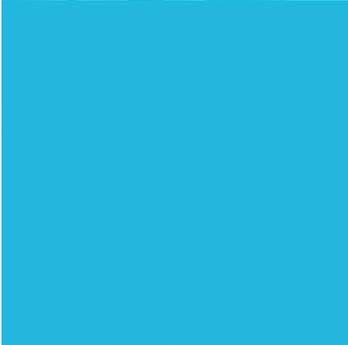
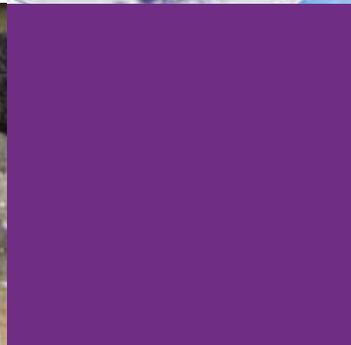


ACCELERATING PROGRESS

on HIV, tuberculosis, malaria, hepatitis
and neglected tropical diseases



A new agenda for
2016 · 2030



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Foreword



We are in a unique and transformative moment in the history of global health.

The past 15 years have proved that, through coordinated action and expanded financing, we can respond effectively to some of the world's greatest health challenges. During this period, the massive international response to HIV, tuberculosis (TB) and malaria has markedly reduced global case incidence and mortality rates, and saved over 50 million lives. As a result, Millennium Development Goal (MDG) 6 has been successfully achieved.

Despite this progress, HIV, TB and malaria continue to pose a major public health threat, killing nearly 3 million people every year. Progress has been uneven in many parts of the world, millions of people lack access to life-saving prevention measures and treatment, and growing resistance to drugs and insecticides threatens to reverse the gains. Viral hepatitis B and C, as well as the group of diseases currently known as "neglected tropical diseases" (NTDs), also continue to inflict a heavy burden on societies.

With the endorsement of the Sustainable Development Goals (SDGs) in September 2015, we have an unprecedented opportunity to accelerate impact on all of the above-mentioned diseases. Target 3.3 in the SDG health goal calls on the world to end the epidemics of AIDS, TB, malaria and NTDs by 2030, and to combat hepatitis and other communicable diseases. The SDG goal stresses the importance of tackling the "unfinished business" of the MDG era, and the urgent need for a global response to the silent epidemics of hepatitis and NTDs.

Delivering on this ambitious agenda will require a major transformation in the way we approach disease control and elimination efforts. It will require a paradigm shift in our thinking, robust and predictable financing, increased investments in health system strengthening, better integration of programmes, and the development and roll-out of new tools. In the next 15 years, WHO will be working with countries and partners to ensure that – in line with our vision to move towards universal health coverage – all affected populations have access to life-saving prevention and treatment, and that we accelerate progress towards the goal of ending the epidemics.

WHO, through the work of the Cluster for HIV/AIDS, Tuberculosis, Malaria and Neglected Tropical Diseases, embraces the public health and research activities that make a difference to the lives of people at risk of, or suffering from, these diseases. This report looks back on the global progress made towards achieving MDG 6 between 2000 and 2015 in relation to all of the above diseases. It also summarizes global WHO recommendations and strategies for the SDG era, which are embedded in the sustainable development context, and sets out cross-cutting priorities. The report is designed to serve as a springboard for further discussion across the WHO network, with Member States and external partners.

At this time of transition from the MDGs to the SDGs, WHO is committed to working with countries and partners to harness the power of global partnership, innovation and research to galvanize intensified action in countries and ensure that every last person benefits from our collective efforts to move towards the 2030 goals. We are confident that, together, we can put this fight on a sustainable footing, reduce the human suffering and deliver on our promise to the next generation.

Dr Winnie Mpanju-Shumbusho
Assistant Director-General for HIV/AIDS,
Tuberculosis, Malaria and Neglected Tropical Diseases

