HEALTH SCIENCES

Project ECHO®

IDENTIFYING HEALTH GAPS IN LOW- AND MIDDLE-INCOME COUNTRIES

Targeted Workforce Development Solutions

April 2023

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Foreword

Project ECHO, based at the University of New Mexico Health Sciences Center in the United States, seeks to establish lasting networks for identifying, sharing, and implementing critical medical best practices so that health care workers in low- and middle-income countries (LMICs) can serve their communities more effectively.

This report was made possible by generous funding and support from Pfizer's Emerging Markets/ Global Medical Grants Partnership. The goal of this project was to identify priority health needs in selected LMICs by collating data and consulting with in-country ECHO partners and ministries of health to create an informed roadmap for future health worker capacity building. We believe this more strategic approach will ensure the appropriate solutions are implemented in each country, which will contribute to closing the health gap between wealthy and poor nations. As we shift to the endemic phase of COVID-19, we have an opportunity to build back stronger, with greater equity as a guiding principle.

Project ECHO's goal of enabling health workers in developing countries to bring best practice specialty care to the first mile of health care complements Pfizer's Accord for a Healthier World which makes essential medicines available to low-income countries at a reduced price.

Abbreviations and acronyms

AAP	American Academy of Pediatrics
Africa CDC	Africa Centers for Disease Control and Prevention
AFROHUN	Africa One Health University Network
AIDS	Acquired immune deficiency syndrome
ART	Antiretroviral treatment or therapy
ASHA	Accredited social health activist
ASD	Autism spectrum disorders
CEDIA	Corporación Ecuatoriana para del Desarrollo de las Investigación y la Academia
CMRT	Community medical response team
CHW	Community health worker
COPC	Community-oriented primary care
COPD	Chronic obstructive pulmonary disease
DALY	Disability-adjusted life-year
ECPCI	Congolese Expertise for Prevention and Control of Infection
FUNESA	Universidade Federal de Sergipe (Brazil)
GDP	Gross domestic product
GHSS	Global Health Systems Solutions
GIT	Gastrointestinal tract
HAI	Health care-associated infections
HIV	Human immunodeficiency virus
HPV	Human papillomavirus
ICAN	Infection Control Africa Network
ICAP	International Center for AIDS Care and Treatment Programs, Columbia University
IDIM	Instituto de Investigaciones Metabólicas (Argentina)
IHME	Institute for Health Metrics and Evaluation
INS	Instituto Nacional de Salud (El Salvador)

IPC	Infection prevention and control
IPCA	Infection Prevention and Control Association (Cameroon)
ISTAC	Instituto Superior Tecnologico American College
LGBTQI	Lesbian, gay, bisexual, transgender, queer, and intersex
LMICs	Low- and middle-income countries
MDGs	Millennium Development Goals
MoHFW	Ministry of Health and Family Welfare (India)
NCD	Non-communicable disease
NGO	Non-governmental organization
NHM	National health mission (India)
NIMHANS	National Institute for Mental Health and Neurological Sciences (India)
OSFE	Obra Social Ferroviaria (Argentina)
PAHO	Pan-African Health Organization
PEM	Protein-energy malnutrition
ProEpi	Brazilian Association of Epidemiology Professionals
RENATA	National Research and Education Network (Colombia)
RMNCH+A	Reproductive, maternal, neonatal, child, and adolescent health
SDGs	Sustainable Development Goals
SHEA	Society for Healthcare Epidemiology of America
STI	Sexually transmitted infection
TARI	Thought Arbitrage Research Institute (India)
TB	Tuberculosis
UFCSPA	Universidade de Ciêcias da Saúde de Porto Alegre (Brazil)
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization
YALI	Young Africa Leaders Initiative (East Africa)

Executive summary

In 2003, the ECHO Model was created to help solve a specific problem: how to expand knowledge about treatment of hepatitis C and access to care across the vast state of New Mexico. Using widely available videoconferencing technology and a tested and proven learning model, Project ECHO brings together subject matter experts and on-the-ground practitioners to discuss specific cases, highlight the latest medical advances and tools, and build a community where all teach and all learn.

In the 20 years since the first ECHO session, Project ECHO has expanded access to specialty care in 194 countries, and more than 4 million experts and learners have attended ECHO sessions.

As health care systems in low- and middle-income countries (LMICs) build back from the COVID-19 pandemic, they face significant challenges – many of which cannot be solved without growing and strengthening the health care workforce. Doing that will require a radically different way of thinking about how best to support those health care professionals, both in terms of getting them the knowledge they need to provide appropriate treatment, and in terms of creating working conditions that will allow them to thrive.

The value proposition for ECHO is clear. First-mile health workers in remote and under-resourced communities around the world need expert knowledge, support, and community. The ECHO Model is uniquely suited not only to get expert medical knowledge to the people and places that most need it, but also to helping governments, non-governmental organizations (NGOs), and other institutions accelerate progress toward achieving the United Nations Sustainable Development Goals (SDGs).

Throughout 2022, Project ECHO researchers met with ECHO partners, ministries of health, and other key constituents in 35 LMICs. Through one-on-one interviews and surveys, along with our ongoing work in these countries and analysis of public health data, we gained a solid understanding of their specific health care priorities. Most of these priorities spanned multiple countries and regions.

With this knowledge as a starting point, ECHO held roundtables with local health experts in all LMIC regions, with a goal of identifying solutions that could be implemented quickly, effectively, and at low cost. These workforce capacity-building solutions apply the ECHO Model to some of the developing world's most intractable problems, including under-five mortality, infection prevention and control, and mental health, and can be easily replicated in any geography.

We are excited to share our findings, which represent the hard work and creativity of ECHO partners around the globe and offer scalable and affordable solutions to strengthen health systems worldwide while improving lives and health outcomes in key areas of pain and priority for governments.

SECTION 1

ECHO needs assessment background

Introduction

The United Nations Millennium Development Goals (MDGs) to reduce global poverty and inequality and their successor, the Sustainable Development Goals (SDGs), have served as a rallying cry for development initiatives for more than two decades. In terms of health, these harmonized international efforts have resulted in significant gains in life expectancy and mother and child survival rates. Yet the global community remains challenged by the chasm that persists between developed and less developed countries in terms of death and disability from preventable, treatable, and curable diseases.

The depth of this rift was brutally exposed by the COVID-19 pandemic. However, signs of trouble in improving the health status of developing countries were evident even before the pandemic struck. By 2019, overall progress on the SDGs was tracking well below the level required to meet their 2030 targets. COVID-19 subsequently compounded matters by diverting scarce health care resources to the pandemic response and disrupting routine health programs.

The lessons of the last few years are clear: we need effective solutions that can scale to meet the needs of low- and middle-income countries (LMICS) as they work to expand access to specialty care, build health care workforce capacity, and accelerate progress against SDGs.

This report explores solutions for augmenting existing national and international programs to strengthen health systems in less-resourced countries. The capacity-building solutions highlighted can equip and empower health care providers to implement localized solutions that are in lockstep with national health needs, potentially impacting millions of lives. To better understand those underlying health needs, Project ECHO analyzed key statistical data and national health strategies, and consulted with ECHO partners and ministries of health who have a practical grasp of priorities on the ground in a wide range of countries.

While localized, needs-aligned solutions could potentially apply to various aspects of health system strengthening, this report focuses on using health care virtual training, through the ECHO Model, to increase the medical knowledge and expertise of health workers. It describes methods of maximizing the existing health workforce and unlocking its potential to provide greater access to best-practice health care.

GLOBAL PROGRESS IN THE 21ST CENTURY

Deaths related to pregnancy and childbirth decreased 35% between 2000 and 2017

The biggest gains were in SE Asia and Africa

Deaths of children under five years declined by 61% between 1990 and 2020

1990: one in five children died before turning five. 2020: one in 27

New HIV infections per year declined by 48% between 2000 and 2020

There was a 55% drop in the number of AIDS-related deaths

TB deaths declined by 45% between 2000 and 2019

The number rose again in 2020 as COVID-19 disrupted TB control programs

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Source: Estimates derived from World Health Statistics 2022, WHO.

Unfinished business of health equity

Between 2000 and 2019, average life expectancy across the world increased by 6.5 years. But as the World Health Organization (WHO) points out: “Health inequalities continue to claim a disproportionate toll on life and health in lower-resource settings. Both life expectancy and healthy life expectancy were at least 10 years lower in low-income countries than in high-income countries in 2019 despite the dramatic improvements observed since 2000” *(WHO, World Health Statistics 2022).*

In low- and middle-income countries, substantial reductions in the rates of maternal, newborn, and under-five mortality were major contributors to improved life expectancy, along with declines in the incidence of HIV, TB, and malaria and mortality due to these diseases. Still, by 2019 communicable diseases accounted for nearly half of total deaths in low-income countries *(WHO, World Health Statistics 2022).*

In terms of non-communicable diseases, the global prevalence rate for hypertension among people aged 30 – 79 years remained unchanged over two decades, but the actual number almost doubled to 1.28 billion, as populations grew and people lived longer. Moreover, the burden of hypertension shifted from high-income countries to LMICs. Overall, 86% of NCD deaths for individuals under the age of 70 years occurred in LMICs *(WHO, World Health Statistics 2022 and Non-communicable diseases fact sheet).*

Table 1: Selected indicators of health inequity across WHO regions for 2019, published in 2022

WHO region	Life expectancy (Years)	Maternal mortality (/100 000 live births)	Under-five mortality (/1 000 live births)	New HIV infections (/1 000 uninfected)	TB incidence (/100 000 people)	People in need of NCD care (Millions)
Africa	64.5	525	72	0.82	220	578.4
The Americas	77.2	57	13	0.15	29	61.7
South-East Asia	71.4	152	30	0.05	211	938.9
Europe	78.2	13	8	0.18	25	6.6
Eastern Mediterranean	69.7	164	45	0.06	112	75.1
Western Pacific	77.7	41	11	0.06	93	72.9
Global	73.3	211	37	0.19	127	1,733.6

Denotes region performing below global average

Source: Estimates derived from the World Health Statistics 2022, WHO.

Note: Countries in ECHO category, Southeast Asia and India, span the WHO South-East Asia and Western Pacific regions

COVID-19 exposes underlying fissures

The onset of the COVID-19 pandemic in 2020 exposed how deep health inequity still runs, and how narrow and fragile some recent gains have been. Above all, it shined a light on the systemic roots of the unequal burden of disease and mortality, not only among countries but also within nations.

COVID-19 disproportionately affected the economically disadvantaged, the elderly, and people with existing health conditions. Yet, those who most needed vaccine protection, for example, often had the least access. In Africa, only 25% of adults aged 60+ were vaccinated, and just 11% with comorbidities completed the primary series *(WHO, World Health Statistics 2022).*

The WHO has conducted periodic pulse surveys on COVID-19's disruption of health services and found little improvement between the start and end of 2021, observing that LMICs seemed most adversely affected. Reorganization of routine services to accommodate the COVID response and shortages of staff, essential medicines, diagnostics, and space in health facilities were common reasons for service disruption.

Table 2: COVID-19: uneven impact, unequal response

Countries by income	Share of global excess deaths 14.9 million 2020 and 2021	Share of national population who completed primary vaccinations
High-income	15%	74%
Upper middle-income	28%	74%
Lower middle-income	53%	52%
Low-income	4%	13%
	100%	–

IMPACT ON HEALTH SERVICES (129 countries reporting)

- >50% of day-to-day primary and community services disrupted
- 38% of countries interrupted elective, critical, and operative care
- There was a deepening decline in in-facility immunizations
- 50% of countries experienced disruption in TB, HIV, and hepatitis programs

Source: World Health Statistics 2022, WHO.

"Many millions of people have missed out on vital health care. If these disruptions are allowed to persist, they will have potentially major implications for morbidity and mortality and for the evolution of other communicable disease epidemics."

World Health Statistics 2022

Stronger health systems, better health

SDG 3, ensuring healthy lives and promoting wellbeing for all at all ages, highlights the importance of developing health care systems to achieve sustainable progress in population health. By exploring health priorities, we have identified key areas of impact to leverage for health system strengthening.

Table 3: Actions required by SDG 3 on healthy living and well-being

Ensure healthy lives and promote wellbeing for all at all ages		
Unfinished MDG agenda	**New health priorities**	**Health system strengthening**
• Reduce maternal mortality • End preventable newborn and child deaths • End HIV, TB, and malaria epidemics and combat other communicable diseases • Ensure access for all to sexual and reproductive health services	• Reduce mortality from NCDs and promote mental health • Strengthen implementation of Framework Convention on Tobacco Control • Strengthen prevention and treatment of substance abuse • Reduce deaths and injuries from road traffic accidents • Reduce deaths from hazardous chemicals and environmental pollution	• Achieve universal health coverage • Provide access for all to medicines and vaccines • Increase health financing and the health workforce in developing countries • Strengthen capacity for early warning and management of health risks

Deep disparities in the distribution of medical knowledge and expertise underly global inequalities in the health of populations and access to health services. Increasing the size of the health workforce in under-resourced countries is a critical facet of creating higher quality and more equitable health systems.

An analysis of data in WHO's National Health Workforce Accounts shows that there were a total of 65.1 million doctors, nurses, midwives, dentists, pharmacists, and other health occupations worldwide in 2020, but the density of health workers in high-income countries was 6.5 times that of low-income countries. While the global health workforce is projected to grow by 29% to 84 million in 2030, the rate of growth in Africa is likely to be only 7% (Boniol M et al, BMJ 2022).

Most countries have plans to reduce the health skills gap but, as long as the number of health workers remains severely constrained in many LMICs, creating practical ways of equipping available clinicians with critically needed skills is an urgent course of action.

A scalable model for growing capacity

One positive outcome of the COVID-19 pandemic was the quantum leap in the use of virtual, digital learning networks to share health knowledge and enable rapid adoption of best practices as they evolved. This resulted in an enormous expansion of Project ECHO, which was created in 2003 to support the implementation of best practice health care in rural and under-resourced communities through virtual mentoring and learning.

ECHO's case-based learning model not only results in knowledge transfer, getting expert, specialized care to populations who otherwise would not have access, but in helping first-mile health care workers solve complex problems and meet the needs of their communities.

HOW THE ECHO MODEL WORKS

The ECHO learning model is based on how clinicians learn from medical rounds during their residencies. It uses a "hub and spoke" structure in which multidisciplinary teams of experts based at a regional academic medical center or other center of excellence (the "hub") use videoconferencing technology to engage with multiple health care workers/providers at local clinical sites (the "spokes") for ongoing telementoring and collaborative problem-solving.

During each ECHO session, participating providers present real, anonymized patient cases to the experts and to each other for discussion and recommendations. Hub teams and spoke participants learn from one another, as expert knowledge is refined and tested through local experience. This inclusive, nonhierarchical philosophy is at the heart of the ECHO Model and informs every ECHO program and individual ECHO session. Through this "all teach, all learn" approach, ECHO participants develop a virtual community of practice with their peers where they get support, guidance, and feedback from other providers. As a result, our collective understanding of how to disseminate and implement best practices across diverse contexts grows.

Four principles of the ECHO Model

	Use technology to leverage scarce resources
	Share best practices to reduce disparities
	Apply case-based learning to master complexity
	Evaluate and monitor outcomes

Once ECHO programs show success, they are very likely to become integrated into the public health training portfolio, thus the cost is absorbed by the public sector over time. These programs are then sustained and grown because they offer the advantages of speed, scale, and fidelity – all at a lower cost than traditional training mechanisms.

This flexible and sustainable model also allows hubs to be rapidly formed or expanded in health emergencies. For example, ECHO hubs were used in many countries to build specific capacity to manage the COVID-19 pandemic. In the first two years of the pandemic, ECHO programs logged more than 2.5 million attendances at COVID-related sessions which benefited an estimated 50 million people.

The international expansion of the ECHO Model has been largely organic. The establishment of ECHO hubs is often driven by the passion of in-country subject-matter experts, while the endorsement of national health authorities commonly facilitates expansion of the model.

The ECHO Model can be deployed to respond more strategically to health priorities common to many developing countries. Not only would a targeted needs-based approach be likely to have a greater impact on reducing health inequity, but it could also help align ECHO's workforce capacity building with other efforts to strengthen health systems in LMICs.

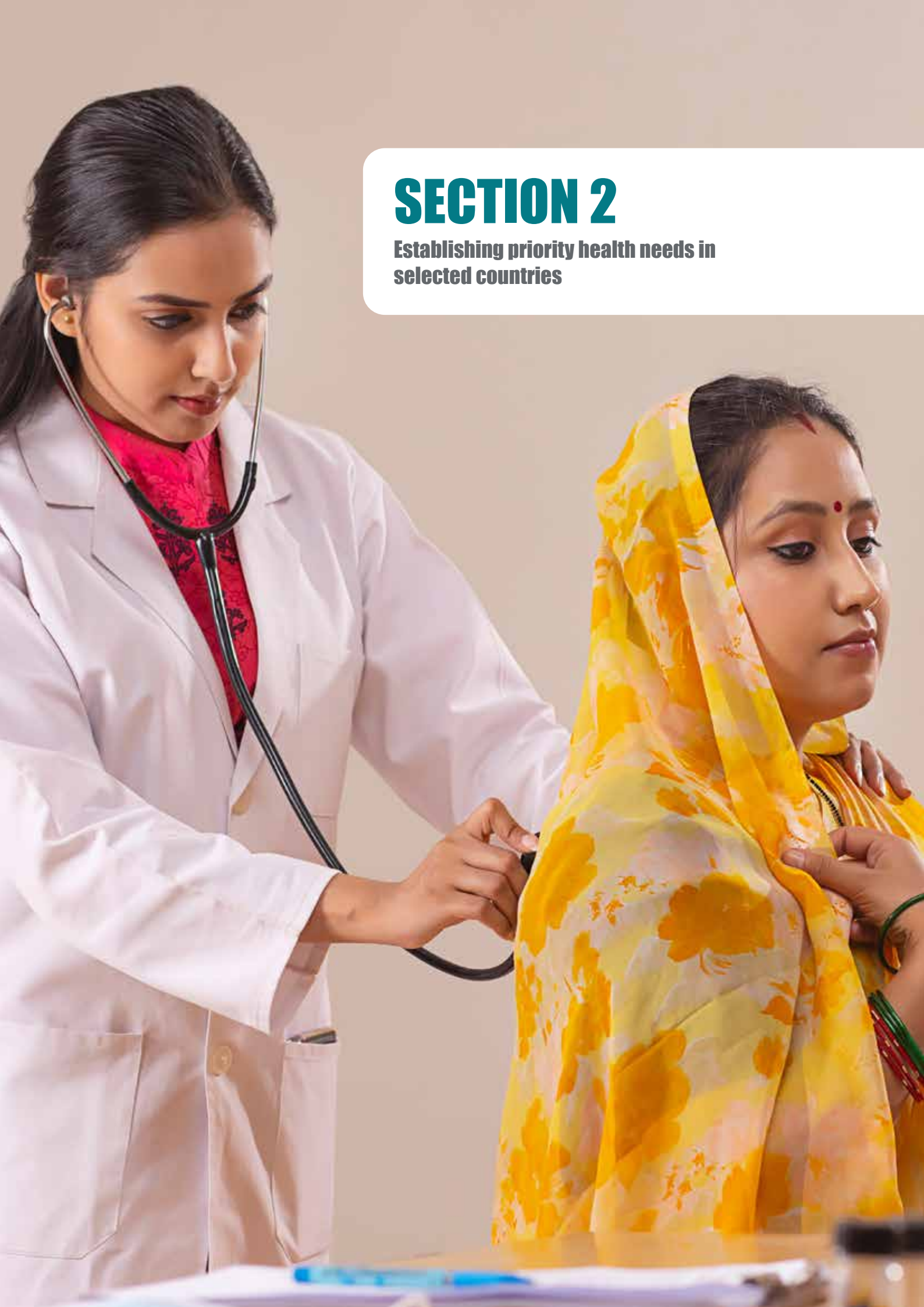
In the second half of 2022, ECHO initiated a process to gather information about priority health needs in selected LMICs and propose ECHO interventions corresponding to these needs. The process and outcomes are described in the body of this report.

A BROADER DEVELOPMENT ROLE

The ECHO Model not only supports capacity building for health care but also for action to address socio-economic and environmental determinants of health. It is a powerful tool to accelerate government and civil society efforts to meet a range of SDGs.

ECHO supports United Nations Sustainable Development Goals

ECHO Director and Founder Dr Sanjeev Arora with Kenya's Cabinet Secretary for Health, Dr Susan Nakhumicha Wafula



SECTION 2

Establishing priority health needs in selected countries

A dual process to pinpoint priorities

In order to understand health priorities in selected countries and workforce capacity challenges, ECHO sourced information on selected LMICs through two processes:

- Gathering and analysis of health priorities from Ministries of Health and other ECHO partners working in each of the countries. Many of these key interviewees are in senior leadership positions and have wide exposure to country and regional challenges.
- Collation of secondary data comprising comparable health and health system indicators for the selected countries.

The quantitative measurement of burden of disease and the assessments of engaged professionals provided different perspectives on a single reality. While the statistics provided a verifiable snapshot of major contributors to mortality and disability, key interviewees were more sensitive to emerging patterns of disease and the need for pre-emptive interventions.

Countries of interest for this project all have successful ECHO hubs and many were included because they are supported, in terms of access to medicines, by the *Accord for a Healthier World*. The majority are in Africa, with the remainder in Latin America, Southeast Asia, and India.

Figure 1: Process for identifying health care priorities

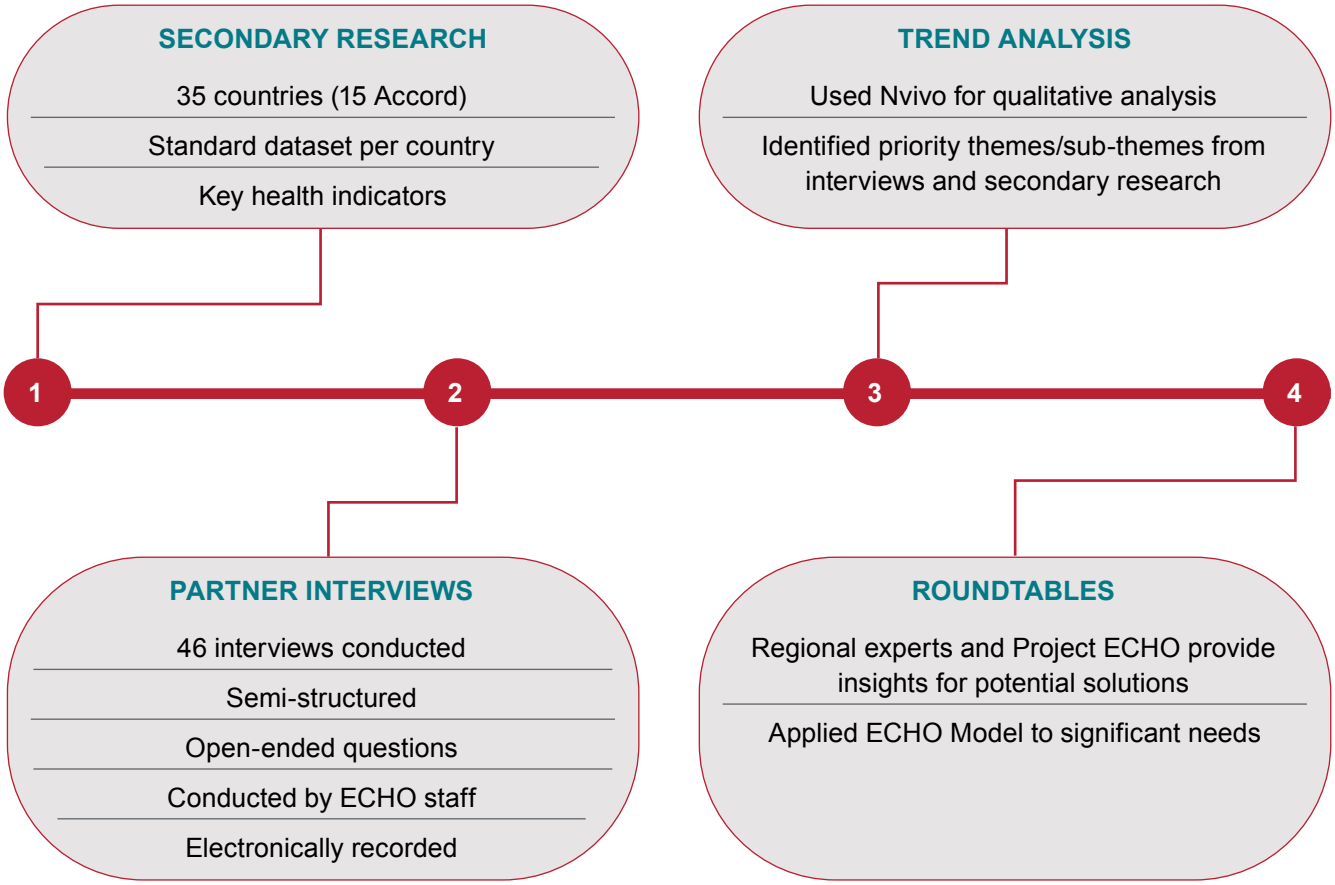
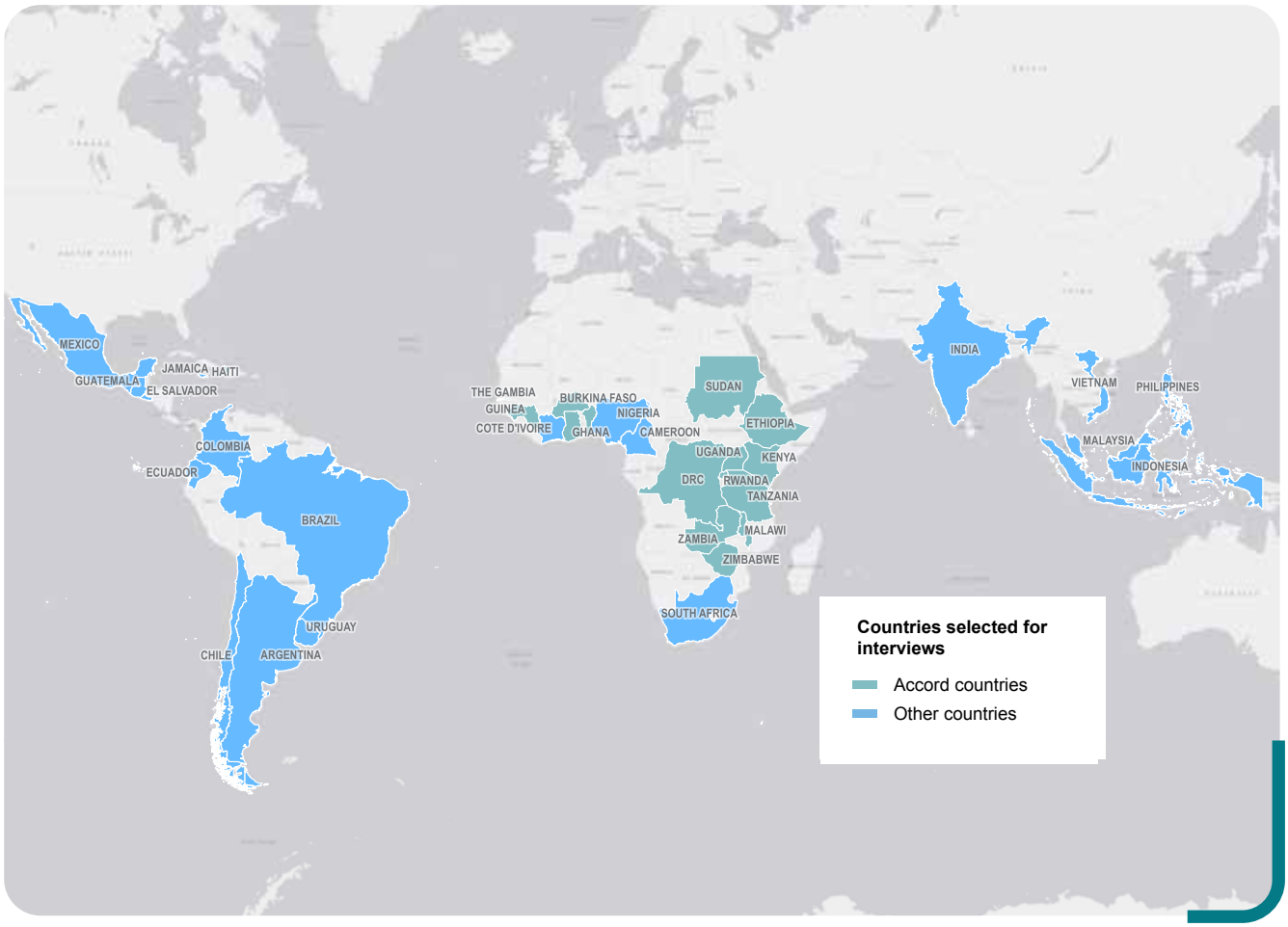


Table 4: Countries selected for the ECHO needs assessment

Africa		Latin America	Southeast Asia	India
Benin	Nigeria	Argentina	Indonesia	India
Burkina Faso	Rwanda	Brazil	Malaysia	
Cameroon	South Africa	Chile	Philippines	
Côte d'Ivoire	Sudan	Colombia	Vietnam	
Dem Rep of Congo	Tanzania	Ecuador		
Ethiopia	Uganda	El Salvador		
Gambia	Zambia	Guatemala		
Ghana	Zimbabwe	Haiti		
Guinea		Jamaica		
Kenya		Mexico		
Malawi		Uruguay		

Figure 2: Participating countries at a glance



Compilation of secondary data

ECHO compiled comparable data on all selected countries from reliable sources with global databases:

- The World Health Organization (WHO)
- Institute for Health Metrics and Evaluation (IHME) at the University of Washington, Seattle

Relevant national policy and strategy documents of the selected countries were also reviewed.

The purpose was to produce succinct information on priority health needs identified by ministries of health, burden of disease, health care spending, and the health workforce in selected countries. This data is reported in detail in country profiles in Appendix C.

ECHO relied on standardized data to compare the situation in various countries and identify possible regional patterns. This enabled a further comparison with the regional themes and sub-themes emerging from the analysis of our primary data.

Primary data: key interviews

A total of 46 key participants drawn from 35 countries in three regions were interviewed in the second half of 2022, using a semi-structured questionnaire.

SELECTION OF COUNTRIES AND KEY INTERVIEWEES

Key interviewees were drawn from ECHO partners, including ministries of health and organizations with a proven track record for launching and managing ECHO projects in the selected countries.

Table 5: General description of key interviewees

Regions	Interviews conducted			Countries
	Ministries of Health	Other ECHO partners	Total	
Africa	9	10	19	19
Latin America	6	10	16	11
Southeast Asia and India	6	5	11	5
Total	**21**	**25**	**46**	**35**

INTERVIEW PROCEDURE

Interviews were conducted individually or in small groups in a language spoken widely in each country: English, French, Portuguese, and Spanish.

In most instances, an ECHO staff member conducted the interviews, either face-to-face during a visit to the country or using Zoom teleconferencing technology. In a few instances, key interviewees submitted written answers via email.

Interviewers used a standard interview guide with open-ended, non-directive questions (Appendix A). Questions and probes prompted key interviewees to identify and reflect on their country's top health issues or disparities, based on their experience or knowledge of policies and strategies of their ministries of health. Interviewees were encouraged to mention specific geographic populations or social groups affected by health inequities, and to suggest priorities for building the health workforce.

ANALYSIS OF DATA

Recordings of all oral interviews were transcribed and combined with written responses from key interviewees who chose to respond by email.

We analyzed the texts by developing a system of categories based on areas of public health and specific diseases or disease groups. A frequency analysis of the thematic categories by country and key interviewee across interviews provided insights into the importance of health themes in each region. Sub-themes and direct quotes linked to those categories illustrated ideas and contextual factors, bringing vividness to the findings.

Secondary data on the top 10 causes of death and disability for the same countries were compiled and categorized under the main themes that emerged from key interviews.

SECTION 3

Our findings on priority health needs

Introduction

Within the framework of global health inequity, ECHO focused on national and regional health needs, while paying some attention to the needs of specific sub-populations.

Data on causes of death and disability provided an indirect indication of the burden of disease and unmet national health needs that should be prioritized for attention. While such data created a solid foundation and had the advantage of being tracked over time, the latest information is inevitably a few years old by the time it is published and lacks specificity.

The information derived from key interviews was more current and reflected the experience gained from the ebb and flow of daily service provision. The vantage point of interviewees was reflected in their assessment of population health needs, with some having a broad vision and others more focused. Despite this advantage of interviewees' sensitivity to emerging needs, it is important to note a degree of bias was inevitable.

In this section, ECHO analyzed the two sets of information for each region, noting patterns of alignment and divergence and drawing on key interviewee comments to elucidate major findings.

It is important to bear in mind that the secondary data referred to the pre-COVID period while key interviewees had been living with the pandemic for 18 months when interviewed. Understandably this experience played a major role in their assessments of need.

The African perspective

DATA ON CAUSES OF DEATH AND DISABILITY

For the 19 selected African countries, a collation of top 10 causes of death and disability from secondary sources reveals some striking patterns:

- Neonatal disorders rank first or second as a cause of death and disability in every country, despite focused efforts to address newborn mortality under the MDGs and SDGs.
- Infectious diseases as a broad theme still impose a higher burden of death and disability than non-communicable diseases (NCDs).
  - Malaria and HIV do not appear in the top 10 in every country but, where they do, they often occupy first or second slot.
  - Lower respiratory tract infections and diarrheal disease are recorded in the top 10 in every country selected for this analysis.
  - TB is almost as pervasive but represents a smaller burden of disease in most cases.
- In terms of NCDs, congenital disorders, stroke, and ischemic heart disease appear among the top 10 causes of death and disability in most countries selected. They occupy a lower position than newborn disorders and most infectious diseases.
- While infectious diseases collectively remain responsible for the greatest number of deaths and people suffering disability, they are shrinking in significance. Most countries have made substantial progress against these diseases.
- The opposite is true of NCDs, which are clearly on the rise in African countries. Despite this increase, only one country recorded diabetes in the leading causes of death and disability.
- Malnutrition ranked among the top 10 causes of death and disability in six countries, half of which were affected by protein-energy malnutrition (PEM) – which often affects children – and the other half by dietary iron deficiency, probably pointing to a problem among women.
- Trauma is a noteworthy driver of death and disability in Africa. Road accidents featured in the top 10 list of most countries, although generally toward the bottom of the list. Interpersonal violence ranked third for South Africa.
- In three countries, depressive disorders ranked in the top 10 and these countries are either currently engaged in war or have recently experienced armed conflict.

Table 6 on page 21 provides details of the top 10 causes of death and disability for each of our selected African countries.

Project ECHO with the University Teaching Hospital and the Ministry of Health, Zambia hub team members

A note on interpreting the table

The heaviest burden of disease has been indicated by shading the top three causes of death and disability for each country. This reveals the extent to which infectious diseases predominated in Africa in 2019, and that neonatal disorders were extremely high in all countries in our selected group.

However, the distribution of the lower-ranked causes of death and disability – unshaded and denoted merely by a number corresponding to their ranking – indicates that African countries have a complex mix of diseases across various categories, with NCDs impacting heavily in many countries.

Table 6: Top 10 causes of death and disability in 2019 in selected African countries

Figures in the table denote ranking of causes of death and disability for each country measured in disability-adjusted life-years (DALYs). Top three causes for each country are highlighted.

	Benin	Burkina Faso	Cameroon	Côte d'Ivoire	Dem Rep Congo	Ethiopia	Gambia	Ghana	Guinea	Kenya	Malawi	Nigeria	Rwanda	South Africa	Sudan	Tanzania	Uganda	Zambia	Zimbabwe
Infectious diseases																			
Malaria	2	1	2	2	1	7	5	2	2	6	3	3	3			4	2	5	8
L respiratory infections	3	3	5	3	4	3	3	4	3	4	4	4	2	5	7	2	4	4	3
Diarrheal diseases	4	4	3	5	3	2	4	6	4	3	5	2	4	8	4	7	5	3	5
Measles	6								6								9		
Meningitis	7	7		7		9			8		9	7							
TB	10	8	9		5	6	6	7	7	5	6	9	5	6		6	7	6	4
HIV			4	4		4	2	3		1	2	6	6	1	9	3	3	1	1
Non-typhoid salmonella												8							
STIs																	8		
Whooping cough									9										
Non-communicable diseases																			
Stroke	9		8	8	8	8	8	5	10	7	8		9	9	5	8		8	9
Ischemic heart disease			10	9	9		9	9		10	10			10	2	10			6
Cirrhosis						10				8								10	
Hemoglobinopathies		6																	
Diabetes														7					
Congenital defects	5	5	6	6	7	5	9	10	5	9	7	5	7		3	5	6	7	
Headache disorders															10				
Maternal, newborn and child health																			
Neonatal disorders	1	2	1	1	2	1	1	1	1	2	1	1	1	2	1	1	1	2	2
Nutrition and food security																			
Protein energy malnutrition		10														9			7
Dietary iron deficiency							10					10						9	
Trauma and violence																			
Road traffic injuries	8	9	7	10	6			8					8	4	6		10		10
Interpersonal violence														3					
Mental health																			
Depressive disorders					10								10		8				

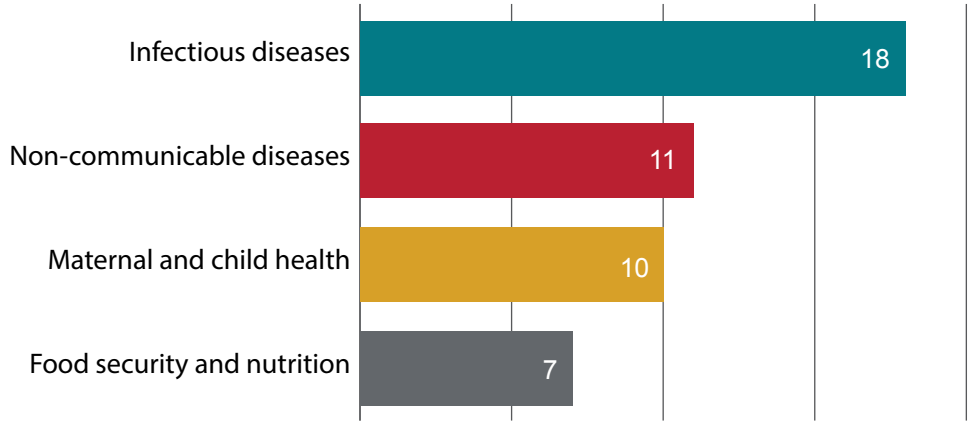
Source: Institute for Health Metrics and Evaluation (IHME) country profiles

THEMES FROM KEY INTERVIEWS

Key interviewees from the selected African countries were most likely to mention infectious diseases as a priority health issue in their countries, followed – in order – by NCDs, maternal and child health, and food security and nutrition (Figure 3). At this broad level, there is a strong correspondence with the statistics on causes of death and disability in the same countries. However, once the specific diseases, disorders, and health risks identified by key interviewees are taken into account, some important differences in perspective emerge and the interviews enrich the picture.

Some key interviewees identified needs falling into three or four thematic areas, suggesting a complex burden of disease in their countries. Others took a narrower view and focused on health needs closest to their field of expertise.

Figure 3: Top four health-need categories identified by African countries (N=19)



The specific diseases or disease groups mentioned by key interviewees are summarized under their respective themes in the table below.

Table 7: Priority diseases or disease groups mentioned by country

	Number of countries
Infectious diseases	
Tropical diseases (malaria, yellow fever, dengue fever and others)	14
HIV	10
Less-common diseases (such as Ebola and Lassa fevers and mpox)	9
Tuberculosis	8
Respiratory infections (such as measles and pneumonia)	5
Intersection with NCDs and general statements	4
Non-communicable diseases (NCDs)	
Cancers	9
Cardiovascular diseases	8
Diabetes	8
Obesity	1
General statements	6

	Number of countries
Maternal and child health	
Improvement of maternal or child mortality country indicators	5
Child, adolescent, and young adult health	5
Intersection with infectious diseases	2
Pregnancy and childbirth complications	1
Gender issues	1
Food security and malnutrition	
Poverty as a determinant of health	2
Intersection with NCDs	1
Chronic child malnutrition	1
General statements	4

INFECTIOUS DISEASES

Key interviewees placed the anticipated emphasis on **malaria**, **HIV**, and **TB**. The death and disability figures highlight the heavy toll of lower respiratory tract infections in Africa, and several interviewees identified respiratory tract diseases, such as pneumonia, as an area of concern.

Malaria was the most frequently mentioned **tropical disease** and weaknesses were identified in relation to prevention, diagnosis, and treatment of malaria – including a lack of access to essential medicines as outlined by our key interviewee in Gambia. In Burkina Faso, the key interviewee stated that malaria really stood out as the most important disease.

In relation to **HIV**, interviewees tended to focus on the need to improve capacity for diagnosing and treating children, preventing new infections among young people – especially adolescent girls and young women, and keeping people living with HIV in antiretroviral treatment (ART) programs. In Uganda, our key interviewee mentioned a reduction in the prevalence of HIV but stated "irrespective of having had a mature epidemic for the last four years, HIV remains a big challenge. I would say that it is still a very big burden to us."

TB was recognized by the interviewees in most countries as a health priority and an ongoing challenge. In the DRC, for instance, our key interviewee gave a sense of the burden of TB. "Our country is in second place (in Africa), and ninth place in the world. There are a lot of TB patients." Suggested interventions included improving case finding, scaling up preventive therapy, and managing bi-directional (TB-COVID) screening.

Cholera was mentioned in two instances in the context of child health and by Cameroon as a neglected disease (see below), but generally diarrheal diseases were not prioritized as frequently by interviewees as the hard data suggested they might be.

Our key interviewee in Cameroon mentioned diseases with epidemic potential that are often neglected. "For Cameroon, it will be: cholera, yellow fever, measles, and monkeypox (sic). It's not because monkeypox (sic) is hot right now; it is a disease which has always plagued us and not interested anyone."

Several other interviewees also identified less-common diseases (such as Ebola fever, Lassa fever, and mpox), which speaks to an intention to be proactive in detecting and containing these diseases. Periodic localized Ebola outbreaks on the continent, with their high mortality rates, have clearly marked outbreak preparedness as a priority.

Key interviewees had the benefit of hindsight in relation to COVID-19 and this was evident in their assessment of capacity-building needs with respect to infectious diseases. For instance, our Ghana interviewee emphasized post-COVID hospital

infections: “If we are not able to tackle (these) early (they) could come up to be an albatross on our neck.”

Interviewees regarded ECHO as an excellent tool to train and assist diverse health workers to prevent such infections, strengthen surveillance, and generally improve outbreak preparedness for a range of infections transmitted in various ways. Some referred to the threat COVID-19 had posed to health security and the need to develop more resilient health systems, capable of withstanding the shocks of major epidemics.

“Our country is very big … and the coverage is very low, and where we have reached the individuals for health care, we have a very low number of health care workers or community health care workers.We would really like to improve the quality of health care delivery to patients – in laboratories, in pharmacies, almost everywhere. That’s why we have put (Project ECHO) as a national priority for us” – Tanzania key interviewee

NON-COMMUNICABLE DISEASES

Key interviewees pinpointed the cardiovascular diseases that have claimed large numbers of African lives and caused significant disability. A few interviewees addressed workforce capacity building, suggesting that training should be focused on nurses and doctors instead of cardiologists, in order to manage hypertension care better at the primary level and reduce unnecessary referrals.

Key interviewees appeared to be ahead of the curve in prioritizing cancer and diabetes as significant health needs. Not one of the selected African countries had cancer among its top 10 reported causes of death and disability in 2019, while only South Africa ranked diabetes on this list. Diabetes experts pointed out some years ago that, as other sub-Saharan African countries became more urbanized, the profound lifestyle changes associated with this transition would result in an explosion of diabetes on the continent. (The Lancet Diabetes and Endocrinology Commission, 2017) It is likely that this is what African health workers are now witnessing. Our key interviewee in Malawi, referring to mortality surveillance data collected at health facilities, said “the top five diseases that are recorded are related to cardiovascular disease – so hypertension and diabetes.”

An apparent gap in the assessment of key interviewees is the combined weight of congenital disorders, such as heart defects, neural tube defects, cerebral palsy, and Down’s syndrome. This is probably because key interviewees were drawn from health programs utilizing the ECHO Model and these have not focused on congenital disorders.

MATERNAL AND CHILD HEALTH

Participants from Benin, Côte d’Ivoire, the DRC, Ethiopia, Gambia, Guinea, Kenya, and Tanzania were alert to the continuing challenge of saving mothers, infants, and children and meeting country commitments in this regard. Our Ethiopian interviewee said capacity building using the ECHO Model had achieved a remarkable reduction in maternal and neonatal mortality, while our Gambia interviewee identified training of midwives as a priority.

Our Zimbabwe interviewees provided insights that broadened our understanding of gender-based violence. “What we’ve seen in Zimbabwe is that the young men are vulnerable here, just as young women are vulnerable.” They proposed the inclusion of men in family support services and indicated the ministry of health was interested in increasing male partner involvement in maternity care. The ECHO Model has great potential as a peer mentoring tool for vulnerable populations – including young men – whose members may not be ready for in-person engagement.

FOOD SECURITY AND NUTRITION

A few interviewees recognized the importance of nutrition as a determinant of health and highlighted the link between malnutrition and poverty, the vulnerability of children, and unhealthy diets as a risk factor for NCDs. Our South African interviewee linked food insecurity to diabetes and obesity. “People tend to think about food insecurity and being underweight. In fact, it’s the opposite because of the easy, accessible, empty carbohydrates.”

