I10, I11-I13, I15		x	This condition is both preventable through prevention measures (e.g., reduce smoking, improve nutrition and physical activity) and treatable.
23	Rheumatic heart disease	1110	I01, I02, I05-I09	x		Case-fatality rates can be reduced through appropriate treatment.
IV. Diseases of the respiratory system						
27	Chronic obstructive pulmonary disorder	1180	J40-J44	x		This condition can be largely prevented through prevention measures (e.g., reduce smoking).
28	Upper respiratory infections	400	J00-J06		x	Case-fatality rates can be reduced through appropriate treatment. J30-J39: other diseases of upper respiratory tract
V. Diseases of the digestive system						
32	Pancreatitis	1248	K85-K86		x	Case-fatality rates can be reduced through early detection and appropriate treatment. K85.2: alcohol induced acute pancreatitis
31	Gallbladder and biliary diseases	1246	K80-K83		x	Case-fatality rates can be reduced through early detection and appropriate treatment.
29	Peptic ulcer disease	1220	K25-K27		x	Case-fatality rates can be reduced through early detection and appropriate treatment. K28: gastric and duodenal ulcer

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE	TREATABLE	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1]
				(INCIDENCE REDUCTION)	(CASE-FATALITY REDUCTION)	RATIONALE FOR INCLUSION
30	Appendicitis	1240	K35-K37		x	Case-fatality rates can be reduced through early detection and appropriate treatment. K38: other diseases of appendix (hyperplasia, diverticulosis, and others).
VI. Diseases of the genitourinary system						
33	Other chronic kidney disease	1273	N02-N07, N08-N12, N13, N14-N16, N17-N19		x	Case-fatality rates can be reduced through early detection and appropriate treatment. N00: acute nephritic syndrome; N01: rapidly progressive nephritic syndrome; N20: calculus of kidney and ureter; N21: calculus of lower urinary tract; N35: urethral stricture.
34	Urolithiasis	1290	N20-N21, N22, N23		x	Case-fatality rates can be reduced through early detection and appropriate treatment. N13: Obstructive and reflux uropathy.
35	Benign prostatic hyperplasia	1280	N40		x	Case-fatality rates can be reduced through early detection and appropriate treatment.
VII. Infant and maternal causes						
36	Neonatal conditions	490	P00-P96 (minus P23, P37.3, P37.4)		x	Case-fatality rates can be reduced through early detection and appropriate treatment.
37	Congenital malformations, deformations and chromosomal anomalies	1400	Q00, Q01, Q02, Q03, Q04, Q05, Q06-Q19, Q20-Q28, Q29-Q99		x	These conditions can be prevented through prevention measures (improve maternal nutrition, e.g., folic acid consumption). These conditions can be treated through surgical operations. Q00: anencephaly and similar malformations; Q01: encephalocele; Q05: spina bifida; Q20-Q28: congenital malformations of the circulatory system.

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE	TREATABLE	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1]
				(INCIDENCE REDUCTION)	(CASE-FATALITY REDUCTION)	RATIONALE FOR INCLUSION
38	Pregnancy, childbirth, and the puerperium	420	O00-O99		x	Effective treatment is available in most cases to avoid maternal mortality.
VIII. Unintentional injuries						
39	Road injury	1530	V01-V04, V06, V09-V80, V87, V89, V99	x		Deaths can be prevented through public health interventions (e.g., road safety measures). V05: pedestrian injured in collision with railway train or railway vehicle; V81-V86: occupant of railway train or railway vehicle, streetcar, industrial premises, agriculture, construction, off-road injured in transport accident; V88: nontraffic accident of specified type but victim's mode of transport unknown; V90-V94: water transport accident; V95-V97: air and space transport accident; V98: other specified transport accidents
40	Falls	1550	W00-W19	x		Deaths can be prevented through public health interventions (e.g., injury prevention campaigns).
41	Drowning	1570	W65-W74	x		Deaths can be prevented through public health interventions (e.g., injury prevention campaigns).