Abbreviations and acronyms

ACT	artemisinin-based combination therapy
AL	artemether and lumefantrine
APOC	African Programme for Onchocerciasis Control
ART	antiretroviral therapy
ARV	antiretroviral drug
DALY	disability-adjusted life year
DOTS	directly observed treatment, short-course
GAVI	GAVI, the Vaccine Alliance
GDP	gross domestic product
GGM	Good Governance for Medicines
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GMP	good manufacturing practice
HAT	human African trypanosomiasis
HBV	hepatitis B virus
HCV	hepatitis C virus
HTM	Cluster for HIV/AIDS, Tuberculosis, Malaria and Neglected Tropical Diseases (WHO)
IRS	indoor residual spraying
ITN	insecticide-treated mosquito net
M&E	monitoring and evaluation
MDG	Millennium Development Goal
MDR	multidrug resistant
NCD	noncommunicable diseases
NGO	nongovernmental organization
NTD	neglected tropical disease
ODA	official development assistance
PEPFAR	United States President's Emergency Plan for AIDS Relief
PMTCT	prevention of mother-to-child transmission
PPP	public–private partnership
R&D	research and development
RBM	Roll Back Malaria
SDG	Sustainable Development Goal
TB	tuberculosis
TDR	Special Programme for Research and Training in Tropical Diseases
TRIPS	Trade-Related Aspects of Intellectual Property
UHC	universal health coverage
UI	uncertainty interval
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
US	United States
USAID	United States Agency for International Development
WASH	water, sanitation and hygiene
WHO	World Health Organization
WHOPES	WHO Pesticide Evaluation Scheme
zNTD	zoonotic neglected tropical disease

Executive summary

WHO is the directing and coordinating authority on international health within the United Nations (UN) system, with a mandate to lead global efforts to control and eliminate infectious diseases.

Working through its Geneva-based headquarters, six regional offices, and 149 country and territory offices, WHO provides evidence-based guidance to support the scale-up of cost-effective interventions that help to bring down the global burden of illness and deaths caused by infectious diseases.

In addition to generating policy and technical guidance at the global and regional levels, WHO supports programme implementation. To achieve this, WHO provides technical assistance and advocates for accelerated action at all levels to tackle disease and other health conditions. In line with its core functions, WHO monitors global, regional and country disease burden trends and responses. The organization also regularly evaluates progress towards internationally agreed global and regional targets, through reports to the World Health Assembly and – for some diseases – the UN General Assembly. WHO works closely with Member States and development partners to achieve its aims.

This report reviews achievements related to Millennium Development Goal (MDG) 6, which was to combat HIV/AIDS, malaria and other major diseases. It looks at the key factors behind achievements in relation to reducing the burden of HIV, tuberculosis (TB), malaria, viral hepatitis and neglected tropical diseases (NTDs), and the role played by WHO in those achievements. It also discusses the new post-2015 global WHO strategies, many of which have been endorsed by the World Health Assembly. In particular, the report discusses the key cross-cutting elements required to drive the ending of major infectious disease epidemics, to achieve the health-related Sustainable Development Goal (SDG) 3, and specifically Target 3.3 of that goal.

Global efforts towards the achievement of MDG 6 have led to significant decreases in incidence, mortality and prevalence of HIV, TB and malaria. Efforts to reduce the disease burden posed by these diseases have also contributed to reducing child mortality and improving maternal health, in line with MDGs 4 and 5. Despite causing a heavy disease burden, neither viral hepatitis nor NTDs were explicitly part of the MDGs. However, the response to NTDs has delivered several

positive results, including bringing many of these diseases close to elimination.

The main drivers of progress

Global development. Progress in controlling infectious diseases has taken place against a backdrop of significant global economic development that has contributed to favourable trends in incidence, mortality and prevalence. For example, many countries where the above-mentioned diseases are endemic have undergone rapid economic growth. Although such growth has been unevenly distributed, it has translated into improved nutrition, housing, water and sanitation, but has also had implications for access to external development assistance. Similarly, improved health has supported the human capital to contribute to development.

Consensus around clear goals. The MDGs focused attention on and formalized consensus around a limited set of goals that were clear, time bound and measurable, providing the basis for concerted global and national efforts. WHO played a key role in guiding global efforts to implement the MDGs, and supported countries in the development and implementation of the monitoring and evaluation (M&E) systems needed to track progress. WHO also supported global efforts through its regular assessment of global, regional and country trends in disease burden and the implementation and outcomes of recommended interventions. This helped provide accountability for the MDGs.

Practical strategies. Developing viable strategies to achieve the MDGs was imperative. WHO played an important part in the strategy development process, and its efforts were supported by the exchange of ideas in different forums, including the World Health Assembly. WHO also made evidence-based guidance available to countries and partners, while providing technical support to ministries of health, and helping countries to review and update their national strategies and action plans on infectious diseases. These strategies provided the basis for implementation of health interventions, combined with practical technical support.