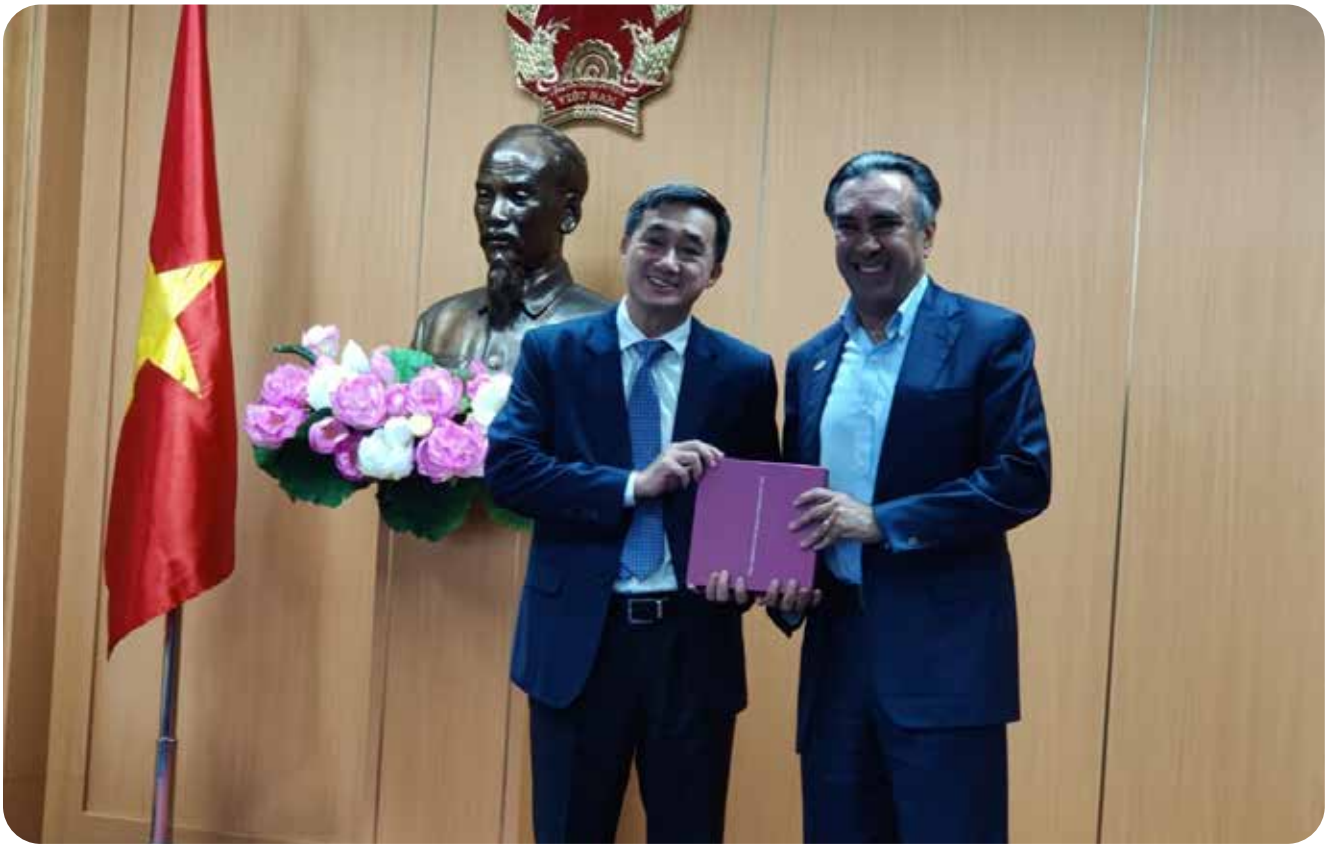
The Southeast Asian and Indian perspective

ECHO India conducted a separate and very thorough assessment on priority health needs and workforce capacity building requirements in India, outside of the analysis conducted for the other Southeast Asian countries. Some of the Indian assessment has been reflected here but the rich roundtable findings and details on their solutions are contained in a separate report.

DATA ON CAUSES OF DEATH AND DISABILITY

A compilation of top 10 causes of death and disability in the five selected countries reveals that **NCDs are taking the highest toll** on life and health, followed by neonatal disorders.

- Ischemic heart disease, stroke, diabetes, and neonatal disorders feature as top 10 causes of death and disability in all five countries.
- While ischemic heart disease and stroke are positioned at or near the top of each country's list, diabetes takes a slightly smaller toll.
- Neonatal disorders continue to be a top 10 cause of death and disability in all five countries, appearing high on the list of most.
- The range of NCDs causing death and disability is quite extensive (especially considering the small number of countries), while there are just a few items on the infectious diseases list.
- Four of the countries count road traffic injuries in the top causes of death and disability. In Vietnam, they rank third on the list.



ECHO Director and Founder Dr Sanjeev Arora meeting with Dr Tran Van Thuan, Vietnam Vice Minister of Health

Table 8: Top causes of death and disability in 2019 in Southeast Asian countries and India

Figures denote ranking of causes of death and disability for each country, measured in disability-adjusted life-years (DALYs) lost. Top three causes for each country are highlighted, showing where the highest burden of disease lies.

	India	Indonesia	Malaysia	Philippines	Vietnam
Non-communicable diseases					
Ischemic heart disease	2	2	1	1	2
Stroke	6	1	2	3	1
Chronic kidney disease			8	5	
Diabetes	9	4	6	7	4
Lower back pain		7	5	8	5
Congenital defects				10	
Chronic obstructive pulmonary disease	3	10			8
Headache disorders			9		10
Cirrhosis		5			7
Lung cancer					9
Infectious diseases					
Lower respiratory tract infections	5		3	4	
TB	7	6		6	
Diarrheal diseases	4	9			
Maternal and child health					
Neonatal disorders	1	3	10	2	6
Trauma and violence					
Interpersonal violence				9	
Road traffic injuries	8	8	4		3
Mental health					
Depressive disorders			7		
Nutrition and food security					
Dietary iron deficiency	10				

Source: Institute for Health Metrics and Evaluation (IHME) country profiles

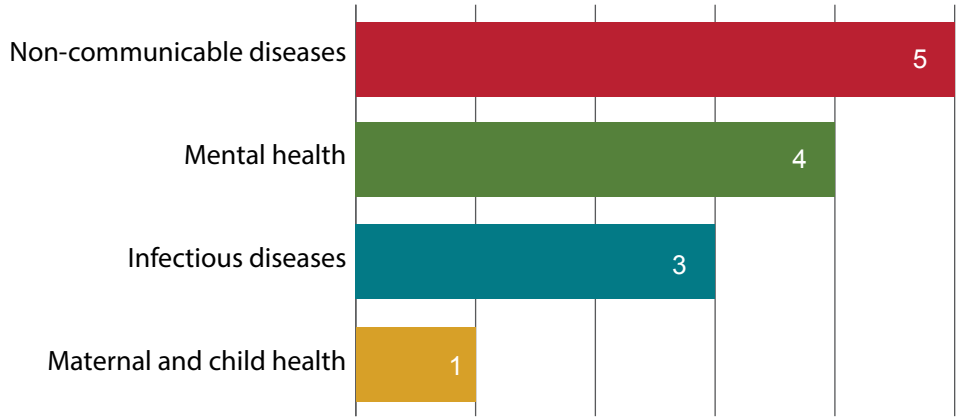
THEMES FROM KEY INTERVIEWS

The **broad category of NCDs** was identified by interviewees from all Southeast Asian countries and India as a priority. This is consistent with feedback from ECHO partners more broadly as well as the statistical data on death and disability. The relatively frequent mention of mental health by key interviewees suggests that health care providers experience it as a more pressing need than the official figures indicate.

Maternal and child health emerged as a primary issue among key interviewees in India only, although it features near the top of the death and disability rankings for three countries.

In the case of India, all four major health themes were identified, while Malaysian and Philippine sources described a triple disease burden (NCDs, infectious diseases, and mental health), and Indonesian and Vietnamese interviewees suggested fewer priorities.

Figure 4: Top health issues identified by Southeast Asian countries and India (N=5)



The more specific disease groups mentioned by key interviewees align fairly well with the top 10 causes of death, especially with respect to **NCDs** – cardiovascular disease, diabetes, and cancers – which generally occupy the highest positions. For instance, in Malaysia, our key interviewee said they follow WHO guidelines for NCD prevention and control and focus on screening and diagnosis services for colorectal, cervical, breast, and oral cancer in health clinics and hospitals by targeting high-risk groups for early detection. In Indonesia, the top four health priorities were cancers, stroke, cardiovascular diseases, and nephrology. Chronic kidney disease was also identified by our key interviewee in the Philippines as a priority, largely due to untreated diabetes.

The India report observed that the country's population was undergoing a shift as birth rates dropped and people lived longer. This contributed to the emergence of NCDs as the top cause of death and disability. The report identified a need to improve palliative care as part of the NCD response and to overcome a perception that this care was restricted to specialists. "(Palliative care) is not being practiced outside big institutions. The lack of access to pain-relieving medicines like morphine is hampering the end-of-life care."

Key interviewees were sensitive to TB as a continuing **infectious disease** priority, while perhaps underestimating the impact of lower respiratory tract infections. India indicated in its dedicated report: "Though we have eradicated communicable diseases like polio and tetanus, infectious diseases like TB are still concerning (and) vector-borne diseases like malaria, dengue and Chikungunya still pose a threat." (India health system review. New Delhi: World Health Organization, Regional Office for South-East Asia; 2022).

As observed above, the significance of **neonatal disorders** appears to have been overlooked by most key interviewees. However, the India report noted: "Though we have made immense progress reducing the maternal mortality rate and improving the health status of the mother, maternal health still has a long way to go when it comes to the lower (socio-economic) strata and rural women."

Table 9: Disease groups, diseases and disorders mentioned by Asian and Indian key interviewees

	Number of countries
Non-communicable diseases (NCDs)	
Cancers	4
Cardiovascular diseases	4
Diabetes	3
Chronic obstructive pulmonary disease	2
Chronic kidney disease	2
General	5
Mental health	
General	4
Infectious diseases	
Tuberculosis	3
Less common diseases (Ebola, Lassa fever and mpox)	2
Tropical diseases (malaria, yellow fever, dengue fever and others)	2
HIV	1
General	2
Maternal and child health	
Various aspects of RMNCH+A*	1

Key interviewees indicated that capacity building was needed with respect to almost all the diseases and disorders indicated above. Some broader solutions were:

- Developing capacity for outbreak preparedness and response.
- Building skills for prevention and early detection of NCDs – for example, raising public awareness of how to prevent NCDs, performing screening for certain cancers, and primary-level mental health services.
- Enabling primary care practitioners to play a greater role, for example, in diabetes management and cancer screening.

"If we can treat all the NCDs at the grassroots level, then the load on the tertiary hospitals will also be reduced because with a lot of preventive medication and other processes, many of the NCDs can be controlled to a great extent, and one should always take that advantage." – India key interviewee

With regard to workforce training in mental health, in Malaysia, our key interviewee stressed a need for effective measures in dealing with suicidal behaviors and strengthening of screening, intervention, and treatment services for substance abuse and addiction.

Interviewees proposed that training should not only improve technical proficiency but also develop the professional confidence and resilience of health workers, thus helping to sustain the health care workforce in the face of continuous pressure.

The Indian consultative process highlighted the value of:

- "Specialized, accurate, proper, and cadre-specific thematic modules" that focused on disease.
- Training in "soft skills and communication" to build the overall competency of the health care worker.
- Complementing limited hands-on training with "ongoing virtual handholding, training, and development provided by experts."
- Offering refresher training to help the health care worker "gain absolute clarity" and keep up with advances in medical care.

In Vietnam, our interviewee highlighted the opportunity that ECHO presents in continuing education. "In Vietnam, our training system is only six years with general doctors, then they go to work... There is a question whether they have enough knowledge, skills, and attitudes to work daily... [We] have a policy recommendation that training needs to be more rigorous... Virtual trainings can help us attain this goal."

The Latin American perspective

DATA ON CAUSES OF DEATH AND DISABILITY

National statistical data reflect a clear shift to **NCDs** – and particularly cardiovascular diseases and diabetes – as major causes of death and disability across the Latin American group. The frequency of chronic kidney disease is noteworthy and is probably partly due to uncontrolled diabetes. Lower back pain and other musculoskeletal disorders are also common in most countries selected for this report.

In the area of **infectious diseases**, lower respiratory tract infections continue to be of concern in most countries.

Neonatal disorders contribute substantially to death and disability in almost every country.

The significance of **interpersonal violence** as a cause of death and disability is noteworthy and, when combined with road traffic injury, this elevates trauma to a major area of need for the majority of countries in this project.

Statistics suggest that **mental health** may be emerging in the region as a priority.

Table 10: Top 10 causes of death and disability in 2019 in Latin American countries

Figures denote ranking of causes of death and disability for each country, measured in disability-adjusted life-years (DALYs). The top three causes for each country are highlighted, indicating health areas with the highest burden of disease is concentrated.

	Argentina	Brazil	Chile	Colombia	Ecuador	El Salvador	Guatemala	Haiti	Jamaica	Mexico	Uruguay
Non-communicable diseases											
Diabetes	5	5	4	4	4	4	4	9	1	1	7
Chronic kidney disease	10		9		5	2	6		5	2	
Ischemic heart disease	1	2	1	2	3	3	7	7	4	3	1
Cirrhosis			6				5			5	
Other muscular skeletal disorders	4		3	7						8	5
Lower back pain	6	7	5	5	10	9			7	9	6
Congenital defects					8			4		10	
Stroke	3	4	2	8	7	10	6		2		2
Headache disorders		9		9					9		
Chronic obstructive pulmonary disease	9			10							4
Lung cancer											3
Colorectal cancer											10
Infectious diseases											
Lower respiratory tract infections	2	8			6	8	1	2			
Diarrheal diseases							8	3			
HIV								5	8		
Maternal and child health											
Neonatal disorders	7	3		3	2	7	3	1	3	6	
Trauma and violence											
Interpersonal violence		1		1	9	1	2	8	6	4	
Road traffic injuries	8	6	8	6	1	5	9			7	8
Drowning								10			
Mental health											
Alcohol use disorders						6	10				
Anxiety disorders		10	10								
Depressive disorders			7						10		
Self-harm											9

Source: Institute for Health Metrics and Evaluation (IHME) country profiles

THEMES FROM KEY INTERVIEWS

Key interviewees placed equal emphasis on maternal and child health and NCDs as priority areas of need, ranking infectious diseases as slightly less pressing. Mental health, although ranked fourth, was mentioned by one in three respondents and appears to be a growing concern.

Most interviewees in this region depicted a complex disease burden in their countries, with multiple priorities. Some interviewees were engaged in a specialized area of health care and focused their input on their area of expertise.

Perceived needs in the area of maternal and child health included achieving targets set under the SDGs – that is, improving maternal, neonatal, and child survival rates – and extended to adolescent and young adult health. Interviewees indicated that there had been a recent increase in maternal, newborn, and child health issues.

The importance of gender as a determinant of health was flagged by some interviewees. Domestic violence, abuse, women's rights, and holistic care, particularly for women of reproductive age, were a priority mentioned by interviewees in Colombia and Uruguay. These issues are being addressed with ECHO by partners in Uruguay, Ecuador, and El Salvador.

Figure 5: Top four health-need categories identified by Latin American countries (N=11)

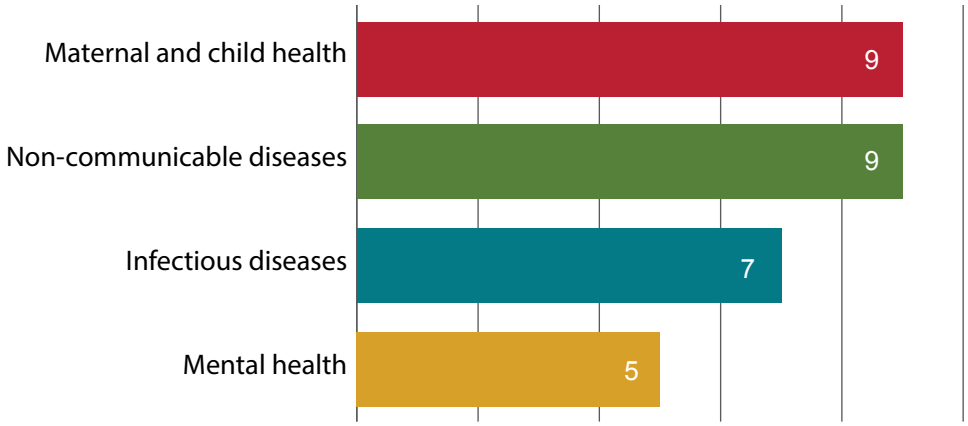


Table 11: Disease groups, diseases and disorders mentioned by Latin American key interviewees

	Number of countries
Maternal and child health	
General statements	5
Child, adolescent, and young adult health	5
Improvement of maternal and child mortality*	4
Pregnancy and childbirth complications	4
Gender issues	2
Intersection with NCDs	2
Intersection with infectious diseases	1

	Number of countries
Non-communicable diseases (NCDs)	
General statements	6
Cardiovascular diseases	6
Cancers	5
Diabetes	5
Obesity	4
Neurological issues	1
Infectious diseases	
HIV	5
Tropical diseases (malaria, dengue, Chikungunya, chagas, zika, and others)	4
Respiratory infections	2
Tuberculosis	2
Other less common diseases, intersection with NCDs, and clean water access	1
Mental health	
General statements and various disorders	5

** This specifically includes reducing maternal mortality among minors.*

NON-COMMUNICABLE DISEASES

Key interviewees' perceptions of need in the area of **NCDs** aligned with country statistical data in terms of prioritizing cardiovascular disease and diabetes. While cancer was mentioned as frequently as diabetes, it only appeared among the top 10 causes of mortality and disability in one country. It is likely that key interviewees are sensitive to emerging diseases and that the rapid progression and high fatality rate of many cancers underscore their significance on the scale of need.

Our interviewees in Ecuador and Guatemala highlighted the need for diabetes preventive measures; and in Brazil, interviewees linked diabetes and other chronic conditions to social determinants of health: "Almost all of these primary causes [of death]... are chronic health conditions caused by social determinants … illiteracy, low level of education, unemployment, poverty, lack of access to adequate food."

INFECTIOUS DISEASES

HIV was still perceived to be a priority across all countries, although in the secondary data it featured for only two countries. To some extent this may reflect recent concerns about the COVID-19 pandemic reversing earlier progress in relation to HIV and TB. In addition, it might speak to the high premium that national HIV programs place on prevention and the UNAIDS 95-95-95 model for diagnosing and treating people living with HIV. This approach not only prolongs the lives of people with HIV, but also reduces transmission of the virus. Keeping HIV off the top 10 list requires constant effort.

Tropical diseases were identified as a significant concern in the Brazil, Ecuador, El Salvador, and Guatemala interviews. Interviewees mentioned difficulty in reaching remote areas in the Amazon and a need to address malaria and other tropical diseases through testing, preventive medication, and vaccination campaigns. Recent pandemics had served as a warning to prepare for possible outbreaks of diseases such as dengue and Chikungunya fevers.

MENTAL HEALTH AND TRAUMA

Key interviewees' prioritization of **mental health** resonates with the statistical data, which reflects varying disorders across the region. Our interviewee in Colombia noted that the COVID-19 pandemic exacerbated mental health issues, and in El Salvador, Guatemala, and Mexico interviewees mentioned a gap in access to mental health professionals. In Guatemala, in particular, there is an urgent need for training primary care providers in remote areas to support and treat patients suffering from mental health disorders, including prescribing medication when necessary.

Brazil's interviewees indicated that the country's Ministry of Health regarded road accidents as one of their priority issues. The significant impact of **road accidents** was also recognized by our interviewees In Guatemala ("we have an epidemic of car accidents") and Haiti.

Latin American interviewees reflected on the possible benefits of **workforce capacity building** in relation to the health needs they had identified. Interviewees in Haiti and El Salvador clearly articulated how using ECHO to build workforce capacity overcame transport barriers and provided a platform for preparedness and response.

Our Mexico interviewee at the Ministry of Health, highlighted a generalized phobia among doctors of neurological, neuropsychiatric, or psychiatric conditions. Their organization uses the ECHO Model to educate primary care professionals, so they feel confident and comfortable treating or referring patients with these conditions and supporting patients' family members.

"Many doctors, especially at the first level of care, even with a specialty, do not want to get involved in these pathologies. So, what we want to do is influence the first-contact doctors. Tell them: 'You know what? You can treat epilepsy, you can identify tumors and refer them in a timely manner, you can treat headaches.' So, these courses are directed at all first-contact doctors (and) we also educate nursing staff and families of the patients." – Mexico interviewee

"We could invite a person for training, the person really wants to come but they can't afford it. So, the most suitable (training) method currently in Haiti…is the virtual method. In addition, the enthusiasm for the ECHO sessions clearly shows that service providers love this method very much." – ***Haiti interviewee*** *endorsing virtual training in areas such as hypertension management, maternal and child health issues, and communicable diseases in general.*

A leading partner in Chile identified the potential of ECHO programs to improve the quality of life for people with autism spectrum disorders (ASD), their families, and caregivers. "One of the objectives that [the Ministry of Health] is considering in the next decade in Chile has to do with comprehensive child development, including people in the autism spectrum … [These policies] will allow us to be a leader in Latin America, to work on services that accompany the entire life cycle [of people on the autism spectrum]." – ***Chile interviewee***

Guatemala's interviewee *spoke to the benefits of additional training for community nursing assistants. "Training of people who are already working and who we need to strengthen, that is what our objective is… The authorities need to understand the importance of the auxiliary nurse. First of all, she does not have to overcome the language barrier … (and) she knows the needs of the community."*

Pointers for capacity building interventions

There are **distinctive regional patterns** in the impact of major public health issues on populations. The balance between infectious diseases and NCDs has tilted decisively toward NCDs in both Asia and Latin America, while in Africa infectious diseases still command the highest priority.

This said, there was **significant common ground** within and among the regional groups participating in this project. One region's most pressing current need may be another's concern for the future or its unfinished business. The overlaps were unsurprising in terms of the broad themes but more interesting when they applied to specific diseases or disease groups. The shared concerns suggest that **targeted capacity-building concepts** emerging from one country are **likely to resonate** with others.

Key interviewees delivered a strong reminder that priorities **cannot be defined purely by the weight of numbers** – high prevalence, mortality, or burden of disability. The importance of interventions to contain and manage emerging diseases as early as possible and to sustain the downward trajectory of diseases that have been brought under control cannot be overstated. Interviewees in Africa appeared to foresee the future burden of NCDs if effective action is not taken now, while in Asia and Latin America, interviewees were cautious about claiming HIV control as a victory. A pool of capacity-building concepts could facilitate knowledge-sharing across borders in these emerging and residual disease areas.

The collective impact of **less common disorders** is highlighted in the secondary data when they are clustered – for example, as congenital defects. The key interviewee from Chile highlighted how pioneering training methods to address less common conditions in one country could be shared with the health workforce in several other countries. "We are delighted to be able to... access multi-center resources... having the same line of work in different places, basically seems super interesting to us, and it is motivating for what we are doing."- Chile interviewee

However, while there are clear benefits to sharing training concepts, **local nuances remain important**, and the case-based teaching and learning method – outlined in Section 4 – gave participants in this project an opportunity to apply broad principles of best practice in their lived reality.

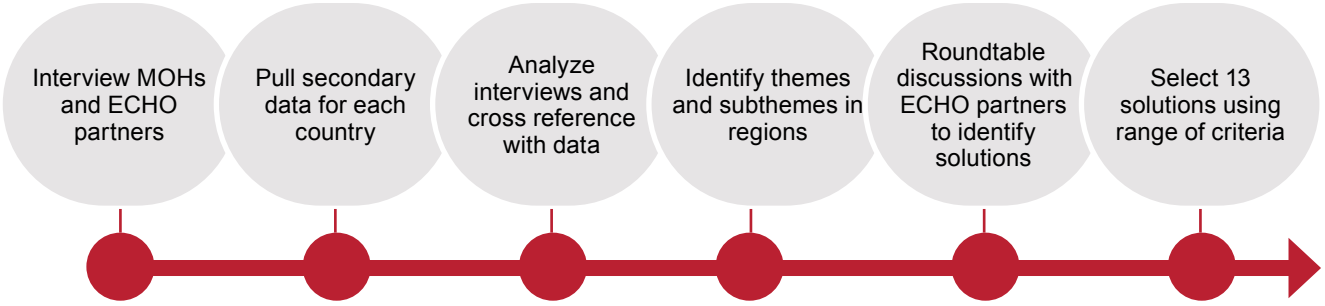
SECTION 4

ECHO solutions for workforce development

Introduction

The third major element of this project – after the collection of secondary data and the consultation with key in-country stakeholders – was a series of roundtable discussions to develop capacity building interventions most suited to addressing the health priorities identified.

Figure 6: Process for deriving workforce development solutions



In all cases except India (see below), roundtable participants were subject-matter experts from ECHO hubs in relevant countries. They had deep knowledge of their area of health care and practical experience of how the ECHO Model could be used to strengthen health worker capacity.

The roundtable process varied in different regions:

- In India, four regional face-to-face roundtable sessions were held – in Kolkata, Mumbai, Raipur, and Hyderabad – and a national roundtable took place in New Delhi. Each session discussed both the health needs of the population and capacity building priorities. Participants included representatives from: government (including state ministries of health), prominent non-governmental organizations, public health facilities, and medical institutes working in the field of public health.
- In Africa, four virtual roundtables were held. The first one focused on the theme of maternal and child health. The last three sessions included ECHO partners from multiple regions with expertise in the thematic areas. These sessions used a round robin brainstorming method after giving members time to think individually about an impactful workforce development strategy to address their selected health need. One session was held in French for experts in French-speaking countries; the others were conducted in English.
- In Latin America, two virtual sessions were convened: one was conducted in Portuguese for Brazilian participants and the other in Spanish. As in the final Africa roundtables, round robin brainstorming was used.
- In the Southeast Asia roundtable, we used the round robin brainstorming method with a similar structure to that used in the Latin American and final African roundtables.

RAPID PROBLEM SOLVING

Preparation

Participants received in advance summaries of the health priorities identified by key interviewees in their region and were requested to think of capacity building interventions to address these needs.

Planning

The development of capacity building solutions used a process of quick thinking to encourage creative problem-solving without judgment and influence from others. Everyone considered the same questions, at the same time, in a virtual meeting. A facilitator led participants through the planning process, one step at a time. Each participant had a planning template and privately completed it in response to the facilitator's prompts and within tight time limits. Participants were required to:

- Choose and describe one workforce development idea that would improve a critical health issue.
- Relate the idea to one of the main health priorities identified by key interviewees.
- Specify the topics to be addressed in the curriculum.
- Indicate who the target audience would be.
- Explain how the ECHO Model would fit in: as a core or complementary activity?
- Name organizations which could lead this initiative.
- Flag main implementation challenges.
- Estimate how long it would take to put the plan into action.
- Describe the most significant impact of the intervention on access to health care.

Presentation

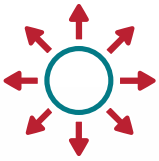
Each participant presented a workforce development plan based on their extensive knowledge and experience in particular health care areas. The sharing portion of the session was structured in a round robin brainstorming fashion to allow all members to contribute equally.

Discussion

Final discussions were unstructured, and participants were encouraged to make connections between solutions and highlight crosscutting strategies. During this time, interactions were vivid, and participants were enthusiastic, collaboratively enriching many of the solutions and occasionally adding new workforce development ideas.

Selecting viable solutions

The ECHO team reviewed all solutions generated by roundtables to produce a shortlist and then made a final selection of workforce development concepts. It is important to note not every health-related intervention is suitable for the ECHO Model. In some instances, for simple issues, it may make sense to do a webinar. Other health priorities may require hands-on training, such as for surgery. For the purposes of this report ECHO focused on solutions implemented using the ECHO Model. The criteria guiding this selection were:

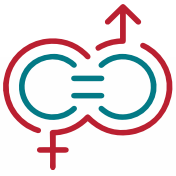


Diversity in the health issues addressed:

Key interviewees had identified a range of health priorities and ECHO strove to ensure that capacity development tools were sufficiently varied to respond to multiple needs.

Engagement of ministries of health:

A supportive working environment is necessary for capacity development of health workers to translate into improved access for patients. ECHO was inclined to select solutions where high-level support within the health service was evident. Project ECHO has signed partnership agreements with 24 health ministries in Africa, Asia, and Latin America (See Table 12).



Gender-related component:

The ECHO team considered whether the intervention would advance gender equity along with improving access to quality health services.

Potential for multi-country application:

In terms of identified health priorities, there was considerable common ground among countries, both within regions and across regional boundaries. The ECHO team tried to assess whether a particular capacity development plan could be replicated in several countries.

Roundtable meeting in Raipur, India

Participation in the Accord for a Healthier World:

ECHO specifically aimed to include interventions that would benefit the African Accord countries of Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, DRC, Eritrea, Ethiopia, Gambia, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Potential to address multiple health focus areas:

Some capacity development interventions could improve service performance in more than one area of population health. For example, training to improve the response to lower respiratory tract infections would impact child health and infectious disease performance, and a nutritional intervention might plug into maternal health and NCDs.

Perceived ease of implementation:

The ECHO team weighed possible barriers to implementation and assets that could be mobilized to support implementation.

ECHO availability and expertise:

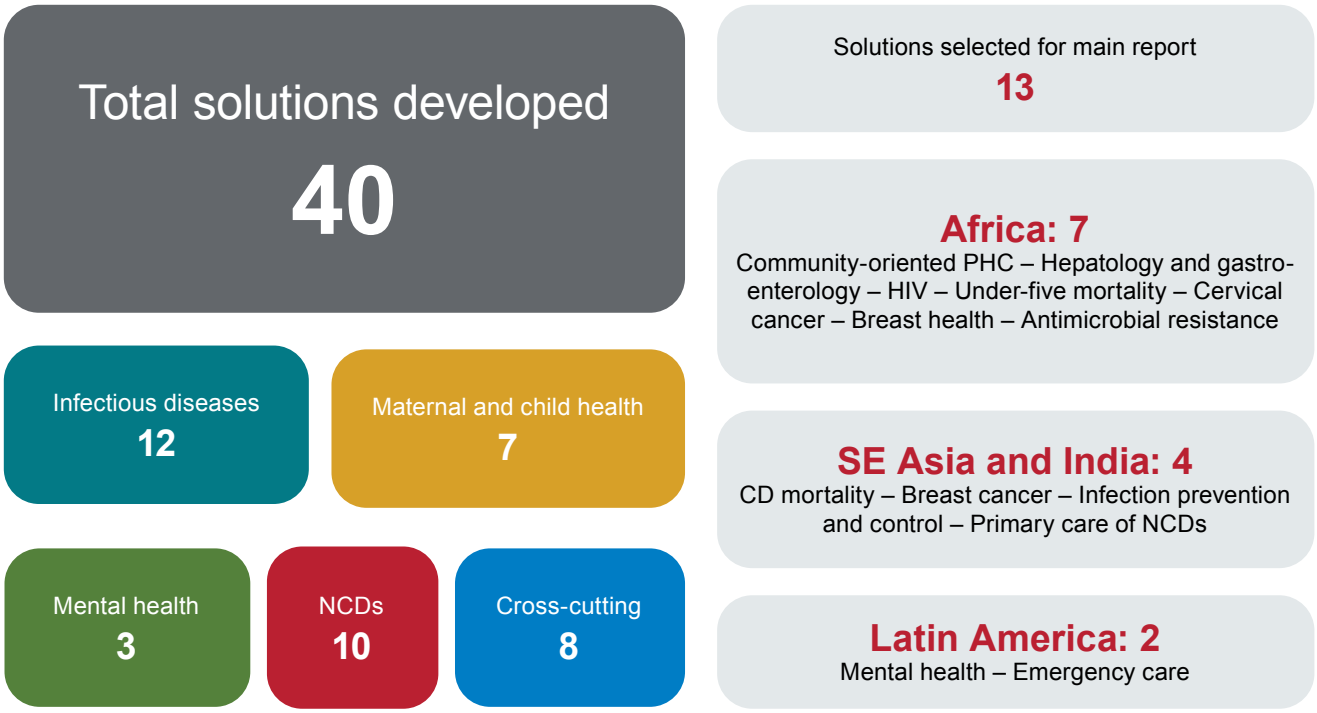
Activating the capacity building solution would be simpler where ECHO already had in-country hubs or programs, especially if these dealt with related subject matter.

ECHO made a final selection of 13 capacity development projects (Figure 7) which are presented in the pages that follow.

Table 12: ECHO's signed partnerships with ministries of health

Africa		Southeast Asia and India	Latin America
Botswana	Liberia	Armenia	Guatemala
Cameroon	Namibia	India	Haiti
Côte d'Ivoire	Sierra Leone	Malaysia	Jamaica
DRC	Sudan	Myanmar	Panama
Gambia	Tanzania	Pakistan	
Ghana	Uganda	Vietnam	
Guinea	Zambia		
Lesotho			

Figure 7: Summary of capacity development solutions received and selected



Overview of capacity development solutions

Twelve of the 40 solutions gathered from partners during roundtables focused primarily on infectious diseases. Initiatives addressing antimicrobial resistance appeared across all three regions, and leading countries in Africa and Latin America proposed HIV-specific programs. Other primary infectious disease topics were emerging diseases, infection prevention and control (IPC), gastroenterology and hepatology, One Health, and zoonosis, with other intersections across themes and an emphasis on co-infections.

Ten of the 40 solutions gathered from partners during roundtables focused primarily on **non-communicable diseases**. Solutions tended to be more general, addressing health promotion, prevention, and medical interventions. Breast health and cervical cancer were prominent in solutions from Africa and Asia. Other initiatives tackled issues related to cancers in general, chronic kidney disease, and diabetes. The rise of NCDs was particularly prominent in the Asia roundtables and was reflected in the solutions outlined during discussions.

Eight of the 40 solutions gathered from partners during roundtables focused on **non-disease-specific topics**. In Africa, one solution primarily addressed community-oriented primary care; similarly, in Asia, one solution focused on building capacity for community health workers. Tackling health care access and social inclusion stood out in initiatives concerning gender equity and providing friendly services to transgender and marginalized groups in Latin America and Asia. Other crosscutting non-disease-specific topics addressed toxicology and emergency care in Latin America.

Seven of the 40 solutions gathered from partners during roundtables focused primarily on **maternal and child health**. Five of them were proposed by partners in Africa, addressing mortality in children under five, newborn care, midwifery, and mother-to-child transmission of infectious diseases, specifically HIV and hepatitis B.

Three of the 40 solutions gathered during roundtables focused primarily on **mental health**. Two solutions came from lead partners in Latin America and one in Asia. They addressed the detection and management of mental disorders in general and a Latin American initiative focused on suicide prevention. One of the overarching themes of the Latin America roundtables was the need for expanded access to mental health services throughout the region.

To identify each solution's primary focus we relied on the description and rationale given by experts. Indeed, many of the solutions reach across various disease areas. For instance, providing services to mothers, fathers, and children living with HIV may address issues of infectious diseases, maternal and child health, and mental health.

Solutions for health workforce development

COMMUNITY-ORIENTED PRIMARY CARE

PRIMARY FOCUS: CROSS-CUTTING

Solution outlined by Sudan partner working with University of Nebraska Medical Center

This intervention focuses on NCDs and infectious diseases and aims to build a community-oriented primary care (COPC) system to improve access to services, especially in remote, rural, and underserved areas – many of which are impacted by war. It envisages training health care providers on the pillars of COPC: defining the community, identifying community health problems, modifying the health care program, and monitoring outcomes. Topics to be addressed are TB, HIV, malaria, prevention of various infectious diseases and NCDs, communication and interprofessional teamwork, community engagement, patient safety, and health ethics.

Impact

"The COPC model has proven effective because it engages service providers and community members in managing health care and 'meets patients where they are.' It also improves the capacity of health care workforces to gain a deeper understanding of their communities and health care needs," said the roundtable participant who developed this solution.

"In addition, it engages the community in their own health, which can assist with equity, sustainability, and dissemination of these programs. This model was tested by the Sudan ECHO hub during our COVID-19 vaccination campaign and volunteers were able to reach the most remote areas. They vaccinated more than 25,000 people, some of whom were initially very resistant to receiving the COVID-19 vaccine."

Learners

Medical doctors, physician assistants, nurses, and medical students. Students are a priority as this approach can help them to absorb the principles of community engagement before they qualify as professionals. The COPC program would contribute to changing the hierarchical culture commonly found in health care practice by "kind of getting out of the ivory tower of medical schools or nursing schools and into the community."

OTHER COUNTRIES WHERE COMMUNITY ENGAGEMENT IS A PRIORITY

Africa		Latin America	Southeast Asia and India
Cameroon	Malawi	Brazil	India
Côte d'Ivoire	Nigeria	Colombia	Philippines
Ethiopia	South Africa	Guatemala	Vietnam
Gambia	Sudan	Haiti	
Ghana	Tanzania	Mexico	
Kenya			

We have a (community) cadre that we call health surveillance assistants. So, for immunization and a lot of community engagement activities, surveillance, outbreaks, and so on, you need that cadre. They do the bulk of the work out there in the community.

(Malawi interviewee)

(Mexico interviewee)

It is very important for us to be able to reach those areas that are difficult to access. We must train the health promoter. We also forget that they are not doctors, they are not nurses, they are not, as such, professionalized. But they are people who live in the community, and end up becoming a person who educates the population.

The health worker best positioned (to address ministry priorities) is the lowest cadre of health care provider who must be empowered with knowledge. They also have the reach to the public, down to the last mile, so they have that convincing power.

(India interviewee)

INTERCOUNTRY MENTORSHIP IN GASTROENTEROLOGY AND HEPATOLOGY

PRIMARY FOCUS: INFECTIOUS DISEASES

Solution outlined by Ethiopia partner from St Paul's Hospital Millennium Medical College, Ethiopia

The primary aim of this solution is to decentralize care for gastrointestinal infectious diseases and NCDs, such as esophageal, colorectal, and hepatocellular cancer, in sub-Saharan Africa. An additional aim is to provide a forum for sharing experiences in implementation of programs, such as the hepatitis B birth-dose vaccine. A few sub-Saharan countries have successfully introduced the birth-dose vaccine but others have encountered challenges.

Impact

By mentoring service providers in the management of complex cases, the proposed approach would improve access to services for underserved patients, addressing health equity issues in countries in sub-Saharan Africa. Another significant impact would be improving relevant policies and policy implementation through sharing of on-the-ground experiences among professional peers.

Learners

Participants would be diverse and include: digestive and liver health specialists, nurses from gastroenterology endoscopy units, community health workers, and policy makers interested in hepatitis elimination and cancer. "

OTHER COUNTRIES WHERE GASTROINTESTINAL DISEASES AND CONDITIONS ARE A PRIORITY*

Africa	Latin America	Southeast Asia and India
Burkina Faso Ethiopia South Africa	Argentina	Malaysia

** Countries were included where key interviewees mentioned gastrointestinal diseases, diarrhea, cirrhosis, hepatitis, and colon and liver cancers. There were no mentions of esophageal cancer.*

INSIGHTS FROM SECONDARY DATA

Cirrhosis ranks among the top 10 causes of death and disability in Ethiopia, Kenya, Zambia, Chile, Guatemala, Mexico, Indonesia, and Vietnam. (IHME, 2019 data)

Liver cancer [is a priority] and … 60% is due to hepatitis B which is entirely vaccine-preventable. [But] we haven't seemed to be able to 'drive that jump' … Hepatitis guidelines were accepted, they were published in December 2019 … [but] the inclusion of vaccine in the screening of antenatal women still hasn't been implemented.

(South Africa interviewee)

(Argentina interviewee)

From the point of view of digestive oncology, we have a great deficit … [especially regarding] the screening strategy for colorectal cancer, since colorectal cancer is the second leading cause of cancer death in Argentina. Although there is a state recommendation that all people over 50 years should undergo screening, we know from surveys that this number is around 30% – or it was pre-pandemic.

MULTICOUNTRY CARE AND SUPPORT FOR CHILDREN, YOUNG MOTHERS AND FATHERS LIVING WITH HIV

PRIMARY FOCUS: INFECTIOUS DISEASES

Solution outlined by Zvandiri, Zimbabwe

This solution addresses gaps in supporting children and young people living with HIV in multiple countries. The focus is on multicountry case management with multisectoral engagement. Each country presents a challenging case, and team members from other countries engage ECHO-style to discuss and problem solve. Broad thematic areas will include HIV, maternal and child health, and mental health.

Impact

Zvandiri, an ECHO partner in Zimbabwe, put forward this solution. Zvandiri assists ministries and implementation partners in 10 other African countries to provide care and support for children, adolescents, and young people with HIV. This is how the organization envisaged the impact of case-based learning on HIV management. "In a micro way, we are solving one problem for one young person. In a macro way, we're using that knowledge and expertise as we move forward in our own countries and work with our own youth. Zvandiri works with many countries and has linkages to their ministries … [but] we do [programs] within [each] country. We've never really been able to get out of one country." Zvandiri is currently engaged in ECHO virtual mentoring in Angola, Eswatini, Ghana, Mozambique, Namibia, Nigeria, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe.

Learners

A multisectoral team including young peer counselors (8 – 24-year-olds living with HIV, including some young mothers), medical doctors, nurses, social workers, mental health professionals, community health workers, health ministry personnel, and other experts depending on the curriculum and cases presented.

OTHER COUNTRIES PRIORITIZING CARE AND SUPPORT FOR CHILDREN, YOUNG MOTHERS, AND FATHERS LIVING WITH HIV*

Africa				Latin America
Ghana	Nigeria	Tanzania	Zambia	Brazil
Malawi	Rwanda	Uganda	Zimbabwe	

** Key interviewees in many countries mentioned HIV as a general priority. This table contains only countries from this project where Zvandiri already works and those where key interviewees specifically mentioned mother-to-child HIV transmission or providing HIV care and support services to pregnant women, children, and young adults. It is possible that additional countries may find this intervention relevant.*

INSIGHTS FROM SECONDARY RESEARCH

In 14 out of 19 countries in our African group HIV was a top cause of death and disability (IHME, 2019 data). In Africa, new infections are generally highest among young people – particularly young women – and access to treatment is poorer for children than adults.

São Paulo eliminated vertical transmission of HIV. We no longer have children born with HIV in the city… That was 20 years of work, 30 years of work. These things don't happen overnight, but it could only happen because it was a perennial policy. And only because the technicians supported this policy.

(Brazil interviewee)

(Zimbabwe interviewee)

"By helping one child or young person, we impact on the individual's partner, children, family, and community. And then, the larger impact is that … this entire multisectoral group (in the ECHO session) gains knowledge, gains strength, and power, and confidence. And we'll move that forward to have an impact on more children as the group's knowledge increases and confidence increases."

STUDENT-LED INITIATIVE TO ADDRESS MORTALITY OF CHILDREN UNDER FIVE YEARS

PRIMARY FOCUS: MATERNAL AND CHILD HEALTH

Solution outlined by the Africa One Health University Network (AFROHUN) Kenya

This solution addresses underlying causes of death in children under five years, which are largely preventable and treatable and include pneumonia and diarrhea. Using the ECHO all-teach all-learn model, the aim is to create a place-based experiential learning program which pairs a multidisciplinary team of university students and subject-matter experts with Kenyan communities experiencing high rates of under-five mortality. The broad areas of learning would include:

- Risk factors and related prevention methods.
- Identification of signs and symptoms.
- Basic home management.

Impact

Students of AFROHUN Kenya's One Health Innovation Clubs proposed a program, GiveLifeAChance, with the above goals. They are well positioned to lead this initiative by leveraging their network of universities in Kenya and beyond.

The initiative would improve prevention, identification, and response to public health threats at the community level, including factors contributing to under-five mortality. It would also help build resilient health systems. Direct impacts include reducing under-five child morbidity and mortality, and producing knowledge and skills through a combination of experience, reflection, conceptualization of the experience, and use of learned ideas to solve problems. This student-led program would provide opportunities for developing and applying leadership skills.

The improvement of students' leadership and community engagement skills has the potential for long-term benefits. "Good leadership, good management skills [are key to utilizing] the few resources that are available," a Namibian roundtable participant commented in response to the Kenyan students' solution.

Learners

A multidisciplinary team of university students, subject-matter experts, parents and families with young children, teachers, and other community members.

OTHER COUNTRIES PRIORITIZING THE REDUCTION OF UNDER-FIVE MORTALITY (WITH A FOCUS ON PNEUMONIA AND DIARRHEAL DISEASES)*

Africa		Latin America	
Benin	DRC	Brazil	Guatemala
Burkina Faso	Gambia	Colombia	Uruguay
Côte d'Ivoire			

** Child mortality was identified as a health priority by all the countries mentioned in the table. Diarrhea in children was specifically mentioned by Gambia and Burkina Faso interviewees, and pneumonia was prioritized by Gambia and Guatemala.*

INSIGHTS FROM SECONDARY DATA

Diarrheal and lower respiratory tract infections are both among the top 10 causes of death in all African countries selected for this project. (IHME, 2019 data).

Maternal and infant deaths are real problems. Although there are small changes … we are not yet below the internationally accepted thresholds.

(DRC interviewee)

(Brazil interviewee)

Regional differences are very large (and) infant mortality varies a lot … From the point of view of service provision, we also have a very large racial inequality. The Amazon is where we have the worst infant mortality rates.

CERVICAL CANCER TRAINING FOR NURSES AND COMMUNITY HEALTH WORKERS

PRIMARY FOCUS: NON-COMMUNICABLE DISEASES

Solution outlined by Cameroon Baptist Convention Health Services

The aim is to provide training for full-spectrum prevention and care of cervical cancer, focusing on nurses and community health workers. They will be trained and mentored through ECHO sessions for cervical screening and vaccination clinics. Cameroon Baptist Convention Health Services will lead these sessions which will be focused on cervical cancer education, promotion of HPV vaccination, screening and early detection, treatment of pre- and early invasive cervical disease, and follow up post-treatment.

Impact

Like other African countries, conflict-torn Cameroon has a physician shortage. As a result, few physicians have the time or expertise to do cervical screenings, but nurses are highly skilled and allowed to perform certain procedures which are reserved for doctors in the United States and other western countries. These sessions can be attended and implemented by other African countries.

Learners

Community health workers, medical laboratory personnel, nurses, physicians, and public health officials.

OTHER COUNTRIES WHERE CERVICAL CANCER IS A PRIORITY*

Africa	Latin America	Southeast Asia and India
Cameroon Malawi Uganda	Argentina Brazil	Malaysia

** Note: South Africa's interviewee said introduction of the human papillomavirus (HPV) vaccine to prevent cervical cancer had been a success story that could be replicated for the hep B vaccine if there was political will.*

Malawi has one of the highest burdens of cervical cancer in the world … We have seen [cervical cancer screening] improvements among women living with HIV because the HIV program has added partners, additional resources. So at least there, the access has improved. But outside that, access is not good.

(Malawi interviewee)

(Uganda interviewee)

Cancer of the cervix is a challenge that we are still battling with as a country.

In Latin America, one of the main problems in gynecological tumors is cervical cancer. The big issue in most places is time. It takes a long time to diagnose and [to receive] radiotherapy and chemotherapy treatment for cervical cancer.

(Argentina interviewee)

PREVENTING HEALTH CARE-ASSOCIATED INFECTIONS AND ANTIMICROBIAL RESISTANCE

PRIMARY FOCUS: INFECTIOUS DISEASES

Solution outlined by Cameroon Baptist Convention Health Services

This initiative aims to build the capacity of frontline health care providers in relation to hand hygiene, surveillance of health care-associated infections (HAI), and antimicrobial stewardship. It paves the way for future surveillance activities. Virtual training, using the ECHO Model, will cover: an introduction to HAI, standard and transmission-based precautions, monitoring hand hygiene compliance, surveillance of HAI, antimicrobial resistance, and antimicrobial stewardship.

Impact

The roundtable participant from Cameroon gave the following background to the solution. "Three types of adverse events are responsible for significant loss of life within the health facility … The first one is low hand-hygiene compliance. The second one is antimicrobial resistance. And then the next is poor use of the available antibiotics."

Low hand hygiene compliance, HAI, and antimicrobial resistance compromise patient safety globally. Poor compliance with infection prevention measures, especially hand hygiene, increases HAI – which in turn drives antibiotic use, elevating the risk of antibiotic resistance. Antibiotic-resistant micro-organisms can spread among patients unless appropriate infection prevention and control measures are implemented. Unfortunately IPC is poor in many health care facilities in LMICs, along with the provision of water and sanitation.

A 2021 study at Banso Baptist Hospital in Kumbo, Cameroon, indicated:

- The incidence of caesarean section-associated surgical site infections was 24 per 1,000 patient-days.
- Up to 82% of study participants were discharged with antibiotics that were not necessary.

  (The study is still to be published.)