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE	TREATABLE	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1]
				(INCIDENCE REDUCTION)	(CASE-FATALITY REDUCTION)	RATIONALE FOR INCLUSION
42	Poisonings	1540	X40, X43, X46-X48, X49	x		These conditions are treatable through better drug prescription and adherence. X41: accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified; X42: accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified; X44: accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances; X45: accidental poisoning by and exposure to alcohol.
IX. Intentional injuries						
44	Assault	1620	X85-X99, Y00-Y09, Y87.1	x		X85.0 deaths can be largely prevented through public health interventions (e.g., drug control policies). / X86.0-Y09.0 deaths can be prevented through public health interventions. / Y87.1 sequelae of assault
43	Suicide and self-inflicted injuries	1610	X60-X84, Y87.0	x		Deaths can be largely prevented through public health interventions (e.g., drug control policies). / Y87.0: sequelae of intentional self-harm.

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE (INCIDENCE REDUCTION)	TREATABLE (CASE-FATALITY REDUCTION)	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1] RATIONALE FOR INCLUSION
X. Alcohol and drug use disorders						
46	Drug use disorders	870	F11-F16, F18-F19, X41-X42, X44	x		Deaths can be largely prevented through public health interventions (e.g., drug control policies). F11-F16: mental and behavioral disorders due to use of alcohol, opioids, cannabinoids, sedatives or hypnotics, cocaine, other stimulants including caffeine, hallucinogens; F18-F19: mental and behavioral disorders due to use of volatile solvents, multipole drug use and use of other psychoactive substances; X41-X42: accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified/accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified; X44: accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances.
45	Alcohol use disorders	860	F10, G72.1, Q86.0, X45	x		Deaths can be largely prevented through public health interventions (e.g., alcohol control policies). F10: mental and behavioral disorders due to use of alcohol; G72.1: alcoholic myopathy; Q86.0: fetal alcohol syndrome (dysmorphic); X45: accidental poisoning by and exposure to alcohol. E24.4, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70, K85.2, K86.0, Q86.0, R78.0, X45, X65, Y15. F10, G31.2, K29.2, K70, I42.6, G62.1, K86.0.

Causes of death included as potentially avoidable premature mortality *(continued)*

GROUP CAUSE (N = 12)	CAUSES OF DEATH (N = 50)	GHE CODE	ICD-10 CODES	PREVENTABLE	TREATABLE	METHODOLOGICAL CRITERIA FOR THE SELECTION OF SENTINEL EVENTS OF POTENTIALLY AVOIDABLE PREMATURE MORTALITY[1]
				(INCIDENCE REDUCTION)	(CASE-FATALITY REDUCTION)	RATIONALE FOR INCLUSION
XI. Nutritional, endocrine, and metabolic disorders						
48	Diabetes mellitus	800	E10-E14	x (50%)	x (50%)	Type 1 diabetes is not preventable, but appropriate treatments can reduce mortality. Type 2 diabetes is largely preventable (e.g., improve nutrition), but appropriate treatments can also reduce mortality.
48-b	Diabetes mellitus-complement	1272		x (50%)	x (50%)	
49	Iron-deficiency anemia	580	D50, D64.9	x		D50-D53: nutritional anemias. [This condition can be largely prevented through prevention measures (e.g., improve nutrition)]. D64.9: anemia unspecified.
47	Iodine deficiency	560	E00-E02		x	Disorders of thyroid gland: case-fatality rates can be reduced through early detection and appropriate treatment. E00: congenital iodine-deficiency syndrome; E01: iodine-deficiency-related thyroid disorders and allied conditions; E02: subclinical iodine-deficiency hypothyroidism; E03: other hypothyroidism; E04: other nontoxic goiter; E05: thyrotoxicosis [hyperthyroidism]; E06: thyroiditis; E07: other disorders of thyroid.
XII. Neurological disorders						
50	Epilepsy	970	G40, G41		x	Case-fatality rates can be reduced through early detection and appropriate treatment. G40: epilepsy / G41: status epilepticus.

Note: [1] Based on the Joint OECD–EUROSTAT Working Group: Avoidable mortality: OECD/Eurostat lists of preventable and treatable causes of death (November 2019 version), WHO ICD-10 Version 2019, and the proportional mortality of the events in the PAHO-corrected mortality database 2014–2016 (less than 75 years of age), updated in 2018.

Source: PAHO.