Collaboration. Increased partnership and collaboration were key to driving advocacy and coordinating action. Notable examples included the Joint United Nations Programme

on HIV and AIDS (UNAIDS), the Roll Back Malaria (RBM) Partnership and the Stop TB Partnership. Although these diseases have been the principal beneficiaries of increased collaboration, there has also been some consolidation of resources and alignment of effort around viral hepatitis and NTDs.

Ownership, leadership and advocacy. Country-level ownership and leadership was the basis for action, particularly the involvement and participation of governments, communities, nongovernmental organizations (NGOs) and activists. For example, country-level leadership was crucial to increasing domestic funding for NTD programmes in middle-income countries. Grass-roots partnerships that brought together activists and NGOs also played an important role in driving different agendas, and many disease-response strategies now include significant rights-based components and an emphasis on community empowerment.

Increased resources. The unprecedented mobilization of resources around MDG-related activities was a key contributor to success, despite the sometimes uneven distribution of funds across disease-response efforts. Disbursements for official development assistance for health tripled after 2000. An estimated 61% of all development assistance for health disbursed between 2000 and 2014 targeted initiatives related to the three MDG health goals. Disease responses also benefited substantially from the creation of dedicated funding mechanisms, including the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), the United States (US) President's Emergency Plan for AIDS Relief (PEPFAR), and the US President's Malaria Initiative, and innovating financing, such as through UNITAID.

Research and innovation. Progress depended heavily on research and innovation, which yielded new drugs, vaccines and diagnostic tools. It also generated new ways to implement interventions, such as increased use of task shifting among health workers, and greater reliance on community-based initiatives. Increasing research on health concerns that affect the most neglected populations was crucial, as was increasing the participation of disease-endemic countries, as both research users and providers. WHO has played a key role in orienting research towards areas that have contributed to MDG-related progress.

Better data and monitoring. Vital to the MDG endeavour was tracking of progress against

baseline assessments to determine whether interventions were working and to ensure accountability. This required systematic investments in routine M&E systems, and special surveys at national and global levels. Regular monitoring of progress towards the health-related MDGs was called for by the World Health Assembly in 2008. Thus, from 2009, annual reviews of progress were conducted based on data gathered by WHO from countries and partners. WHO also contributed to each official MDG progress report issued by the UN Secretary-General.

Health system strengthening. Although health system strengthening was not an explicit focus of the MDGs, many countries made multiple investments in specific components of health systems that led to improvements in key areas. Similarly, many countries initiated or developed pro-poor health policies that support progress towards universal health coverage (UHC) targets. Reciprocally, delivery of interventions and services for infectious diseases were important in supporting and improving health systems, notably by promoting evidence-based policies and rolling out cost-effective interventions, improving basic health infrastructure and commodity delivery systems, establishing or improving effective M&E and surveillance systems, building and strengthening laboratory capacity and networks, expanding and training the health workforce and scaling up community-based programmes.

Ending the epidemics

Infectious diseases remain a concern to all countries, imposing a significant burden on economies and public health. Together, HIV, TB, malaria, viral hepatitis and NTDs are estimated to have caused about 4.3 million deaths in 2014, (6, 8, 9, 12, 16, 142). In addition to the high mortality rate, many of these diseases cause chronic illness, disability, stigma and exclusion from society.

SDG Target 3.3 calls for an end to the epidemics of HIV, TB, malaria and NTDs by 2030, and for efforts to combat hepatitis. The disease-specific goals and targets that have been adopted by Member States through the World Health Assembly are fully in line with SDG 3. WHO, UNAIDS, the RBM Partnership, the Stop TB Partnership and the Global Fund have developed a set of fully aligned global strategies and action plans that will guide efforts towards achieving the 2030 goals. As outlined below, achieving the goals will require rapidly expanding coverage of high-impact interventions, leveraging health system strengths

and strengthening health systems, supporting national governments, focusing efforts on areas and populations most at risk and affected, bolstering monitoring and surveillance, tackling drug and insecticide resistance, advancing the research agenda, financing the expansion of service coverage, and exploring opportunities for collaboration and integration.

Rapidly expanding coverage of high-impact interventions. The achievements of the past 15 years attest to the effectiveness of the interventions that have been developed. However, more needs to be done to ensure that key interventions for HIV, TB, malaria, viral hepatitis and NTDs reach everyone who needs them – in line with SDG Target 3.8, which is to achieve UHC. Several strategies call for a ramping up of activity in the next 5 years to capitalize on progress and avoid losing hard-won gains. Simply expanding coverage will not be enough; improving the quality and efficiency of interventions and services across the full continuum of health services will be vital to ensure maximum impact.