Such problems are common in Cameroon, but surveillance is not undertaken because service providers do not appreciate its importance and they lack the capacity to conduct it. The Infection Prevention and Control Association (IPCA), Cameroon, in collaboration with the Infection Control African Network and Society for Health Care Epidemiology of America (SHEA), would be interested in leading an initiative to build capacity to prevent HAI and antimicrobial resistance and promote antimicrobial stewardship.

Learners

Nurses, physicians, pharmacy and laboratory staff, and other relevant role players.

OTHER COUNTRIES PRIORITIZING HAND HYGIENE, PREVENTION OF ANTIMICROBIAL RESISTANCE, AND PROMOTION OF ANTIMICROBIAL STEWARDSHIP*

Africa	Latin America	Southeast Asia and India
Cameroon Nigeria Zambia	El Salvador	Cameroon Nigeria Zambia

** Interviewees alluded to antimicrobial resistance and stewardship in nuanced or general ways. The table above covers only specific mentions of these concepts.*

INSIGHTS FROM SECONDARY RESEARCH

- Antimicrobial resistance and anti-microbial stewardship rank third among health priorities of the Zambian Ministry of Health.
- The El Salvador Ministry of Health has a national program for infection control and antimicrobial resistance.
- India experts proposed a solution that builds health care worker competency for antimicrobial stewardship.

EXPANDING ACCESS TO MENTAL HEALTH SERVICES

PRIMARY FOCUS: MENTAL HEALTH

Solution outlined by Colombia partners and Ministry of Health

The lack of specialists working with people with neurodevelopmental disorders and mental health problems reflects a gap in workforce development in many Latin American countries. The demand for services exceeds the available specialists, resulting in long waiting lists for diagnostic evaluation and delayed initiation of treatment. People requiring care for mental health disorders must seek out professionals in specialized centers, generally in large cities. This initiative aims to ensure there are more trained professionals in rural and peripheral areas, reducing the number of unnecessary referrals.

Impact

The Pan American Health Organization (PAHO) is the WHO health agency for the Americas, incorporating Latin America and the Caribbean. PAHO in Colombia has partnered with the Ministry of Health and the Colombian National Research and Education Network (RENATA) to scale up services for mental, neurological, and substance use disorders in LMICs, using the ECHO Model.

An overarching theme identified during the Latin American roundtable discussions was the need to train primary care providers and community mental health workers to expand access to mental health services. The integration of the ECHO Model to support best practice in primary care could also support the expansion of mental health services at this level of care in Colombia and across the PAHO region.

Learners

Mental health workforce, including psychiatrists, counselors, psychiatric social workers, nurses, and various other health care professionals such as community health workers, non-specialty doctors, and social workers. Specifically in Colombia, the program would target Ministry of Health personnel in La Guajira and Chocó, where mental health services are least available.

OTHER COUNTRIES PRIORITIZING THE EXPANSION OF ACCESS TO MENTAL HEALTH SERVICES

Africa	Latin America	Southeast Asia and India
Rwanda	Ecuador	India
South Africa	El Salvador	Indonesia
Uganda	Guatemala	Malaysia
Zimbabwe	Mexico	
	Colombia	
	Uruguay	

INSIGHTS FROM SECONDARY RESEARCH

Depressive disorders are among the top 10 causes of death and disability in Democratic Republic of Congo, Rwanda, and Sudan. IHME statistics confirm that self-harm is a top cause of death and disability in Uruguay. Other Latin American countries in which mental health disorders feature in top 10 causes of death and disability are: Brazil (anxiety disorders), Chile (depressive and anxiety disorders), El Salvador and Guatemala (substance-use disorders), and Jamaica (depressive disorders). Depressive disorders are the 7th highest cause of death and disability in Malaysia (IHME, 2019 data)

(Zimbabwe interviewee)

Overarching all of this is the massive gap of mental health. It's mental health and psychosocial support.

[Mental health] has never, historically, been properly addressed … The level of discomfort and dissatisfaction of health teams, patients, and users [of mental health services] is very high compared to the rest of the [health service] areas. Uruguay has the highest suicide rates in the world, and … we are affected by the problematic use of various substances.

(Malawi interviewee)

STRENGTHENING EMERGENCY CARE IN REMOTE AREAS

PRIMARY FOCUS: CROSS-CUTTING

Solution outlined by Argentine Ministry of Health

This initiative aims to improve the diagnosis and treatment of pathologies in emergency care and improve decision-making for referral to advanced care. The solution was proposed by a participant from Argentina and addresses the concentration of emergency care services in the capital city, Buenos Aires – an issue common to many Latin American countries. The Ministry of Health in Argentina wants to partner with the University of Mendoza to expand virtual training and mentoring to remote areas, focusing on toxicology, pediatric emergencies, and hemodynamic (blood circulation) monitoring.

Impact

In emergency care, patient outcomes often depend on the speed with which the correct medical care is provided. This training would enable health professionals in smaller towns across the country to provide the standard of care stipulated in clinical protocols. The Ministry of Health would provide subject-matter experts and engage the participation of relevant specialists at secondary and tertiary hospitals.

Learners

This pilot initiative in Argentina would include clinicians in four hospitals in the province of Mendoza, located between 43km and 324km from the tertiary care center in the provincial capital, as well as Ministry of Health personnel and other subject-matter experts.

OTHER COUNTRIES WITH EMERGENCY CARE AS A PRIORITY*

Latin America	Southeast Asia and India
Argentina Colombia	Vietnam

** Interviewees alluded to emergency care and needs in nuanced or general ways. The table above covers only explicit mentions of emergency care.*

> *We know that one of the most frequent causes of death is postpartum hemorrhage emergencies.*
>
> **(Colombia interviewee)**

REDUCING PREMATURE DEATH DUE TO NON-COMMUNICABLE DISEASES

PRIMARY FOCUS: NON-COMMUNICABLE DISEASES

Solution outlined by Ministry of Health in Vietnam

This initiative aims to reduce the number of premature deaths resulting from NCDs. The Ministry of Health in Vietnam successfully conducted a pilot initiative to train clinicians nationwide to help reduce premature NCD deaths. The training could be expanded to India, Indonesia, the Philippines, and Malaysia with ECHO serving to accelerate access to training.

Impact

This solution will focus on training primary care clinicians in better management, early detection, and prevention of NCDs. Following the pilot in Vietnam, the approach could be expanded to Malaysia, the Philippines, and Indonesia, where ministries of health have stated that NCDs are a priority. A multicountry approach would allow for sharing of experts in ECHO sessions across the region and collaborative learning between the countries, exponentially expanding expertise.

Learners

Primary care clinicians: nurses, doctors, and community health workers (CHWs).

OTHER COUNTRIES WHERE COMMUNITY ENGAGEMENT IS A PRIORITY

Africa		Latin America		Southeast Asia and India
Cameroon	Malawi	Argentina	Guatemala	India
Côte d'Ivoire	Rwanda	Brazil	Haiti	Indonesia
Ethiopia	South Africa	Colombia	Jamaica	Malaysia
Gambia	Uganda	Ecuador	Mexico	Philippines
Ghana	Zambia	El Salvador		Vietnam
Kenya				

INSIGHTS FROM SECONDARY RESEARCH

The WHO reports that NCDs cause more than 70% of all deaths in LMICs, however only 2% of health funding is directed to NCDs. Effective measures to prevent and control NCDs in LMICs would cost just an additional US$ 1.27 per person per year. *(Source WHO: https://www.who.int/news/item/16-05-2018-investing-in-noncommunicable-disease-control-generates-major-financial-and-health-gains).*

Stroke ranks among top 10 causes of death in 16 out of 19 African countries featured in this report, and ischemic heart diseases in 11 countries. In all Latin American countries selected for this project, diabetes, and ischemic heart disease rank among the top 10 causes of death and disability. Stroke is also listed in most countries, and chronic kidney disease in about half.

The emergence of non-communicable diseases represents a heavy burden in terms of morbidity and mortality … [We see] cardiovascular diseases and cancers for which we can't really put [in place] good monitoring and diagnosis systems for patients. To me, those are the top public health issues for our country right now.

(Cameroon interviewee)

(Philippines interviewee)

NCDs were increasing rapidly and about 75% of all deaths could be attributed to NCDs, including cancers, cardiovascular diseases, diabetes and kidney disease, the last largely due to untreated diabetes. The majority of the NCDs were considered lifestyle-related.

BETTER BREAST CANCER OUTCOMES

PRIMARY FOCUS: NON-COMMUNICABLE DISEASES

Solution outlined by Dharmais National Cancer Center and Indonesian Ministry of Health

This initiative aims at improving breast health awareness and early detection of breast cancer for better outcomes. The Indonesian Breast Cancer Society has taken the lead in organizing an ECHO virtual training with support from the Dharmais National Cancer Center and the Indonesian Ministry of Health. A successful pilot conducted in the Tangerang region points to great potential to scale this up nationally.

Impact

Expanding this initiative would fill a major health worker development need in Indonesia. Breast cancer is the most prevalent cancer in Indonesia, with 65,858 new cases and 22,430 deaths in 2020. (Globocan, 2020) About 70% of breast cancer cases are detected at late stages, leading to poor care outcomes. If breast cancer is detected and treated properly at an early stage, the survival rate is more than 90%. Community health workers or cadres should be engaged in the early detection and prevention of breast cancer. They need to have access to a referral system when cancer is suspected. Presently tertiary hospitals lack the capacity to treat cancer cases. Building this capacity is critical, so that patients can be managed in their communities.

Learners

Community health workers and other health care providers.

OTHER COUNTRIES PRIORITIZING BREAST CANCER

Africa	Latin America	Southeast Asia and India
Côte d'Ivoire Kenya	Brazil	Indonesia Philippines Malaysia

Cancer of the uterus, in our country, is the deadliest cancer and many women and young girls [have] breast and cervical cancer … It's a tragedy, it's really a tragedy, when we can develop early detection programs. And virtual training can accomplish these early detection programs.

(Côte d'Ivoire interviewee)

(Brazil interviewee)

There was a deterioration, a worsening in screenings during the [COVID-19] pandemic for gynecological cancers, both cervical cancer and breast cancer.

DELIVERING INFECTION PREVENTION AND CONTROL TRAINING TO NURSES

PRIMARY FOCUS: INFECTIOUS DISEASES

Solution outlined by ECHO India

This solution recognizes the strategic role played by nurses in developing resilient health systems and focuses on enabling them to follow best practice in infection prevention and control (IPC). This solution was developed for India where it addresses gaps in training through a partnership involving ECHO India, state nursing councils, nursing associations, and municipal corporations. The aim is to support the implementation and sustainability of IPC programs in India, leading to system changes and reduced infection rates.

Impact

The COVID-19 pandemic underscored the critical need for Indian health systems to incorporate IPC practices and an increasing number of medical facilities are doing so. However, there are significant obstacles, such as insufficient funding and human resources, hospital overcrowding, and low nurse-to-patient ratios even in intensive care units. In addition, there is a lack of information among staff members, which results in inappropriate use of protective equipment and incorrect IPC practices. The situation could be greatly improved by ensuring there are trained and dedicated staff to carry out IPC activities.

Learners

Nurses

OTHER COUNTRIES PRIORITIZING INFECTION PREVENTION AND CONTROL*

Africa
Nigeria
Sudan

** Interviewees alluded to IPC needs in nuanced or general ways. The table above covers only specific mentions of infection prevention and control.*

> *IPC is a key area that requires more strengthening. We don't want people, while responding to infections, to get infected – so IPC is key. Antimicrobial resistance … is the silent pandemic that can destroy us.*
>
> **(Nigeria interviewee)**

UPSKILLING THE PRIMARY HEALTH CARE WORKFORCE FOR NCD SCREENING, EARLY DETECTION, AND TREATMENT

PRIMARY FOCUS: NON-COMMUNICABLE DISEASES

Solution outlined by ECHO India for Ministry of Health and Family Welfare

The ECHO India team proposes to leverage its partnership with the Ministry of Health and Family Welfare (MoHFW) and state national health missions (NHMs) to create programs to build community health workers' capacity for NCD care. The aim is to improve the skills of the primary health care workforce in screening, early detection, and treatment, focusing mainly on diabetes, hypertension, and cardiac and respiratory disorders. The initiative is pan-India with a particular focus on NCD high-burden states such as Uttar Pradesh, Maharashtra, Bihar, West Bengal, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Rajasthan, Karnataka, and Gujarat.

Impact

Worldwide, NCDs kill approximately 40 million people each year, accounting for 70% of all deaths, according to WHO. A study conducted by the Thought Arbitrage Research Institute (TARI), showed that 116 out of 1,000 Indians suffer from NCDs such as hypertension, digestive disease, diabetes, respiratory diseases, neurological disorders, cardiovascular diseases, kidney disorders, and cancer *(https://tari.co.in/wp-content/uploads/2021/07/NCD-Report-finalfile-1-1.pdf)*. Multiple studies indicate that the greatest capacity gap among health care providers is in addressing NCDs.

Learners

Frontline workers, nurses, and medical officers.

OTHER COUNTRIES PRIORITIZING NCDS

Africa		Latin America		Southeast Asia and India
Cameroon	Malawi	Argentina	Guatemala	Indonesia
Côte d'Ivoire	Rwanda	Brazil	Haiti	Malaysia
Ethiopia	South Africa	Colombia	Jamaica	Philippines
Gambia	Uganda	Ecuador	Mexico	Vietnam
Ghana	Zambia	El Salvador		
Kenya				

INSIGHTS FROM SECONDARY DATA

Ischemic heart disease ranks among the top 10 causes of death and disability in 11 countries in Africa, all Latin American countries, all Southeast Asian countries selected for this project, and India. Stroke ranks among the top 10 causes of death and disability in 16 out of 19 African countries in this report, and is a top cause in most Latin American countries and all Southeast Asian countries (IHME, 2019 data).

(Ecuador interviewee)

Diabetes problems and heart problems as well – especially hypertension – are very serious. I believe that, although specialist doctors can continue to be trained, there are also other areas of training that are perhaps important and are more aimed at spreading knowledge of certain habits towards the population in general.

In terms of non-communicable diseases, [priorities are] definitely diabetes and hypertension, and, to a great extent, chronic obstructive pulmonary disease.

(India interviewee)

BRIDGING THE GAP IN MATERNAL AND CHILD HEALTH SERVICES

PRIMARY FOCUS: MATERNAL AND CHILD HEALTH

Solution outlined by ECHO India and national health missions

The solution focuses on capacity building of accredited social health activists (ASHAs) in order to strengthen maternal and child health service in the eastern belt of India. This will be achieved through ECHO India's collaboration with the Ministry of Child and Family Welfare and will boost initiatives like reproductive, maternal, newborn, and adolescent health.

ECHO India will leverage its existing network of partnerships with various national health missions (NHMs) in the eastern region to enhance the capacity of ASHAs, community health officers, and nurses, especially at the primary level. The intervention will cover multiple states, subdivisions, districts, block-level hospitals, and other health infrastructure. ECHO India will work with state health departments and partner with various state health agencies, including medical institutions and nursing councils. These interventions will provide a creative and innovative approach to building the competencies and confidence of ASHAs and other health responders in reproductive, maternal, newborn, and child health and nutrition.

Impact

Maternal and child health care services play a crucial role in minimizing the risks related to pregnancy and childbirth. In the case of India, the maternal mortality rate has declined but a significant coverage gap remains between wealthy individuals and urban residents, and women with low income or living in rural areas. There is a great need for initiatives to reduce maternal and infant mortality in particular states, including Jharkhand, Chhattisgarh, Bihar, and Madhya Pradesh. In these states, shortages of skilled health workers and other barriers to access have led to lower coverage of prenatal and postnatal services, and routine childhood immunization.

Learners

ASHAs, nurses, and other primary care health workers.

OTHER COUNTRIES PRIORITIZING MATERNAL AND CHILD HEALTH

Africa		Latin America		Southeast Asia and India
Benin	Guinea	Chile	Mexico	India
Burkina Faso	Nigeria	Colombia	Brazil	
Côte d'Ivoire	Tanzania,	Haiti	El Salvador	
DRC	Zambia	Jamaica	Guatemala	
Gambia	Zimbabwe	Uruguay		

Our interviewee in the Jamaica Ministry of Health mentioned that building capacity in program areas related to child and maternal health and immunization is a priority, including providing holistic care and adolescent-friendly services.

(Jamaica interviewee)

(India interviewee)

The Ministry of Health gives out its own priorities from time to time and reproductive, maternal, newborn, child and adolescent health has always been a focus.

WHERE TO ACCESS ALL SOLUTIONS CREATED BY ROUNDTABLES

A total of 40 solutions were developed by roundtable participants – some in greater detail than others – and 13 have been included in the main body of this report. The remaining 27 are contained in the country profiles comprising Appendix C.

Focus of solution	Country proposing solution	Page
INFECTIOUS DISEASES		
Intercountry mentorship in gastroenterology, hepatology	Ethiopia	43
Multicountry care for children, young mothers with HIV	Zimbabwe	44
Preventing health care-associated infections	Cameroon	47
Infection prevention and control training for nurses	India	52
Developing expertise for antibiotic optimization	Guatemala	142
Capacity building on emerging infectious diseases and long-term COVID	Uruguay	153
Training on a continuous care model for STI management	Brazil	125
Building capacity for One Health approach to infectious disease prevention	Kenya	89
Training to reduce transmission of zoonotic diseases	Kenya	89
Strengthening and expanding ECHO TB/HIV mentorship model	Zambia	116
Building competency for antimicrobial stewardship	India	157
Training for early detection of cervical cancer and HPV vaccinations	Indonesia	169
Capacity building to improve care to mothers and children with HIV	Namibia*	179
Improving access to HIV treatment and quality care	Nicaragua/Panama*	179
NCDs		
Cervical cancer training for nurses and CHWs	Cameroon	46
Reducing premature death due to NCDS	Vietnam	50
Better breast cancer outcomes	Indonesia	51
Upskilling primary care workers for NCD screening and care	India	53
Training to improve primary care management of diabetes	Brazil	126
Training primary care workers on chronic kidney disease	Brazil	126
Training primary care workers on multifactorial chronic disease	Brazil	126
Capacity building to promote breast health	Kenya	89

* *These proposals are for countries that were not the focus of this needs assessment project*

Conclusion

Rebuilding health systems devastated by a global pandemic – systems that were already underfunded and struggling to address systemic inequities in health care provision – requires new ways of thinking and a laser-like focus on growing and strengthening the health care workforce. Implementing the ECHO solutions identified in this report would address locally identified health priorities in LMICs using a proven learning model that is both low-cost and high-impact. Project ECHO can be an effective catalyst to driving lasting change.

APPENDICES

Appendix A, B and C

Appendix A

ECHO HEALTH NEEDS ASSESSMENT

QUESTIONS FOR INTERVIEWS

1. **What are the top health issues or disparities in your country or region? Possible probes:**
    a. What are the top issues for the Ministry of Health? (Probe for priorities related to public health, prevention, diagnosis, treatment, and health screenings.)
    b. Who are other key stakeholders and what are their top health issues or disparities?
    c. Are these priorities documented/written anywhere or posted on public websites?
    d. Which types of health care providers are best positioned to address these priorities?
    e. Are there barriers to care, such as access to medication or access to health information, that may also need to be addressed?
2. **Which geographic areas or populations in your country or region are particularly impacted by these health issues? Possible probes:**
    a. Rural vs. urban areas.
    b. Populations such as elderly people and those with special needs.
3. **What are top priorities for building health care workforce capacity in your country or region? Possible probes:**
    a. Which priorities can be addressed by virtual training or mentoring?
    b. Where in the career pipeline is training or mentoring needed? For example, attracting people to health care careers, education system, or early career.
4. **What are the priorities for evaluating a professional development program like ECHO in your country or region? Possible probes:**
    a. What outcomes are most important or feasible to measure?
    b. What outcomes are measured for similar virtual or in-person professional development programs?
    c. Which organizations might be good research or evaluation partners?
5. **What challenges have you experienced (or do you anticipate) in doing the ECHO program? What resources or tools might be needed to overcome these challenges?**

Appendix B

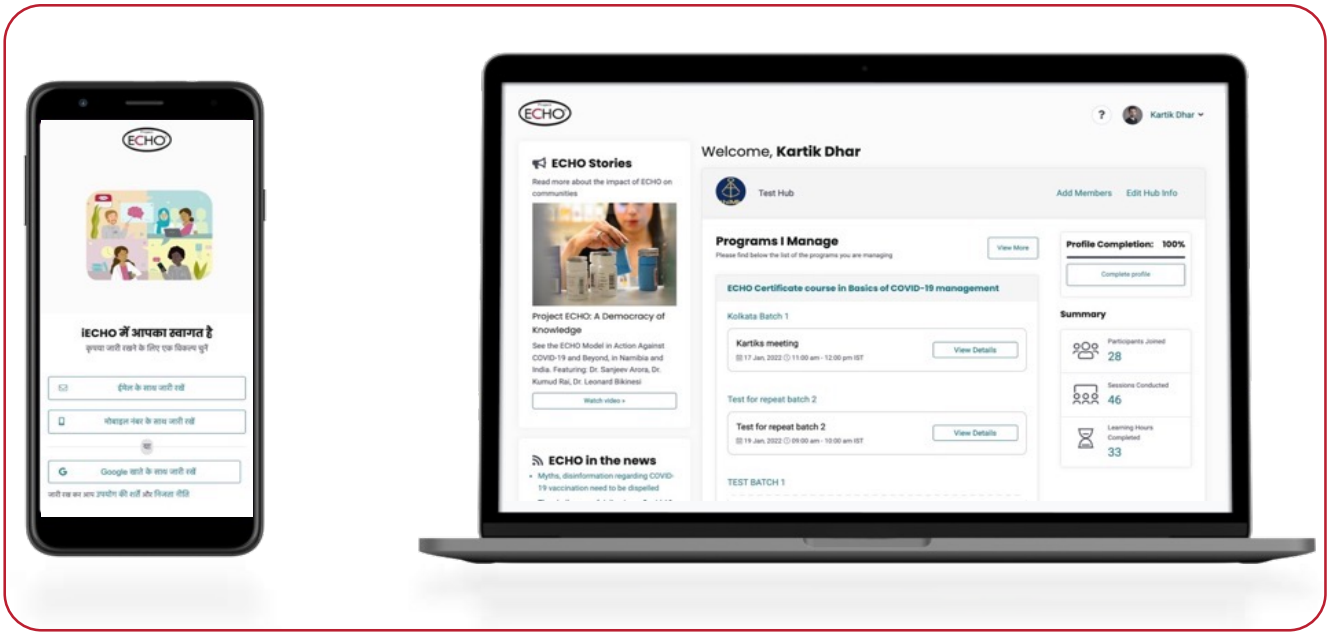
iECHO PLATFORM GLOBAL ROLL-OUT

ECHO has developed a next generation program management tool geared to make it easier to launch and run ECHO virtual communities of practice. This tool will greatly reduce the administrative costs of operating an ECHO program, and help participant members communicate with one another and with the ECHO hub team. This tool is critical for the implementation, long-term sustainability, and assessment of the solutions that are implemented for this project.

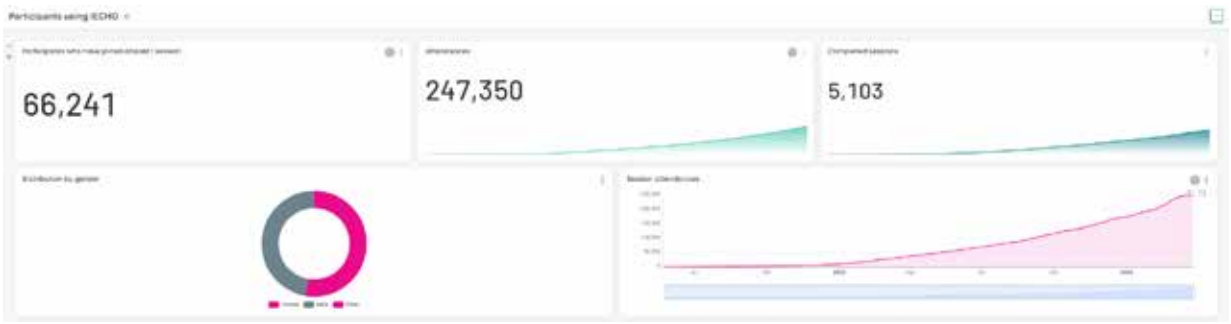
This next-generation software will allow each participant to track their ECHO learning journey. It will allow ECHO hubs and subject matter experts to access programmatic information about attendance over time and view post-survey feedback responses instantaneously, allowing hub leaders to quickly pivot and adjust their program content and curriculum as needed to meet their learners' needs. The software records session attendance automatically and can easily generate attendance and feedback reports that can support research on outcomes and impact and demonstrate program efficacy for funders and other key stakeholders like Ministries of Health.

Key features include end-to-end program management, advanced session scheduling, automated attendance capture, automated email and text session reminders and customizable feedback and assessment forms. iECHO is now available in 19 languages, including French, Spanish, Portuguese (Europe and Brazil), Malay, Indonesia, Vietnamese, and many others. Additional features are planned to help participants connect with one another and more efficiently share evolving best practices on the platform. Future goals for the iECHO Platform are to help participants and experts connect with one another globally and to share resources and information faster.

MEET iECHO: A CLOUD-BASED DIGITAL PLATFORM FOR THE ECHO MOVEMENT

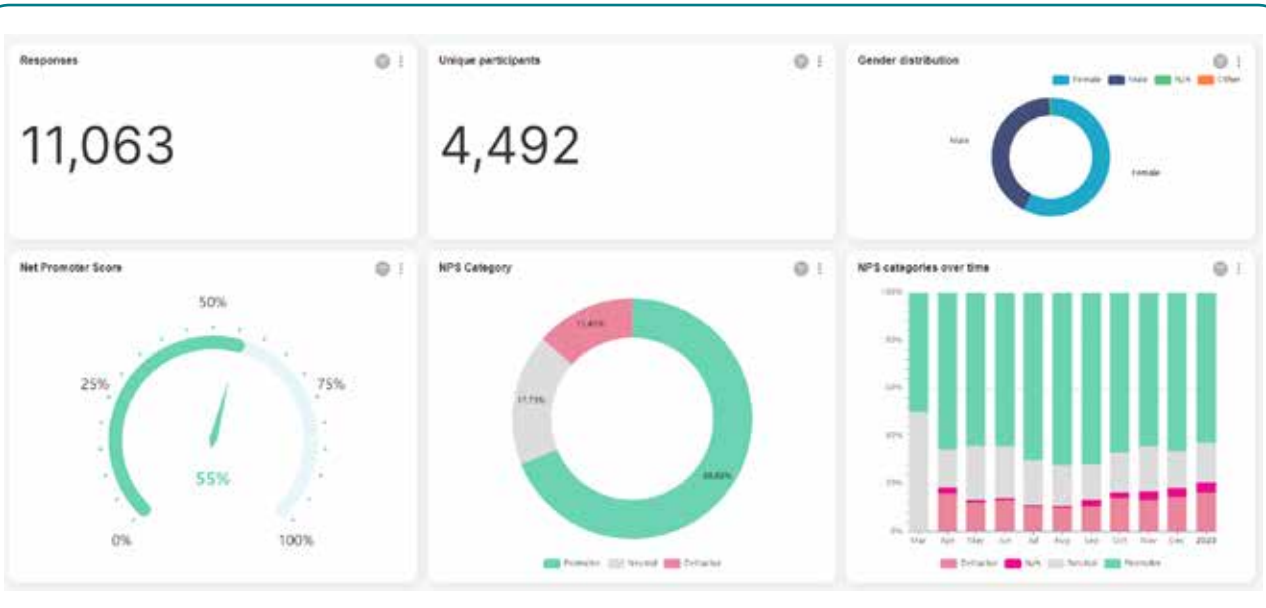


Participants using iECHO



Attendee Occupations tracked in iECHO

Feedback Data tracked in iECHO



Appendix C

OVERVIEWS OF SELECTED COUNTRIES

Appendix C comprises short summaries on the 35 countries selected for this project. These overviews present:

- Some of the secondary data gathered during the project, focusing on:
  - Priority health needs identified in the most recent national health plans published by the ministries of health of the countries.
  - Information on the health care workforce and financial resourcing of health care.
  - The top 10 causes of death and disability combined in each country. These estimates, made by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington in Seattle, are calculated in terms of the disability-adjusted life-years (DALYs) lost due to premature death and disability.
  - Trends in the top 10 causes of death and disability over a 10-year period, which indicate the country's capacity to manage various health threats.
- Information related to our key interviews:
  - Organizations represented by our interviewees.
  - Workforce solutions put forward by participants that were not contained in Section 4.
  - Information on ECHO's partnerships in each country.

Readers should note that secondary data was accessed from online databases mostly between May and July 2022. Although links to the databases are given, the online information might have been updated since ECHO utilized the databases.

TABLE OF CONTENTS

BENIN | country overview

Population (2021)	13 million	
GDP per capita (2021)	US$1,319	
Life expectancy at birth (2019)	Women 65.7	Men 61.2
Maternal mortality (2017)	397/100,000 live births	
Under-five mortality (2020)	86/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The last published national health plan was for 2006-2010 and priorities might have changed since then. Top health issues appear to be maternal and child health, malaria, diarrheal diseases, and lower respiratory tract infections.

Benin does not have a specific law enabling universal health care.

Sources: HIV/AIDS Plan Cadre Stratégique National de Lutte contre le VIH/SIDA/IST 2006-2010. https://extranet.who.int/countryplanningcycles/file-repository/BEN

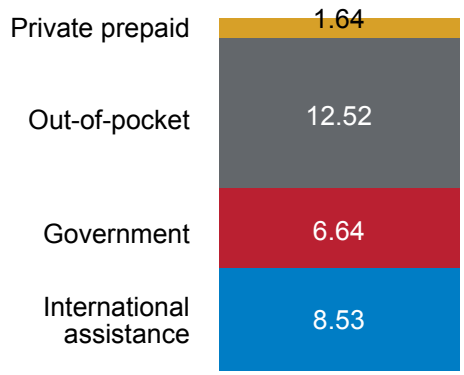
Country profile: Benin. Universal Health Coverage Partnership, WHO 2022 https://www.uhcpartnership.net/country-profile/benin

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Benin	Global
Nurses and midwives per 10,000 people	2019	3.03	39.5
Medical doctors per 10,000 people	2019	0.65	16.4
Pharmacists per 10,000 people	2018	0.27	4.7
Number of medical specialists	2018	562	–
Number of medical and pathology laboratory scientists	2018	668	–
Number of community health workers	N/A	N/A	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Benin health spending 2018

US$29

per person

Average health spending in Sub-Saharan Africa 2020

US$89

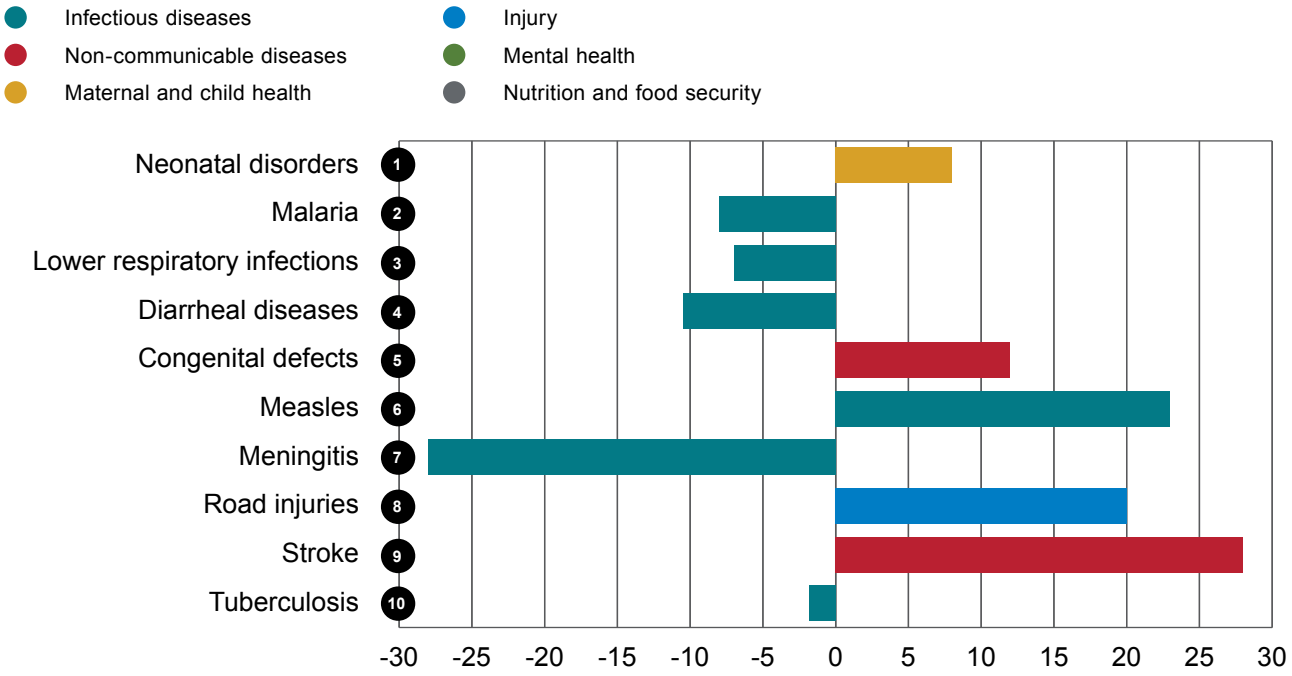
per person

Breakdown of Benin health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Benin profile. http://www.healthdata.org/benin

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Benin profile. http://www.healthdata.org/benin

Infectious diseases dominate the list of top 10 causes of death and disability in Benin, with diseases that often claim young lives (malaria, lower respiratory tract infections, and diarrheal disease) near the top of the list. The positive news is that most infectious diseases are in retreat, except for measles, which is vaccine-preventable. Neonatal disorders still cause more death and disability than any other factors and have increased over the decade. The rapid growth of stroke as a cause of death and disability is notable, as is the rising toll of road injuries.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No solutions were submitted by Benin participants.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Forces Armées Béninoises (FAB)	1	Unknown

ORGANIZATIONS INTERVIEWED

Ministry of Health Benin	Zoom interview

BURKINA FASO | country overview

Population (2021)	**22.1 million**	
GDP per capita (2021)	**US$893**	
Life expectancy at birth (2019)	Women **65.2**	Men **60.1**
Maternal mortality (2017)	**320/100,000** live births	
Under-five mortality (2020)	**85/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Burkina Faso's national health plan for 2016 – 2020 focused on addressing the needs of an aging population and the associated rise in burden of disease. The elderly, children, the poor, and those in rural or economically isolated areas are regarded as vulnerable from a health perspective.

Burkina Faso does not yet have a universal health care law.

Sources: Plan stratégique de santé des personnes âgées 2016 – 2020. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/burkina_faso/plan_strategique_de_sante_des_personnes_agees_2016_-_2020.pdf

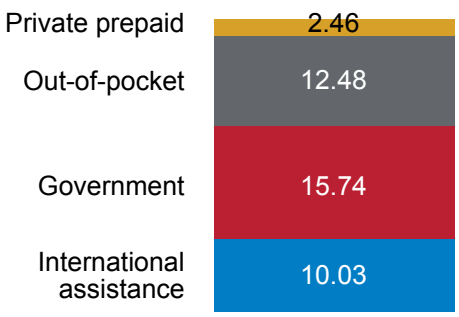
Country profile: Burkina Faso. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/burkinafaso

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Burkina Faso	Global
Nurses and midwives per 10,000 people	2019	9.27	39.5
Medical doctors per 10,000 people	2019	0.94	16.4
Pharmacists per 10,000 people	2019	0.15	4.7
Number of medical specialists	2019	884	–
Number of medical and pathology laboratory scientists	2019	800	–
Number of community health workers	2019	2,979	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Burkina Faso health spending 2018

US$41
per person

Average health spending in Sub-Saharan Africa 2020

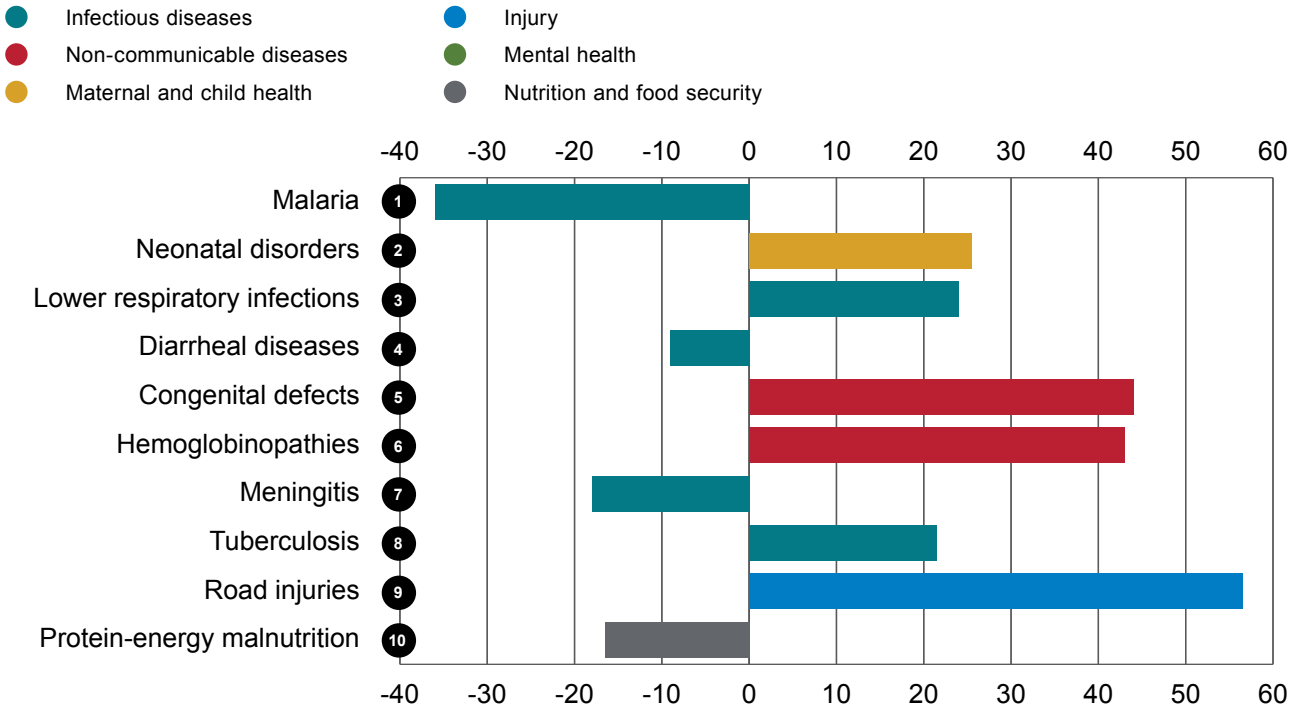
US$89
per person

Breakdown of Burkina Faso health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Burkina Faso profile. http://www.healthdata.org/burkina-faso

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Burkina Faso profile. http://www.healthdata.org/burkina-faso

The top four causes of death and disability, measured in disability-adjust life-years (DALYs), are malaria, neonatal disorders, lower respiratory tract infections, and diarrheal diseases, all of which commonly affect young children and probably drive Burkina Faso's high under-five mortality rate. There has been a reduction in malaria, diarrheal diseases, and meningitis. There has also been a decline in disease burden and death due to protein-energy malnutrition. However, there is a very large increase in the toll taken by road injuries. The relatively high impact of congenital defects and hemoglobinopathies – like sickle cell disease – is noteworthy. The "lifestyle" NCDs – diabetes, hypertension, and heart diseases – had not entered the top 10 causes of death and disability in Burkina Faso by 2019.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

There were no solutions from Burkina Faso.

ECHO PARTNERS

There is no ECHO hub in Burkina Faso.

ORGANIZATIONS INTERVIEWED

Ministry of Health, Burkina Faso	Zoom interview

CAMEROON | country overview

Population (2021)	**27.2 million**	
GDP per capita (2021)	**US$1,667**	
Life expectancy at birth (2019)	Women **64.5**	Men **60.3**
Maternal mortality (2017)	**529/100,000** live births	
Under-five mortality (2020)	**72/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Three infectious diseases – HIV/AIDS, malaria, and TB – account for nearly 24% of Cameroon's burden of morbidity. They are among the Ministry of Health's strategic priorities, along with other respiratory diseases, maternal health, and non-communicable diseases (NCDs). The ministry is concerned about the rising death toll from NCDs, particularly cardiovascular diseases, cancers, and mental illness. Road injuries, occupational diseases, and workplace accidents are also areas of concern.

Cameroon does not have dedicated legislation on universal health care.

Sources: Plan National de Développement Sanitaire PNDS 2016-2020. Ministry of Health, 2015. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/cameroon/cameroon_-_draft_pnds_02.08.16.docx

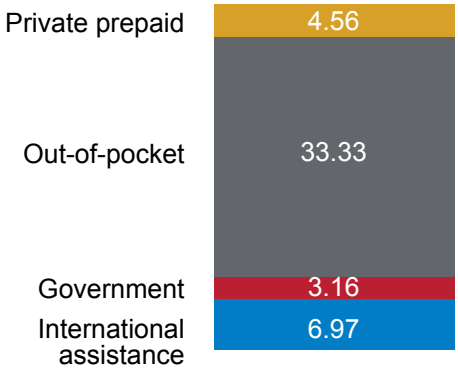
Country profile: Cameroon. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/cameroon/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Cameroon	Global
Nurses and midwives per 10,000 people	2018	3.63	39.5
Medical doctors per 10,000 people	2018	1.29	16.4
Pharmacists per 10,000 people	2018	0.01	4.7
Number of medical specialists	2018	859	–
Number of medical and pathology laboratory scientists	2018	241	–
Number of community health workers	2011	367	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Cameroon health spending 2018

US$48

per person

Average health spending in Sub-Saharan Africa 2020

US$89

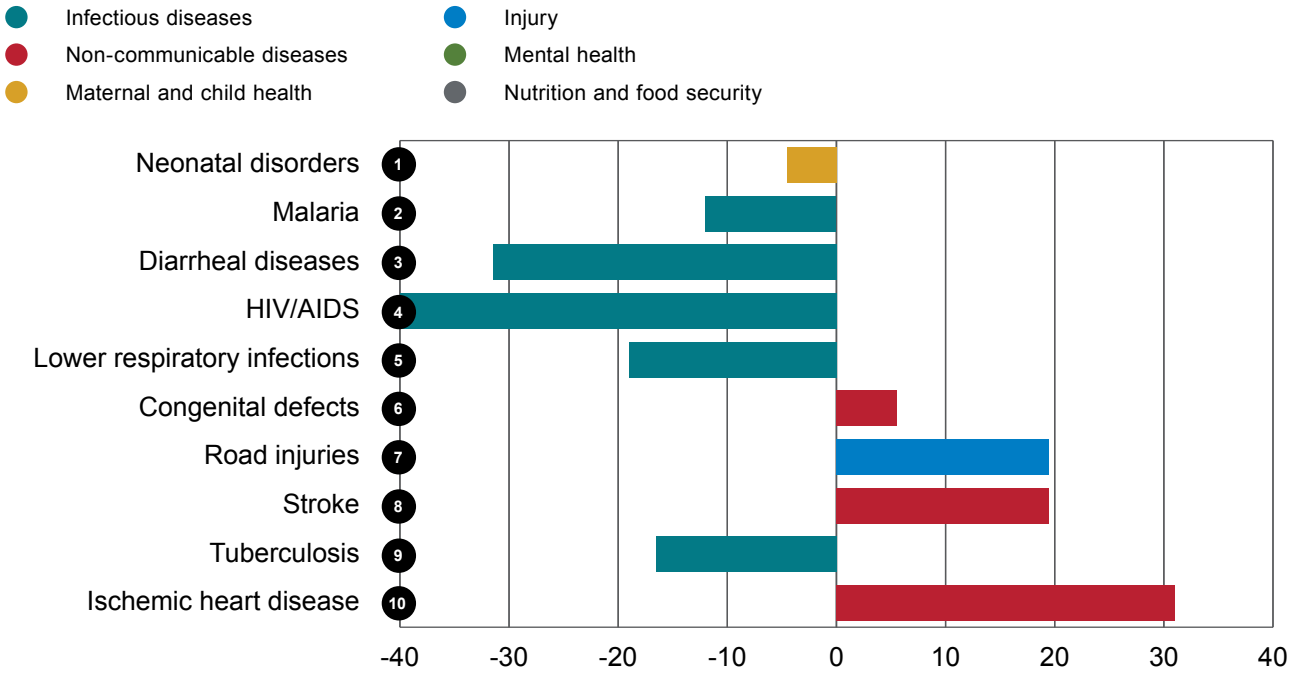
per person

Breakdown of Cameroon health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Cameroon profile. http://www.healthdata.org/cameroon

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Cameroon profile. http://www.healthdata.org/cameroon

Neonatal disorders are the top cause of death and disability, measured in disability-adjusted life-years (DALYs), and they have declined only slightly in the past decade. The infectious diseases which occupy the next four slots – HIV, diarrheal diseases, lower respiratory tract infections and malaria – have decreased at a faster rate, indicating considerable progress in these areas. Cameroon reflects a pattern common in African countries: the rise of NCDs as a serious threat to life and health. Stroke and ischemic heart disease feature on the top 10 list and are on the increase.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Cameroon's participants in the ECHO roundtable process developed two solutions for capacity building of health workers, both of which appear in Section 4 of this report.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Cameroon Baptist Convention Health Services	1	Cervical cancer prevention, screening, diagnosis, and risk mitigation
Global Health Systems Solutions (GHSS)	1	Laboratory sciences
ICAP Columbia University Cameroon	1	HIV/AIDS and TB
Infection Prevention and Control Association, (IPCA), Cameroon	1	Hygiene
République du Cameroun Ministère de la Santé Publique	2	Public health

ORGANIZATIONS INTERVIEWED

Ministry of Health Cameroon	Zoom interview

CÔTE D'IVOIRE | country overview

Population (2021)	**27.5 million**	
GDP per capita (2021)	**US$2,549**	
Life expectancy at birth (2019)	Women **65.8**	Men **60.5**
Maternal mortality (2017)	**617/100,000** live births	
Under-five mortality (2020)	**78/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Priorities for the Ministry of Health in the period 2016 – 2020 were:

- Strengthening governance and leadership of the health sector.
- Improving the internal and external financing of the health system.
- Increasing the quality, availability, and usage of its service offering.
- Reducing morbidity and mortality related to major diseases by 50% by 2020.
- Reducing maternal, newborn, child, and adolescent mortality by 50% by 2020.
- Strengthening health prevention and promotion.

The improvement of child and maternal health indicators had fallen below target for some years. Maternal mortality only dropped from 745/100,000 live births in 1990 to 645/100,000 live births in 2015, a decrease of just 13.4% in 25 years.

Côte d'Ivoire does not yet have a universal health care law.