Annex 2.
Average rates of potentially avoidable premature mortality and their absolute and relative inequality in the gradient of sustainable development between countries, according to sex, age group, type of preventable causes, and year

Average rates of potentially avoidable premature mortality and their absolute and relative inequality in the gradient of sustainable development between countries (n = 33), by type, sex, age, and year, Region of the Americas, 2000, 2009, and 2019

TYPE AND SEX	AGE GROUP	YEAR	REGIONAL AVERAGE			SII			CIx		
			RATE	LB	UB	INDEX	LB	UB	INDEX	LB	UB
Potentially avoidable, both sexes	0–9	2000	201.3	200.6	202.0	–383.6	–331.1	–434.5	–29.7	–31.8	–27.7
		2009	141.9	141.3	142.5	–243.6	–216.4	–268.1	–28.1	–30.2	–26.1
		2019	110.7	110.2	111.3	–164.4	–147.6	–177.0	–26.5	–28.5	–24.5
	10–19	2000	43.3	43.0	43.7	–39.3	–38.6	–36.0	–15.7	–17.6	–13.8
		2009	40.8	40.5	41.1	–46.3	–42.8	–46.0	–18.5	–20.4	–16.5
		2019	38.6	38.3	38.9	–44.0	–40.4	–43.8	–18.2	–20.1	–16.2
	20–29	2000	122.9	122.4	123.3	–138.6	–130.7	–138.7	–20.1	–22.1	–18.1
		2009	117.8	117.4	118.2	–114.9	–110.4	–107.7	–16.9	–18.8	–14.9
		2019	111.4	111.1	111.8	–60.4	–68.6	–36.6	–9.5	–11.5	–7.6
	40–64	2000	430.4	429.5	431.3	–209.1	–238.2	–157.8	–8.5	–10.4	–6.5
		2009	379.8	379.0	380.6	–185.0	–212.1	–134.8	–8.3	–10.2	–6.3
		2019	356.1	355.4	356.8	–119.9	–162.3	–32.6	–5.9	–7.9	–4.0
	65–74	2000	1717.0	1713.0	1721.1	–435.6	–596.3	–200.2	–4.5	–6.4	–2.6
		2009	1426.1	1422.7	1429.5	–647.5	–743.3	–492.7	–7.9	–9.8	–6.0
		2019	1281.8	1279.2	1284.5	–593.6	–695.2	–400.5	–8.2	–10.1	–6.3
Potentially preventable, both sexes	0–9	2000	41.9	41.6	42.3	–103.9	–81.0	–130.9	–46.7	–48.8	–44.5
		2009	23.2	23.0	23.5	–45.4	–35.4	–56.1	–45.2	–47.4	–43.1
		2019	15.5	15.3	15.7	–26.5	–21.2	–31.6	–45.0	–47.1	–42.9
	10–19	2000	37.3	37.0	37.6	–27.6	–28.1	–20.8	–13.2	–15.1	–11.3
		2009	35.4	35.1	35.7	–35.8	–33.4	–33.4	–16.8	–18.8	–14.9
		2019	33.9	33.6	34.2	–33.6	–31.2	–30.7	–16.3	–18.2	–14.4

Average rates of potentially avoidable premature mortality and their absolute and relative inequality in the gradient of sustainable development between countries (n = 33), by type, sex, age, and year, Region of the Americas, 2000, 2009, and 2019 *(continued)*