Sources: Plan National de Developpement Sanitaire 2016-2020. Ministry of Health 2016. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/cote_divoire/pnds_2016-2020.pdf

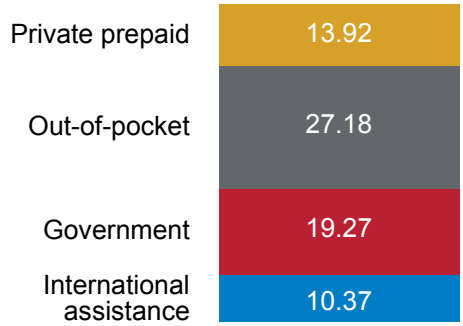
Country profile: Côte d'Ivoire. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/cote-divoire/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Côte d'Ivoire	Global
Nurses and midwives per 10,000 people	2019	6.56	39.5
Medical doctors per 10,000 people	2019	1.62	16.4
Pharmacists per 10,000 people	2019	0.37	4.7
Number of medical specialists	2018	1,356	–
Number of medical and pathology laboratory scientists	2014	2,380	–
Number of community health workers	2018	14,556	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Côte d'Ivoire health spending 2018

US$71
per person

Average health spending in Sub-Saharan Africa 2020

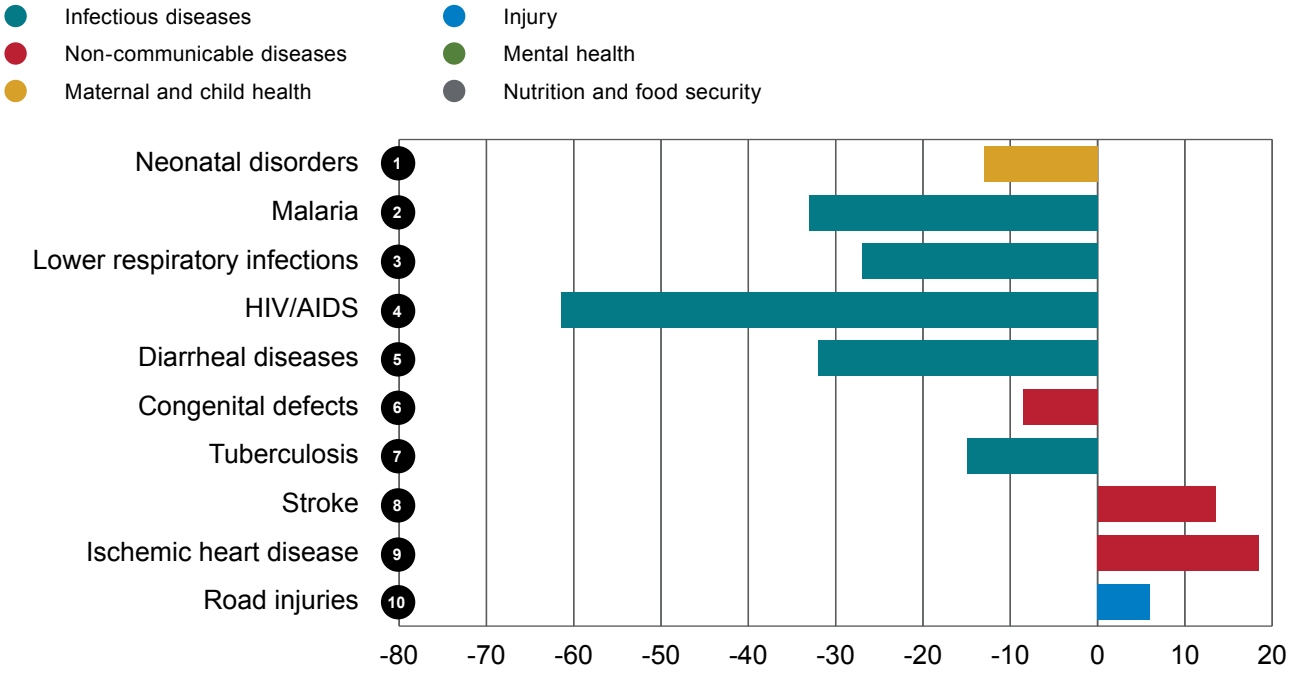
US$89
per person

Breakdown of Côte d'Ivoire health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Côte d'Ivoire profile. http://www.healthdata.org/cotedivoire

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Côte d'Ivoire profile. http://www.healthdata.org/cotedivoire

As a group, infectious diseases, measured in disability-adjusted life-years (DALYs), still account for most disability and death in Côte d'Ivoire but there has been an improvement across the board. The reduction in mortality and morbidity attributable to HIV is particularly impressive.

Neonatal disorders comprise the single greatest cause of death and disability and their impact has only reduced slightly over the course of a decade.

The cardiovascular NCDs – stroke and ischemic heart disease – have begun to make an impression on Côte d'Ivoire's disease patterns and are on the increase.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No workforce development solution was put forward by Côte d'Ivoire partners.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Antenne INHP Daloa	1	COVID-19
CHR d'Aboisso	1	COVID-19
CHR d'Agboville	1	COVID-19
CHR de Bongouanou	1	COVID-19
CHR de Daloa	1	COVID-19
CHR de Katiola	1	COVID-19
CHR de Korhogo	1	COVID-19
CHR de Man	1	COVID-19
CHR de San Pedro	1	COVID-19
CHR de Soubre	1	COVID-19
CHR Odienne	1	COVID-19
CHR Yamoussoukro	1	COVID-19
CHU de Bouake	1	COVID-19
Institut Pierre Richet	1	COVID-19
Ministère d'Etat Ministère de la Défense, Direction de la Santé et de l'Action Sociale des Armées Côte d'Ivoire	1	HIV
Ministry of Health and Public Hygiene	2	COVID-19
National Cancer Control Program	1	Oncology
Population Services International Côte d'Ivoire	1	
Superhub: Institut National de Santé Publique	3	

Note: many of the hubs showing COVID-19 programs may have shifted to other focus areas.

ORGANIZATIONS INTERVIEWED

Ministry of Health, National Institute of Public Health, Côte d'Ivoire	Zoom interview

DEMOCRATIC REPUBLIC OF CONGO

country overview

Population (2021)	**95.9 million**	
GDP per capita (2021)	**US$577**	
Life expectancy at birth (2019)	Women **64.8**	Men **60.0**
Maternal mortality (2017)	**473/100,000** live births	
Under-five mortality (2020)	**81/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Ministry of Health priorities for the period 2016 – 2020 were:

- Reducing mortality rates and increasing life expectancy
- Reducing malnutrition
- Improving maternal and child health
- Preventing and controlling communicable diseases

In 2013/14, four out of 10 children under five (43%) suffered from chronic malnutrition – in other words, more than 6 million children. Among young women aged 15 -19 years, the rate of malnutrition rose to 21%.

Malaria remains highly prevalent and accounts for more than 40% of infant deaths. The Democratic Republic of Congo (DRC) has struggled to improve in the area of maternal and child health. The ministry reports that high maternal mortality is partly due to complications related to pregnancy in adolescent girls.

The DRC does not have dedicated universal health care legislation.

Sources: Plan National de Developpement Sanitaire 2016-2020. Ministry of Health. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/democratic_republic_of_congo/pnds_2016-2020_version_finale_29_avril_2016.pdf

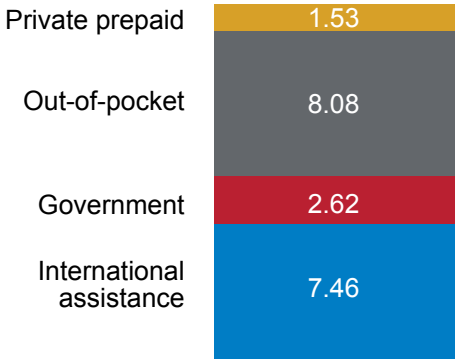
Country profile: Democratic Republic of the Congo. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/drc

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	DRC	Global
Nurses and midwives per 10,000 people	2018	11.1	39.5
Medical doctors per 10,000 people	2018	3.75	16.4
Pharmacists per 10,000 people	2018	0.2	4.7
Number of medical specialists	2018	778	–
Number of medical and pathology laboratory scientists	2018	2,934	–
Number of community health workers	–	–	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average DRC health spending 2018

US$20

per person

Average health spending in Sub-Saharan Africa 2020

US$89

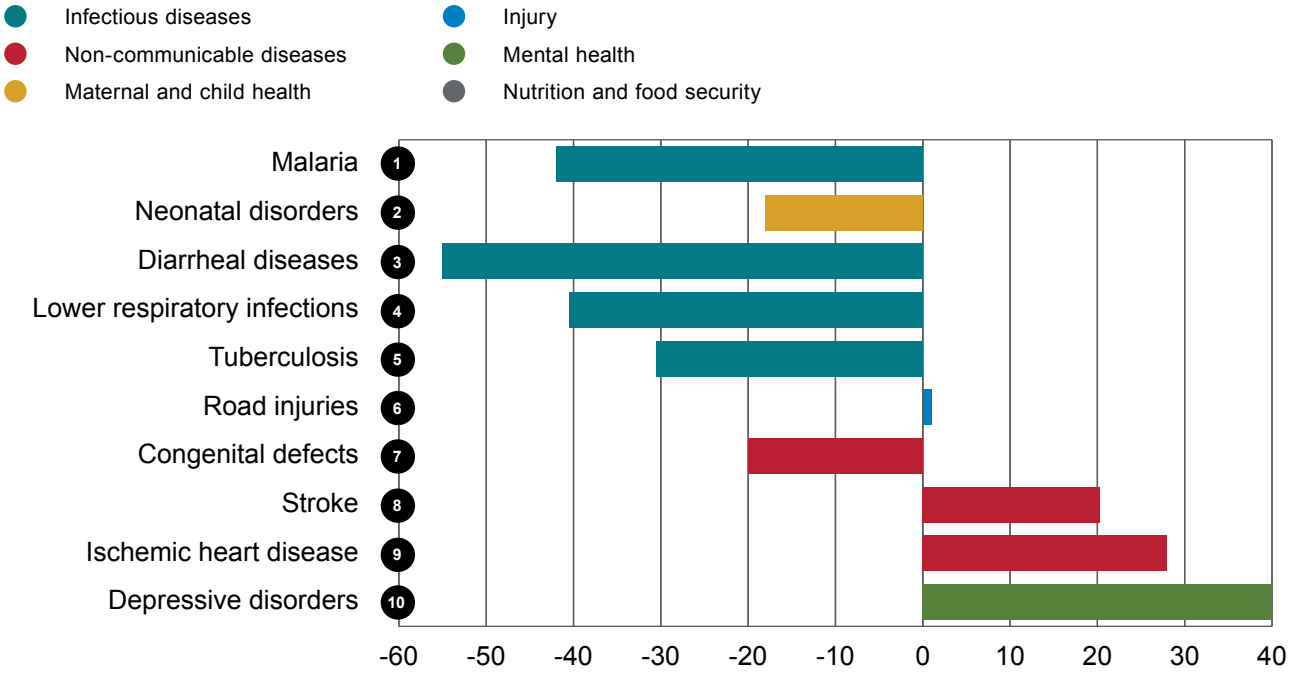
per person

Breakdown of DRC health spending 2018 US$ per person

http://www.healthdata.org/democratic-republic-congo

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Democratic Republic of Congo profile. http://www.healthdata.org/democratic-republic-congo

The top five causes of death and disability in the DRC, measured in disability-adjusted life-years (DALYs), are all declining. Four out of the five are infectious diseases, with neonatal disorders occupying the second slot on the list. There is evidence that NCDs are a growing health concern in the DRC, with cardiovascular NCDs gaining significant ground over a decade. Depressive disorders grew at a faster rate than any other major cause of death and disability in the country.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No workforce development solution was put forward by DRC partners.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Congolese Expertise for Prevention and Control of Infection (ECPCI)	1	Not stated

ORGANIZATIONS INTERVIEWED

Ministry of Health Democratic Republic of Congo	Zoom interview

ETHIOPIA | country overview

Population (2021)	120.3 million	
GDP per capita (2021)	US$925	
Life expectancy at birth (2019)	Women 70.5	Men 66.9
Maternal mortality (2017)	401/100,000 live births	
Under-five mortality (2020)	49/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The Ministry of Health indicated in 2015 it would continue to prioritize reproductive, maternal, newborn, child, and adolescent health and nutrition for the next five years. It would also focus its efforts on addressing HIV and TB.

Geographic inequities in health care outcomes and access exist for children, women, rural populations, and those most impoverished. Rural versus urban outcomes can be particularly stark, with residents of the capital, Addis Ababa, enjoying the best access and quality of care.

The ministry reports significant progress in reducing maternal and child mortality and deaths associated with HIV, malaria, and TB. But the country still faces a triple burden of disease: communicable diseases, non-communicable diseases (NCDs) and injuries.

Ethiopia has not enacted specific legislation on universal health coverage.

Sources: Health Sector Information Plan 2015-2020. Ministry of Health, 2015. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/ethiopia/hstp_ethiopia.pdf

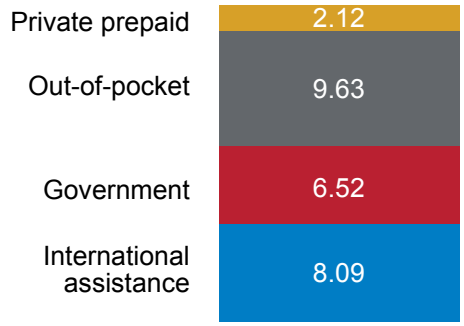
Country profile: Ethiopia. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/Ethiopia/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Ethiopia	Global
Nurses and midwives per 10,000 people	2020	7.84	39.5
Medical doctors per 10,000 people	2020	1.06	16.4
Pharmacists per 10,000 people	2020	0.47	4.7
Number of medical specialists	2020	2,813	–
Number of medical and pathology laboratory scientists	2020	8,005	–
Number of community health workers	2020	42,630	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Ethiopia health spending 2018

US$26
per person

Average health spending in Sub-Saharan Africa 2020

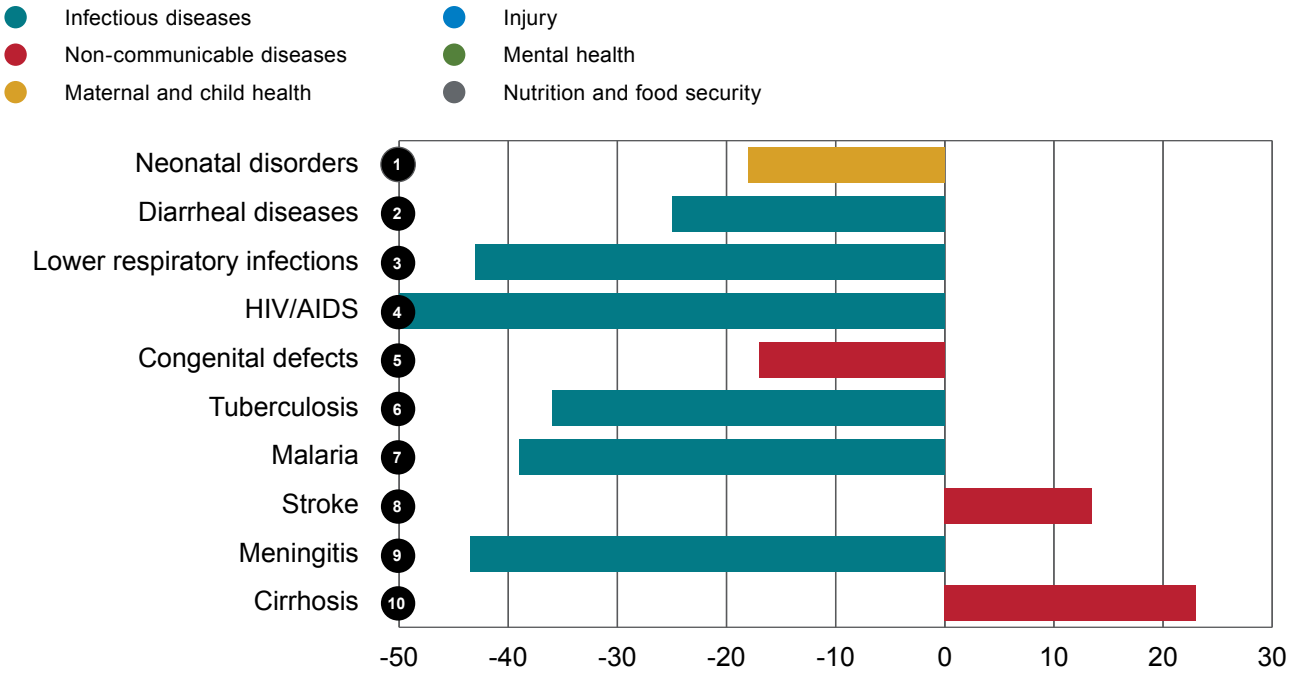
US$89
per person

Breakdown of Ethiopia health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Ethiopia profile. http://www.healthdata.org/ethiopia

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Ethiopia profile. http://www.healthdata.org/ethiopia

The overwhelming impact of infectious diseases, measured in terms of disability-adjusted life-years (DALYs), is evident from the table of top causes of death and disability. Although the severity of all these diseases is declining quite markedly, they still sit firmly at the top of the list. The NCDs that have entered the top 10 causes of death and disability are cirrhosis and stroke and both are increasing in their impact.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Ethiopia's solution is for inter-country mentorship in the areas of gastro-enterology and hepatology and it is included in Section 4.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Addis Ababa City Administration Health Bureau	1	HIV/AIDS
Addis Ababa University	2	Pulmonary health and diseases
African Society for Laboratory Medicine	5	COVID-19, HIV/AIDS, laboratory sciences, quality improvement, tuberculosis, and waste management
African Union's Specialized Technical Agency, the Africa Centers for Disease Control and Prevention (Africa CDC)	4	Not stated
Ethiopian Environmental Health Professionals Association	1	Not stated
Ethiopian Pediatric Society	1	COVID-19, maternal health, neonatal care, pediatrics, pregnancy complications, and quality improvement
Ethiopian Public Health Institute	1	Not stated
St Paul's Hospital Millennium Medical College/St Paul's Hospital	1	Hepatology and gastroenterology

ORGANIZATIONS INTERVIEWED

Ministry of Health Ethiopia	Zoom interview

GAMBIA | country overview

Population (2021)	**2.6 million**	
GDP per capita (2021)	**US$772**	
Life expectancy at birth (2019)	Women **67.7**	Men **63.4**
Maternal mortality (2017)	**597/100,000** live births	
Under-five mortality (2020)	**49/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Top health priorities for the Ministry of Health are to achieve a 75% decline in maternal mortality, a 67% decline in mortality among children under five, to halt and reverse the spread of HIV/AIDS, and to provide special assistance to AIDS orphans.

The ministry identifies a double burden of communicable and non-communicable diseases (NCDs), a specific need to curb the HIV/AIDS pandemic, and a need to strengthen the health system in order to improve the quality of health services and progress toward universal coverage.

Sources: Health is Wealth 2012 – 2020. Ministry of Health, 2012. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/gambia/national_health_policy.pdf

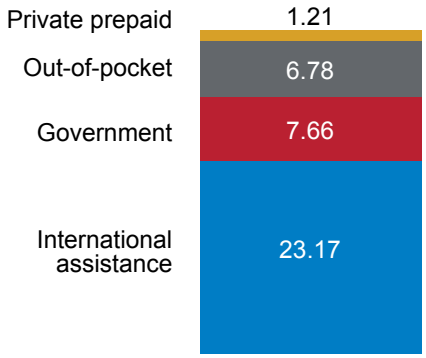
Country profile: Gambia. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/Gambia/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Gambia	Global
Nurses and midwives per 10,000 people	2020	9.46	39.5
Medical doctors per 10,000 people	2020	0.82	16.4
Pharmacists per 10,000 people	2020	0.021	4.7
Number of medical specialists	2020	39	–
Number of medical and pathology laboratory scientists	2020	41	–
Number of community health workers	2020	2,080	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Gambia health spending 2018

US$39

per person

Average health spending in Sub-Saharan Africa 2020

US$89

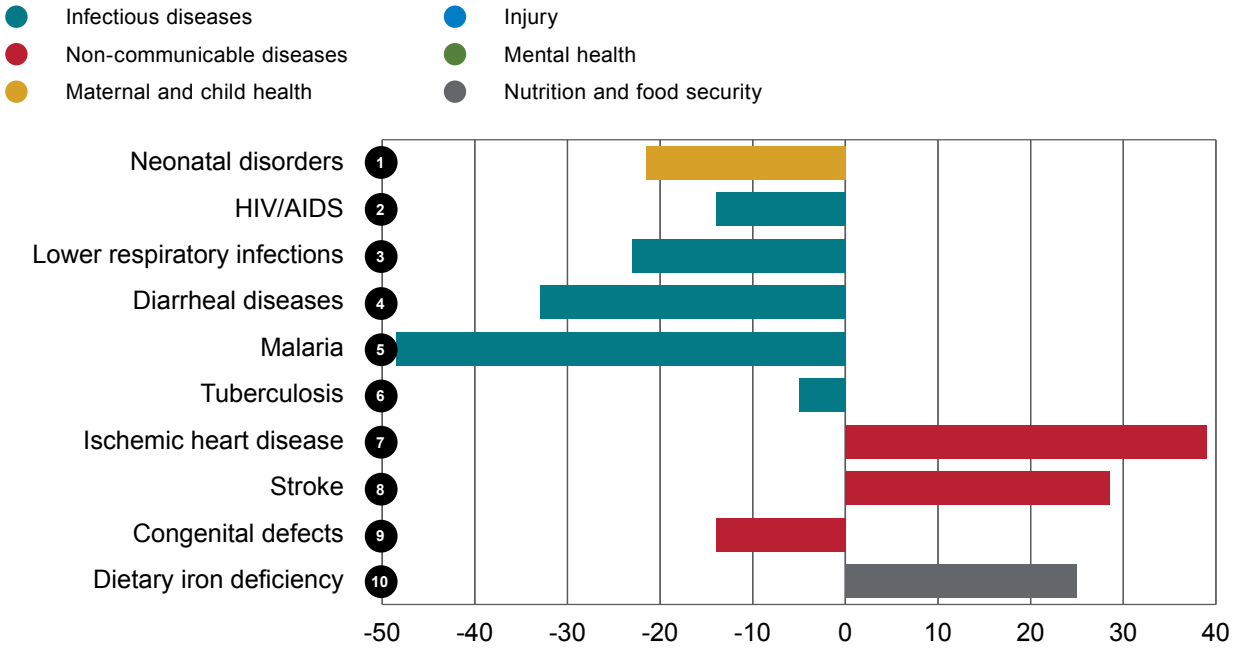
per person

Breakdown of Gambia health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Gambia profile. http://www.healthdata.org/gambia

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Gambia profile. http://www.healthdata.org/gambia

Infectious diseases are prominent in Gambia's top 10 causes of death and disability, measured in disability-adjusted life-years (DALYs). They still occupy the top positions, but are declining at various rates. The most noteworthy improvement is in relation to malaria. The cardiovascular NCDs – stroke and ischemic heart disease – are playing a larger role than 10 years ago. The rate of growth of ischemic heart disease, at almost 40% in a decade, outstrips all other diseases and injuries on the list. Death and disability due to dietary iron deficiency has increased.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Gambia did not put forward capacity building solutions.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Ministry of Health	1	Nursing

ORGANIZATIONS INTERVIEWED

Ministry of Health Gambia	Emailed questions and response
Solhealth	Zoom interview

GHANA | country overview

Population (2021)	32.8 million	
GDP per capita (2021)	US$2,363	
Life expectancy at birth (2019)	Women 69.2	Men 63.7
Maternal mortality (2017)	308/100,000 live births	
Under-five mortality (2020)	45/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The Ministry of Health has a strong focus on maternal, infant, and child health; malaria; and epidemic-prone diseases, such as cerebrospinal meningitis and cholera. Non-communicable diseases (NCDs) constitute a second major focus area, specifically diabetes, hypertension, and strokes, which are increasingly a cause of death and or disability. Mental health and geriatric care are also included as priority areas.

Assessments show mixed progress relative to the ministry's health targets. Indicators for malaria improved at projected rates. While newborn care coverage improved, neonatal mortality measures deteriorated. Performance against ministry targets for health care infrastructure and health care workforce indicators was stagnant. Government health care financing is improving at rates set by the ministry but growth in health care coverage has not matched this.

Ghana does not have dedicated universal health care legislation.

Sources: Ghana National Healthcare Quality Strategy 2017-2021. Ministry of Health, 2016. https://www.moh.gov.gh/wp-content/uploads/2017/06/National20Quality20Strategy20Ghana.pdf

Holistic Assessment of 2017 Health Sector Programme of Work. Ministry of Health, 2018. https://www.moh.gov.gh/wp-content/uploads/2018/09/2017-Holistic-Assessment-Report_Final_09.08.2018.pdf

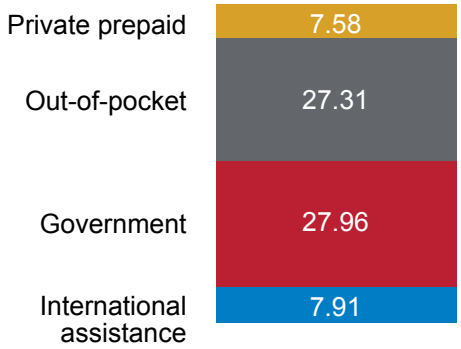
Country profile: Ghana. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/ghana/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Ghana	Global
Nurses and midwives per 10,000 people	2020	36.2	39.5
Medical doctors per 10,000 people	2020	1.7	16.4
Pharmacists per 10,000 people	2020	0.45	4.7
Number of medical specialists	2018	1,090	–
Number of medical and pathology laboratory scientists	2018	1,563	–
Number of community health workers	2018	15,820	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Ghana health spending 2018

US$71

per person

Average health spending in Sub-Saharan Africa 2020

US$89

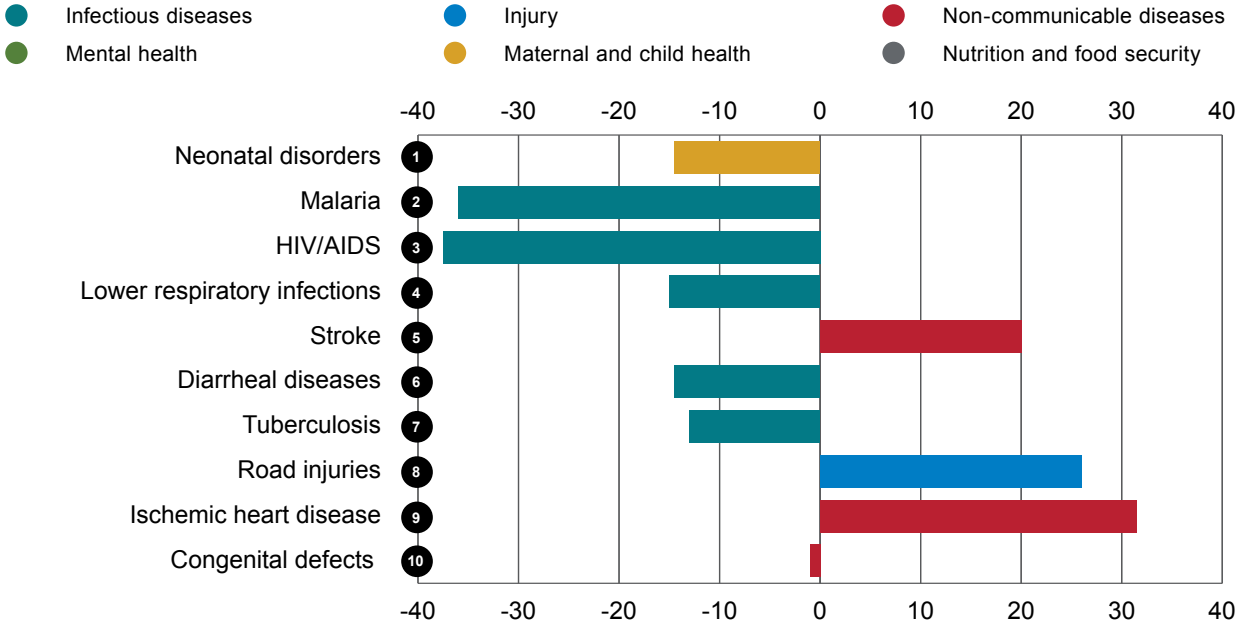
per person

Breakdown of Ghana health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Ghana profile. http://www.healthdata.org/ghana

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Ghana profile. http://www.healthdata.org/ghana

Infectious diseases dominate Ghana's top 10 causes of death and disability, measured in disability-adjusted life-years (DALYs). However, neonatal disorders remained the biggest single cause of death and disability in 2019, showing a modest decline over the past decade. HIV, malaria, lower respiratory infections, diarrheal diseases, and tuberculosis are playing a smaller role than 10 years ago. However, NCDs are on the rise, with stroke causing the fifth most deaths and disability and ischemic heart disease growing at more than 30% in a decade. Death and disability due to road injuries have also increased substantially.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No solutions were put forward by Ghana.

ECHO PARTNERS

There are no ECHO hubs or programs in Ghana.

ORGANIZATIONS INTERVIEWED

Ministry of Health Ghana	Emailed questions and response

GUINEA | country overview

Population (2021)	13.5 million	
GDP per capita (2021)	US$1,189	
Life expectancy at birth (2019)	Women 62.3	Men 59.5
Maternal mortality (2017)	576/100,000 live births	
Under-five mortality (2020)	96/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Ministry of Health priorities are to address:

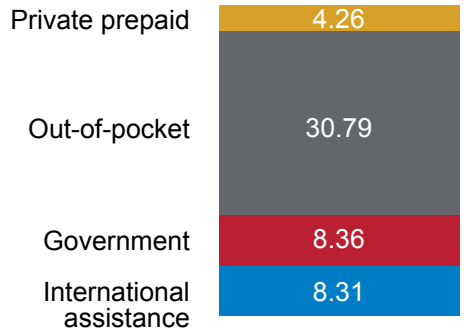
- High maternal and child mortality
- High prevalence of communicable diseases, emerging epidemic-prone diseases, and non-communicable diseases (NCDs)
- The low performance of the health system, specifically:
  - Low coverage of quality, essential health services as part of universal health coverage reform
  - Underfunding of the health sector, including low state funding of health
  - Low density of quality human resources
  - Low availability of medicines, vaccines, infrastructure, equipment, medical products, and other technologies
  - A lack of real-time health information and knowledge for management of the health sector
  - Weak organization and management of health services

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Guinea	Global
Nurses and midwives per 10,000 people	2018	5.73	39.5
Medical doctors per 10,000 people	2018	2.22	16.4
Pharmacists per 10,000 people	2018	0.2	4.7
Number of medical specialists	2018	138	–
Number of medical and pathology laboratory scientists	2018	181	–
Number of community health workers	2018	16,567	–

Source: WHO World Health Statistics 2022; and WHO Global health workforce database.

SOURCES OF HEALTH CARE SPENDING



Average Guinea health spending 2018

US$52
per person

Average health spending in Sub-Saharan Africa 2020

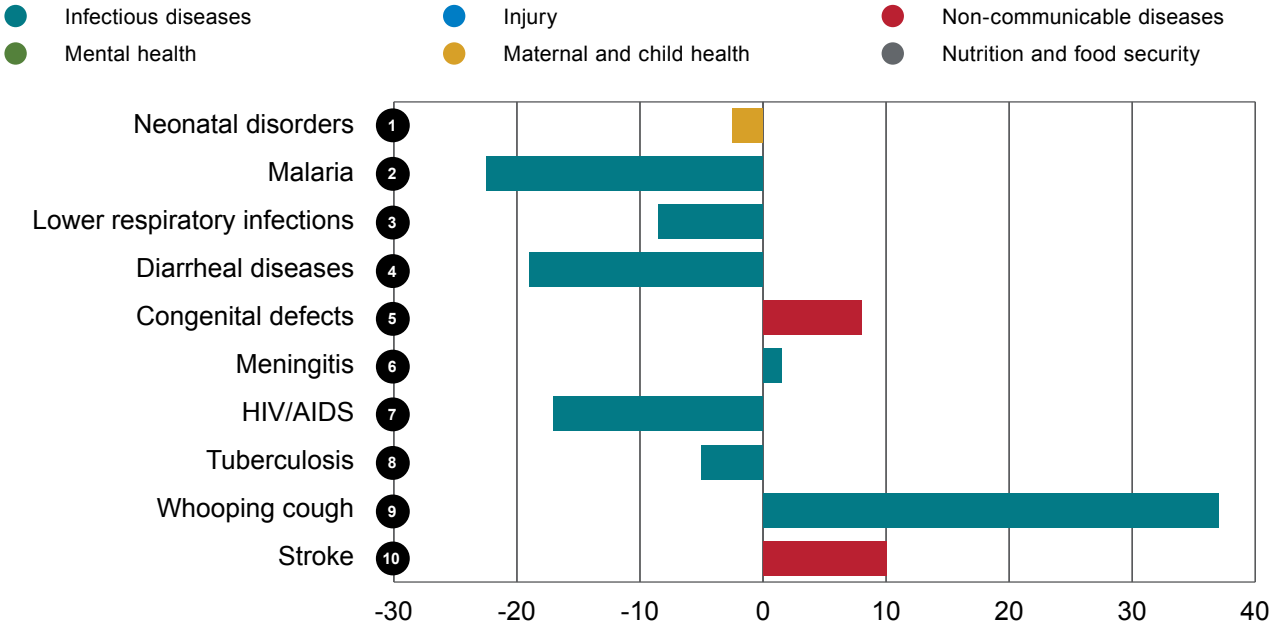
US$89
per person

Breakdown of Guinea health care spending 2018 US$ per person

Source: Institute for Health Metrics and Evaluation. Guinea profile. www.healthdata.org/guinea

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Source: Institute for Health Metrics and Evaluation. Guinea profile. www.healthdata.org/guinea

Neonatal disorders are the top causes of death and disability, measured in disability-adjusted life-years (DALYs), and there has been little progress toward changing this situation. Three infectious diseases occupy positions two to four on the top 10 list and all typically have a significant impact on young children. This suggests that Guinea's under-five mortality rate is being adversely impacted by the prominence of these diseases. Overall, infectious diseases are responsible for the bulk of illness and mortality in the country, although most of them are declining. The surge in whooping cough is notable, as this is an infection normally covered by child immunization programs. Stroke and congenital defects are the two NCD categories taking a heavy toll on health in Guinea, and both have had an increased impact in a decade.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No solutions were submitted by Guinea participants in the project.

ECHO PARTNERS

There are no ECHO hubs in Guinea.

ORGANIZATIONS INTERVIEWED

Ministry of Health Guinea	Zoom interview

KENYA | country overview

Population (2021)	53 million	
GDP per capita (2021)	US$2,082	
Life expectancy at birth (2019)	Women 68.4	Men 63.7
Maternal mortality (2017)	342/100,000 live births	
Under-five mortality (2020)	42/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Priorities for the period 2020 to 2023 are neonatal health, maternal health, disease outbreak preparedness and response, antimicrobial resistance, cancers, health care access, emergency medical services, public health approaches to chronic and non-communicable diseases (NCDs), universal health coverage, and food safety.

Some key health indicators, such as maternal and neonatal mortality, have shown progress. But the TB treatment success rate was below target and malaria incidence has fallen further behind the target. In terms of strengthening health systems, infrastructural improvements are on course but the health care workforce has not grown at the desired rate.

Government health care financing and health care coverage are not meeting targets. Kenya does not have dedicated legislation on universal health coverage.

Sources: Research-For-Health Priorities. Ministry of Health, 2020.

Kenya Health Sector Strategic Plan 2018-2023 Mid-Term Review Synthesis Report. Ministry of Health, 2021.

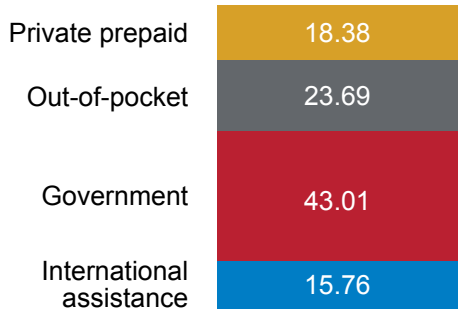
Country profile: Kenya. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/kenya/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Kenya	Global
Nurses and midwives per 10,000 people	2018	11.66	39.5
Medical doctors per 10,000 people	2018	1.57	16.4
Pharmacists per 10,000 people	2018	0.19	4.7
Number of medical specialists	2018	2,440	–
Number of medical and pathology laboratory scientists	2004	6,000	–
Number of community health workers	2018	58,079	–

Source: WHO, Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average Kenya health spending 2018

US$101

per person

Average health spending in Sub-Saharan Africa 2020

US$89

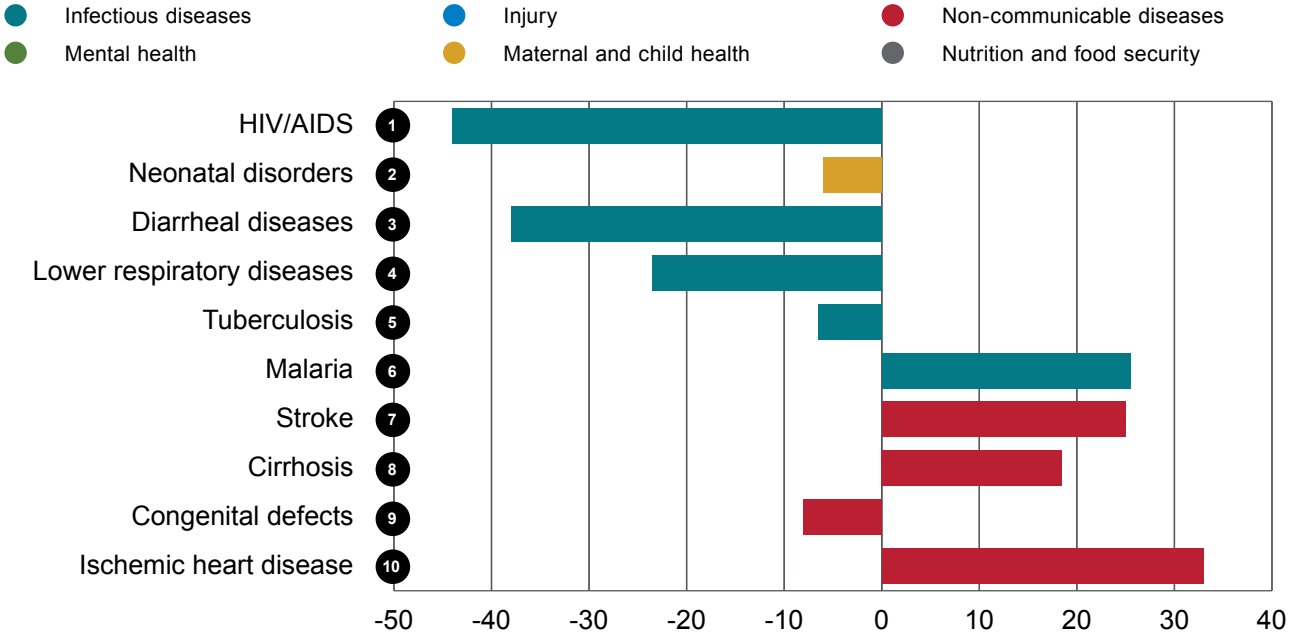
per person

Breakdown of Kenya health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Kenya profile. http://www.healthdata.org/kenya

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Kenya profile. http://www.healthdata.org/kenya

Collectively, infectious diseases are still the most significant cause of death and disability, measured in disability-adjusted life-years (DALYs). Considerable progress has been made in the areas of HIV, diarrheal diseases, and lower respiratory infections. However, gains against TB have been modest, and malaria took a larger toll in 2019 than 10 years earlier. The cardiovascular NCDs – stroke and ischemic heart disease – are playing a larger role than 10 years ago, and the rate of growth of ischemic heart disease outstrips all other causes on the list.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Kenya's participants in the project developed several capacity building solutions. The solution which envisages students leading initiatives to reduce child mortality is featured in Section 4 while the others appear below:

Capacity building for infectious disease prevention using the One Health approach

Goals and issues	Hub team	Targeted learners	Challenges
The aim is to strengthen prevention of communicable diseases by integrating One Health core competencies into internship programs, including veterinary training at various levels and later extending to training in environmental health, environmental sciences, and medical health sciences.	Africa One Health University Network (AFROHUN) Kenya	Frontline health workers, including veterinary professionals and paraprofessionals (and later scaling up to other disciplines)	• Program timing • Coordinating various interns and institutions, which are scattered with some in remote areas with poor connectivity • Stakeholder mobilization across levels of government • Technological access including equipment • Funding for experts' time, research projects, and supplies

Capacity building to promote breast health

Goals and issues	Hub team	Targeted learners	Challenges
Breast health training to improve early detection	Moi Teaching and Referral Hospital and Academic Model Providing Access to Healthcare (AMPATH)	Hospital clinicians	• Participation • Coordination • Sustainability

Training on methods to reduce transmission of zoonotic and other infectious diseases

Goals and issues	Hub team	Targeted learners	Challenges
The goal is to train various health professionals to use research, community engagement, and other innovative methods to prevent transmission of zoonotic and other infectious diseases	AFROHUN Kenya and Young African Leaders Initiative	Medical doctors, nurses, community health workers, veterinarians, animal health assistants, and environmentalists	• Technology and equipment • Stakeholder mobilization • Funding for experts' time

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Academic Model Providing Access to Healthcare (AMPATH)	3	Cancer screening, childhood cancers, chronic disease, clinical medicine, evidence-based medicine, pediatrics, and sickle cell anemia
Access Afya Kenya Ltd.	1	
AIC CURE International Hospital	1	COVID-19
Assist International	2	COVID-19, medical education, quality improvement, and surgery
Chronic Drugs Medical Scheme	1	
Eastern Africa Regional Coordinating Centre – Africa CDC	1	Infectious diseases
Homa Bay County Referral Hospital	1	COVID-19
Infection Prevention Network Kenya	2	Antimicrobial resistance, infection prevention and control (IPC)
Jaramogi Oginga Odinga Teaching & Referral Hospital Kenya	1	HIV/AIDS
Kenyan National Tuberculosis, Leprosy and Lung Disease Program Kenya	1	Tuberculosis
Kenyan Network of Cancer Organisations	1	Cancer prevention and risk mitigation, cancer screening, COVID-19
Kenyatta National Hospital	1	
Kericho County Referral Hospital	1	COVID-19
Kiambu County Level 5 Hospital	1	COVID-19
Kipepeo Therapies	1	Autism
Kirinyaga County Kerugoya Level 5 Hospital	1	COVID-19
Kisii County Referral Hospital	1	COVID-19
Kisumu County Health Services Kenya	1	HIV/AIDS
Kitui County Level 5 Hospital	1	COVID-19
Machakos County Referral Hospital	1	COVID-19

ECHO hubs	Number of programs	Program focus areas
Makueni County Level 5 Hospital	1	COVID-19
Mbagathi Hospital	1	COVID-19 and medical education
Meru County Referral Hospital	1	COVID-19
Migori County Referral Hospital	1	COVID-19
Ministry of Health Kenya	1	COVID-19
Moi Teaching and Referral Hospital	2	Chronic disease and integrated mental health
Moi University College of Health Sciences	1	Chronic disease
Muranga County Referral Hospital	1	COVID-19
Nakuru County Level 6 Hospital	1	COVID-19
Narok County Referral Hospital	1	COVID-19
National AIDS STI Control Program Kenya (NASCOP)	1	HIV/AIDS
National Public Health Laboratory Services	2	Infectious diseases, laboratory sciences, and quality improvement, Antimicrobial Resistance (AMR)
Nyeri County Referral Hospital	1	COVID-19
Port Victoria Sub County Hospital	1	Laboratory sciences and quality improvement
Siaya County Referral Hospital	1	COVID-19

Note: Many of the hubs showing COVID-19 programs may have shifted to other focus areas..

ORGANIZATIONS INTERVIEWED

Ministry of Health Kenya	Emailed questions and response

MALAWI | country overview

Population (2021)	**19.9 million**	
GDP per capita (2021)	**US$635**	
Life expectancy at birth (2019)	Women **68.9**	Men **62.3**
Maternal mortality (2017)	**349/100,000** live births	
Under-five mortality (2020)	**39/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Ministry of Health set the following targets in 2017:

- Reduce maternal mortality to less than 70 per 100 000 live births by 2030
- End preventable deaths of newborns and under five children by 2030
- End the epidemics of AIDS, TB, malaria, and neglected tropical diseases by 2030
- Combat hepatitis, water-borne diseases, and other communicable diseases
- Reduce by one-third premature mortality from non-communicable diseases (NCDs) by 2030, and promote mental health
- Strengthen prevention and treatment of substance abuse
- Halve deaths and injuries from road traffic accidents by 2020
- Achieve universal access to sexual and reproductive health care services by 2030
- Achieve universal health coverage, including financial risk protection
- Substantially reduce deaths and illness from hazardous chemicals in air, water, and soil, pollution, and contamination.

The ministry regards rural residents and those who are poorly educated – especially women – and living in poverty as vulnerable populations.

The Malawi constitution recognizes the right to basic health care but the country does not have dedicated legislation on universal health coverage.

Sources: Health Sector Strategic Plan II (2017-2022). Ministry of Health, 2017. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/malawi/health_sector_strategic_plan_ii_030417_smt_dps.pdf

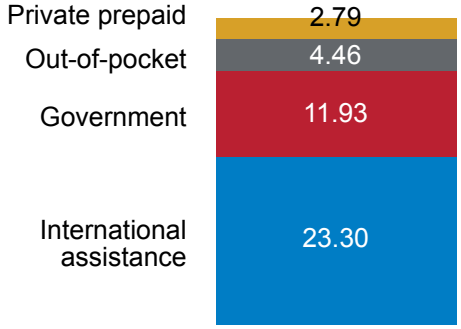
Country profile: Malawi. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/Malawi/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Malawi	Global
Nurses and midwives per 10,000 people	2020	7.09	39.5
Medical doctors per 10,000 people	2020	0.5	16.4
Pharmacists per 10,000 people	2020	0.08	4.7
Number of medical specialists	2020	319	–
Number of medical and pathology laboratory scientists	2020	743	–
Number of community health workers	2020	–	–

Source: WHO, Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average Malawi health spending 2018

US$42

per person

Average health spending in Sub-Saharan Africa 2020

US$89

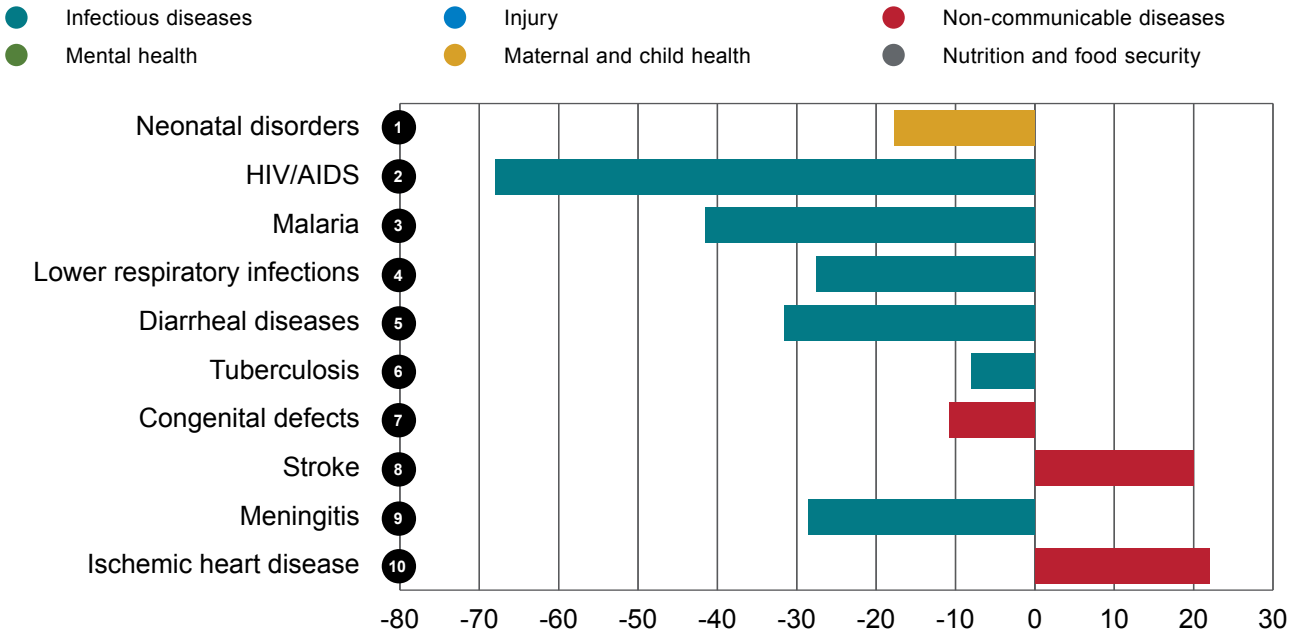
per person

Breakdown of Malawi health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Malawi profile. http://www.healthdata.org/malawi

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Malawi profile. http://www.healthdata.org/malawi

Infectious diseases dominate Malawi's top 10 causes of death and disability, measured in disability-adjust life-years (DALYs). The reduction in the burden of ill health and loss of life from HIV and malaria is encouraging and all infectious diseases have also shown a downward trend. The cardiovascular NCDs – stroke and ischemic heart disease – are playing a larger role than 10 years ago, both growing at about 20%.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No solutions were proposed by the Malawi partners.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Malawi AIDS Counselling and Resource Organization	2	HIV/AIDS
Malawi Infection Prevention and Control/WASH	1	Infectious diseases

ORGANIZATIONS INTERVIEWED

Lighthouse Trust in collaboration with Ministry of Health Malawi	Zoom interview

NIGERIA | country overview

Population (2021)	213.4 million	
GDP per capita (2021)	US$2,066	
Life expectancy at birth (2019)	Women 64.1	Men 61.2
Maternal mortality (2017)	917/100,000 live births	
Under-five mortality (2020)	114/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

National health policy has prioritized enhancing access to quality and affordable health care. It also aimed to clarify roles and responsibilities for the provision and financing of health among three tiers of government. The goal was to establish a general hospital in each of the 774 local government areas and revitalize primary care provision.

Communicable diseases remain highly prevalent and, as the main cause of death and disability, are a priority. They include malaria, acute respiratory infections, measles, diarrhea, tuberculosis, HIV/AIDs, and neglected tropical diseases.

Workforce training is desperately needed to increase the provision of effective care. Child mortality is still a top health concern and one that exhibits regional disparities. Child mortality rates have fallen in the capital of Abuja but remain high in other cities and regions like Kano, Zamfara, and Jigawa.

Nigeria has not enacted dedicated legislation on universal health coverage.

National Health Policy 2016. Ministry of Health, 2016. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/nigeria/draft_nigeria_national_health_policy_final_december_fmoh_edited.pdf

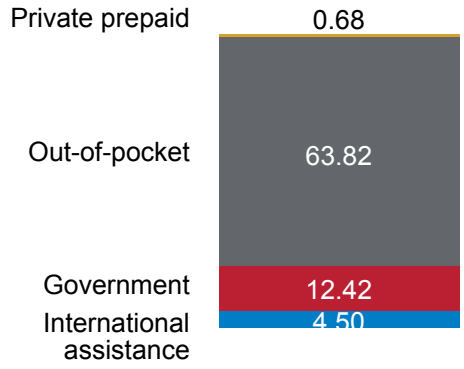
Country profile: Nigeria. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/nigeria/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Nigeria	Global
Nurses and midwives per 10,000 people	2019	15.01	39.5
Medical doctors per 10,000 people	2018	3.81	16.4
Pharmacists per 10,000 people	2019	1.23	4.7
Number of medical specialists	2018	3,035	–
Number of medical and pathology laboratory scientists	2019	26,677	–
Number of community health workers	2018	116,454	–

Source: WHO, Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average Nigeria health spending 2018

US$81

per person

Average health spending in Sub-Saharan Africa 2020

US$89

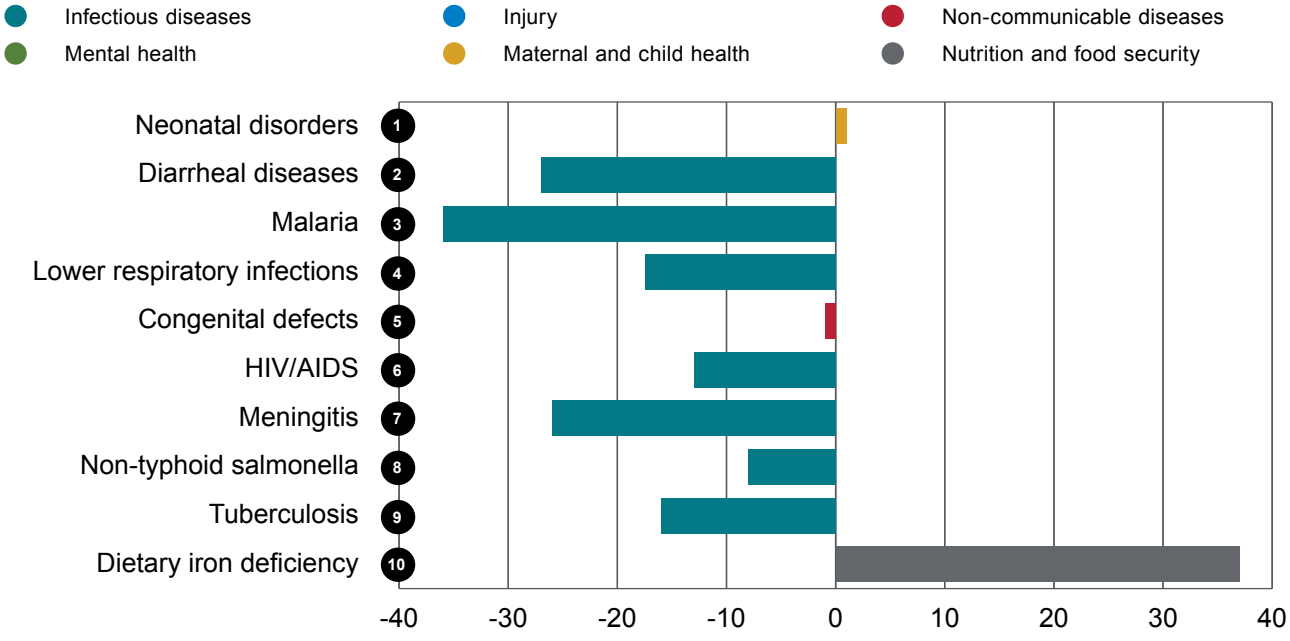
per person

Breakdown of Nigeria health care spending 2018 US$ per person

Source: Institute for Health Metrics and Evaluation. Nigeria profile. http://www.healthdata.org/nigeria

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Source: Institute for Health Metrics and Evaluation. Nigeria profile. http://www.healthdata.org/nigeria

Top causes of death and illness in Nigeria (measured in disability-adjusted life-years or DALYs) are heavily weighted toward infectious diseases, almost all of which have declined in the decade from 2009 to 2019 in terms of their toll on life and health. However, at the top of the list is neonatal disorders and the concern is that they have increased slightly while global health targets carry an expectation of reduction. The sharp increase in dietary iron deficiency is noteworthy.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No solutions were put forward by the Nigerian partners.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Aminu Kano Teaching Hospital, Nigeria	1	Respiratory health and diseases
APIN Public Health Initiatives	2	COVID-19 and HIV/AIDS
College of Medicine, University of Lagos		Hepatitis B
Farm Alert Ltd dba VetPro	2	Community health workers and public health
ICAP Nigeria	1	Cervical cancer, gender equity, HIV/AIDS, pediatrics, and quality improvement
Medicaid Cancer Foundation	1	Breast cancer, cancer survivorship, and psychosocial care
Paediatric Association of Nigeria	2	COVID-19
PreDiagnosis International	1	
Superhub: mDoc Healthcare	9	Chronic disease, COVID-19, NCDs, quality improvement, and reproductive medicine
University of Maryland, Nigeria	2	HIV/AIDS

ORGANIZATIONS INTERVIEWED

Centers for Disease Control Nigeria	Zoom interview

RWANDA | country overview

Population (2021)	13.5 million	
GDP per capita (2021)	US$822	
Life expectancy at birth (2019)	Women 71.2	Men 66.9
Maternal mortality (2017)	248/100,000 live births	
Under-five mortality (2020)	40/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The Ministry of Health has a strong focus on maternal, neonatal and child health; nutrition; malaria; and disease control. While service uptake by new mothers and infants has improved substantially, mortality indicators have only improved slightly. There has been progress in combatting malaria and a reduction in related illness and deaths, but concentrated areas of malaria infection persist.

Health care workforce indicators have been almost stagnant, although the ratio of doctors to population increased somewhat between 2012/13 and 2017/18.

Rwanda has not passed dedicated legislation on universal health coverage.

Sources: MOH, Third Health Sector Strategic Plan July 2012 – June 2018, Rwanda. Ministry of Health, 2018. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/rwanda/hssp_iii_final_version.pdf

Country profile: Rwanda. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/rwanda/

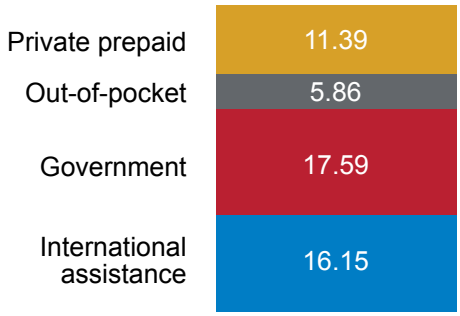
Monitoring and Evaluation Plan for the Health Sector Strategic Plan. Ministry of Health, 2018. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/rwanda/final_m_e_plan_for_hssp_iii_a.pdf

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Rwanda	Global
Nurses and midwives per 10,000 people	2019	9.48	39.5
Medical doctors per 10,000 people	2019	1.18	16.4
Pharmacists per 10,000 people	2018	0.72	4.7
Number of medical specialists	2018	534	–
Number of medical and pathology laboratory scientists	2018	1,990	–
Number of community health workers	2018	45,000	–

Source: WHO, Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average Rwanda health spending 2018

US$51

per person

Average health spending in Sub-Saharan Africa 2020

US$89

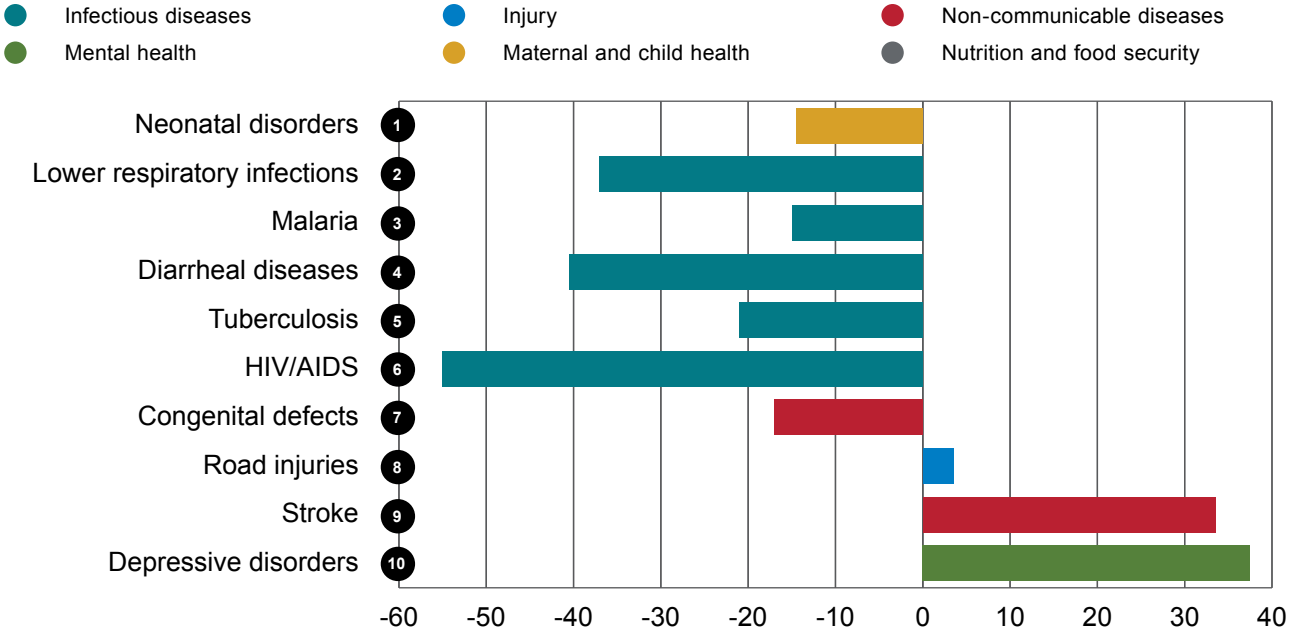
per person

Breakdown of Rwanda health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Rwanda profile. http://www.healthdata.org/rwanda

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Rwanda profile. http://www.healthdata.org/rwanda

Neonatal disorders remained the top cause of death and disability in 2019, showing only a slight drop over a decade and justifying the ministry's continued focus on newborn health. Collectively, infectious diseases dominate the list of leading causes of illness and mortality, but the impact of each disease in this group is declining. Progress in the area of HIV/AIDS is notable, as are the reductions in diarrheal and respiratory infections which commonly affect young children. Although the impact of strokes has increased substantially, Rwanda has not yet seen the kind of growth in non-communicable diseases (NCDs) that many other countries on the continent have. However, the rapid increase in death and disability due to depression is concerning and a reminder that Rwanda's population has experienced great trauma well within living memory.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Rwanda did not put forward any capacity development solutions.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Institute of Medical Education and Global Health, LLC	1	Respiratory health and diseases
Nyarugenge District Hospital/COVID-19 National Referral Center	2	COVID-19, medical education, respiratory health and diseases

ORGANIZATIONS INTERVIEWED

University of Rwanda	Zoom interview

SOUTH AFRICA | country overview

Population (2021)	**59.4 million**	
GDP per capita (2021)	**US$7,055**	
Life expectancy at birth (2019)	Women **68.3**	Men **62.2**
Maternal mortality (2017)	**119/100,000** live births	
Under-five mortality (2020)	**32/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Priorities for the Ministry of Health are:

- Preventing and reducing the burden of disease, and promoting health
- Advancing universal health coverage through development of National Health Insurance (NHI)
- Preparing health facilities for implementation of NHI
- Re-engineering primary health care by increasing community outreach teams, contracting general practitioners, and creating district-level specialist teams
- Improving health facility planning by applying norms and standards
- Improving financial management, including revenue collection and supply chain management

Prevention and effective treatment of HIV and TB remain high on the agenda, and prevention and detection of non-communicable diseases (NCDs) constitute a growing need recognized by the ministry. The ministry also strives to reduce maternal and child mortality but has been falling short of targets. The ministry notes that increasing health care infrastructure and the capacity of the health care workforce are needed in order to deliver better public sector care.

South Africa does not have a dedicated law on universal health coverage, but its National Health Bill has been introduced in Parliament.

Sources: Strategic Health Plan 2015-2020. MOH 2015. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/south_africa/ndoh-strategicplan2015-2020.pdf

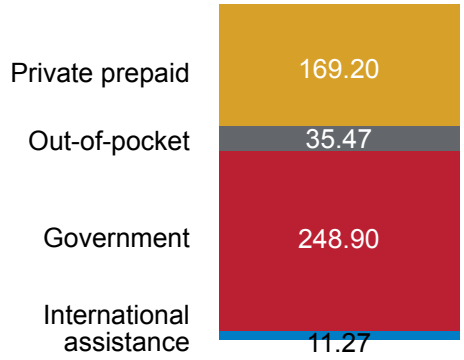
Country profile: South Africa. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/southafrica/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	South Africa	Global
Nurses and midwives per 10,000 people	2018	49.74	39.5
Medical doctors per 10,000 people	2019	7.92	16.4
Pharmacists per 10,000 people	2016	2.72	4.7
Number of medical specialists	2018	14,192	–
Number of medical and pathology laboratory scientists	2019	9,939	–
Number of community health workers	2018	54,180	–

Source: WHO, Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average South Africa health spending 2018

US$465

per person

Average health spending in Sub-Saharan Africa 2020

US$89

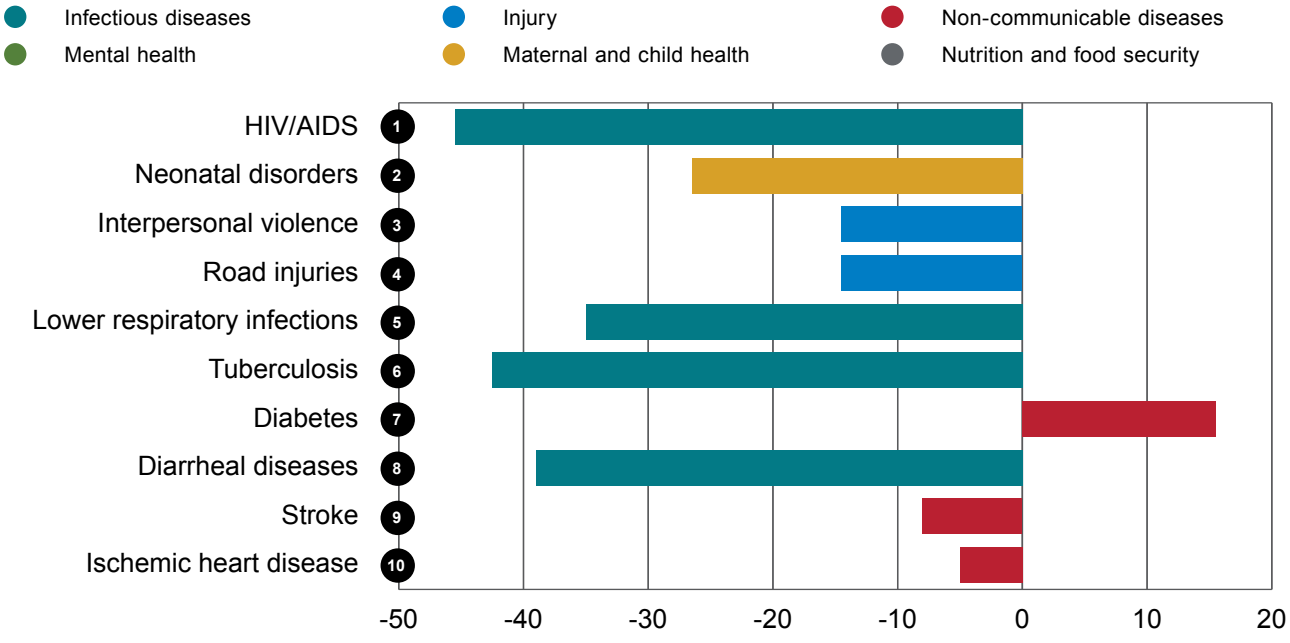
per person

Breakdown of South Africa health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). South Africa profile. http://www.healthdata.org/southafrica

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Rwanda profile. http://www.healthdata.org/rwanda

South Africa's top three causes of death and disability, measured in disability-adjusted life-years (DALYs), are HIV, neonatal disorders, and injuries due interpersonal violence. This speaks to a complex and heavy burden of disease. Infectious diseases, when taken collectively, still account for the greatest number of deaths and illnesses. In all instances the impact has reduced considerably from 2009 to 2019. The combined impact of road injuries and interpersonal violence is substantial, both in terms of loss of life and severity of harm. The cardiovascular NCDs – stroke and ischemic heart disease – and diabetes fill lower positions on the list. Diabetes continues to grow and is associated with an obesity epidemic.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Building capacity to prevent mother-to-child transmission of hepatitis B

Goals and issues	Hub team	Targeted learners	Challenges
There is a high prevalence of hepatitis B in South Africa and other countries on the continent. It is a disease that can be prevented but cannot be cured. The incidence of hepatitis B could be reduced if pregnant women were to receive the correct care to prevent mother-to-child transmission. The success across Africa in preventing mother-to-child transmission of HIV suggests this is a viable approach.	University of Cape Town and ECHO hub on viral hepatitis in Sub-Saharan Africa Experts at academic institutions could assist with curriculum development Support of ministries of health would be vital for implementation	Midwives, obstetricians, gynecologists, pediatricians, and community health workers	• Co-ordination with departments of health • Integrating HIV/HBV/syphilis • Internet connectivity costs • Commitment from ECHO program leaders and spokes • Hub sustainability

ECHO PARTNERS

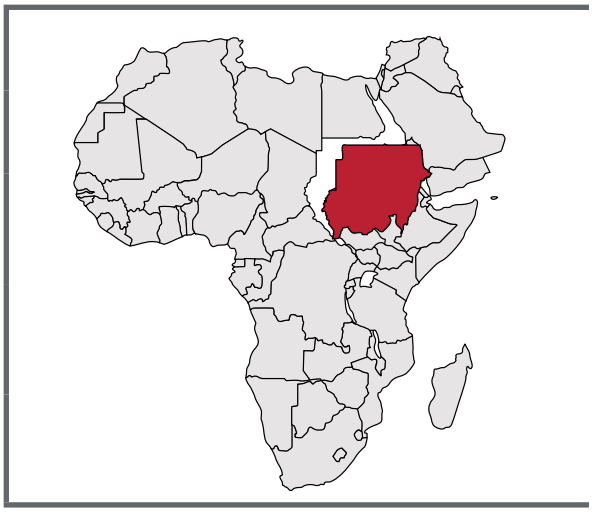
ECHO hubs	Number of programs	Program focus areas
CDC Advanced HIV COVID-19	1	COVID-19, HIV/AIDS
Gastroenterology Foundation of South Africa	3	Hepatology and gastro-enterology
ImPower´d Woman	1	Gender equity intervention and support
Infection Control Africa Network (ICAN)	2	Infectious diseases
Infection Control Society South Africa	1	
National Health Laboratory Services	1	Pathology
Robert Mangaliso Sobukwe Hospital	5	Cancer diagnosis and treatment, chronic disease, emergency care, lung cancer, maternal health, palliative care, and reproductive medicine
Stellenbosch University	2	Breast cancer, cancer screening and diagnosis, genetics, and palliative care
University of Cape Town	3	COVID-19, hepatitis B, hepatitis C
University of Pretoria	1	Autism education, intervention, and support
Wits Health Consortium	1	Palliative care

ORGANIZATIONS INTERVIEWED

University of Cape Town	Zoom interview

SUDAN | country overview

Population (2021)	45.7 million	
GDP per capita (2021)	US$752	
Life expectancy at birth (2019)	Women 70.8	Men 67.6
Maternal mortality (2017)	295/100,000 live births	
Under-five mortality (2020)	57/1,000 live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Priorities for the Ministry of Health for 2012 to 2016 were infectious and parasitic diseases – particularly malaria, tuberculosis, schistosomiasis, diarrheal diseases, acute respiratory infections, and protein-energy malnutrition. Non-communicable diseases (NCDs) are on the rise and constitute a new priority.

The ministry reported a one-third reduction in child mortality between 1990 and 2010, and a 60% reduction in maternal mortality. But Sudan was unlikely to reach ministry targets for maternal and child health by the end of that planning cycle.

The ministry identified the necessity to enhance the quality of services at secondary and tertiary health care facilities and strengthen the patient referral system.

Sources: Sudan National Health Sector Strategic Plan 2012-2016. Ministry of Health, 2012. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/sudan/sudan_national_health_sector_strategic_plan_nhssp_2012-2016.pdf

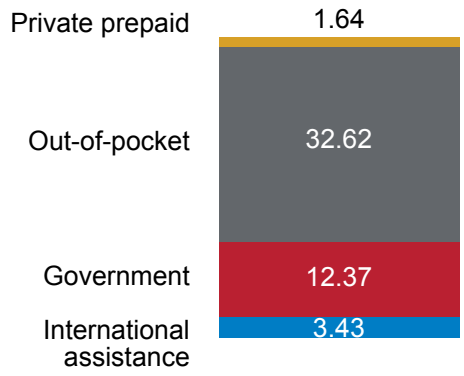
Country profile: Sudan. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/sudan/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Sudan	Global
Nurses and midwives per 10,000 people	2018	11.46	39.5
Medical doctors per 10,000 people	2017	2.62	16.4
Pharmacists per 10,000 people	2017	0.25	4.7
Number of medical specialists	–	–	–
Number of medical and pathology laboratory scientists	2004	35	–
Number of community health workers	2004	4,716	–

Source: WHO, Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average Sudan health spending 2018

US$50
per person

Average health spending in Sub-Saharan Africa 2020

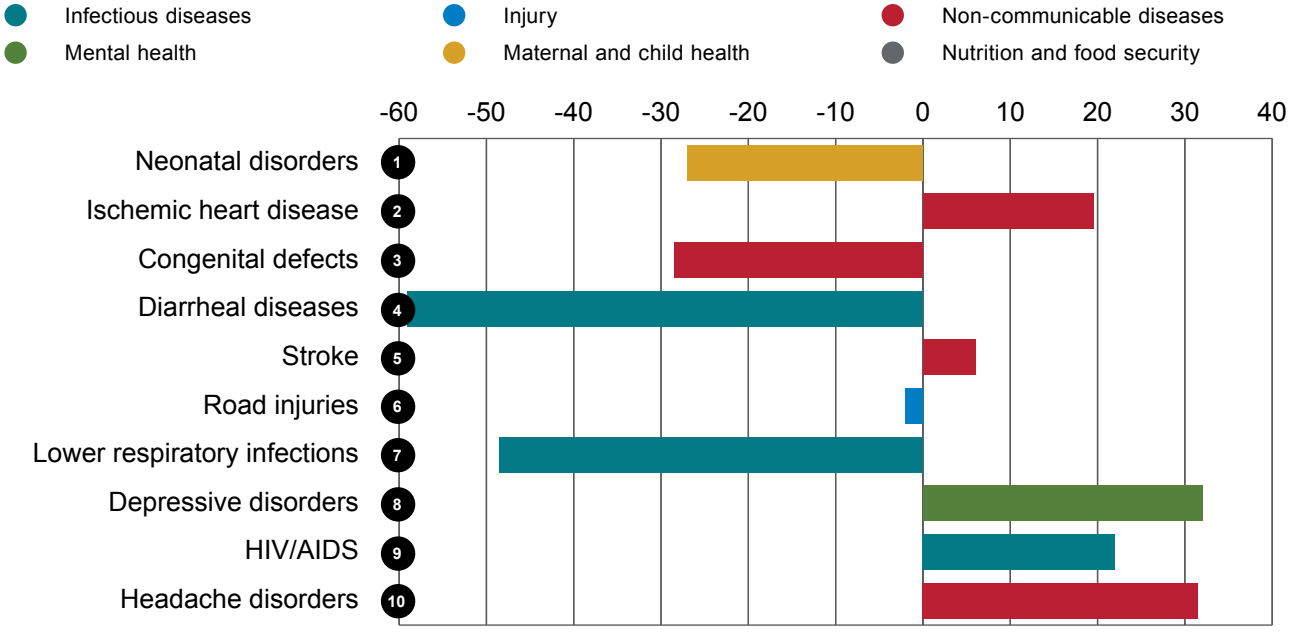
US$89
per person

Breakdown of Sudan health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Sudan profile. http://www.healthdata.org/sudan

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Sudan profile. http://www.healthdata.org/sudan

NCDs and infectious diseases are both prominent in Sudan's top 10 causes of death and disability, measured in disability-adjust life-years (DALYs). At the top of the list are neonatal disorders. However, there has been a decline over a decade in the impact of neonatal disorders, and two infectious disease groups that affect young children – diarrheal and lower respiratory infections – have also declined. The cardiovascular NCDs – stroke and ischemic heart disease – are playing a larger role than 10 years ago. The increased impact of depressive disorders and the growth in HIV deaths and illness are concerning, especially as the latter runs contrary to continental trends.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Sudan ‘s participant proposed a solution for building capacity for community-oriented primary care. This appears in Section 4 .

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Sudanese American Medical Association	1	Surgery
Superhub: Sudanese American Medical Association (SAMA)	1	Dialysis
Sustainable Development Response Organization (SuDRO)	1	Leadership
UNMC Sudan ECHO Global Hub	2	Ambulatory care and primary care

ORGANIZATIONS INTERVIEWED

Federal Ministry of Health Sudan	Emailed questions and response

TANZANIA | country overview

Population (2021)	**63.6 million**	
GDP per capita (2021)	**US$1,099**	
Life expectancy at birth (2019)	Women **69.3**	Men **65.4**
Maternal mortality (2017)	**524/100,000** live births	
Under-five mortality (2020)	**49/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Health priorities of the Ministry of Health are reducing maternal and child mortality and addressing the communicable diseases of malaria, HIV, and TB. The ministry recognizes that this will depend on reaching underserved areas and groups.

Tanzania has made impressive gains in reducing under-five and infant mortality, mainly by addressing malaria and other childhood diseases. The decline in maternal mortality and neonatal mortality has not met national targets.

The country aims to maintain its HIV program, the prevention and control of malaria, and early detection and treatment of tuberculosis and leprosy. Generally, detection and treatment initiation have been successful but prevention programs require strengthening.

The Ministry of Health reports that non-communicable diseases (NCDs) are an increasing burden and there is a rapidly increasing demand for services, especially for cardiovascular diseases, diabetes, and cancer. The ministry plans to gradually increase diagnostic and therapeutic capacities for NCDs.

Tanzania does not have a specific universal health care law.

Sources: Sector Strategic Plan IV 2015-2020. Ministry of Health 2015. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/tanzania/final_hssp_iv_vs1.0_260815.pdf

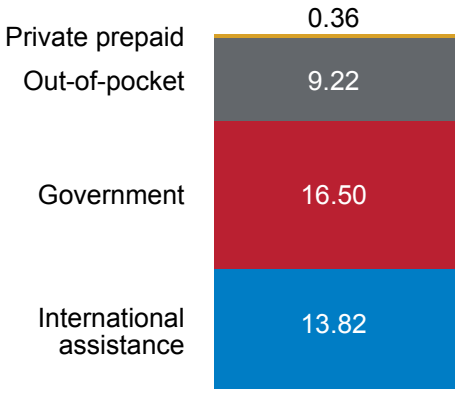
Country profile: Tanzania. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/tanzania/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Tanzania	Global
Nurses and midwives per 10,000 people	2018	5.67	39.5
Medical doctors per 10,000 people	2018	0.51	16.4
Pharmacists per 10,000 people	2018	0.33	4.7
Number of medical specialists	2018	451	–
Number of medical and pathology laboratory scientists	2018	4,361	–
Number of community health workers	–	–	–

Source: WHO, Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average Tanzania health spending 2018

US$40

per person

Average health spending in Sub-Saharan Africa 2020

US$89

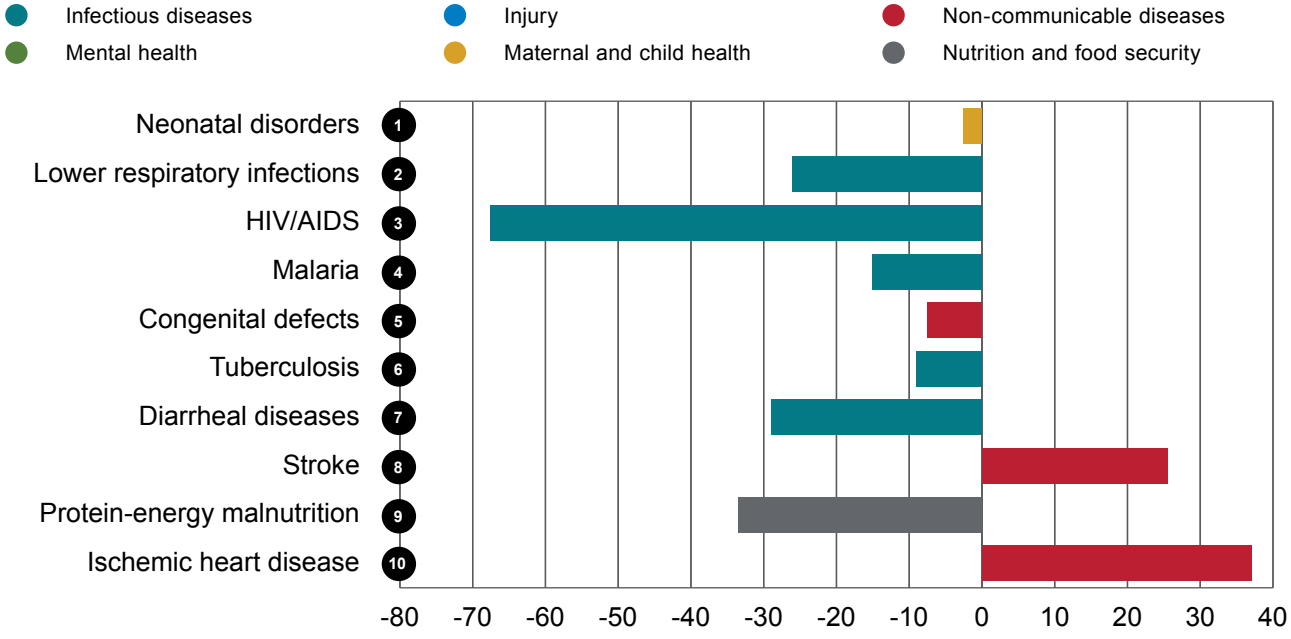
per person

Breakdown of Tanzania health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Tanzania profile. http://www.healthdata.org/tanzania

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Tanzania profile. http://www.healthdata.org/tanzania

Measured in disability-adjusted life-years (DALYs), the heaviest toll on life and health in Tanzania is exacted by infectious diseases. But the impact of each of these diseases is declining, although at different rates. As a standalone cause, neonatal disorders top the list of causes of death and disability – and the rate of reduction in a decade has been modest.

The emergence of cardiovascular NCDs is clear and quite rapid.

The continued effects of poverty on health are manifest in the fact that protein-energy malnutrition occupies the ninth position. However, the reduction in its impact is substantial.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Building clinical skills for newborn care

Goals and issues	Hub team	Targeted learners	Challenges
Neonatal disorders are the top cause of death and disability in Tanzania and the ministry has prioritized improving maternal and newborn health. A digital version of the AAP-WHO Clinical Skills Course for Essential Newborn Care is being developed for use in Tanzania. The ECHO Model is envisaged as the delivery system for this course.	AAP Superhub and the East, Central and Southern Africa College of Nursing	Newborn clinicians, including physicians, nurses, midwives, and obstetricians working at six regional hospitals	• Internet connectivity • Long-term sustainability of the hub

ECHO PARTNERS

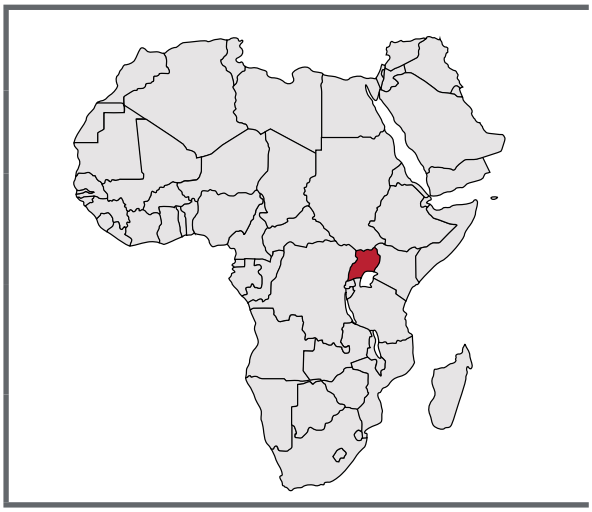
ECHO hubs	Number of programs	Program focus areas
Comprehensive Community Based Rehabilitation Tanzania	2	COVID-19, medical education, and rehabilitation
East, Central, and Southern African Health Community	1	Tuberculosis
Global Peace Network	5	Community health workers, evidence-based medicine, and pediatrics
Mbeya Zonal Referral Hospital	1	Respiratory health and diseases
Movement of Youth Against Poverty Ignorance and Disease	1	HIV/AIDS and tuberculosis
Tanzania Health Promotion Support	1	Multidrug-resistant TB
Ministry of Health, Community Development, Gender, Elderly, and Children	4	HIV/AIDS, laboratory sciences, and multidrug-resistant TB

ORGANIZATIONS INTERVIEWED

Ministry of Health, Community Development, Gender, Elderly, and Children Tanzania	Zoom interview

UGANDA | country overview

Population (2021)	**45.9 million**	
GDP per capita (2021)	**US$884**	
Life expectancy at birth (2019)	Women **70.1**	Men **63.2**
Maternal mortality (2017)	**375/100,000** live births	
Under-five mortality (2020)	**43/1,000** live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The leading priority of the Ministry of Health for the period to 2020 was to reduce the infectious diseases of HIV, malaria, tuberculosis, meningitis, and infections of the lower respiratory system. The ministry also aimed to improve equity in service delivery through infrastructure development, and equipping and staffing facilities. Uganda does not yet have a specific universal health care law.

The most recent health strategy noted that maternal and child heath indicators had met targets, but this was not the case for HIV/AIDS and malaria. Development of health care infrastructure progressed as planned but there were still urban-rural disparities in populations served per facility. The health workforce was identified as a constraint on appropriate provision of health services, with challenges in terms of numbers, skills, retention, motivation, and performance.

Sources: Health Sector Development Plan 2015/16 – 2019/20. Ministry of Health, 2015. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/uganda/health_sector_development_plan_2015-16_2019-20_0.pdf

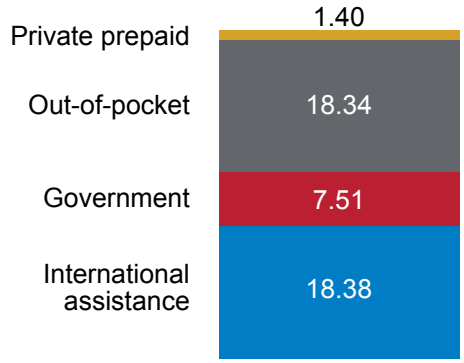
Country profile: Uganda. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/uganda/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Uganda	Global
Nurses and midwives per 10,000 people	2020	16.37	39.5
Medical doctors per 10,000 people	2020	1.54	16.4
Pharmacists per 10,000 people	2020	0.38	4.7
Number of medical specialists	2018	179	–
Number of medical and pathology laboratory scientists	2018	3,874	–
Number of community health workers	2018	4,646	–

Source: WHO World Health Statistics 2022; and WHO Global health workforce database

SOURCES OF HEALTH CARE SPENDING



Average Uganda health spending 2018

US$46
per person

Average health spending in Sub-Saharan Africa 2020

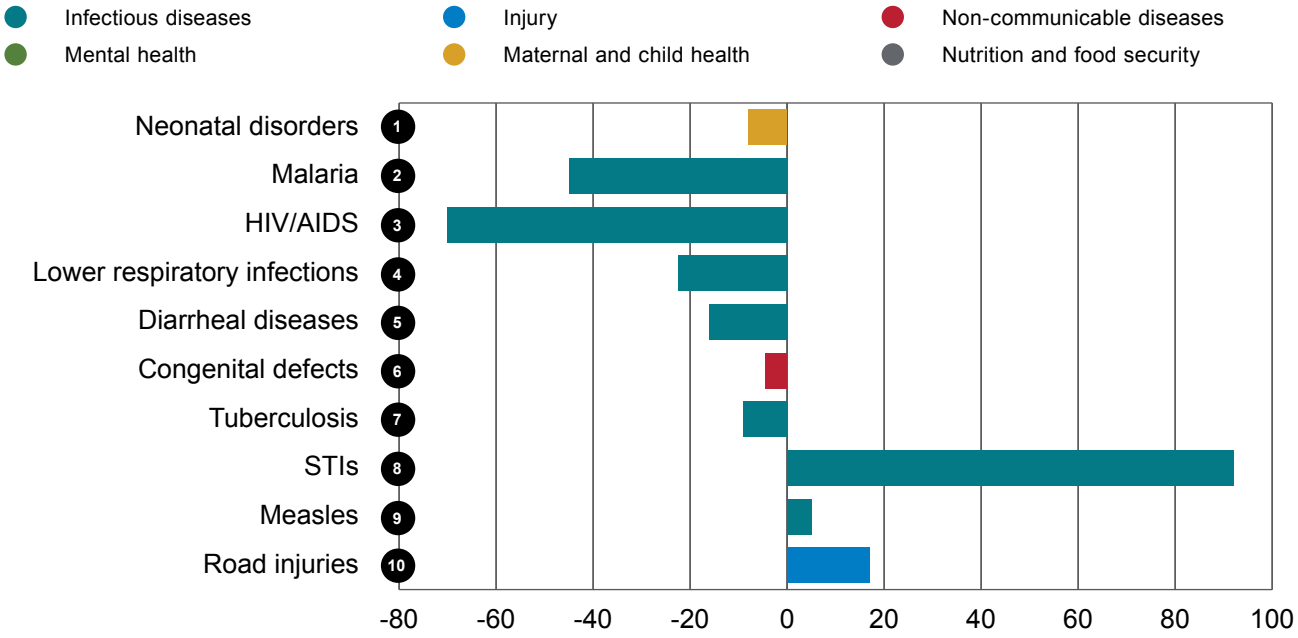
US$89
per person

Breakdown of Uganda health care spending 2018 US$ per person

Source: Institute for Health Metrics and Evaluation. Uganda profile. http://www.healthdata.org/uganda

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Source: Institute for Health Metrics and Evaluation. Uganda profile. http://www.healthdata.org/uganda

Neonatal disorders top the causes of death and disability, measured in disability-adjusted life-years (DALYs), and their impact has remained almost static over 10 years. The striking pattern in Uganda is the predominance of infectious diseases. While the overall impact of some diseases, like HIV/AIDS, tuberculosis, and malaria, has declined, there has been a rise in measles and STIs have become a major epidemic. While other countries on the continent are beginning to contend with NCDs as a major cause of death and disability, in Uganda infectious diseases have outstripped such threats as may exist on the NCD front.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

No workforce development solution was put forward by Uganda partners.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Africa One Health University Network (AFROHUN)	2	One Health
African Palliative Care Association	1	Medicine
Arua Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Fort Portal Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Gulu Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Hoima Regional Referral Hospital	1	HIV/AIDS
Jinja Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Kabale Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Kayunga Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Lira Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Makerere University: College of Health Sciences	1	COVID-19
Masaka Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Mbale Regional Referral Hospital	1	HIV/AIDS
Mbarara Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Ministry of Health – Uganda	3	Behavioral and mental health, HIV/AIDS, multidrug-resistant TB
Moroto Regional Referral Hospital	1	COVID-19 and HIV/AIDS
Mubende Regional Referral Hospital	2	COVID-19 and HIV/AIDS
National TB Reference Laboratory	1	
Soroti Regional Referral Hospital	1	COVID-19 and HIV/AIDS
SEED Global	1	Emergency Medicine
Uganda People's Defence Force	1	HIV/AIDS
Uganda Virus Research Institute	4	HIV/AIDS, Rapid Testing Quality Improvement

**Note: many of the hubs showing COVID-19 programs may have shifted to other focus areas.*

ORGANIZATIONS INTERVIEWED

Ministry of Health Uganda	Zoom interview

ZAMBIA | country overview

Population (2021)	19.5 million	
GDP per capita (2021)	US$1,137	
Life expectancy at birth (2019)	Women 65.4	Men 59.5
Maternal mortality (2017)	213/100,000 live births	
Under-five mortality (2020)	61/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The overall priority for the Ministry of Health, as indicated in its strategic plan for 2017 – 2021, is providing a continuum of care, with an emphasis on strengthening primary health care systems and services. Other priorities are improving maternal and child health, reducing malaria, and sustaining progress in relation to HIV.

The Ministry of Health acknowledges disparities in care that disadvantage low-income families, rural populations, and women. Increasing the capacity of the health care workforce is a priority for the Ministry of Health as it is critical to reducing inequities in access to care.