TYPE AND SEX	AGE GROUP	YEAR	REGIONAL AVERAGE			SII			CIx		
			RATE	LB	UB	INDEX	LB	UB	INDEX	LB	UB
Potentially preventable, both sexes	20–29	2000	99.8	99.4	100.1	–100.6	–95.0	–95.1	–18.7	–20.7	–16.7
		2009	96.9	96.6	97.3	–85.2	–82.7	–73.0	–15.7	–17.6	–13.7
		2019	91.8	91.5	92.2	–37.1	–47.8	–6.6	–7.3	–9.2	–5.4
	40–64	2000	262.3	261.6	263.1	–111.9	–133.1	–74.7	–7.6	–9.5	–5.6
		2009	233.9	233.3	234.5	–88.4	–110.0	–50.5	–6.6	–8.5	–4.7
		2019	219.6	219.1	220.2	–38.4	–74.8	34.8	–2.9	–4.8	–1.0
	65–74	2000	1000.3	997.2	1003.5	–114.1	–235.0	62.3	–2.1	–4.0	–0.2
		2009	834.7	832.1	837.3	–202.0	–284.2	–79.8	–4.4	–6.3	–2.5
		2019	742.9	740.8	744.9	–179.7	–269.6	–27.9	–4.3	–6.2	–2.4
Potentially treatable, both sexes	0–9	2000	159.4	158.8	160.0	–274.9	–241.3	–304.6	–25.7	–27.7	–23.7
		2009	118.7	118.2	119.2	–192.7	–173.0	–209.4	–25.2	–27.2	–23.2
		2019	95.3	94.8	95.8	–133.8	–120.7	–142.2	–23.6	–25.6	–21.6
	10–19	2000	6.0	5.9	6.1	–10.3	–8.7	–11.7	–32.4	–34.2	–30.5
		2009	5.4	5.3	5.5	–9.6	–8.0	–11.0	–29.9	–31.7	–28.1
		2019	4.8	4.7	4.9	–9.7	–8.3	–11.2	–31.3	–33.0	–29.5
	20–29	2000	23.1	22.9	23.3	–32.5	–29.5	–34.5	–26.2	–28.2	–24.2
		2009	20.9	20.7	21.1	–25.7	–23.8	–26.4	–22.7	–24.7	–20.7
		2019	19.6	19.5	19.8	–21.1	–20.3	–21.0	–20.0	–21.9	–18.1
	40–64	2000	168.1	167.5	168.6	–94.3	–104.4	–73.8	–9.9	–11.8	–8.0
		2009	145.9	145.4	146.4	–95.1	–101.7	–77.4	–10.9	–12.8	–9.0
		2019	136.5	136.0	136.9	–81.0	–89.1	–58.6	–10.8	–12.7	–8.8
	65–74	2000	716.7	714.1	719.4	–317.7	–365.7	–242.2	–7.7	–9.7	–5.8
		2009	591.3	589.2	593.5	–444.6	–459.6	–405.1	–12.7	–14.7	–10.8
		2019	539.0	537.2	540.7	–415.1	–427.1	–369.2	–13.5	–15.4	–11.5
Potentially avoidable, males	0–9	2000	222.0	221.0	223.0	–424.2	–366.7	–480.0	–29.5	–31.5	–27.4
		2009	156.7	155.9	157.6	–273.1	–242.7	–301.0	–28.1	–30.2	–26.1
		2019	121.9	121.1	122.7	–183.4	–164.4	–198.0	–26.5	–28.6	–24.5
	10–19	2000	61.8	61.3	62.4	–53.9	–52.5	–46.5	–15.3	–17.3	–13.4
		2009	58.9	58.4	59.4	–65.0	–58.7	–63.0	–17.8	–19.8	–15.9
		2019	57.2	56.7	57.7	–66.7	–58.4	–66.2	–18.0	–19.9	–16.1
	20–29	2000	180.4	179.6	181.1	–213.9	–198.0	–216.8	–20.5	–22.5	–18.6
		2009	176.0	175.3	176.7	–178.0	–167.0	–166.3	–17.2	–19.1	–15.2
		2019	165.2	164.6	165.9	–98.9	–108.7	–60.8	–10.6	–12.5	–8.7
	40–64	2000	541.5	540.0	542.9	–248.3	–288.5	–177.6	–7.7	–9.7	–5.8
		2009	479.3	478.1	480.6	–233.2	–267.3	–170.5	–8.1	–10.0	–6.1
		2019	447.8	446.7	448.9	–151.1	–205.0	–38.6	–5.8	–7.8	–3.9
	65–74	2000	2124.1	2117.4	2130.9	–343.7	–594.5	33.7	–2.8	–4.7	–1.0
		2009	1738.4	1732.9	1744.0	–733.7	–863.2	–523.1	–7.2	–9.1	–5.2
		2019	1586.2	1581.9	1590.5	–695.2	–832.4	–431.6	–7.4	–9.3	–5.5

Average rates of potentially avoidable premature mortality and their absolute and relative inequality in the gradient of sustainable development between countries (n = 33), by type, sex, age, and year, Region of the Americas, 2000, 2009, and 2019 *(continued)*