Sources: Zambia National Health Strategic Plan 2017 – 2021. Ministry of Health, 2017. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/zambia/zambianhsp.pdf

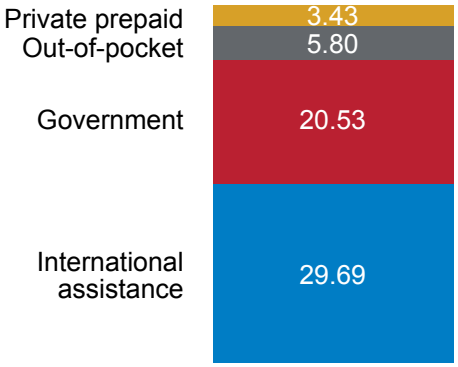
Country Profile: Zambia. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/zambia/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Zambia	Global
Nurses and midwives per 10,000 people	2018	10.23	39.5
Medical doctors per 10,000 people	2018	1.17	16.4
Pharmacists per 10,000 people	2018	0.98	4.7
Number of medical specialists	2018	325	–
Number of medical and pathology laboratory scientists	2018	441	–
Number of community health workers	2018	221	–

Source: WHO World Health Statistics 2022; and WHO Global health workforce database

SOURCES OF HEALTH CARE SPENDING



Average Zambia health spending 2018

US$59
per person

Average health spending in Sub-Saharan Africa 2020

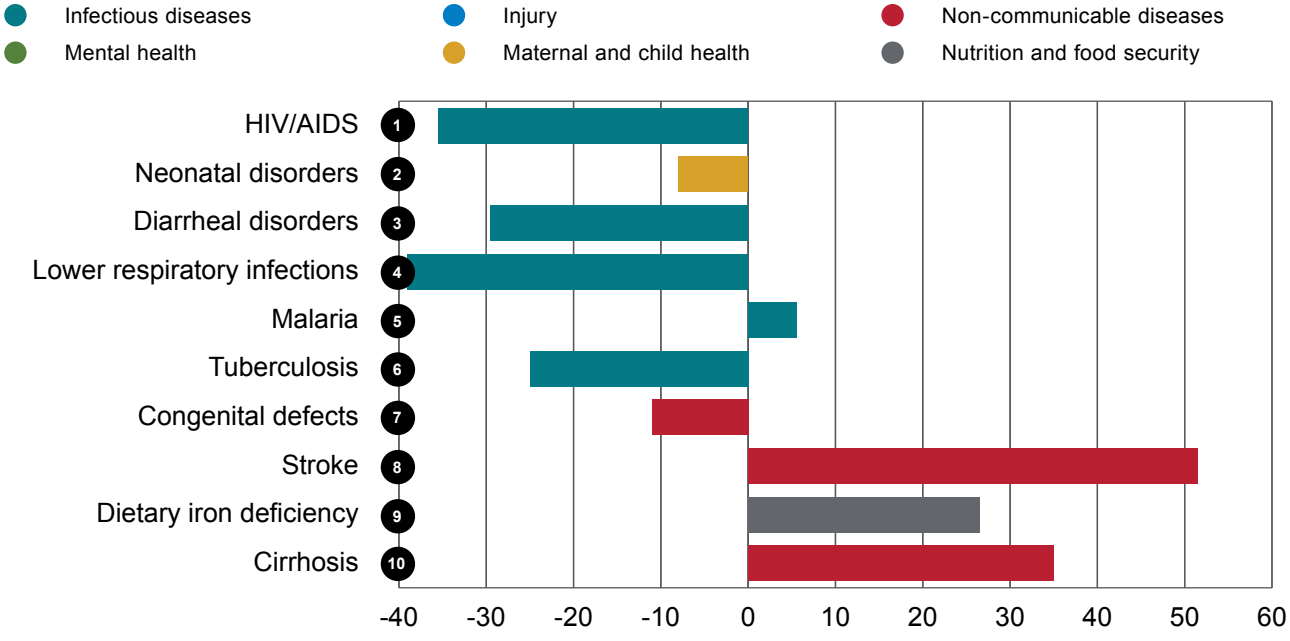
US$89
per person

Breakdown of Zambia health care spending 2018 US$ per person

Source: Institute for Health Metrics and Evaluation. Zambia profile. http://www.healthdata.org/zambia

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Source: Institute for Health Metrics and Evaluation. Zambia profile. http://www.healthdata.org/zambia

Infectious diseases, led by HIV/AIDS, continue to cause most death and disability, measured in disability-adjusted life-years (DALYs). Except for malaria – fifth from the top – infectious diseases are diminishing gradually as a cause of mortality and morbidity. Neonatal disorders also account for a very large proportion of death and disability and the decline over a decade has been less than 10%. The increased impact of stroke has been concerning and, together with the growing toll of cirrhosis, may signal that NCDs represent a major threat.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Strengthening the core competencies of student midwives and new graduates

Goals and issues	Hub team	Targeted learners	Challenges
Neonatal disorders remain a top cause of death and disability in Zambia and the maternal mortality rate requires further reduction. Strengthening the core competencies of midwives could contribute to progress in these areas of care.	Midwifery Association of Zambia in partnership with SEED Global	Midwifery students Newly graduated midwives	• IT equipment • Staffing

Strengthening the ECHO HIV/TB mentorship model and expanding it to other areas of care

Goals and issues	Hub team	Targeted learners	Challenges
The aim of this intervention is to strengthen the existing ECHO clinical mentorship model for HIV/TB and expand it to include other areas of care, such as: • Mother-to-child transmission of HIV/hepatitis B/syphilis • HIV and NCD service integration • HIV prevention • Treatment of adolescents with HIV and TB • Advanced outbreak response	ECHO Zambia HIV/TB clinical mentorship hub Other specialized clinics	Nurses, doctors, trainees in nursing and medicine, clinical officers, medical licentiates, environmental health technicians, laboratory health personnel, and M&E officers	• Human resources • Coordinators • IT • ECHO champions/mentors • Internet access

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Defence School of Health Sciences	1	HIV/AIDS and tuberculosis
Livingstone General Hospital, Zambia	1	Respiratory health and diseases
Southern Africa Regional Coordinating Centre – Africa CDC	1	Infectious diseases
Superhub: Ministry of Health – Zambia	3	COVID-19, HIV/AIDS, and TB

ORGANIZATIONS INTERVIEWED

Ministry of Health Zambia	Emailed questions and response

ZIMBABWE | country overview

Population (2021)	**16 million**	
GDP per capita (2021)	**US$1,774**	
Life expectancy at birth (2019)	Women **63.6**	Men **57.5**
Maternal mortality (2017)	**458/100,000** live births	
Under-five mortality (2020)	**54/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Zimbabwe is prone to epidemic diseases, including diarrheal disease, and outbreaks of anthrax and rabies. Public health surveillance and a disaster preparedness and response program are a priority. At the start of the period 2016 – 2020, HIV prevalence was relatively high at 15% in adults and considerable gains were threatened by high vulnerability of young women to HIV infection and teenage pregnancy. TB deaths were mainly due to its link to HIV. Malaria was a major cause of morbidity and mortality in some geographic areas.

The Ministry of Health reported non-communicable diseases (NCDs) were becoming a major cause of morbidity and mortality. It also indicated that the nutrition status of children fell short of targets. Health care infrastructure and health care workforce capacity were also below desired levels.

Economic prospects were discouraging and government funding was likely to become more constrained, the health strategy warned. There would be a need for external funding to support health infrastructure, retain health workers, and ensure the supply of medicines and commodities. Equitable access to these goods and services was a major challenge which the health strategy sought to address.

Zimbabwe does not yet have a universal health care law.

Sources: National Health Strategy Equity and Quality in Health: Leaving No One Behind 2016-2020. Ministry of Health 2016. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/zimbabwe/zimbabwe_national_health_strategy_for_zimbabwe_2016-2020_updated_final_2.pdf

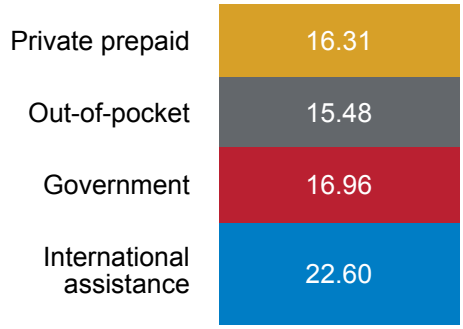
Country profile: Zimbabwe. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/zimbabwe/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Zimbabwe	Global
Nurses and midwives per 10,000 people	2020	21.39	39.5
Medical doctors per 10,000 people	2020	1.99	16.4
Pharmacists per 10,000 people	2020	1.08	4.7
Number of medical specialists	2018	619	–
Number of medical and pathology laboratory scientists	2018	644	–
Number of community health workers	2018	15,888	–

WHO, World Health Indicators. Global Health Workforce statistics database.
https://www.who.int/data/gho/data/indicators

SOURCES OF HEALTH CARE SPENDING



Average Zimbabwe health spending 2018
US$71
per person

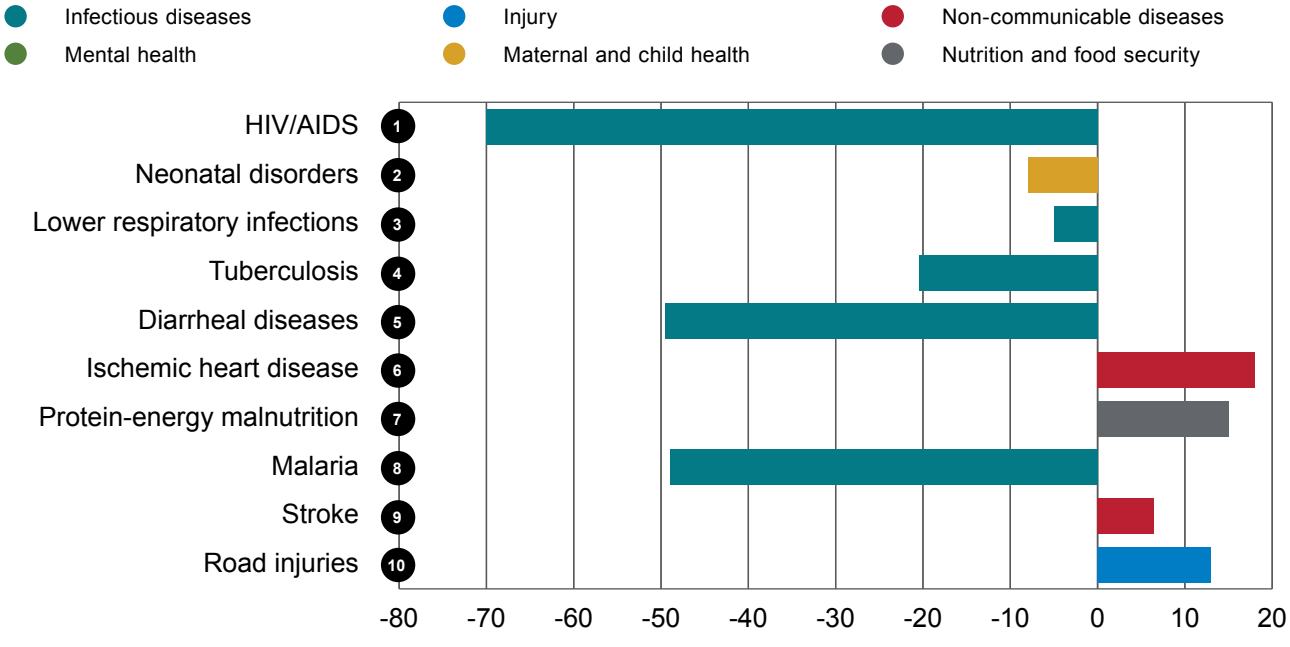
Average health spending in Sub-Saharan Africa 2020
US$89
per person

Breakdown of Zimbabwe health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Zimbabwe profile. http://www.healthdata.org/zimbabwe

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Zimbabwe profile. http://www.healthdata.org/zimbabwe

HIV/AIDS remains the top cause of death and disability in Zimbabwe, measured in disability-adjusted life-years (DALYs). The rate of reduction in mortality and illness due to HIV/AIDS has also been – by a wide margin – greatest in the area of HIV/AIDS. Declines in the burden of disease from malaria and diarrheal diseases were also impressive and the downward trend in death and disability was apparent across all infectious diseases on the top 10 list between 2009 and 2019.

Neonatal deaths, while still a major cause of death and disability, have declined somewhat.

Two cardiovascular NCDs – ischemic heart disease and stroke – feature in the top 10 and are on the increase. The rise in death and illness due to protein-energy malnutrition undoubtedly reflects economic conditions. The burden of disease and death due to road injuries is also growing.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

The proposal from our Zimbabwean hub, Zvandiri, deals with HIV prevention, care, and treatment for children and young people. It appears in Section 4 of this report.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Africa University	1	Behavioral and mental health, HIV/AIDS, pediatrics, reproductive medicine, and TB
Infection Control Association of Zimbabwe	1	–
Zvandiri	9	Community health workers

ORGANIZATIONS INTERVIEWED

Zvandiri	Zoom interview

ARGENTINA | country overview

Population size (2021)	**45.8 million**	
GDP per capita (2021)	**US$10,636**	
Life expectancy at birth (2019)	Women **79.5**	Men **73.5**
Maternal mortality rate (2017)	**39/100,000** live births	
Under-five mortality rate (2020)	**9/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The right to health care has been recognized in the Argentine constitution since 1994, however improvements in coverage have slowed in the last decade after significant progress between 1990 and 2010. The Ministry of Health regards strengthening primary health care as the key to improving health outcomes. It reports that maternal and child health indicators are least favorable in the Northwest and Northeast regions. Reducing the use of alcohol and tobacco among the youth is a government priority and World Tobacco Survey results for 2003 and 2007 suggest there has been movement in the desired direction.

Argentina has achieved nominal universal health coverage with everyone having the right to coverage but quality and access varying.

National health priorities

- Child and adolescent health
- Maternal health
- Sexual and reproductive health
- Care of people with disabilities
- Tobacco control
- Prevention and control of alcohol misuse
- Prevention of cardiovascular disease
- Nutrition
- Prevention of eating disorders
- Mental health

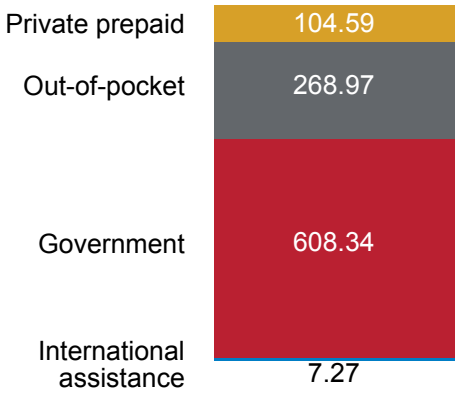
Plan Federal de Salud 2010-2016. Ministry of Health, 2010. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/argentina/arg._plan_federal_de_salud.pdf

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Argentina 2012–20	Global 2012–20
Nurses and midwives per 10,000 people	2017	26.0	39.5
Medical doctors per 10,000 people	2020	40.6	16.4
Pharmacists per 10,000 people	2004	5.07	4.7
Number of medical specialists	–	–	–
Number of medical and pathology laboratory scientists	2004	19,629	–
Number of community health workers	–	–	–

Source: WHO World Health Statistics 2022; WHO Global health workforce database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Argentina health spending 2018

US$989

per person

Average health spending in Latin America and Caribbean 2020

US$578

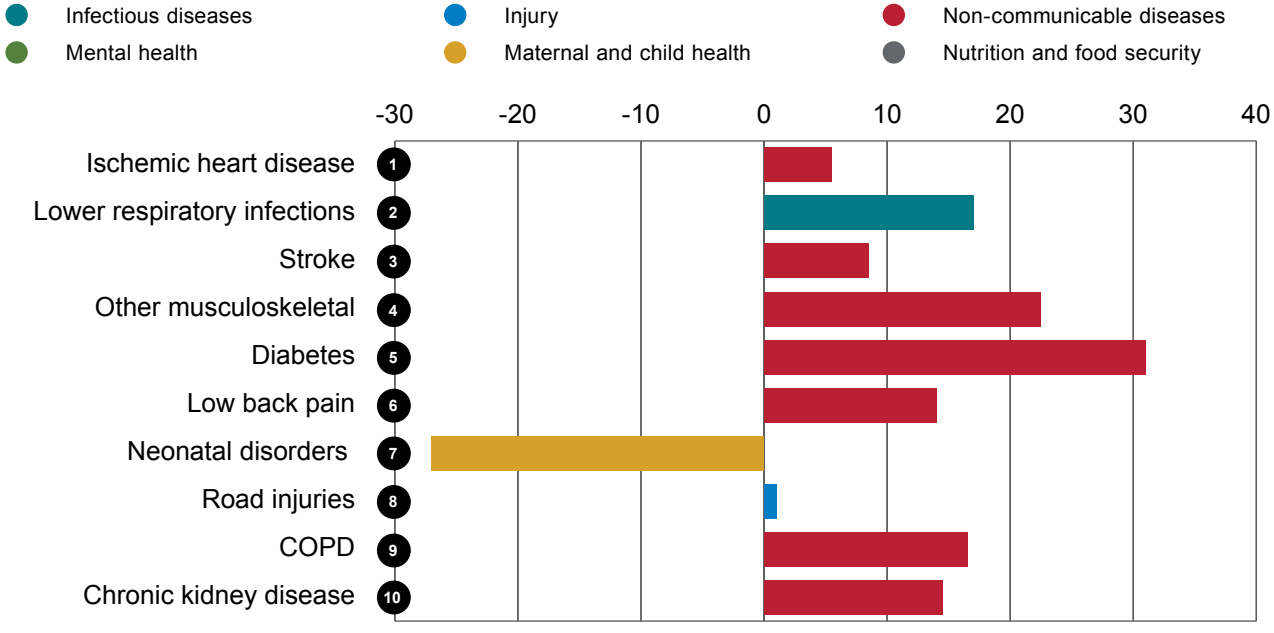
per person

Breakdown of Argentina health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Argentina profile. http://www.healthdata.org/argentina

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Argentina profile. http://www.healthdata.org/argentina

Seven out of 10 leading causes of death and disability in Argentina, measured in disability-adjusted life-years (DALYs), are non-communicable diseases (NCDs) and all have increased over the past decade. While ischemic heart disease and stroke top the NCD list, they are growing less swiftly than diabetes which has shown the highest rate of growth. Chronic kidney disease, ranked 10th, is likely to be due in part to poorly managed diabetes. Lower respiratory infections account for the second largest burden of disability and death and have increased significantly in a decade. While neonatal disorders are still a major cause of death and disability, their contribution to the burden of disease has declined. It should be noted that Argentina's under-five mortality rate is among the lowest in the group of Latin American countries in this project.

WORKFORCE DEVELOPMENT SOLUTIONS

Argentina's solution for improved emergency care and referral to advanced care is contained in Section 4 of the report.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Clínica Central S.A.	1	Respiratory health and diseases
Fundacion Neurodiversidad	1	Autism
Hospital Britanico de Buenos Aires	1	Hepatology and gastroenterology
Hospital Italiano	3	Dermatology, hepatitis C, hepatology, and gastroenterology
Hospital Pirovano	1	
Instituto Alexander Fleming	3	Cancer prevention, risk mitigation, screening, diagnosis, and treatment, gynecological cancers, and health and human services
Instituto de Oncologia Angel H Roffo	2	Cancer prevention, risk mitigation, screening, diagnosis, and treatment, COVID-19, head and neck cancer, and hematology
Instituto de Rehabilitacion Psicofisica de Buenos Aires	1	Pulmonary health and diseases
Instituto Pallium Latinoamérica	2	Palliative care and pediatrics
Obra Social Ferroviaria (OSFE)	5	Alcohol abuse, diabetes, drug addiction, gender equity, nutrition and metabolic diseases, obesity, preventive health and wellness, and rheumatology
Program for Early Detection and Conscientization on Developmental and Autism Spectrum Disorders	2	Autism and psychiatry
Superhub Hospital Universidad Austral	5	Cancer diagnosis and treatment, hepatitis C, hepatocellular carcinoma, and leukemia
Universidad de Mendoza	1	Emergency medicine

ORGANIZATIONS INTERVIEWED

Instituto Alexander Fleming	Zoom interview

BRAZIL | country overview

Population size (2021)	**214.3 million**	
GDP per capital (2021)	**US$7,507**	
Life expectancy at birth (2019)	Women **79.4**	Men **72.4**
Maternal mortality rate (2017)	**60/100,000** live births	
Under-five mortality rate (2020)	**15/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Brazil has the largest population in Latin America and its health ministry has prioritized the expansion of primary care, along with emergency care and pharmacy facilities, and improving equity in access to care.

The country has legislation on universal health care which provides a foundation for this approach.

The Ministry of Health acknowledges that there are disparities in health care which affect rural residents, women, children, the elderly, and racial, ethnic, and LGBTQ minorities.

National health priorities 2020–2023

- Preventing chronic non-communicable diseases (NCDs)
- Addressing road accidents and violence
- Control of infectious diseases
- Promotion of healthy aging

Plano Nacional de Saude 2016-2019. Ministry of Health, 2016. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/brazil/planonacionalsaude_2016_2019.pdf

Country Profile: Brazil. Commonwealth Fund, 2022.

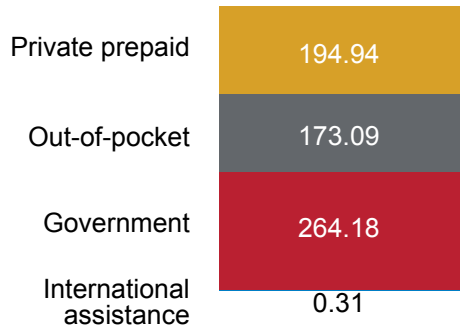
https://www.commonwealthfund.org/international-health-policy-center/countries/brazil

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Brazil	Global
Nurses and midwives per 10,000 people	2019	74.01	39.5
Medical doctors per 10,000 people	2019	23.11	16.4
Pharmacists per 10,000 people	2017	6.83	4.7
Number of medical specialists	2019	65,383	–
Number of medical and pathology laboratory scientists	2000	13,924	–
Number of community health workers	2019	281,207	–

Source: WHO World Health Statistics 2022; and WHO Global health workforce database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Brazil health spending 2018

US$633

per person

Average health spending in Latin America and Caribbean 2020

US$578

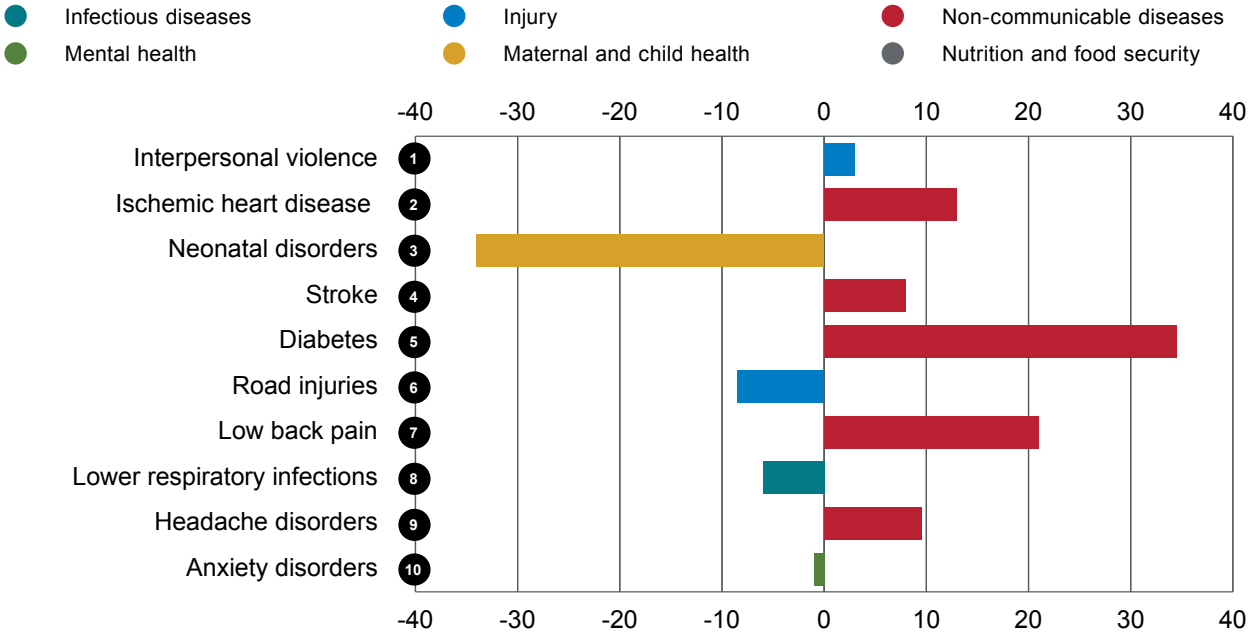
per person

Breakdown of Brazil health care spending 2018 US$ per person

Source: Institute for Health Metrics and Evaluation. Brazil profile. www.healthdata.org/brazil

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Source: Institute for Health Metrics and Evaluation. Brazil profile. www.healthdata.org/brazil

Interpersonal violence tops the list of causes of death and disability, measured in disability-adjusted life-years (DALYs), followed by ischemic heart disease and neonatal disorders. Progressing down the list, the dominance of NCDs is evident as is the fact that they are all on the rise. There has been a substantial reduction in death and disability due to neonatal disorders. Lower respiratory infections, also declining, are the only infectious disease category included in the top 10.

WORKFORCE DEVELOPMENT SOLUTIONS

Training to provide inclusive health care services, catering to marginalized populations

Goal and issue	Hub team	Targeted learners	Challenges
The aim is to provide inclusive and accessible primary care services – including care for STIs, diabetes, hypertension, and cancers – to marginalized populations such has homeless people, the LGBTQI community, and adolescents. This requires innovative methods and sensitivity to the needs of populations.	Several teams	Public health officials working in primary care	• Further planning required to develop concept

Training on health service delivery to transgender people

Goal and issue	Hub team	Targeted learners	Challenges
The goal is to enable health professionals to offer appropriate health services to transgender people, with an understanding of their unique requirements. Training would use the curriculum developed for ECHO by the Universidade Federal de Sergipe.	Universidade Federal de Sergipe, which has a multi-disciplinary team for the project	All health professionals in Sergipe state	• None mentioned

Training on a successful model of continuous care for STIs which expands access

Goal and issue	Hub team	Targeted learners	Challenges
Diagnosis and treatment of STIs – including syphilis and HIV – is highly unequal. A successful and inexpensive model of continuous care has been introduced by the Municipal Secretary of São Paulo. It covers diagnosis and treatment of STIs, including coinfections with HIV, and would reach homeless people living with HIV.	Municipal secretaries across Brazil with an interest in improving STI care	Nurses and doctors currently working in clinics operating in public spaces	• Identifying interested municipal secretaries • Reorganizing the health system to serve vulnerable populations from street clinics • Planning for the program would take about a year

Training to improve primary care workers' capacity to manage diabetes

Goal and issue	Hub team	Targeted learners	Challenges
The goal is to upskill primary care workers so that they can provide diabetes care – including care to patients with complex disease – and to reduce the demand on specialists. The hub already has a plan for this and estimates it could be launched in six months if funding were available.	Universidade Federal de Sergipe and Sergipe State School of Public Health (FUNESA)	Diverse primary care professionals: doctors, nurses, psychologists, community health workers, nutritionists, and social workers	• Funding

Training of primary care workers on treatment of chronic kidney disease

Goal and issue	Hub team	Targeted learners	Challenges
The aim is to equip primary care workers with the knowledge to treat chronic kidney disease, which is a neglected condition, and avoid patients deteriorating to an advanced stage of disease before treatment is received. Such programs already exist in Brazil and could be expanded, with a six-month lead time in each case.	Hospital Pequeno Principe with state and municipal secretaries and nephrology associations	Primary care providers	• Communication strategy to engage and recruit primary care providers

Building primary care capacity to respond to multifactorial chronic diseases

Goal and issue	Hub team	Targeted learners	Challenges
There is a need to improve prevention and diagnosis of cancers – particularly breast and prostate cancer, viral diseases – especially HPV, and non-communicable diseases. The goal is to strengthen capacity at the primary level and improve referral systems.	Universidad de Ciências da Saúde de Porto Alegre (UFCSPA) and smaller universities in Rio Grande do Sul	Primary care providers in Rio Grande do Sul	• Current workload of health care workers • Internet connectivity and other logistical matters

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Associação Brasileira de Profissionais de Epidemiologia (ProEpi)	1	COVID-19
Dra Helena Providelli Neurologista LTDA	1	Migraine management
Fundação Amor	1	Chronic pain
Hospital de Câncer de Barretos (Hospital de Amor)	1	Palliative care
Hospital de Clinicas de Porto Alegre	1	Hepatitis
Hospital Pequeno Príncipe	1	Domestic violence
Municipal Secretary of Health of São Paulo	8	HIV/AIDS and tuberculosis
Universidade Federal de Ciências da Saúde de Porto Alegre	2	Nephrology and pediatrics
Universidade Federal de Sergipe	3	COVID-19 and health care
Universidade Federal do Paraná	3	Geriatrics, primary care, and rheumatology

ORGANIZATIONS INTERVIEWED

Associação Brasileira de Profissionais de Epidemiologia de Campo (ProEpi)	Zoom interview
Municipal Secretary of Health São Paulo	Zoom interview
Universidade Federal de Sergipe	Zoom interview

CHILE | country overview

Population (2021)	19.5 million	
GDP per capita (2021)	US$16,265	
Life expectancy at birth (2019)	Women 83.2	Men 78.1
Maternal mortality (2017)	13/100,000	
Under-five mortality (2020)	7/1,000	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The national health strategy aims to reduce the impact of chronic communicable and non-communicable diseases (NCDs), from TB to cardiovascular disease, and to address mortality due to traffic accidents and intrafamily violence. It seeks to prevent hypertension and diabetes and improve treatment coverage. Prevention includes tackling risk factors such as tobacco and alcohol consumption, obesity, and sedentary lifestyles. The strategy encompasses occupational and environmental health and nutrition.

Initiatives to improve the public health system include filling gaps in human resources, strengthening primary care, accrediting hospitals, increasing access to health care, improving treatment of users, and ensuring access to quality medicines at a fair price.

The strategy includes preparedness for health emergencies and disasters.

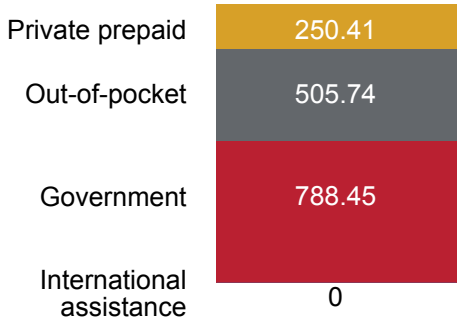
Estrategia Nacional de Salud. Ministry of Health, 2011. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/chile/chl._estrategia_nacional_de_salud_para_el_cumplimiento_de_los_objetivos_sanitarios_de_la_d.pdf

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Chile	Global
Nurses and midwives per 10,000 people	2021	46.01	39.5
Medical doctors per 10,000 people	2021	29.73	16.4
Pharmacists per 10,000 people	2021	6.3	4.7
Number of medical specialists	2021	29 804	–
Number of medical and pathology laboratory scientists	2009	29	–
Number of community health workers	–	–	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Chile health spending 2019

US$545
per person

Average health spending in Latin America and Caribbean 2020

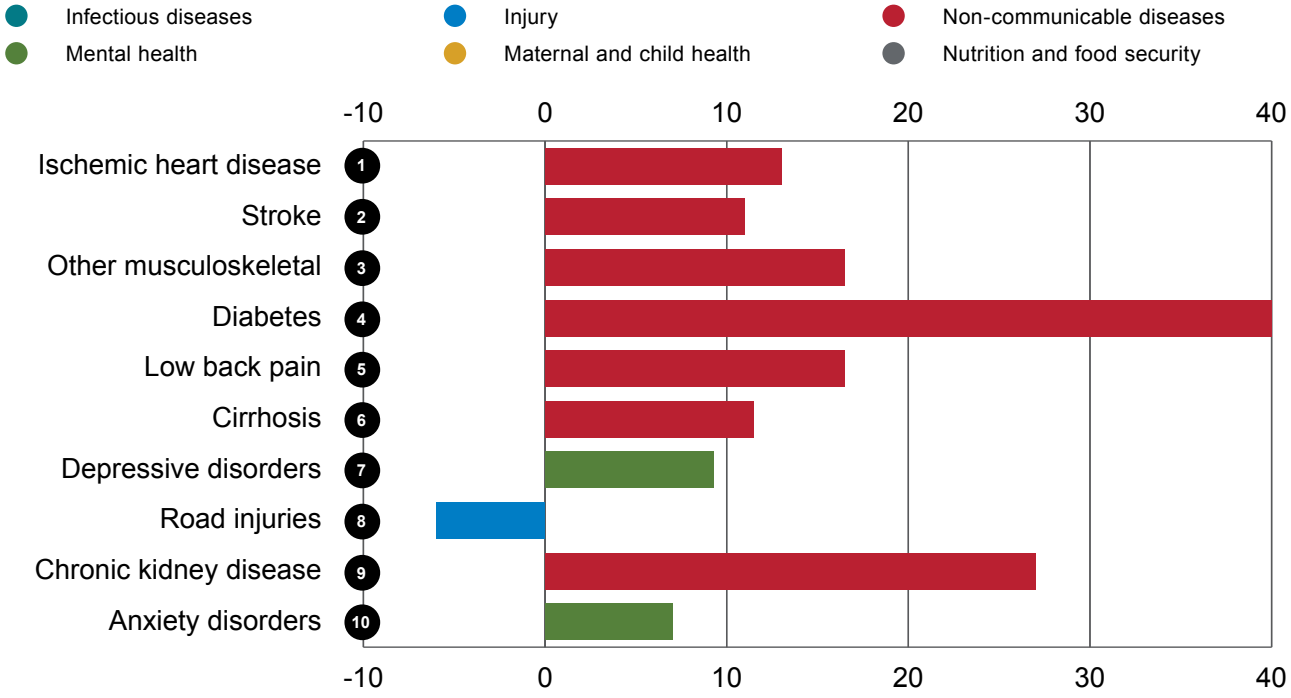
US$578
per person

Breakdown of Chile health care spending 2019 US$ per person

Institute for Health Metrics and Evaluation (IHME). Chile profile. http://www.healthdata.org/chile

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Chile profile. http://www.healthdata.org/chile

NCDs occupy seven out of the 10 positions on Chile's list of top causes of death and disability (calculated in disability-adjusted life-years or DALYs) and the individual diseases have all increased in the last decade. Some have grown at a moderate rate, but diabetes and chronic kidney disease – often linked to uncontrolled diabetes – have increased at a much faster rate. Two forms of mental health disorder – depression and anxiety – are among the top 10 contributors to the burden of disease. Notable by their absence are infectious diseases and maternal and child disorders.

WORKFORCE DEVELOPMENT SOLUTIONS

The solution below does not primarily benefit Chile, but Chile has been a key player in the establishment of ECHO Autism Communities which will form the foundation of this expanded regional network. Therefore, the solution is included in this country profile.

Building capacity in multiple Latin American countries for responding to autism and developmental disabilities

Goal and issue	Hub team	Targeted learners	Challenges
The aim is to improve access to diagnosis of and treatment for autism and developmental disabilities. The program will include training on neurotypical development, developmental disorders, psychiatric disorders, and differential diagnosis.	National universities and ministries of health in various Latin American countries. ECHO Autism Communities already include Chile, Costa Rica, and Argentina. Priority countries for expansion are: Colombia, Panama, and Peru	Frontline primary health care personnel, including doctors, nurses and psychologists, and teachers and nursery school personnel	• Funding coordination and communication with professionals • Time within the working day to undertake support work for the proposal

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Asociacion Latinoamericana para el Estudio Higado	1	Liver disease
Fundacion Apoyo Autismo Chile	1	Autism

ORGANIZATIONS INTERVIEWED

Fundacion Apoyo Autismo Chile	Zoom interview

COLOMBIA | country overview

Population size (2021)	51.5 million	
GDP per capita (2021)	US$6,104	
Life expectancy at birth (2019)	Women 81.9	Men 76.7
Maternal mortality rate (2017)	83/100,000 live births	
Under-five mortality rate (2020)	13/1,000 live births	

WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Major health issues prioritized by the Ministry of Health include improving women's health and adolescent health as well as promoting healthy living to address non-communicable diseases (NCDs).

The Ministry of Health reports gains in child health but acknowledges that women's health indicators are falling short of targets. A key concern is the elimination of multiple forms of discrimination and violence, especially sexual violence perpetrated not only against women but also gender and sexual minorities.

Colombia passed a universal health care law in 1993 but national coverage is constrained by wide disparities in service provision. These are partly defined by geography – rural areas are underserved and their child mortality rates are higher than in urban areas. Health access disparities are also due to social and economic inequality: poor people, women, immigrants, internally displaced people, and indigenous populations have limited access. Quality of care is higher in private hospitals.

National health priorities 2020–2023

- Youth health
- Health of the elderly
- Environmental health
- Sexual and reproductive health
- Food security and nutrition
- Social cohesion and mental health
- Healthy living and infectious diseases
- Health living and NCDs
- Public health in emergencies and disasters
- Occupational health

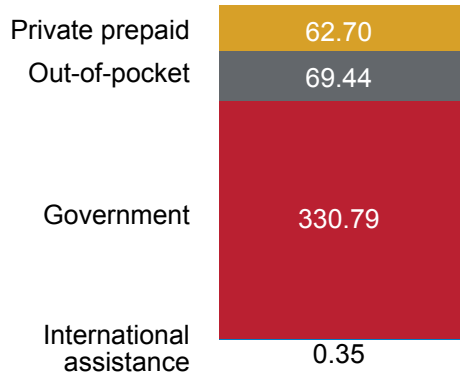
Plan Decenal de Salud Publica 2012-2021. Ministry of Health 2012.
https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/colombia/nhp_colombia.pdf
Country profile: Colombia. Universal Health Coverage Partnership WHO, 2022. https://www.uhcpartnership.net/country-profile/colombia/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Chile	Global
Nurses and midwives per 10,000 people	2020	14.56	39.5
Medical doctors per 10,000 of people	2020	23.27	16.4
Pharmacists per 10,000 people	2020	1.77	4.7
Number of medical specialists	2020	26,409	–
Number of medical and pathology laboratory scientists	–	–	–
Number of community health workers	–	–	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Colombia health spending 2018

US$463

per person

Average health spending in Latin America and Caribbean 2020

US$578

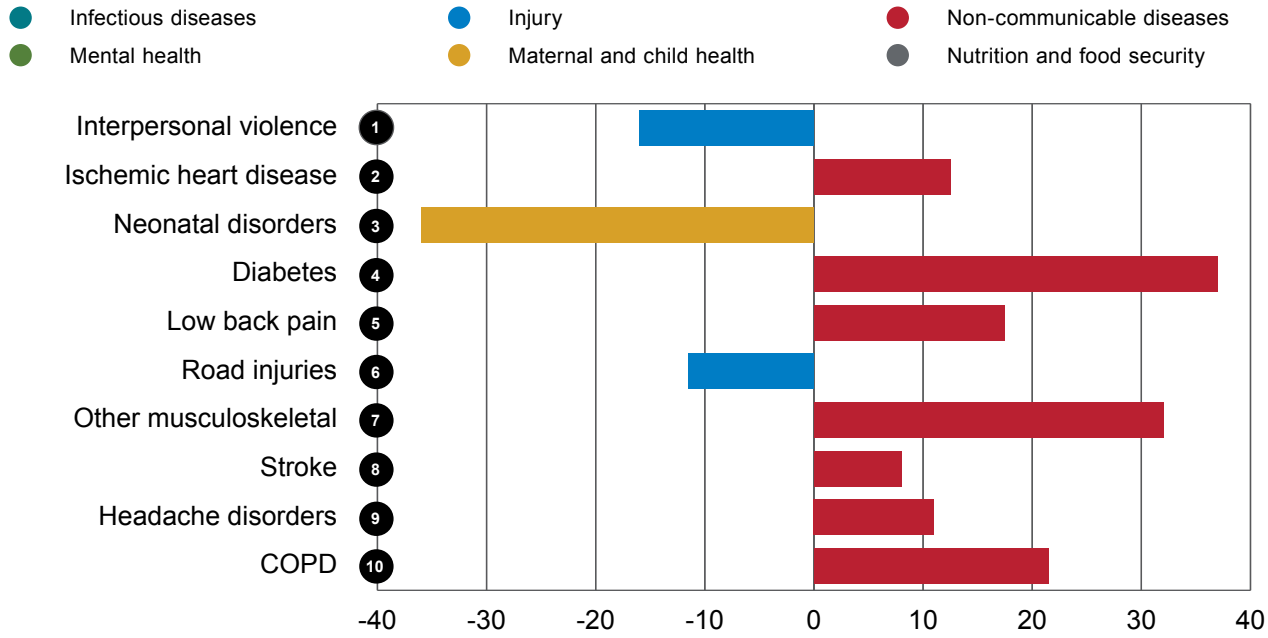
per person

Breakdown of Colombia health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Colombia profile. http://www.healthdata.org/colombia

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Colombia profile. http://www.healthdata.org/colombia

Top causes of death and disability measured over a decade in disability-adjusted life-years (DALYs) clearly show the advance of a range of NCDs in Colombia, with diabetes increasing most rapidly followed by musculoskeletal conditions. The diversity of NCDs speaks to a wide range of risk factors. Injuries exact a heavy toll on life and wellness in Colombia, with interpersonal violence at the top of the list and road accidents ranking as the seventh most common cause of injury and death. However, in both cases, the numbers have fallen considerably in recent years. The seriousness of neonatal disorders is reflected by their number three place on the list. However, Colombia's greatest gains in terms of disease burden have been in this area.

WORKFORCE DEVELOPMENT SOLUTIONS

Colombia developed a solution that would expand access to mental health services and this appears in Section 4.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Grupo Colombiano de Psoriasis e Immunodermatologia (COLPSOR)	1	Dermatology
Hospital Central de la Policía Nacional de Colombia	1	Neuroscience
Hospital Pablo Tobón Uribe	2	Chronic diseases and palliative care
Universidad Antonio Nariño	2	Dentistry and healthy aging
Red Nacional Academica de Tecnologia Avanzada (RENATA)	1	Mental Health
Universidad Pontificia Bolivariana University Clinic	1	Migraine management

ORGANIZATIONS INTERVIEWED

National Research and Education Network (RENATA)	Zoom interview

ECUADOR | country overview

Population size (2021)	**17.8 million**	
GDP per capita (2021)	**US$5,965**	
Life expectancy at birth (2019)	Women **80.5**	Men **76.4**
Maternal mortality rate (2017)	**59/100,000** live births	
Under-five mortality rate (2020)	**13/1,000** live births	

WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

ECHO could not locate a national health policy or plan published by the Ministry of Health from which to extract health priorities. However the following national executive policy was released:

- Executive Office, Plan Nacional Para El Buen Vivir 2017-2021.

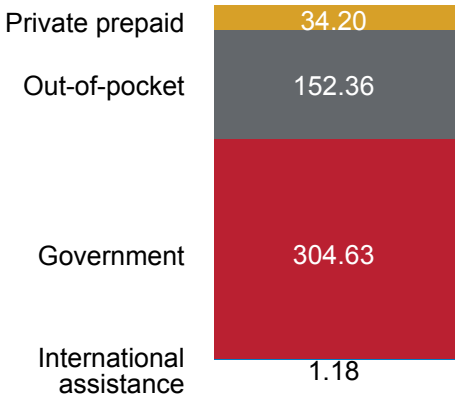
https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/ecuador/ecu._plan_nacional_buen_vivir_2017_2021.pdf

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Ecuador	Global
Nurses and midwives per 10,000 people	2018	25.10	39.5
Medical doctors per 10,000 people	2017	22.32	16.4
Pharmacists per 10,000 people	2015	0.42	4.7
Number of medical specialists	2015	13,016	–
Number of medical and pathology laboratory scientists	–		–
Number of community health workers	2015	1,054	–

WHO World Health Statistics 2022, WHO Global Health Workforce database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Ecuador health spending 2018

US$492

per person

Average health spending in Latin America and Caribbean 2020

US$578

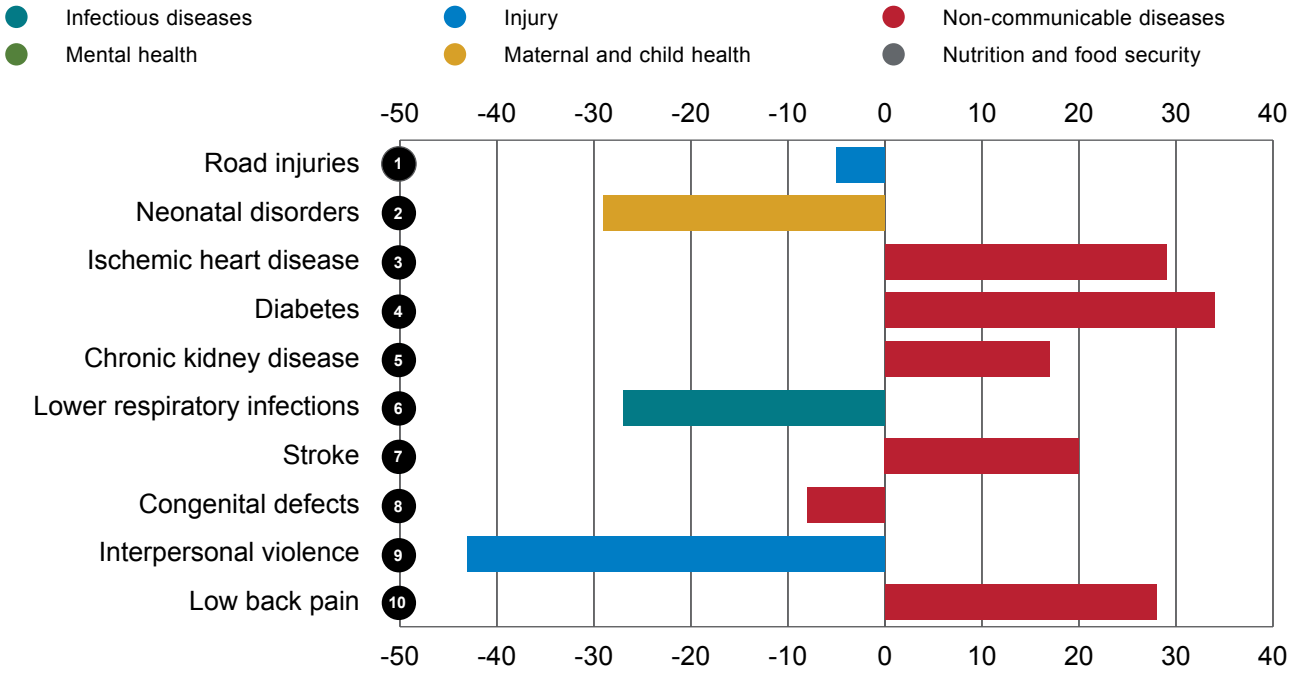
per person

Breakdown of Ecuador health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Ecuador profile. www.healthdata.org/ecuador

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Ecuador profile. www.healthdata.org/ecuador

Although non-communicable diseases (NCDs) dominate the list of top causes of death and disability in Ecuador, right at the top are road injuries and neonatal disorders. Deaths and disability due to neonatal disorders have declined considerably in a decade, and there has been a reduced toll from both road injuries and interpersonal violence. In contrast, the burden of disease and death due to NCDs is growing, with diabetes and ischemic heart diseases leading this trend.

WORKFORCE DEVELOPMENT SOLUTIONS

There were no solutions proposed by Ecuador participants.

ECHO PARTNERS

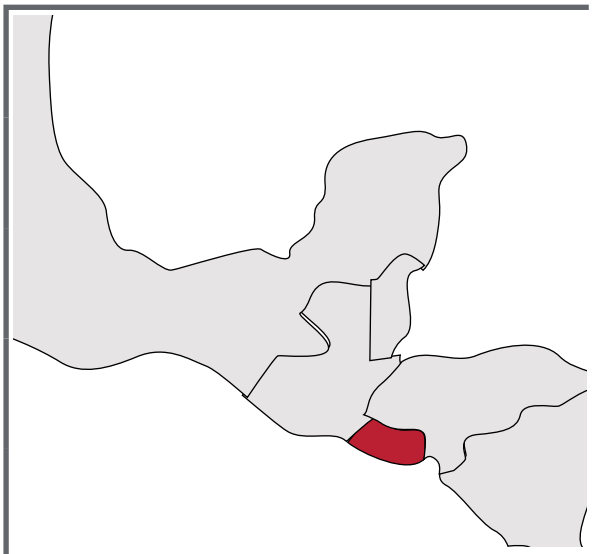
ECHO hubs	Number of programs	Program focus areas
Instituto Superior Tecnologico American College (ISTAC)	2	Geriatrics
Superhub: Corporación Ecuatoriana para del Desarrollo de las Investigación y la Academia (CEDIA)	7	Cancer prevention and risk mitigation, cardiology, COVID-19, diabetes, neonatal care, nursing, and palliative care
Universidad UTE	1	Type 1 diabetes

ORGANIZATIONS INTERVIEWED

Corporación Ecuatoriana para del Desarrollo de las Investigación y la Academia (CEDIA)	Zoom interview

EL SALVADOR | country overview

Population size (2021)	**6.3 million**	
GDP per capita (2021)	**US$4,551**	
Life expectancy at birth (2019)	Women **79.1**	Men **70.6**
Maternal mortality rate (2017)	**46/100,000** live births	
Under-five mortality rate (2020)	**13/1,000** live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Priorities for the Ministry of Health include maternal and child health, control of infectious diseases, and control of preventable non-communicable disease (NCDs). Immunization remains a major program, with the country aiming to maintain coverage of 90 to 95%. The Ministry of Health's goal is to reduce out-of-pocket health spending by citizens by three percentage points.

The ministry has identified priority populations:

- Young children, children, and adolescents
- Women
- Older people
- Indigenous people
- People with disabilities

El Salvador does not have legislation providing for universal health care.

Plan Estrategico Ministerio de Salud 2014-2019. Ministry of Health, 2014. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/el_salvador/plan_estrategico_institucional_en_salud_pei_2014-2019.pdf

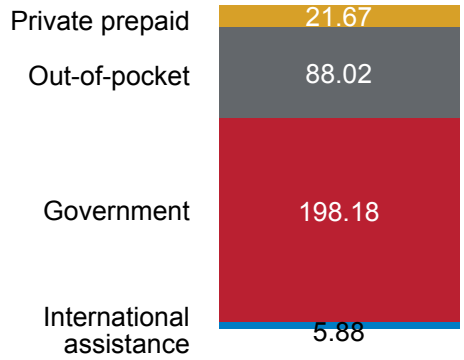
Country profile: El Salvador. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/el-salvador

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	El Salvador	Global
Nurses and midwives per 10,000 people	2018	18.34	39.5
Medical doctors per 10,000 people	2018	28.7	16.4
Pharmacists per 10,000 people	2017	6.55	4.7
Number of medical specialists	2016	3,884	–
Number of medical and pathology laboratory scientists	2008	1,975	–
Number of community health workers	2016	5,419	–

WHO Global Health Workforce database. https://www.who.int/data/gho/data/indicators

SOURCES OF HEALTH CARE SPENDING



Average El Salvador health spending 2018

US$314

per person

Average health spending in Latin America and Caribbean 2020

US$578

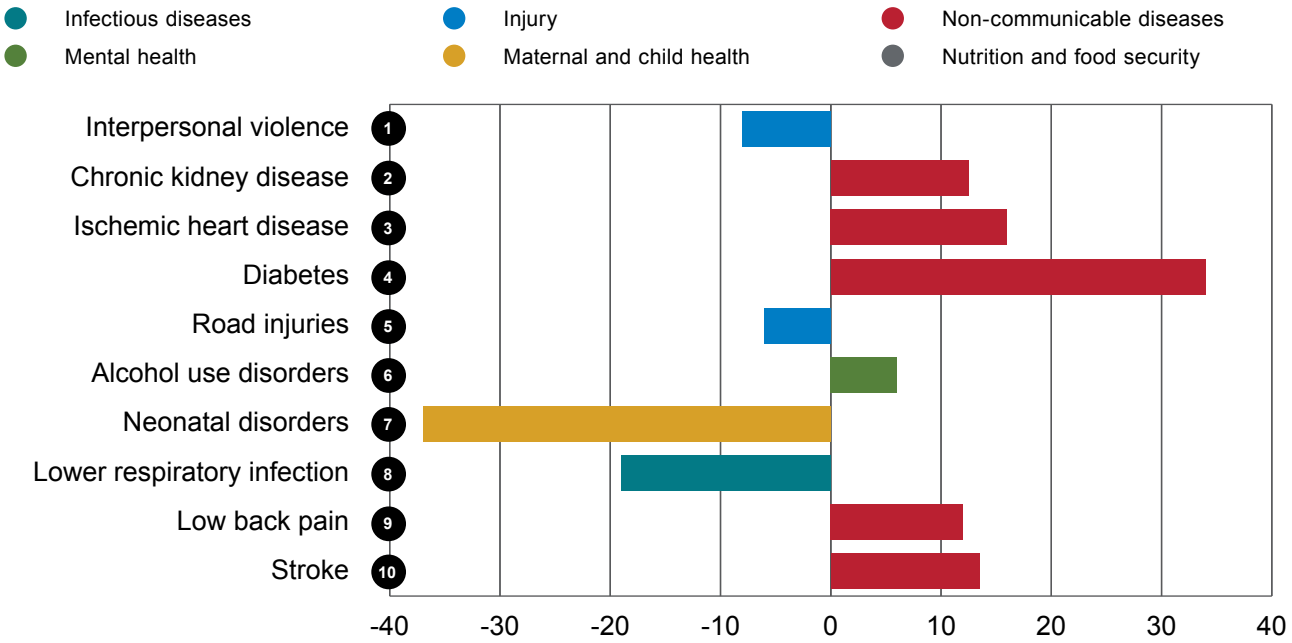
per person

Breakdown of El Salvador health care spending 2018 US$ per person

Institute of Health Metrics and Evaluation (IHME). El Salvador profile. www.healthdata.org/elsalvador

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute of Health Metrics and Evaluation (IHME). El Salvador profile. www.healthdata.org/elsalvador

Collectively, NCDs dominate the top causes of death and disability in El Salvador, measured in disability-adjusted life-years (DALYs), and each disease is on the rise. As in many countries in the region, diabetes is increasing most rapidly. Interpersonal violence is the single greatest cause of death and disability, although it is on the decline, as are road injuries. The country has made real progress in reducing the impact of neonatal disorders and lower respiratory infections.

WORKFORCE DEVELOPMENT SOLUTIONS

Training and support for mental health services

Goal and issue	Hub team	Targeted learners	Challenges
There is a need to provide service providers in various disciplines with training and support on mental health, especially suicide prevention and attention-deficit/hyperactivity disorder (ADHD).	National Institute of Health, El Salvador, and El Salvador National Psychiatry Association	Frontline health personnel in a range of disciplines	Internet connectivity, especially if the program is extended to other countries in the region

Improving capacity for surveillance and care for venoms and toxins

Goal and issue	Hub team	Targeted learners	Challenges
The goal is to improve surveillance for venoms and toxins and strengthen related care.	Instituto Nacional de Salud (INS) superhub and El Salvador Toxicology Association	Frontline health personnel in a range of disciplines	• Securing government support • Funding • Didactic material

ECHO PARTNERS

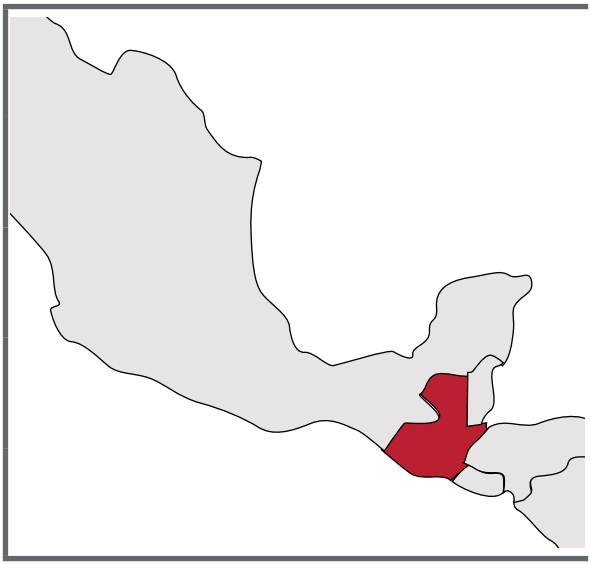
ECHO hubs	Number of programs	Program focus areas
Secretaria Ejecutiva del Consejo de Ministros de Salud de Centroamérica y República Dominicana	5	COVID-19 (now long COVID), HIV/AIDS, laboratory sciences, mental health, and TB
Superhub: Instituto Nacional de Salud	15	Prenatal care, pediatric infectious disease, gynecology and obstetrics, chronic disease, nursing, nutrition, rehabilitation, behavioral and mental health, oncology, palliative care, toxicology, blood banks, radiology, laboratory quality, pathology

ORGANIZATIONS INTERVIEWED

Ministry of Health El Salvador	Zoom interview
Council of Ministries of Health for Central America and Dominican Republic	Zoom interview

GUATEMALA | country overview

Population size (2021)	17.1 million	
GDP per capita (2021)	US$5,025	
Life expectancy at birth (2019)	Women 75.0	Men 69.0
Maternal mortality rate (2017)	95/100,000 live births	
Under-five mortality rate (2020)	24/1,000 live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The last digitally published national health plan for Guatemala was for the period 2006-2010. At that stage HIV was a pressing priority but it no longer represents a top burden of death and disability.

Guatemala does not have specific legislation on universal health coverage.

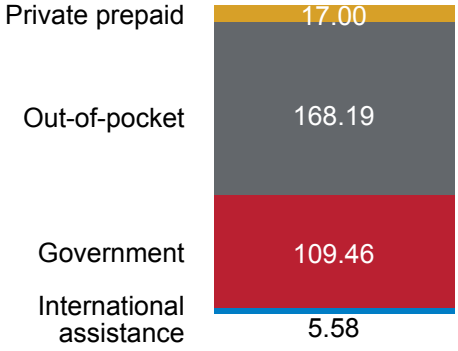
Plan Estratégico Nacional sobre ITS, VIH y SIDA 2006-2010. https://extranet.who.int/countryplanningcycles/file-repository/GTM
Country profile: Guatemala. Universal Health Coverage Partnership, WHO 2022 https://extranet.who.int/uhcpartnership/country-profile/guatemala

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Guatemala	Global
Nurses and midwives per 10,000 people	2020	22.36	39.5
Medical doctors per 10,000 people	2020	12.41	16.4
Pharmacists per 10,000 people	2020	1.18	4.7
Number of medical specialists	2020	5,640	–
Number of medical and pathology laboratory scientists	2020	2,044	–
Number of community health workers	2020	225	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Guatemala health spending 2018

US$300

per person

Average health spending in Latin America and Caribbean 2020

US$578

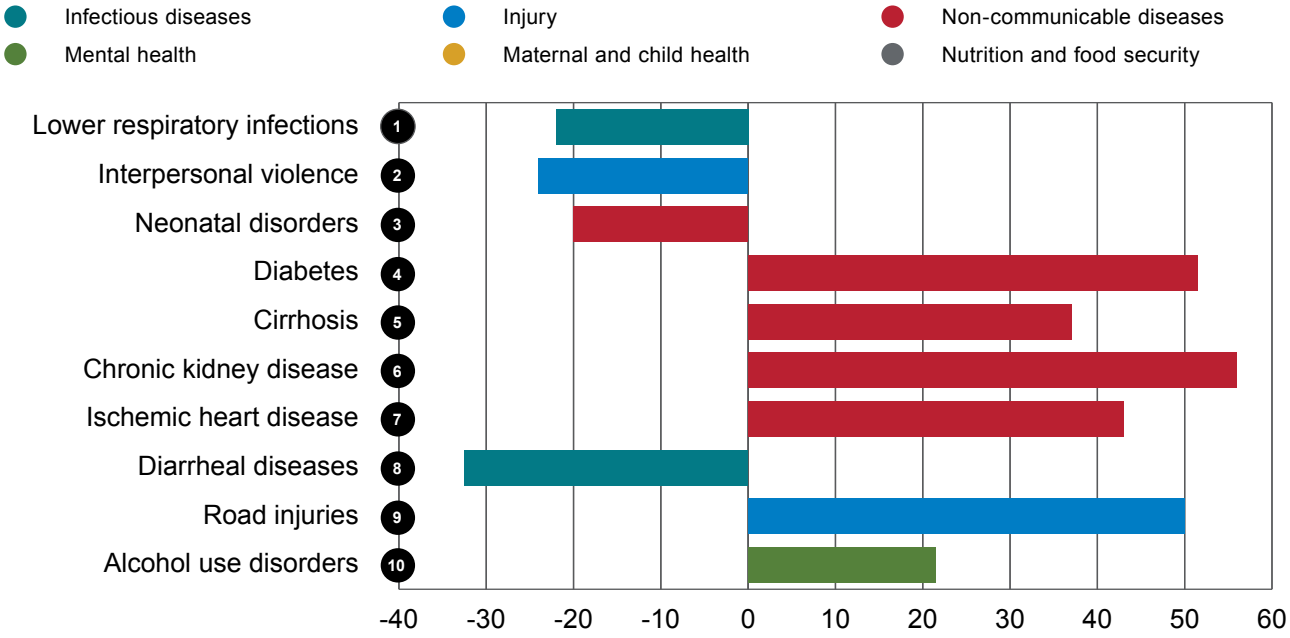
per person

Breakdown of Guatemala health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Guatemala profile. http://www.healthdata.org/guatemala

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Guatemala profile. http://www.healthdata.org/guatemala

The top three causes of death and disability, measured in disability-adjusted life-years (DALYs), are lower respiratory infections, interpersonal violence, and neonatal disorders. All of these are showing a downward trend. In contrast, Guatemala has seen extraordinary growth in death and disability due to non-communicable diseases (NCDs) in the past decade, specifically due to diabetes, chronic kidney disease (possibly linked to uncontrolled diabetes), ischemic heart disease, and cirrhosis. There has also been a rise in the burden of disease due to alcohol use disorders, with a possible link to the increase in cirrhosis. Infectious diseases – in the form of lower respiratory infections and diarrheal diseases – have declined as a cause of death and disability, as have neonatal disorders and interpersonal violence.

WORKFORCE DEVELOPMENT SOLUTIONS

Guatemala's Hospital Nacional Roosevelt is one of three facilities prioritized by the Council of Ministries of Health for Central America and the Dominican Republic (SE-COMISCA) in its solution focused on a regional ECHO program for antibiotic optimization.

Development of expertise in the area of antibiotic optimization

Goal and issue	Hub team	Targeted learners	Challenges
The goal is to establish a regional network of specialists to discuss problems related to the rational and appropriate use of antibiotics and propose interventions in accordance with the WHO guidelines.	SE-COMISCA	Clinical care personnel at levels 1, 2 and 3 health establishments in Central America, starting with selected hospitals: Hospital Nacional Roosevelt, Guatemala Hospital Nacional Escuela, Honduras Hospital Lenin Fonseca, Nicaragua	• Funding • Training of subject-matter experts and other participants in ECHO methodology • Access to IT hardware and software • Internet connectivity • Promotion to mobilize participation • Winning government support

ECHO PARTNERS

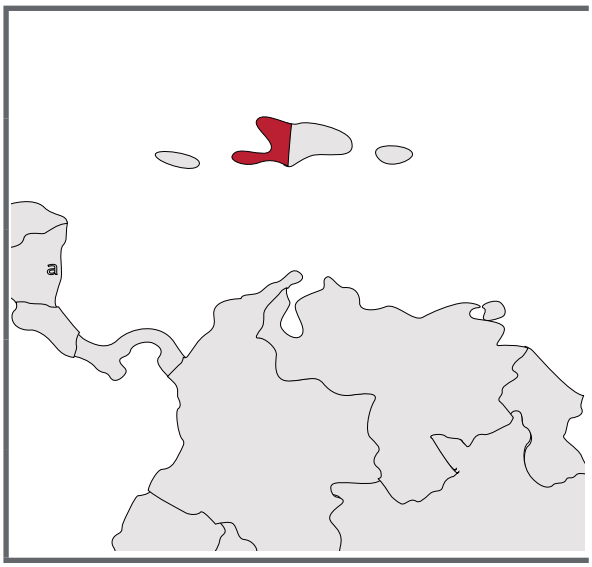
ECHO hubs	Number of programs	Program focus areas
Asociacion IDEI Guatemala	1	Intercultural health, prevention and self-care for HIV
Guatemala Ministry of Public Health and Social Assistance	3	Capacity building in clinic management, maternal and child health, adolescent health
Universidad del Valle de Guatemala	4	Mental health, HIV prevention, HIV treatment, data analytics

ORGANIZATIONS INTERVIEWED

Universidad del Valle de Guatemala	Zoom interview
Ministry of Public Health and Social Assistance Guatemala	Zoom interview

HAITI | country overview

Population size (2021)	11.4 million	
GDP per capita (2021)	US $1,829	
Life expectancy at birth (2019)	Women 64.8	Men 63.3
Maternal mortality rate (2017)	480/100,000 live births	
Under-five mortality rate (2020)	60/1,000 live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Improving maternal and child health and addressing HIV are major priorities for the Ministry of Health. Other areas high on the health agenda are nutritional diseases, cardiovascular diseases, diabetes, cancer, TB, and malaria. The ministry recognizes the following as vulnerable groups from a health perspective: women, infants, children, pregnant women, and people living in poverty. Maternal health indicators have deteriorated in recent years, and those for maternal and child health have remained static. In urban areas, violence and communicable diseases are a significant problem. Zoonotic diseases are a concern in the regions of Plaine du Cul de Sac and Bainet.

Haiti does not have dedicated legislation on universal health care.

Plan Directeur de Santé 2012-2022. Ministry of Health 2012. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/haiti/haiti_plan_directeur_de_sant_2012-2022_guiding_health_plan_2012-2022_.pdf

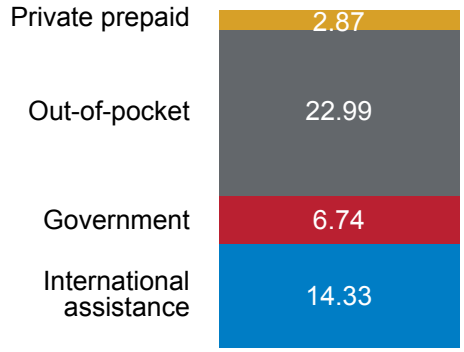
Country profile: Haiti. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/haiti

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Haiti	Global
Nurses and midwives per 10,000 people	2018	3.98	39.5
Medical doctors per 10,000 people	2018	2.34	16.4
Pharmacists per 10,000 people	2018	0.3	4.7

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Haiti health spending 2018

US$47
per person

Average health spending in Latin America and Caribbean 2020

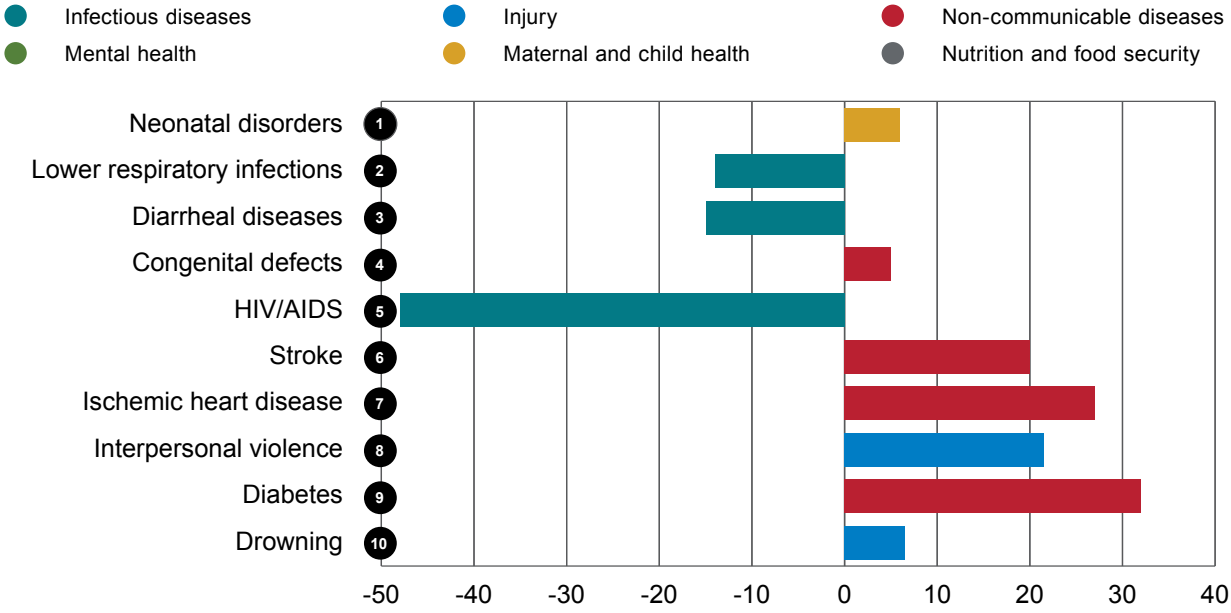
US$578
per person

Breakdown of Haiti health care spending 2018 US$ per person

Source: Institute for Health Metrics and Evaluation. Haiti profile. www.healthdata.org/haiti

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Haiti profile. http://www.healthdata.org/haiti

Neonatal disorders are the top cause of death and disability, followed by lower respiratory tract infections and diarrheal diseases, which commonly occur among young children. Infectious diseases dominate the top of the list, although all three categories – and most notably HIV – are in decline. While non-communicable diseases (NCDs) rank slightly lower than infectious diseases in terms of the burden of death and disability, stroke, ischemic heart disease, and diabetes are all increasing. Deaths due to interpersonal violence and drowning are also on the rise. The pattern suggests that health programs are effective in terms of infectious diseases, but that NCDs require new, more effective approaches.

WORKFORCE DEVELOPMENT SOLUTIONS

Haiti's participants did not put forward a capacity development solution.

ECHO PARTNERS

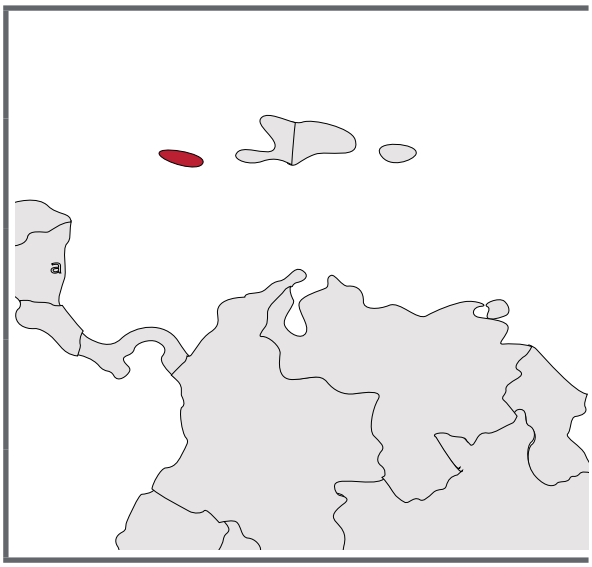
ECHO hubs	Number of programs	Program focus areas
Ministry of Public Health and Population	1	Laboratory quality for HIV

ORGANIZATIONS INTERVIEWED

Ministry of Public Health and Population Haiti	Zoom interview

JAMAICA | country overview

Population size (2021)	**2.8 million**	
GDP per capita (2021)	**US$5,184**	
Life expectancy at birth (2019)	Women **77.7**	Men **74.4**
Maternal mortality rate (2017)	**80/100,000** live births	
Under-five mortality rate (2020)	**13/1,000** live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

According to the most recent business plan of the Ministry of Health, Jamaica's health priorities are maternal and child health, non-communicable diseases (NCDs) like cancer, HIV and STIs, and mental health with a focus on substance abuse. The ministry aims to improve health care outcomes by prioritizing primary care infrastructure and access to primary care, preventing outbreaks of infectious diseases, and responding to the rise of NCDs, paying special attention to tobacco use as a risk factor.

The Ministry of Health seeks to improve emergency care infrastructure and develop children's hospitals to serve the Western and Central parishes.

Jamaica does not yet have a dedicated universal health care law.

Vulnerable populations

The ministry recognizes the following as vulnerable populations:

- Infants and children
- Pregnant women
- LGBTQ persons
- Sex workers
- Residents of the underserved Western and Central parishes

Ministry of Health's Strategic Business Plan (2015-2018). Ministry of Health, 2015. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/jamaica/ministry-of-healths-strategic-business-plan-2015-2018.pdf

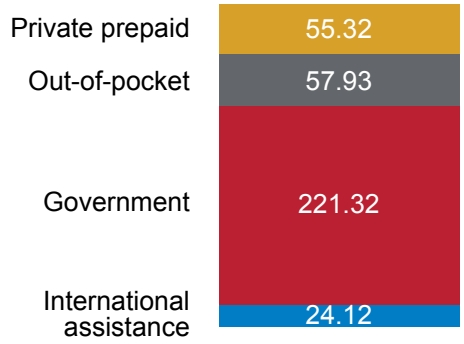
Country profile: Jamaica. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/jamaica

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Jamaica	Global
Nurses and midwives per 10,000 people	2018	9.43	39.5
Medical doctors per 10,000 people	2018	5.27	16.4
Pharmacists per 10,000 people	2018	0.15	4.7
Number of medical specialists	2018	348	–
Number of medical and pathology laboratory scientists	2018	–	–
Number of community health workers	2018	1,106	–

WHO, World Health Indicators. Global Health Workforce statistic database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Jamaica health spending 2018

US$359

per person

Average health spending in Latin America and Caribbean 2020

US$578

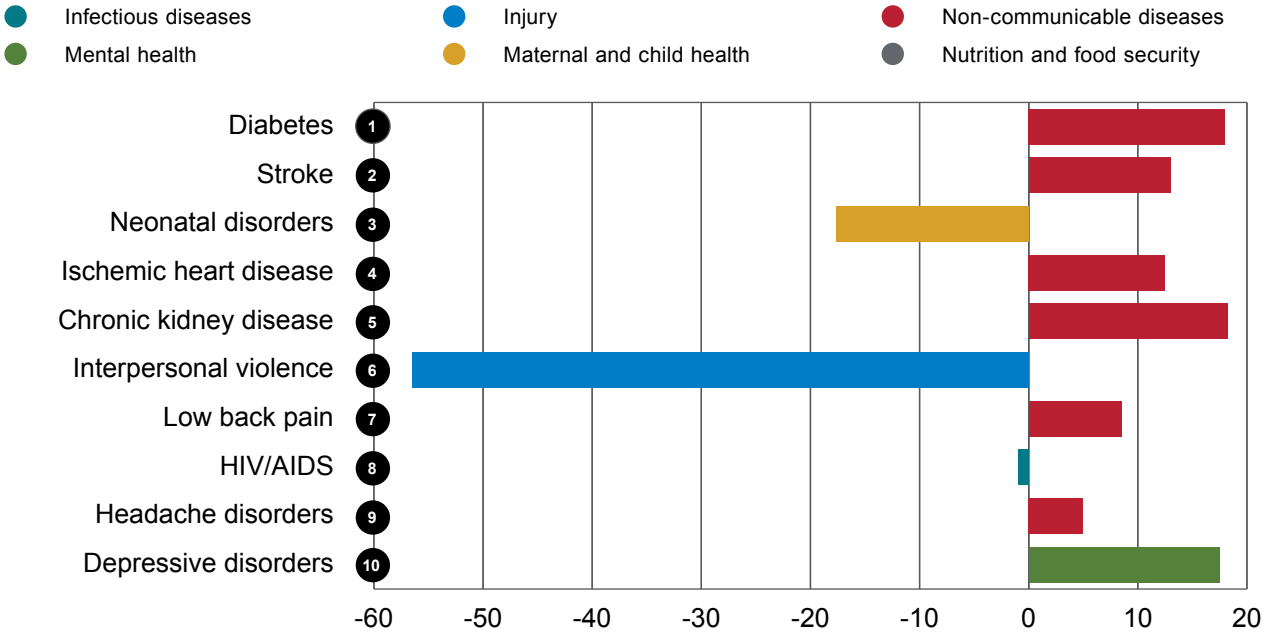
per person

Breakdown of Jamaica health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Jamaica profile. http://www.healthdata.org/jamaica

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Jamaica profile. http://www.healthdata.org/jamaica

Striking features of the death and disability analysis are the enormous decline in the contribution of interpersonal violence – which, nevertheless, still occupies slot six among the top causes – and the dominance of NCDs as a growing burden of disease. Diabetes is now the leading cause of death and disability in Jamaica, followed by stroke. The major NCDs are quite diverse with cardiovascular, diabetes and kidney disease on the one hand, and low back pain and headaches on the other. Neonatal disorders have declined as a cause of death and disability. HIV has remained almost static and is still a factor to be reckoned with. The rise of depressive disorders, at the bottom of the list, has been almost as rapid as the increase in diabetes.

WORKFORCE DEVELOPMENT SOLUTIONS

Jamaica's participants did not put forward a solution.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Ministry of Health Jamaica	2	Chronic disease and HIV

ORGANIZATIONS INTERVIEWED

Ministry of Health Jamaica	Zoom interview

MEXICO | country overview

Population size (2021)	**126.7 million**	
GDP per capita (2021)	**US$10,045**	
Life expectancy at birth (2019)	Women **78.9**	Men **73.1**
Maternal mortality rate (2017)	**33/100,000** live births	
Under-five mortality rate (2020)	**14/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Ministry of Health priorities are to address obesity, diabetes, and other non-communicable diseases (NCDs), including cardiovascular diseases, various cancers, and mental health. The ministry believes the NCD disease burden is largely due to demographic change and the adoption of unhealthy lifestyles – poor nutrition, lack of physical activity, smoking, and alcohol consumption.

Strengthening surveillance for prevention and control of communicable diseases such as HIV, AIDS, TB, influenza, and dengue fever is also high on the national health agenda.

The Ministry of Health has not achieved national targets for reducing NCDs. It observes that NCDs are common among older patients, are chronic in nature, and often involve drug and technology-based therapies that are expensive and may require periods of hospitalization.

The ministry identifies the following challenges to health care provision: a lack of resources – including properly trained health personnel – to provide comprehensive care; shortages of medicines; weaknesses in the referral and counter-referral systems between levels of care; and a lack of specialized physical infrastructure, for example for geriatric care in primary care facilities.

Mexico's constitution requires universal health care and the country has achieved this as a result of the expansion of government-funded health care since the Seguro Popular (Popular Health Insurance) law was passed in 2003.

Programa de Acción Específico: Atención del Envejecimiento 2013-2018. Ministry of Health, 2013. HYps://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/mexico/programa_de_accion_especifico_atencion_del_envejecimiento_2013_2018.pdf (Ac

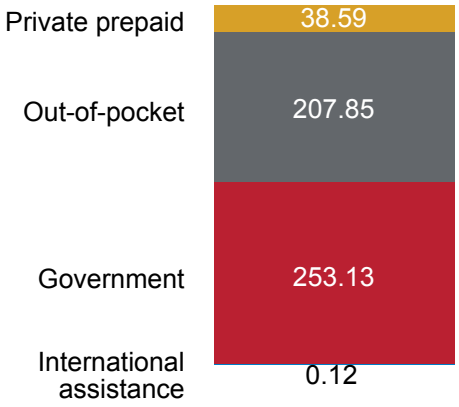
Mexico achieves universal health coverage, enrolls 52.6 million people in less than a decade. Harvard School of Public Health 2012-08-15. https://www.hsph.harvard.edu/news/features/mexico-universal-health/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Mexico	Global
Nurses and midwives per 10,000 people	2019	28.24	39.5
Medical doctors per 10,000 people	2019	24.25	16.4
Pharmacists per 10,000 people	2010	0.49	4.7
Number of medical specialists	2019	197,882	–
Number of medical and pathology laboratory scientists	–	–	–
Number of community health workers	–	–	–

WHO, World Health Indicators. Global Health Workforce statistic database https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Mexico health spending 2018

US$500

per person

Average health spending in Latin America and Caribbean 2020

US$578

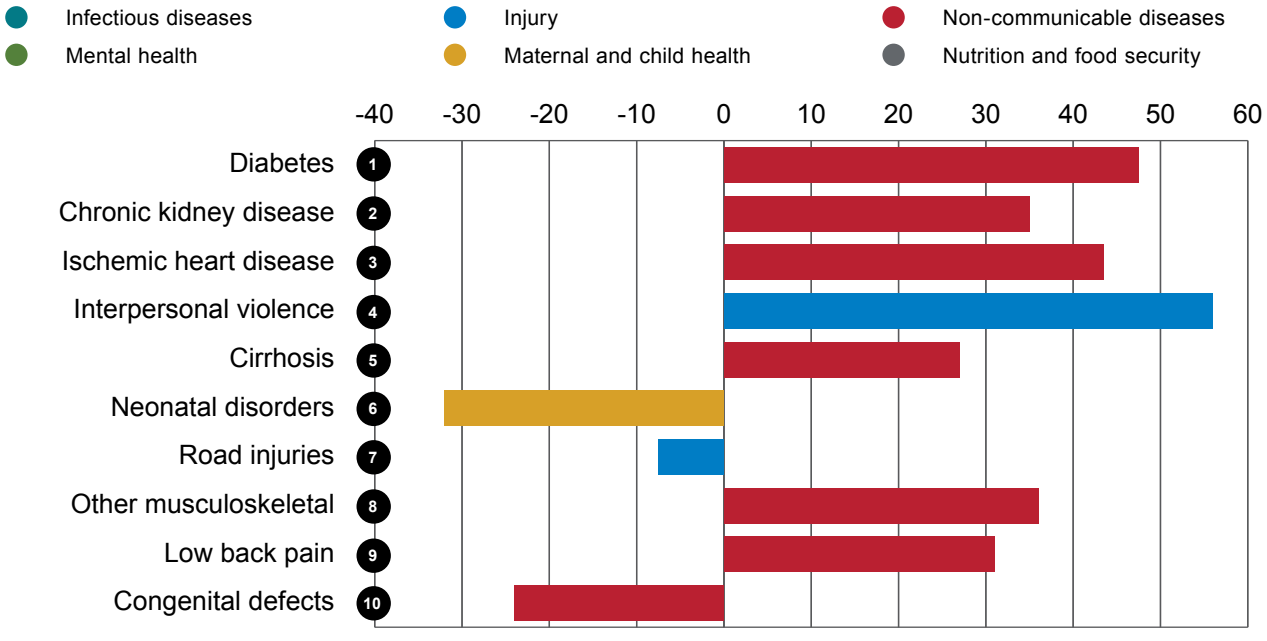
per person

Breakdown of Mexico health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Mexico profile. http://www.healthdata.org/mexico

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Mexico profile. http://www.healthdata.org/mexico

Diabetes, the number one cause of death and disability in Mexico, has increased by nearly 50% in just a decade. Chronic kidney disease and ischemic heart disease, filling positions two and three in terms of burden of disease and mortality, have both risen substantially. NCDs, usually driven by complex risk factors, have displaced infectious diseases as the major threat to health in Mexico. A noteworthy, growing cause of death and disability is interpersonal violence – again a health consequence of complex social factors. Mexico has achieved progress in reducing the impact of neonatal disorders and congenital defects.

WORKFORCE DEVELOPMENT SOLUTIONS

Mexico's participants did not put forward a solution.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Clinica Medica Internacional	1	Tuberculosis
Asociacion Mexicana de Lucha Contra el Cancer AC	1	Oncology
Centro PACE MD	1	Emergency care and reproductive medicine
Colegio Mexicano de Reumatología	1	Immune disorders
Dr Jose E Gonzalez University Hospital, UANL	1	Hepatology
Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán	1	Leukemia
Instituto Nacional de Neurología y Neurocirugía Manuel Velasco Suárez	1	Epilepsy, Parkinson's disease, depressive disorders, multiple sclerosis
Sociedad Mexicana de Nutrición y Endocrinología	1	Bone health
Star Médica	2	Neurology
Superhub Fundación Carlos Slim	13	Behavioral and mental health, chronic disease, COVID-19, maternal health, neonatal care, palliative care, respiratory health and diseases, and tuberculosis
Universidad Panamericana	1	Depression and anxiety, diabetes, renal disease

ORGANIZATIONS INTERVIEWED

Fundacion Carlos Slim	Zoom interview
Instituto Nacional de Neurologia y Neurocirugía	Zoom interview

URUGUAY | country overview

Population size (2021)	**3.4 million**	
GDP per capita (2021)	**US$17,313**	
Life expectancy at birth (2019)	Women **80.6**	Men **73.5**
Maternal mortality rate (2017)	**17/100,000** live births	
Under-five mortality rate (2020)	**6/1,000** live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The Ministry of Health has a strong focus on reproductive, maternal, and child health including: prevention of unwanted pregnancy in teenagers, prevention of low birth weight and premature babies, reducing the rate of Caesarian sections, preventing vertical transmission of HIV and syphilis, and addressing nutrition and developmental problems in early childhood.

Non-communicable diseases (NCDs) constitute a second major focus area, with the aim of reducing morbidity and mortality related to diabetes, cardiovascular disease, and chronic respiratory pathology.

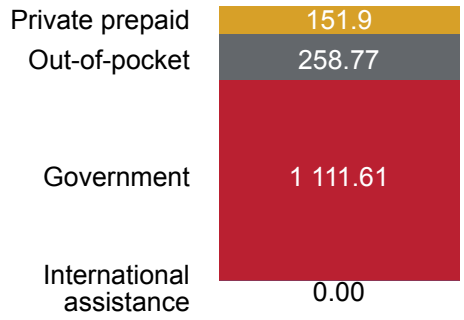
Objetivos Sanitarios Nacionales, 2020. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/uruguay/ury._objetivos_sanitarios_nacionales_2020.pdf

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Uruguay	Global
Nurses and midwives per 10,000 people	2019	72.17	39.5
Medical doctors per 10,000 people	2017	49.4	16.4
Pharmacists per 10,000 people	–	–	4.7
Number of medical specialists	2018	8,524	–
Number of medical and pathology laboratory scientists	2008	601	–
Number of community health workers	–	–	–

WHO, Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Uruguay health spending 2018

US$1,522

per person

Average health spending in Latin America and Caribbean 2020

US$578

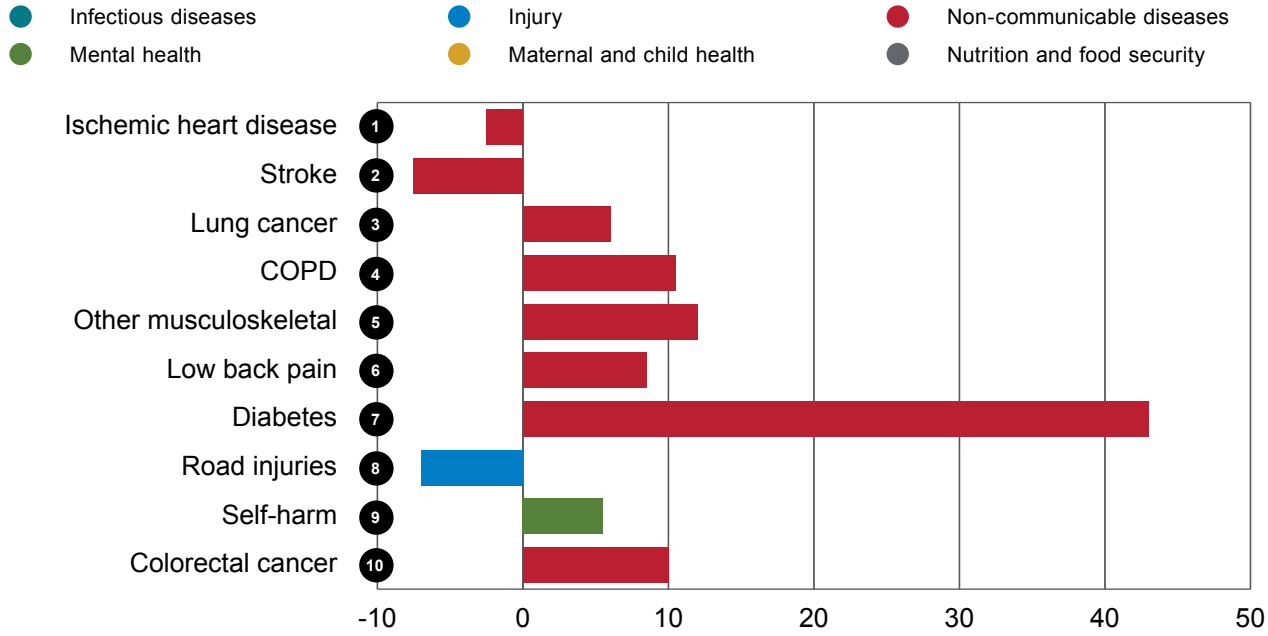
per person

Breakdown of Uruguay health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Uruguay profile. http://www.healthdata.org/uruguay

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Uruguay profile. http://www.healthdata.org/uruguay

NCDs are extremely prominent in Uruguay's top 10 causes of death and disability, measured in disability-adjusted life-years (DALYs). The cardiovascular NCDs – stroke and ischemic heart disease – are playing a smaller role than 10 years ago, but the rate of growth of diabetes (more than 40% in a decade) outstrips all other diseases and injuries on the list. Lung and colorectal cancer are now included in the top causes of death and disability. Lung cancer occupies a concerning third ranking with chronic obstructive pulmonary disease (COPD) just below it. There has been a reduction in road injuries and death, but death and disability due to self-harm have increased somewhat.

WORKFORCE DEVELOPMENT SOLUTIONS

Capacity building on emerging infectious diseases and managing long-term impacts of COVID-19

Goal and issue	Hub team	Targeted learners	Challenges
The goal is to build capacity to respond to emerging infectious diseases and to enable health professionals to manage the long-term impacts of COVID-19 as new treatments become available. The program should cover: • Disease prevention by behavior modification and vaccination • Diagnosis of acute infections • Treatment of acute infections • Treatment in the population more broadly, including psychosocial care and managing long-term effects • Preparation for future pandemics	Universidad de la República Superhub in Uruguay with the Uruguay Ministry of Health and Fiocruz in Brazil	South American ministries of health Health care providers in a range of disciplines, including those who were part of the ECHO program on COVID-19	• Funding

ECHO PARTNERS

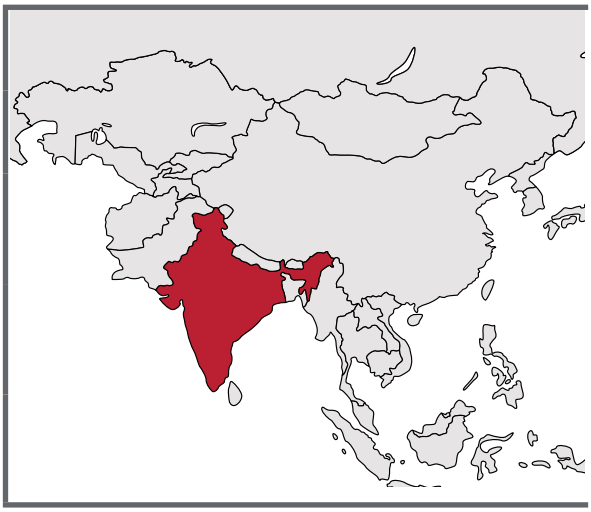
ECHO hubs	Number of programs	Program focus areas
Uruguay Superhub: Universidad de la República	18	Prevention, screening, diagnosis, and risk mitigation for cancer, autism, cardiology, chronic disease, COVID-19, geriatrics, gynecological cancers, hepatitis C, HIV/AIDS, immune disorders, infectious diseases, neurology, palliative care, pediatrics, public health, and rehabilitation

ORGANIZATIONS INTERVIEWED

Universidad de la República Uruguay	Zoom interview

INDIA | country overview

Population size (2021)	1.41 billion	
GDP per capita (2021)	US$2,257	
Life expectancy at birth (2019)	Women 72.2	Men 69.5
Maternal mortality rate (2017)	145/100,000 live births	
Under-five mortality rate (2020)	33/1,000 live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Top health issues and Ministry of Health priorities are neonatal disorders, ischemic heart disease, chronic obstructive pulmonary disease (COPD), and diarrheal diseases. Maternal and child mortality have declined and India currently has a dual burden of communicable and non-communicable diseases (NCDs), disproportionately affecting the poor. Issues in accessing care are more likely to be experienced by the poor, women, and lower castes.

In addition to shifting patterns of disease, India's health care system has changed dramatically. A robust and rapidly growing health care industry has emerged. At the same time, incidence of catastrophic health care spending has increased and is a major driver of poverty. These changes, together with economic growth and its positive impact on public funds, require a new national health policy.

India does not have legislation providing for universal health care.

Source: National Health Policy 2017. Ministry of Health, 2017. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/india/india_national_health_policy.pdf

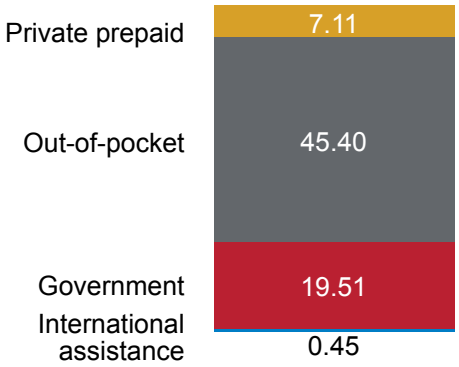
Country Profile: India. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/india

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	India	Global
Nurses and midwives per 10,000 people	2020	17.48	39.5
Medical doctors per 10,000 people	2020	7.35	16.4
Pharmacists per 10,000 people	2020	8.7	4.7
Number of medical specialists	–	–	–
Number of medical and pathology laboratory scientists	2020	635,500	–
Number of community health workers	2020	1,097,609	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average India health spending 2018

US$72

per person

Average health spending in South Asia 2020

US$68

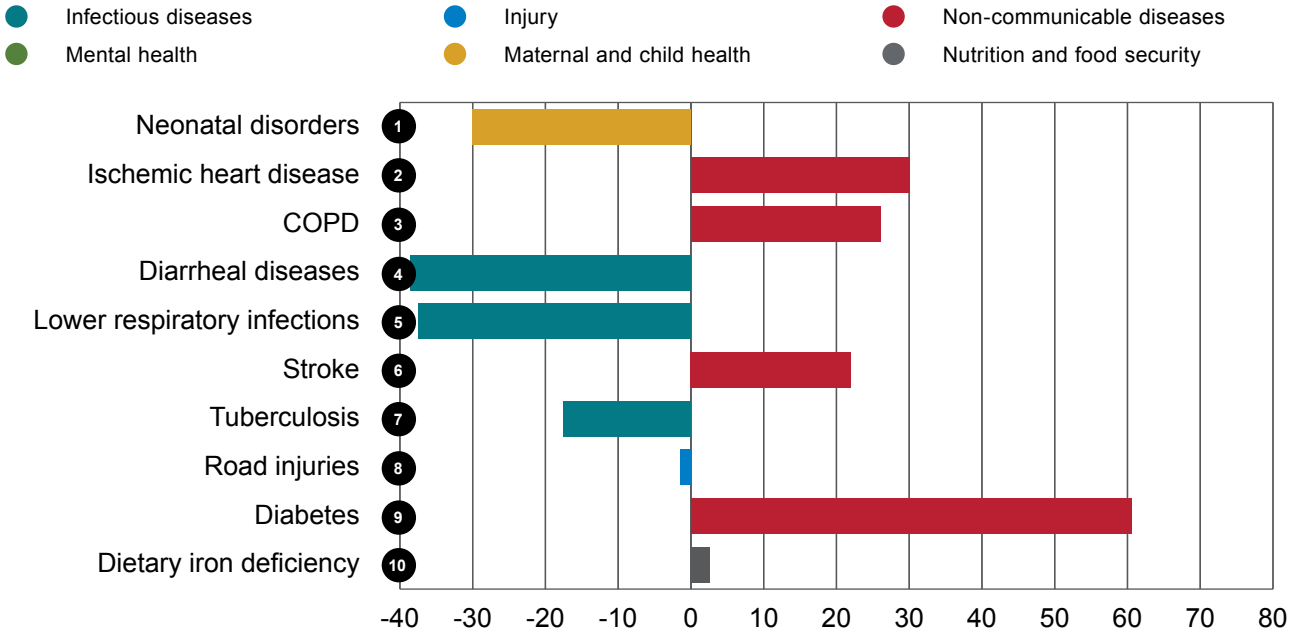
per person

Breakdown of India health care spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). India profile. http://www.healthdata.org/india

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). India profile. http://www.healthdata.org/india

Neonatal disorders still caused the most death and disability in India in 2019 although there was a decline in this impact over a decade. In 2019 there was a roughly equal balance between infectious diseases and NCDs in terms of disability-adjusted life-years (DALYs) lost due to death and disease. Notably, the impact of all infectious diseases was declining while the toll taken by NCDs was growing.