TYPE AND SEX	AGE GROUP	YEAR	REGIONAL AVERAGE			SII			CIx		
			RATE	LB	UB	INDEX	LB	UB	INDEX	LB	UB
Potentially avoidable, females	0–9	2000	179.8	178.8	180.7	–341.1	–293.7	–387.1	–30.1	–32.1	–28.1
		2009	126.4	125.6	127.2	–212.9	–189.1	–234.0	–28.1	–30.2	–26.1
		2019	99.1	98.4	99.8	–144.5	–129.9	–155.1	–26.4	–28.5	–24.4
	10–19	2000	24.3	24.0	24.7	–21.1	–20.9	–19.2	–17.4	–19.3	–15.4
		2009	22.0	21.6	22.3	–23.7	–22.5	–23.5	–20.9	–22.9	–19.0
		2019	19.4	19.1	19.7	–17.0	–16.9	–15.8	–19.1	–21.1	–17.2
	20–29	2000	65.9	65.4	66.3	–57.7	–56.3	–51.9	–20.1	–22.2	–18.0
		2009	60.2	59.8	60.6	–46.6	–47.2	–39.2	–16.9	–19.0	–14.9
		2019	57.3	56.9	57.7	–17.9	–25.6	0.1	–7.0	–9.0	–5.1
	40–64	2000	326.2	325.1	327.3	–172.8	–194.0	–131.0	–9.9	–11.9	–8.0
		2009	286.5	285.6	287.4	–142.8	–164.1	–98.8	–9.1	–11.0	–7.1
		2019	270.1	269.3	270.9	–94.4	–126.4	–25.5	–6.7	–8.7	–4.8
	65–74	2000	1379.3	1374.3	1384.2	–493.0	–612.4	–301.4	–6.5	–8.4	–4.6
		2009	1157.8	1153.6	1162.0	–576.1	–654.1	–434.6	–9.0	–11.0	–7.1
		2019	1019.2	1016.0	1022.5	–518.9	–592.5	–368.0	–9.6	–11.6	–7.7

Note: SII: slope index of inequality; CIx: concentration index of health inequality; LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.

Annex 3.
Average rates of potentially avoidable, preventable, and treatable premature mortality, and their absolute and relative inequalities in the gradient of sustainable development between countries, by sex and year

Average rates of potentially avoidable, preventable, and treatable premature mortality, and their absolute and relative inequalities in the gradient of sustainable development between countries (n = 33), by age, sex, type, and year, Region of the Americas, 2000, 2009, and 2019