WORKFORCE DEVELOPMENT SOLUTIONS

In addition to the four solutions summarized below, Indian participants put forward three proposals that are contained in the Section 4 of this report:

- Early detection and treatment of NCDs
- Ensuring better access to maternal health care and improvement of the quality of service
- Infection prevention and control in health care facilities

Upskilling health workers to improve mental health screening, early detection, and intervention

Goal and issue	Hub team	Targeted learners	Challenges
The goal is to improve the skills of health workers to screen for mental health conditions, detect them early, and provide the appropriate care, in accordance with the National Health Program and National Telehealth Guidelines for Mental Health.	National Institute of Mental Health and Neurological Sciences (NIMHANS), leading regional mental health institutions, and government bodies and associations working in the area of mental health	The mental health workforce, including psychiatrists, counselors, and psychiatric social workers and nurses	• Poor internet connectivity in remote locations • Workload of health care providers • Sub-standard foundational knowledge • Stigma related to mental health

Capacity building for the provision of palliative care

Goal and issue	Hub team	Targeted learners	Challenges
Proper facilities for the provision of palliative care are lacking and there is low awareness of this need. Training of nurses and community workers to provide palliative care in accordance with national guidelines would fill this gap. The program would also enhance the capacity of nurses already providing palliative care at hospitals and other institutions. Particular attention would be paid to upskilling community health workers as they fulfil a range of palliative care functions, from creating community awareness and identifying needs to undertaking home visits and providing bereavement counseling.	Ministry of Health and Family Welfare, state national health missions (NHMs), Indian Nursing Council, nursing associations, municipal corporations, and a range of medical institutions	Nurses and community health workers	• Poor internet connectivity in remote locations • Workload of health care providers • Lack of palliative care infrastructure

Building competency of health workers for antimicrobial stewardship

Goal and issue	Hub team	Targeted learners	Challenges
Multidrug-resistant TB and other forms of drug resistance are rising, largely due to the indiscriminate use of antibiotics. This program seeks to build the competencies of health care workers to exercise responsible stewardship to curb antimicrobial drug-resistance.	Government organizations, medical colleges, state NHMs, and the national center responsible for infection control	Medical officers, doctors, microbiologists, lab technicians, and nurses	• Poor internet connectivity in remote locations • Workload of health care providers • Language barriers for training delivery

Upskilling health workers in the community to reduce inequity in the delivery of primary care

Goal and issue	Hub team	Targeted learners	Challenges
There is a need to strengthen the primary health care system and reduce disparities in the delivery of care. Upskilling of community health officers and community health workers would be a means to this goal.	State NHMs, National Health Systems Resource Centre (NHSRC), and other state training bodies	Community health workers and community health officers	• Heavy workload of community health workers and community health officers • Language barriers to training delivery

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Agra Division, NHM UP	3	
Aligarh Division, NHM UP	2	
All India Institute of Medical Sciences (AIIMS), Mangalagiri	1	Medical education
All India Institute of Medical Sciences, Bathinda	1	Cancer prevention and risk mitigation
All India Institute of Medical Sciences, New Delhi	2	COVID-19
All India Institute of Medical Sciences, Patna	1	COVID-19
All India Institute of Medical Sciences, Rishikesh	1	Capacity building
Amdavad Municipal Corporation	1	COVID-19
AMR, NCDC, Civil Lines, Delhi	3	

ECHO hubs	Number of programs	Program focus areas
Andhra Pradesh Nursing & Midwives Council	1	Nursing
APSACS, Vijayawada, Andhra Pradesh	1	HIV/AIDS
Ayodhya Division, NHM UP	4	Community health workers
Azamgarh Division, NHM UP	2	Community health workers
Banaras Hindu University	3	Community health workers
Bareilly Division, NHM UP	4	Community health workers
Basti Division, NHM UP	3	Primary care
BrihanMumbai Municipal Corporation	3	COVID-19
Cancer Institute (WIA), Adyar – Chennai	1	Oncology and psychiatry
Cankids Kidscan	4	Advocacy, cancer survivorship, and pediatrics
CanSupport	4	Palliative care
Cardiology ECHO – Dr Neeraj Bhalla	1	Cardiology
Care Giver Saathi Foundation Private Limited	1	Health care
Central TB Division, GOI	2	Tuberculosis
Centre of Excellence, RBIPMT, GTB Nagar, Delhi	1	
Charutar Arogya Mandal	3	Behavioral and mental health, community health workers, NCDs, palliative care, and reproductive health
CHIP Foundation	2	Cancer screening, and tobacco cessation
Chitrakootdham Division, NHM UP	3	Community health workers
Civil Hospital Markand, Bilaspur	2	Community health workers
GMC- JJ Hospital, Mumbai Maharashtra	1	Health care
DDHS Kallakurichi, DPH&PM Tamil Nadu	1	Health care
Delhi Society for the Promotion of Rational Use of Drugs (DSPRUD)	1	Medical education

ECHO hubs	Number of programs	Program focus areas
Delhite's National Initiative in Palliative Care	1	Nursing and palliative care
Dental Institute, RIMS, Ranchi	2	Dentistry and oral medicine, and tobacco cessation
Devipatan Division, NHM UP	3	Health care
DIACARE – Diabetes Care and Hormone Clinic, Ahmedabad, Gujarat	1	Diabetes
Directorate of Family Health and Welfare Punjab	7	COVID-19, hepatitis C, pulmonary health, and diseases
Directorate of General Health Services (Nursing Division)	5	COVID-19
Directorate of Public Health- Tamil Nadu	6	Community health workers, COVID-19, and primary care
Division of Zoonotic Diseases Programmes (DZDP), NCDC	1	Public health
DNipCare	1	Nursing and palliative care
Dr B Barooah Cancer Institute, Guwahati	1	Nursing and palliative care
Dr Rajendra Prasad Government Medical College	2	
Dr Ram Manohar Lohia Institute of Medical Sciences, Lucknow	1	Community health workers
Equalize Health (formerly D-Rev)	2	Maternal health and reproductive health
Family Welfare Mother and Child Health Dept of BMC	3	Health care
Federation of Obstetric and Gynaecological Societies of India	1	COVID-19
Foundation for Medical Research India	3	Capacity building and tuberculosis
Foundation for Research in Health Systems	1	Public health
GMCH, College of Nursing	4	Capacity building, genetics, nursing, and palliative care
GMERS Medical College, Gotri, Vadodara, Gujarat	2	COVID-19
Goa Nursing Council	6	Advocacy, behavioral and mental health, and nursing
Gorakhpur Division, NHM UP	4	Community health workers
Government Hospital of Thoracic Medicine	1	Tuberculosis

ECHO hubs	Number of programs	Program focus areas
Government Medical College, Srinagar, J&K	5	COVID-19 and geriatrics
Gujarat Nursing Council	1	Nursing
HCG Hospital, Bengaluru	1	Speech and hearing
Healing Fields Foundation	1	COVID-19
Health and Family Welfare Training Center, Aurangabad	1	Capacity building
Holy Family Hospital	1	Neurology
Homi Bhabha Cancer Hospital and Research Centre, Visakhapatnam	4	Cancer prevention, screening, and risk mitigation
Hospital for Mental Health, Ahmedabad	9	Behavioral and mental health, and COVID-19
ICMR- Model Rural Health Research Health Units, Raichur	2	Reproductive health
Indira Gandhi Medical College, Shimla	1	COVID-19
Industree Crafts Foundation	2	Public Health
Institute of Liver and Biliary Sciences	2	Hepatology and gastroenterology
Intermediate Reference Laboratory, Gangtok, SIkkim	2	Tuberculosis
J.S. Ayurvedic Mahavidhyala and P D Patel Ayurvedic Hospital	2	
Jhansi Division, NHM UP	3	Community health workers
JHPIEGO India	7	Reproductive health
Joint DHS (TB & Leprosy) & State TB Officer, Pune	1	Tuberculosis
JPNA Trauma Centre	1	Quality improvement
Kanpur Division, NHM UP	1	
Karuna Trust	3	COVID-19, maternal health, and reproductive health
King George's Medical University	3	Health care
KJ Somaiya College of Nursing	3	Capacity building, maternal health, and nursing

ECHO hubs	Number of programs	Program focus areas
Kolkata Municipal Corporation (KMC), West Bengal	12	Advocacy, behavioral and mental health, community health workers, COVID-19, and tuberculosis
Lions Aravind Institute of Community Ophthalmology (LAICO)	1	Ophthalmology
Lucknow Division -National Health Mission, Uttar Pradesh	6	
LV Prasad Eye Institute	6	Ophthalmology
Maharashtra Nursing Council	1	Nursing
Malabar Cancer Centre, Thalassery	1	Cancer prevention and risk mitigation
Manipur Nursing Council	1	Nursing
Max Super Speciality Hospital, Saket	1	Cancer prevention, risk mitigation, screening, and treatment
Medanta/Global Health Private Limited	1	Neurology
Meerut Division, NHM UP	3	Community health workers
Mind India	1	Behavioral and mental health
Ministry of Health & Family Welfare, India	2	COVID-19
Mirzapur Division, NHM UP	2	
Mizoram College of Nursing	1	Nursing
Mizoram Nursing Council	2	Nursing
Moradabad Division, NHM UP	4	Community health workers
Nagaland Nursing Council	2	Capacity building and nursing
National Centre for Disease Control (NCDC, ICMR)	1	Capacity building and laboratory sciences
National Health Mission Andhra Pradesh	2	Behavioral and mental health, and COVID-19
National Health Mission Bhopal Madhya Pradesh	1	COVID-19
National Health Mission Delhi	1	COVID-19
National Health Mission Goa	1	COVID-19

ECHO hubs	Number of programs	Program focus areas
National Health Mission Himachal Pradesh	5	COVID-19
National Health Mission Karnataka	2	COVID-19
National Health Mission Nagaland	7	COVID-19
National Health Mission Rajasthan	1	COVID-19
National Health Mission Uttar Pradesh	1	COVID-19
National Health Mission, Arunachal Pradesh	3	COVID-19
National Health Mission, Assam	1	COVID-19
National Health Mission, Chhattisgarh	5	COVID-19
National Health Mission, Maharashtra	1	COVID-19
National Health Mission, Meghalaya	1	
National Health Mission, Mizoram	1	Behavioral and mental health
National Health Mission, Punjab	2	COVID-19, and pulmonary health and diseases
National Health Mission, Sikkim	8	Behavioral and mental health, community health workers, COVID-19, and primary care
National Health Mission, Tamil Nadu	1	COVID-19
National Health Mission, Tripura	2	Cancer screening, COVID-19, and palliative care
National Health Mission, Uttarakhand	1	COVID-19
National Health Mission-Gujarat	1	COVID-19
National Health Systems Resource Centre	2	Capacity building, COVID-19, and public health
National Institute of Epidemiology (NIE, ICMR)	1	Epidemiology
National Leprosy Eradication Programme	1	
NIVASA	1	Health care
NTAI-Chhattisgarh Branch	1	Nursing
Pain Relief and Palliative Care Society	1	Palliative care

ECHO hubs	Number of programs	Program focus areas
PCoE, Agartala, Tripura	1	Tuberculosis
Pediatric and Neonatal Nurses Forum of India	2	Nursing and pediatrics
Pediatric Hematology and Oncology Chapter	2	Cancer prevention, screening, diagnosis, risk mitigation, and treatment, hematology, and pediatrics
Piramal Swasthya Management & Research Institute	2	NCDs
Post Graduate Institute of Medical Education and Research, Chandigarh	3	Hepatitis C
Prayagraj Division, NHM UP	3	
Public Health Institute Nagpur	4	Capacity building and community health workers
Punjab Government	1	COVID-19
QA Division, National Health Mission, Uttar Pradesh	1	Community health workers
Rajiv Gandhi University of Health Sciences	1	COVID-19
Rufaida College of Nursing	2	Nursing
SHARE India	2	HIV/AIDS and tuberculosis
Skill Employment and Entrepreneurship Department, Assam	1	
SM Sehgal Foundation	1	Capacity building
Society of Cardiac Nurses	2	Capacity building and cardiology
Society of Indian Neuroscience Nurses	1	Nursing and stroke
Solidarity and Action against HIV Infection in India	1	Reproductive health
SSU-IDSP, NHM Karnataka	1	Health care
St John's Hospital, Bengaluru	1	Nephrology
State Institute of Health and Family Welfare, Punjab	1	
State Institute of Health and Family Welfare, Himachal Pradesh	2	Community health workers
State TB Cell Andhra Pradesh	1	Tuberculosis

ECHO hubs	Number of programs	Program focus areas
State TB Cell, Bihar	1	Tuberculosis
State TB Cell, Hyderabad, Telangana	2	Tuberculosis
State TB Cell, Pune, Maharashtra	2	Tuberculosis
State TB Cell, Shillong, Meghalaya	3	Tuberculosis
State TB Demonstration Centre, Bhopal, Madhya Pradesh	1	Tuberculosis
State TB Training and Demonstration Centre (New Delhi TB Centre)	2	Tuberculosis
STC Aizawl Mizoram	2	Tuberculosis
STC, Bangalore, Karnataka	3	Tuberculosis
STC, Bhopal, Madhya Pradesh	2	Tuberculosis
STC, Bhubaneshwar, Odisha	3	Tuberculosis
STC, Dehradun, Uttarakhand	2	Tuberculosis
STC, Gandhinagar, Gujarat	1	Tuberculosis
STC, Gangtok, Sikkim	1	Tuberculosis
STC, Guwahati, Assam	2	Tuberculosis
STC, Himachal Pradesh	2	Tuberculosis
STC, Imphal, Manipur	2	Tuberculosis
STC, Jaipur, Rajasthan	1	Tuberculosis
STC, Jammu, J&K	2	Tuberculosis
STC, Kohima, Nagaland	1	Tuberculosis
STC, Kolkata, West Bengal	3	Tuberculosis
STC, Lucknow, Uttar Pradesh	2	Tuberculosis
STC, Panchkula, Haryana	1	Tuberculosis
STC, Pondicherry, Puducherry	1	Tuberculosis

ECHO hubs	Number of programs	Program focus areas
STC, Port Blair, Andaman & Nicobar Islands	2	Tuberculosis
STC, Thiruvananthapuram, Kerala	2	Tuberculosis
STC, Vijayawada, Andhra Pradesh	4	Tuberculosis
STDC Nagpur, Maharashtra	2	Tuberculosis
STDC Pune Maharashtra	2	Tuberculosis
STDC Ranchi, Jharkhand	1	Tuberculosis
STDC Srinagar, J&K	1	Tuberculosis
STDC, Agra, Uttar Pradesh	1	Tuberculosis
STDC, Ahmedabad, Gujarat	2	COVID-19 and tuberculosis
STDC, Bengaluru, Karnataka	1	Tuberculosis
STDC, Dharampur, Himachal Pradesh	1	Tuberculosis
STDC, Hyderabad, Telangana	3	Public Health and tuberculosis
STDC, Patiala, Punjab	1	Tuberculosis
STDC, Raipur, Chhattisgarh	1	Tuberculosis
STDC, Visakhapatnam, Andhra Pradesh	2	Tuberculosis
Super Speciality Paediatric Hospital and Post- Graduate Teaching Institute	1	
Superhub: ECHO India	7	Air pollution, COVID-19, medical education, palliative care, prevention and wellness, and pulmonary health and diseases
Superhub: National Institute for Mental Health and Neurosciences	12	Behavioral and mental health, community health, developmental disabilities, hepatitis C, psychiatry, and substance-use disorders
Superhub: National Institute of Cancer Prevention and Research	12	Cancer prevention, screening, and risk mitigation, cervical cancer, dentistry and oral medicine, nursing, pathology, and substance-use disorders
Superhub: National Institute of Tuberculosis and Respiratory Diseases India	6	Multidrug-resistant tuberculosis, thoracic surgery, and tuberculosis
Tamil Nadu Nurses and Midwives Council	9	Advocacy, COVID-19, education, and nursing

ECHO hubs	Number of programs	Program focus areas
Tata Medical Center, Kolkata	3	Cancer prevention, screening, and risk mitigation
Tata Memorial Centre	11	Cancer prevention, screening, risk mitigation, and treatment
The Association of People with Disability, Bengaluru	1	Capacity building, and rehabilitation
THIMK	1	
Trivandrum Institute of Palliative Sciences	23	Chronic pain, COVID-19, nursing, pain management, palliative care, and pulmonary health and diseases
Ummeed Child Development Center	7	Autism, behavioral and mental health, and COVID-19
Union	1	
Varanasi Division, National Health Mission, Uttar Pradesh	2	
World Health Organization South-East Asia Region	1	HIV/AIDS
YMT school of Nursing	1	Capacity building and nursing

ORGANIZATIONS INTERVIEWED

Kolkata Municipal	Zoom interview
NICPR	Zoom interview
NIMHANS	Zoom interview
Pallium India Trust	Zoom interview
Tamil Nadu Nursing Council	Zoom interview

INDONESIA | country overview

Population size (2021)	273.8 million	
GDP per capita (2021)	US$4,333	
Life expectancy at birth (2019)	Women 73.3	Men 69.4
Maternal mortality rate (2017)	177/100,000 live births	
Under-five mortality rate (2020)	23/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Ministry priorities for 2015–2019 were:

- Improving the health and nutrition status of mothers and children
- Enhancing disease control
- Increasing access to and quality of primary and referral health care, especially in remote, underdeveloped, and border areas.
- Improving coverage of universal health care through implementation of Kartu Indonesia Sehat (Healthy Indonesia Card).
- Meeting the needs for human resources for health, medicines, and vaccines.
- Improving health system responsiveness.

Non-communicable diseases (NCDs) constitute a major disease burden while certain infectious diseases remain a threat. Some infectious disease targets have been met (for example, polio, measles, diphtheria, pertussis, hepatitis B, and tetanus), while others remain priorities for action (including HIV/AIDS, tuberculosis, malaria, dengue fever, influenza, and avian flu).

The maternal mortality rate has decreased slightly but it is still far from the ministry's target. The main causes of maternal mortality are hypertension during pregnancy and post-partum hemorrhage. The Ministry of Health notes that the main barrier to improving maternal and child health outcomes is a lack of competency among health workers and midwives.

Indonesia does not have a dedicated universal health care law.

Sources: Strategic Plan of Ministry of Health 2015-2019. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/indonesia/restra_2015_translated_1.pdf

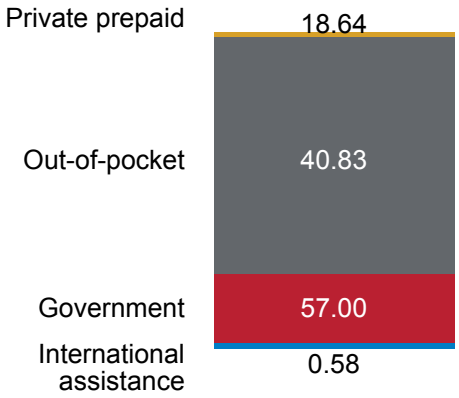
Country profile: Indonesia. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/indonesia/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Indonesia	Global
Nurses and midwives per 10,000 people	2020	39.54	39.5
Medical doctors per 10,000 people	2020	6.23	16.4
Pharmacists per 10,000 people	2020	0.94	4.7
Number of medical specialists	2020	32,418	–
Number of medical and pathology laboratory scientists	–	–	–
Number of community health workers	2020	45,709	–

WHO, World Health Indicators. Global Health Workforce statistics database.

SOURCES OF HEALTH CARE SPENDING



Average Indonesia health spending 2018

US$117

per person

Average health spending Southeast Asia, East Asia, and Oceania 2020

US$492

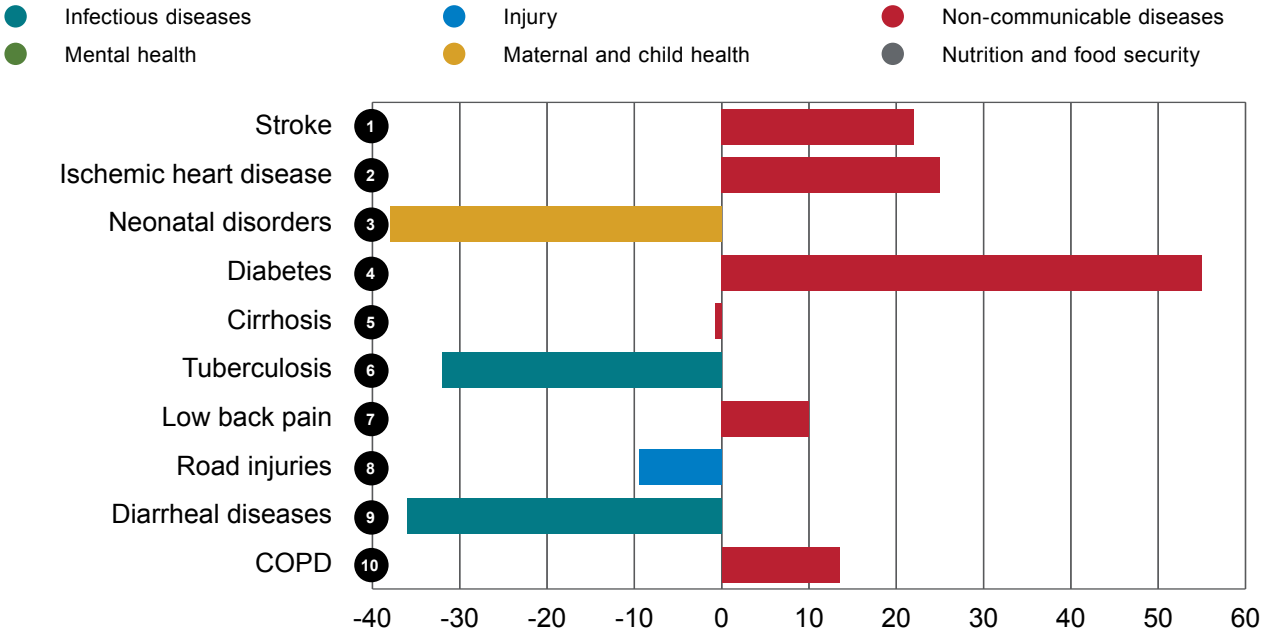
per person

Breakdown of Indonesia health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Indonesia profile. http://www.healthdata.org/indonesia

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Indonesia profile. http://www.healthdata.org/indonesia

NCDs not only dominate the top positions on the list of major causes of death and disability in Indonesia but they also continue to increase. Diabetes alone has increased by more than 50% in a decade. Neonatal disorders are showing a downward trend but, since they occupy the third position on the list, there is still considerable room for improvement. Both tuberculosis and diarrheal disease have shown a strong downward trend.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Training to improve early detection of cervical cancer and HPV vaccination

Goals and issues	Hub team	Targeted learners	Challenges
Fewer than 7% of girls and women in Indonesia have received HPV vaccine. Fewer than 10% of women aged 30-50 years have been screened for cervical cancer. The goal is to contribute to access to screening and vaccination.	Dharmais National Cancer Center with support from the Ministry of Health and subject-matter expertise from MD Anderson	Nurses and midwives	• Funding

An additional solution focused on capacity development to improve breast health awareness and early breast cancer detection appears in Section 4 of this report.

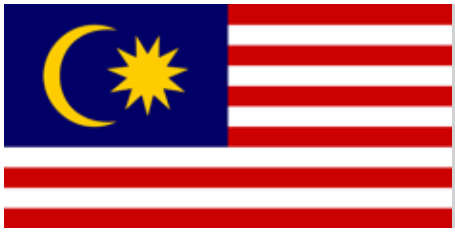
ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Dharmais National Cancer Hospital, National Cancer Center Indonesia	3	Breast cancer, cancer diagnosis, childhood cancers, leukemia, and pediatrics
RSUP Sardjito	1	Breast cancer and cancer diagnosis

ORGANIZATIONS INTERVIEWED

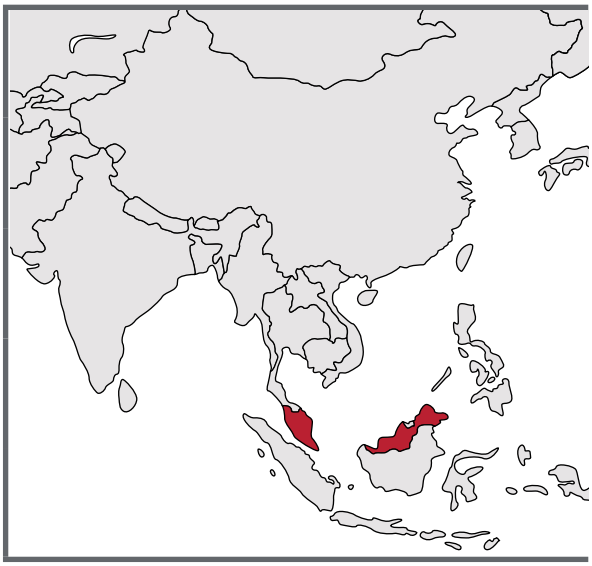
Institutions consulted

Ministry of Health Indonesia	In-person interview



MALAYSIA | country overview

Population (2021)	33.4 million	
GDP per capita (2021)	US$11,109	
Life expectancy at birth (2019)	Women 77.1	Men 72.6
Maternal mortality (2017)	29/100,000 live births	
Under-five mortality (2020)	9/1,000 live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Malaysia's 10th Country Health Plan prioritized the provision of quality health care and promotion of healthy lifestyles. The ministry targeted access to care along with quality, and access to public recreational and sports facilities to support active lifestyles. Subsequently, four strategies were identified by the ministry:

- Establish a comprehensive health care system and recreational infrastructure.
- Encourage health awareness and healthy lifestyle activities.
- Empower communities to plan and implement wellness programs.
- Transform the health sector.

The ministry cites rising health expenditure, increasing demand for health services, and a growing public-private dichotomy as challenges to health care provision in Malaysia. These cause disparities in access to care and responsiveness, inappropriate interventions being demanded by patients or induced by providers, and varying quality and standards of care. Lack of public health care workers is also cited as a challenge, as are effective training, and monitoring of training and implementation.

Malaysia does not have a specific law on universal health care.

Sources: Country Health Plan: 10th Malaysia Plan. Ministry of Health. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/malaysia/country_health_plan_2011-2015.pdf

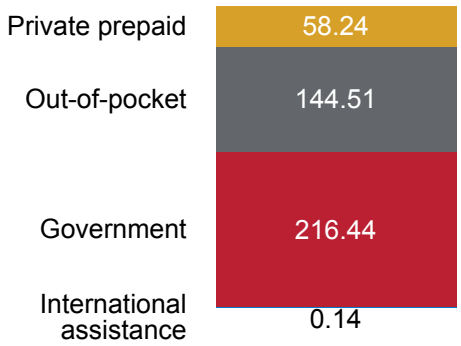
Country profile: Malaysia. Universal Health Coverage Partnership, WHO 2022. https://www.uhcpartnership.net/country-profile/malaysia/

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Malaysia	Global
Nurses and midwives per 10,000 people	2019	34.84	39.5
Medical doctors per 10,000 people	2020	22.86	16.4
Pharmacists per 10,000 people	2015	3.47	4.7
Number of medical specialists	–	–	–
Number of medical and pathology laboratory scientists	2012	6 161	–
Number of community health workers	–	–	–

WHO, World Health Indicators. *Global Health Workforce statistics database.*
https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Malaysia health spending 2018

US$419

per person

Average health spending in Southeast Asia, East Asia, and Oceania 2020

US$492

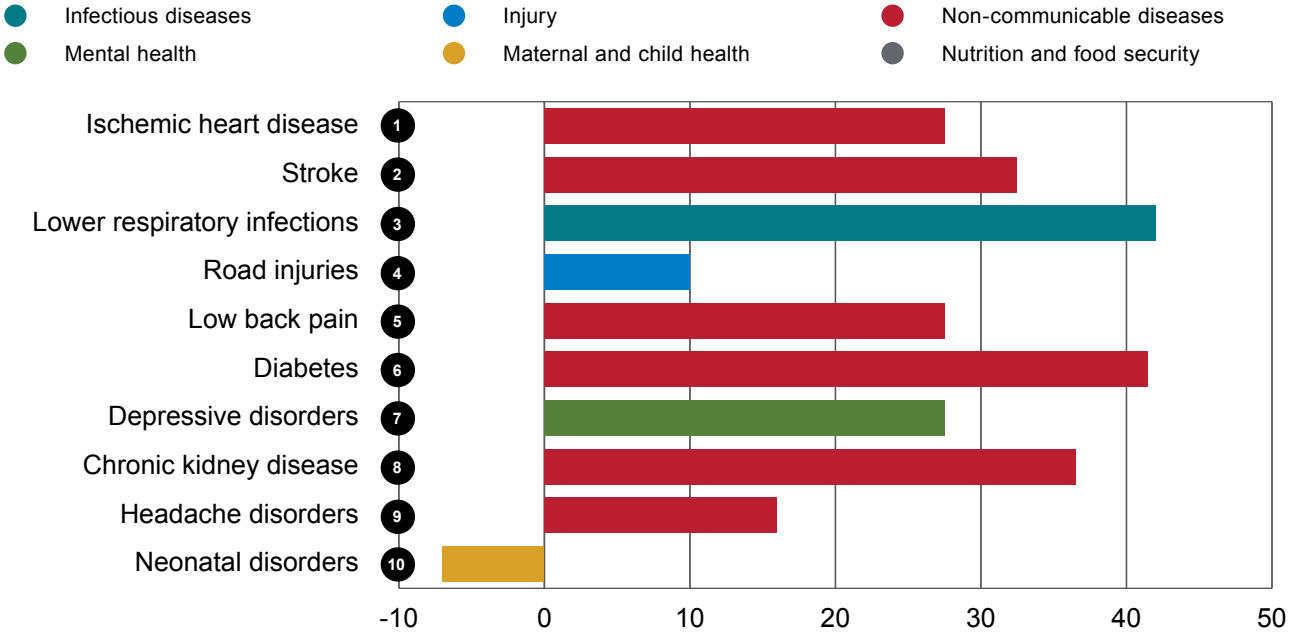
per person

Breakdown of Malaysia health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Malaysia profile. http://www.healthdata.org/malaysia

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Malaysia profile. http://www.healthdata.org/malaysia

The top causes of death and disability in Malaysia, measured in disability-adjusted life-years (DALYs), are on the increase. NCDs dominate the burden of disease, and most are regarded as diseases of lifestyle associated with complex socio-behavioral risk factors. Lower respiratory infections are the standout infectious disease in the top 10 and have increased substantially in a decade. Depressive disorders, at seventh position, are increasing. Neonatal disorders, at the bottom of the list, have continued to decrease.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Training to enable health care providers to discuss taboo women's health subjects

Goals and issues	Hub team	Targeted learners	Challenges
Training is needed to upskill health workers to discuss taboo women's health matters, such as Pap smears and breast self-examination. This intervention is prompted by the gender disparities in health outcomes in rural areas of Malaysia. A related issue, in Malaysia and other Muslim countries, is ensuring there are sufficient women in health professions to deliver services to women.	Ministry of Health Malaysia	Residents, pharmacists, community clinic nurses, and community health workers	• Attitudes that impose taboos on women's health issues

ECHO PARTNERS

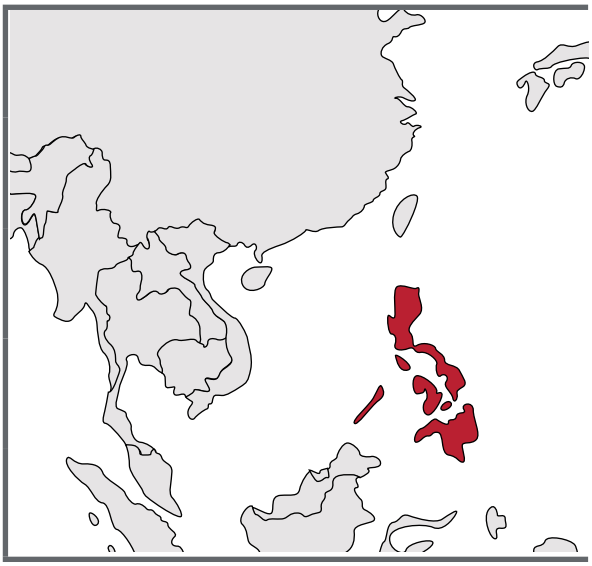
ECHO hubs	Number of programs	Program focus areas
Ministry of Health Malaysia	1	Palliative care
University of Malaya	3	Breast cancer, prevention, screening, diagnosis, and risk mitigation for cancer, cervical cancer, lung cancer, primary care, and radiology

ORGANIZATIONS INTERVIEWED

Ministry of Health Malaysia	In-person interview

PHILIPPINES | country overview

Population (2021)	**113.9 million**	
GDP per capita (2021)	**US$3,461**	
Life expectancy at birth (2019)	Women **73.6**	Men **67.4**
Maternal mortality (2017)	**121/100,000** live births	
Under-five mortality (2020)	**26/1,000** live births	



Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

Priorities for the Ministry of Health are maternal and child health, prevention and treatment of infectious disease with a focus on HIV/AIDS and malaria, combatting non-communicable diseases (NCDs) which are increasingly prevalent, and addressing rising inequities in health care and outcomes. Major Ministry of Health targets include:

- Reducing maternal mortality to fewer than 70/100,000 live births
- Ending preventable deaths among newborns and children under five years
- Ending the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases
- Combatting hepatitis, water-borne diseases, and other communicable diseases

The country has fallen short on its targets for maternal and child health and infectious disease prevention. Health care infrastructure development is also below target and the ministry notes that government funding for infrastructure has remained focused on Manila and specialty hospitals primarily serving the affluent. The shortage and maldistribution of health care workers are seen as the prime contributor to poor health provision and outcomes.

The country's Universal Health Care Bill has been signed into law.

Sources: The Philippine Health Agenda for 2016 to 2022. Ministry of Health, 2016. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/philippines/health_agenda_2016-20222.pdf

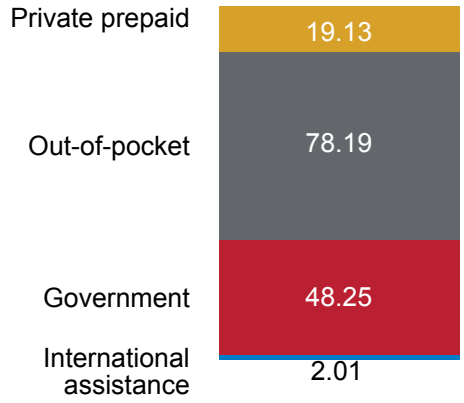
Philippines UHC Act: a new dawn for health care. WHO 2019. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/philippines/stories_from_the_field_issue1_philippines.pdf

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Philippines	Global
Nurses and midwives per 10,000 people	2019	54.44	39.5
Medical doctors per 10,000 people	2020	7.73	16.4
Pharmacists per 10,000 people	2017	3.31	4.7
Number of medical specialists	–	–	–
Number of medical and pathology laboratory scientists	–	–	–
Number of community health workers	2019	248,584	–

WHO, World Health Indicators. *Global Health Workforce statistics database.*
https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Philippines health spending 2018
US$148
per person

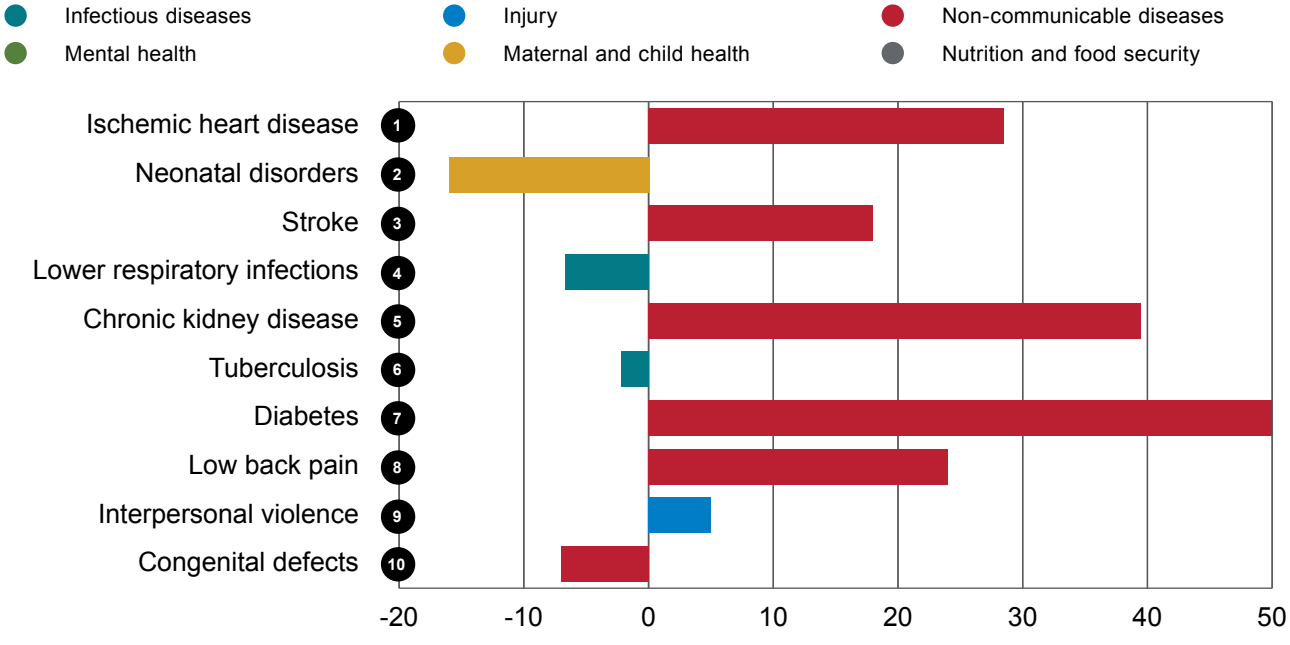
Average health spending in Southeast Asia, East Asia, and Oceania 2020
US$492
per person

Breakdown of Philippines health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Philippines profile. http://www.healthdata.org/philippines

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Philippines profile. http://www.healthdata.org/philippines

The top causes of death and disability, measured in disability-adjusted life-years (DALYs), reveal the enormous toll of NCDs on the Philippines. Six out of 10 causes are NCDs, and in all but one case they are increasing rapidly. They include the major "diseases of lifestyle" – heart disease, stroke, and diabetes. While neonatal disorders rank second as a cause of death and disability, the country is showing progress in reducing their impact. Both infectious diseases listed – TB and lower respiratory infections – have declined over a decade.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Upskilling primary care clinicians in rural and underserved communities

Goals and issues	Hub team	Targeted learners	Challenges
Unequal access to care and differential health outcomes are acknowledged as national issues in Philippines along with inequities in the distribution of health workers. The upskilling of primary care workers in rural and underserved communities would help to address this situation.	University of Philippines with Department of Health	Primary care clinicians	• Funding • Internet connectivity

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Municipality of Guagua	1	Breast cancer and cancer screening
Samal Rural Health Unit	1	Breast cancer

ORGANIZATIONS INTERVIEWED

Ministry of Health Philippines	In-person interview

VIETNAM | country overview

Population (2021)	97.5 million	
GDP per capita (2021)	US$3,757	
Life expectancy at birth (2019)	Women 78.1	Men 69.6
Maternal mortality (2017)	43/100,000 live births	
Under-five mortality (2020)	21/1,000 live births	

Sources: WHO World Health Statistics 2022; World Bank www.data.wordbank.org

MINISTRY OF HEALTH PRIORITIES AND PROGRESS

The disease pattern in Vietnam reflects a transition from a society challenged by infectious diseases to one characterized by the rise of non-communicable diseases (NCDs). Road injuries add substantially to this mixed disease burden and some new epidemics and rare diseases have emerged.

Between 2010/11 and 2015 the health status of the Vietnamese people improved:

- Life expectancy at birth increased from 72.9 years 73.3 years.
- Infant mortality dropped from 15.5% in 2011 to 14.7%.
- The under-five mortality rate decreased from 23.3% in 2011 to 22.1%.

The rate of HIV infections is still high in Northern Uplands provinces and big cities. TB patients' compliance with treatment is limited, particularly in remote areas. Parasite resistance to antimalarial drugs is at risk of spreading.

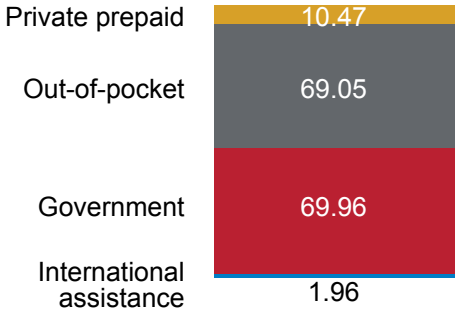
Sources: Plan for people's health protection, care and promotion 2016 – 2020. Ministry of Health, 2015. https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/viet_nam/vietnam_plan_2016-2020.pdf

HEALTH CARE WORKFORCE RELATIVE TO POPULATION

Professional category	Year	Vietnam	Global
Nurses and midwives per 10,000 people	2016	14.46	39.5
Medical doctors per 10,000 people	2016	8.28	16.4
Pharmacists per 10,000 people	2016	3.39	4.7
Number of medical specialists	–	–	–
Number of medical and pathology laboratory scientists	–	–	–
Number of community health workers	–	–	–

WHO, World Health Indicators. Global Health Workforce statistics database. https://www.who.int/data/gho/data/indicators.

SOURCES OF HEALTH CARE SPENDING



Average Vietnam health spending 2018

US$151

per person

Average health spending in Southeast Asia, East Asia, and Oceania 2020

US$492

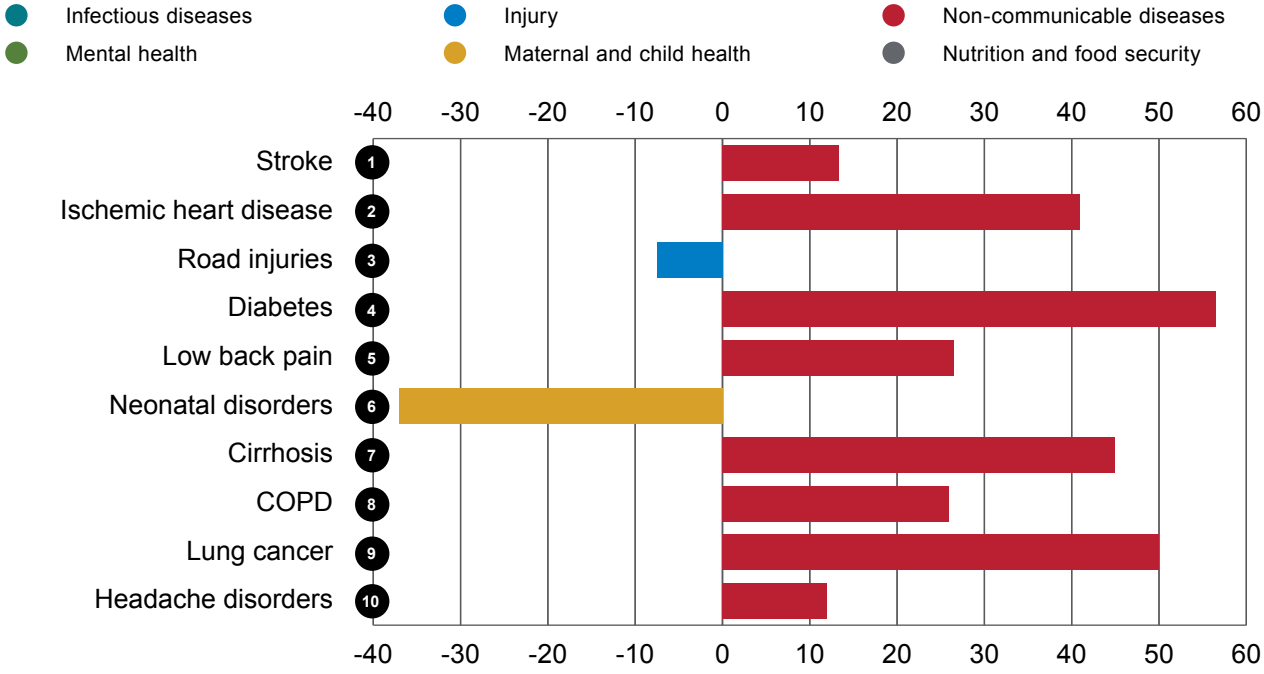
per person

Breakdown of Vietnam health spending 2018 US$ per person

Institute for Health Metrics and Evaluation (IHME). Vietnam profile. http://www.healthdata.org/vietnam

BURDEN OF DISEASE AND HEALTH PRIORITIES

Top 10 causes of death and disability in 2019 and percentage change since 2009



Institute for Health Metrics and Evaluation (IHME). Vietnam profile. http://www.healthdata.org/vietnam

There has been a dramatic rise of NCDs in Vietnam. Not only did they occupy eight out of 10 places in the top 10 causes of death and disability in 2019, but all these NCDs showed an upward trajectory. In most instances, lifestyle risk factors are behind this trend. The country has made gains in reducing neonatal disorders and road injuries.

SOLUTIONS FOR WORKFORCE DEVELOPMENT

Vietnam's solution for training to reduce premature death due to NCDs has been included in Section 4.

ECHO PARTNERS

ECHO hubs	Number of programs	Program focus areas
Center for Supporting Community Development Initiatives	1	Harm reduction and hepatitis C
Hải Phòng Children Hospital	1	
Hanoi Medical University	1	Public health and substance use disorders
Hanoi University of Public Health	1	Hospital leadership and management
Hue University of Medicine and Pharmacy	1	
Hung Vuong General Hospital, Phu Tho	1	Cardiology
Mosaic Training and Communication Vietnam/Center for Creative Initiatives in Health and Population	1	Autism
National Lung Hospital, Vietnam	3	Multidrug-resistant TB
Project Vietnam Foundation	2	Bone health, medical education, and pediatrics
Superhub: Vietnam National Children's Hospital	24	Cancer prevention, screening, diagnosis, risk mitigation, treatment, and survivorship, cardiology, clinical medicine, COVID-19, emergency care, dentistry and oral medicine, genetics, hematology, hepatology and gastroenterology, immunology, neonatal care, nephrology, neurology, nursing, pathology, pediatrics, psychiatry, psychology, radiology, respiratory infections, rheumatology, surgery, and tropical diseases
University of Medicine and Pharmacy, Ho Chi Minh City	1	Substance-use disorders
Vietnam National Hospital of Dermatology and Venereology	2	Sexually transmitted diseases

ORGANIZATIONS INTERVIEWED

Obstetric and Pediatric Hospital	Response to emailed questions
Vietnam National Children's Hospital	Response to emailed questions

ADDITIONAL WORKFORCE DEVELOPMENT SOLUTIONS

Roundtable discussions for this project included experts working beyond the 35 countries which form the focus of this report. This resulted in two solutions which are not attached to the selected countries.

Africa – Namibia

Capacity building to improve care to mothers and children with HIV

Goals and issues	Hub team	Targeted learners	Challenges
The goal of the project is to build capacity to improve systems, services, and quality of care for mothers and children living with HIV	Ministry of Health, Namibia	Doctors, nurses, community health workers, pharmacists, social workers, and medical students	• Funding • IT hardware and internet connectivity • Resources for implementing better care (medicines, vaccines, etc) • Human resources and task-shifting

Latin America – Nicaragua and Panama

Training to improve access to HIV treatment and quality care for adults and children

Goals and issues	Hub team	Targeted learners	Challenges
The goal is to increase access to antiretroviral treatment (ART) for adults and children living with HIV and improve their quality of care. Training would cover HIV prevention, optimization of ART for adults and children, and treatment of advanced disease and opportunistic infections. It would deal with treatment resistance, treatment in prisons, and servicing migrant populations.	**Panama:** Ministry of Health **Nicaragua:** to be determined Partner: US Centers for Disease Control and Prevention Central Americas Office	**Panama:** Pediatric health service providers **Nicaragua:** doctors and nurses in 100 health centers Pediatric programme to be expanded to other Central American countries	• Funding • Program coordination • Internet connectivity in remote areas • Political factors that might hinder ECHO hub establishment

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