AGE GROUP AND SEX	TYPE	YEAR	REGIONAL AVERAGE			SII			CIx		
			RATE	LB	UB	INDEX	LB	UB	INDEX	LB	UB
Under 75, both sexes	Potentially avoidable	2000	293.5	293.1	293.9	–193.6	–205.1	–169.0	–11.8	–13.7	–9.8
		2009	253.2	252.9	253.6	–173.1	–182.4	–151.1	–12.1	–14.0	–10.1
		2019	231.2	230.9	231.5	–127.6	–142.8	–92.4	–10.3	–12.3	–8.4
	Potentially preventable	2000	171.5	171.2	171.8	–92.4	–103.5	–69.3	–9.8	–11.8	–7.9
		2009	150.6	150.4	150.9	–79.5	–89.6	–58.7	–9.6	–11.5	–7.7
		2019	138.6	138.3	138.8	–49.4	–65.2	–16.4	–6.7	–8.6	–4.7
	Potentially treatable	2000	122.0	121.8	122.3	–99.4	–101.1	–92.1	–14.4	–16.4	–12.5
		2009	102.6	102.4	102.8	–93.3	–92.9	–88.6	–15.6	–17.6	–13.7
		2019	92.6	92.4	92.8	–78.7	–79.1	–72.1	–15.7	–17.7	–13.7
Under 75, males	Potentially avoidable	2000	369.4	368.8	370.0	–229.3	–246.5	–194.0	–10.8	–12.7	–8.8
		2009	321.2	320.6	321.7	–215.8	–228.4	–185.8	–11.5	–13.5	–9.6
		2019	294.9	294.4	295.4	–160.9	–181.1	–113.6	–9.8	–11.7	–7.8
	Potentially preventable	2000	240.4	239.9	240.9	–135.5	–150.2	–103.1	–10.0	–11.9	–8.0
		2009	212.4	211.9	212.8	–124.0	–136.4	–95.5	–10.4	–12.3	–8.4
		2019	195.8	195.4	196.2	–83.3	–102.6	–40.4	–7.7	–9.6	–5.8
	Potentially treatable	2000	129.0	128.7	129.4	–88.8	–93.5	–76.7	–12.3	–14.2	–10.3
		2009	108.8	108.5	109.1	–89.2	–90.5	–81.7	–13.8	–15.7	–11.8
		2019	99.1	98.8	99.4	–76.1	–78.1	–65.9	–13.8	–15.8	–11.8
Under 75, females	Potentially avoidable	2000	223.3	222.8	223.7	–155.2	–162.9	–134.3	–13.2	–15.2	–11.3
		2009	189.8	189.3	190.2	–130.5	–137.4	–111.0	–13.1	–15.1	–11.1
		2019	171.4	171.0	171.7	–95.0	–106.4	–66.6	–11.6	–13.6	–9.7
	Potentially preventable	2000	107.5	107.2	107.9	–48.9	–58.5	–27.6	–9.6	–11.6	–7.7
		2009	92.8	92.5	93.1	–36.9	–46.4	–16.9	–8.3	–10.2	–6.3
		2019	84.6	84.4	84.9	–17.7	–31.5	12.6	–4.9	–6.8	–2.9
	Potentially treatable	2000	115.7	115.4	116.1	–107.5	–106.8	–103.2	–16.5	–18.5	–14.5
		2009	96.9	96.7	97.2	–96.0	–94.0	–93.3	–17.6	–19.5	–15.6
		2019	86.8	86.5	87.0	–80.6	–79.6	–76.5	–17.8	–19.8	–15.8

Note: SII: slope index of inequality; CIx: concentration index of health inequality; LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.

Annex 4.
Average rates of potentially avoidable, preventable, and treatable premature mortality, and their absolute and relative inequalities in the gradient of sustainable development between countries, according to sex, year, and population groups of economically active and nonactive age

Average rates of potentially avoidable, preventable, and treatable premature mortality, and their absolute and relative inequalities in the gradient of sustainable development between countries (n = 33), by population groups of economically active and nonactive age, type, sex, and year, Region of the Americas, 2000, 2009, and 2019

POPULATION GROUP	TYPE AND SEX	YEAR	REGIONAL AVERAGE			SII			CIx		
			RATE	LB	UB	INDEX	LB	UB	INDEX	LB	UB
Under 75 years old, economically inactive (0–14 and 65–74 years old)	Potentially avoidable, both sexes	2000	405.6	404.9	406.4	–263.1	–279.7	–228.0	–11.9	–13.8	–9.9
		2009	330.2	329.5	330.8	–240.4	–249.8	–214.3	–13.2	–15.1	–11.2
		2019	288.8	288.2	289.4	–207.0	–216.0	–177.9	–13.9	–15.9	–11.9
	Potentially preventable, both sexes	2000	193.3	192.8	193.8	–74.5	–92.1	–43.2	–7.6	–9.5	–5.7
		2009	157.9	157.5	158.4	–65.8	–79.2	–41.9	–8.2	–10.1	–6.2
		2019	138.7	138.3	139.1	–58.8	–71.7	–32.6	–8.8	–10.8	–6.9
	Potentially treatable, both sexes	2000	212.3	211.8	212.9	–192.3	–192.0	–183.6	–15.7	–17.7	–13.7
		2009	172.2	171.7	172.7	–178.8	–173.9	–175.9	–17.6	–19.6	–15.6
		2019	150.1	149.7	150.6	–151.6	–147.3	–147.3	–18.3	–20.3	–16.3
	Potentially avoidable, males	2000	481.7	480.5	482.8	–255.2	–284.7	–200.1	–9.7	–11.6	–7.7
		2009	390.8	389.8	391.9	–257.5	–273.5	–221.1	–11.6	–13.6	–9.7
		2019	347.4	346.4	348.3	–226.9	–242.4	–185.4	–12.2	–14.2	–10.3
	Potentially avoidable, females	2000	247.2	246.4	248.0	–67.5	–95.8	–19.0	–5.3	–7.3	–3.4
		2009	201.1	200.4	201.9	–75.1	–93.5	–43.0	–7.1	–9.0	–5.1
		2019	179.5	178.8	180.2	–69.0	–87.1	–33.2	–7.5	–9.4	–5.6

Average rates of potentially avoidable, preventable, and treatable premature mortality, and their absolute and relative inequalities in the gradient of sustainable development between countries (n = 33), by population groups of economically active and nonactive age, type, sex, and year, Region of the Americas, 2000, 2009, and 2019 *(continued)*

POPULATION GROUP	TYPE AND SEX	YEAR	REGIONAL AVERAGE			SII			CIx		
			RATE	LB	UB	INDEX	LB	UB	INDEX	LB	UB
Under 75 years of age, economically active (15–64 years of age)	Potentially avoidable, both sexes	2000	241.3	240.9	241.8	–157.0	–167.2	–133.8	–11.5	–13.4	–9.5
		2009	217.9	217.5	218.3	–140.2	–150.1	–116.6	–11.2	–13.2	–9.3
		2019	204.7	204.4	205.1	–92.7	–111.4	–50.9	–8.2	–10.1	–6.2
	Potentially preventable, both sexes	2000	160.6	160.3	160.9	–98.9	–107.3	–77.8	–11.2	–13.1	–9.2
		2009	147.1	146.8	147.4	–85.2	–94.1	–63.4	–10.4	–12.4	–8.5
		2019	138.9	138.6	139.2	–45.2	–63.1	–5.1	–5.8	–7.7	–3.9
	Potentially treatable, both sexes	2000	80.7	80.5	81.0	–53.9	–57.2	–45.3	–12.1	–14.1	–10.2
		2009	70.8	70.6	71.1	–52.6	–54.4	–45.2	–12.9	–14.8	–10.9
		2019	65.9	65.7	66.1	–45.9	–48.2	–37.4	–13.0	–15.0	–11.1
	Potentially avoidable, males	2000	316.5	315.8	317.1	–210.1	–223.3	–177.3	–11.5	–13.4	–9.5
		2009	288.9	288.3	289.5	–192.8	–204.9	–159.9	–11.4	–13.4	–9.5
		2019	271.2	270.6	271.7	–130.9	–154.3	–74.7	–8.5	–10.4	–6.6
	Potentially avoidable, females	2000	236.4	235.9	237.0	–166.1	–174.3	–138.8	–12.4	–14.4	–10.5
		2009	217.7	217.1	218.2	–146.8	–155.7	–117.6	–12.0	–13.9	–10.0
		2019	204.4	204.0	204.9	–90.8	–111.1	–40.1	–8.0	–9.9	–6.1

Note: SII: slope index of inequality; CIx: concentration index of health inequality; LB: lower bound; UB: upper bound (of 95% confidence interval).

Source: PAHO.

In recent decades, a significant improvement in people's general health conditions has occurred, leading to an increase in life expectancy at birth in most countries in the Region of the Americas. This progress has been the result of both health technology advances – antibiotics, vaccines, and other treatments – and improvements in the conditions in which people live, including increased access to improved drinking water and sanitation, and health services. Nevertheless, progress has slowed in recent years, and achievements have varied among countries and territories, as well as within them.

In the journey toward universal health, it is essential to have the ability to monitor and assess progress in terms of the ultimate goal of health systems: improving the health and well-being of populations. To this end, this edition of *Health in the Americas* analyzes the standardized rate of potentially avoidable premature mortality as an indicator of health system performance, considering both its preventable component through public and intersectoral health interventions, as well as the treatable component, related to the effectiveness of health services, that is, the quality of health care.

The analysis of potentially avoidable premature mortality provides a metric for comparing and tracking performance over time. This analytical tool plays a crucial role in holding health systems accountable in the Region of the Americas. Furthermore, the analysis of potentially avoidable premature mortality highlights the importance of investing not only in healthcare services but also in addressing the broader social and environmental determinants of health. This approach is fundamental to ensuring equity in health outcomes across countries. By recognizing the significance of these determinants, countries can develop comprehensive strategies that encompass not only health care but also social policies aimed at reducing inequalities and improving overall population health.

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