Leveraging health system strengths and strengthening health systems. The achievement of targets depends on robust, effective, flexible health systems. Hence, strategic investment in health systems is essential, to provide a solid platform for sustained action, including a strong health workforce, adaptable health services, and reliable systems for ensuring uninterrupted supply of quality-assured and affordable health commodities. Health system strengthening will be a major focus of SDG-related efforts, as reflected in SDG Target 3.8, which calls upon countries to “Achieve UHC, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all”.

Supporting national governments. Health system strengthening depends on robust national-level support. Encouraging that support is a strategic priority for WHO. In post-2015 global strategies, the call for increased support is framed in terms of increased government stewardship and accountability in the context of UHC, with an emphasis on the importance of financial risk protection. Public financing of public goods is fundamental to progress on national infectious disease agendas, given that one of the principal obstacles to increasing diagnosis and treatment coverage is the deterrent effect of direct charges for services paid for out of pocket.

Focusing efforts on areas and populations most at risk and affected. Reaching populations and subgroups that have tended to be overlooked or missed by interventions and services in the past is a prerequisite for ending the epidemics, and is a UHC imperative. In some cases, the barriers to achieving full health service coverage are geographical whereas in others they are socioeconomic. Focusing on specific areas or populations can help to ensure equity of health service coverage. It may also help to optimize the use of limited resources in the latter stages of disease responses, accelerating progress towards ending the epidemics.

Bolstering monitoring and surveillance. Data gathering needs to be recognized as a core activity that is required to track progress, ensure accountability, and inform development of policies and strategies. The SDG resolution calls for a data revolution, and emphasizes the importance of systematic follow-up and review of implementation at national, regional and global levels. A major cross-cutting challenge to disease-response efforts is that many countries still lack direct measurements of mortality from national vital registration systems of high coverage and quality that use standard coding of causes of death according to the *International classification of diseases*. Other challenges include underreporting; lack of complete and consistent data; and lack of agreement on standard terminology and coding for programme data generated by health facilities and community-based programmes, and surveillance data from surveys and facilities, making it impossible to aggregate and analyse data in a consistent and coherent way.

The scaling up of national statistical capacities, and the strengthening and modernization of statistical systems will require effective institutional arrangements and internal coordination, sustainable human and financial resources, and technical cooperation. National statistical offices should have a clear mandate to lead the coordination of the national agencies involved and to become the data hubs for monitoring. WHO is committed to maintaining and strengthening the core functions in its 12th Global Programme of Work, notably in terms of defining indicators and improving ways of measuring and reporting on progress. This will also require systematic investment in country statistical capacity and disaggregated data, as mentioned in the SDG targets.

Tackling drug and insecticide resistance. Emerging resistance presents a potential obstacle

to attaining targets. For example, malaria efforts are increasingly hampered by the emergence of multidrug resistance to artemisinin in the Greater Mekong subregion. TB programme management is greatly complicated by multidrug resistant TB, of which there were an estimated 480 000 new cases in 2014 (about 5% of total TB incidence). On the insecticide front, a major strategic concern is overreliance on pyrethroids – the only class of insecticide used in insecticide-treated mosquito nets (ITNs), and applied in many indoor residual spraying (IRS) programmes. Strategic priorities include intensified research and innovation, augmented resistance surveillance, and effective use of new diagnostic technologies to support monitoring and ensure rational use of medicines.

Advancing the research agenda. Key research imperatives include the development of new products (including drugs, diagnostics, vaccines and other commodities) to support disease-response agendas, and the development of better ways to deliver services. Progress towards the SDGs also depends on optimizing the use of currently available health interventions and service delivery models through implementation research, notably by supporting researchers in disease-endemic countries. There is an urgent need to establish sustainable mechanisms to fund the research and development (R&D) needed to develop new drugs, diagnostics and vaccines for populations in low- and middle-income countries, where the standard commercial incentives for R&D may not apply. Similarly, research is required to identify the most effective models of service delivery to reach marginalized and underserved populations, and to improve the quality of services. Also crucial is ensuring that the SDGs acknowledge the importance of research.

Financing the expansion of service coverage. Despite the unprecedented mobilization of resources associated with the MDGs, there is an urgent need to increase and sustain predictable, long-term financing for the delivery of interventions and services for infectious diseases. Key to achieving this will be integrating essential interventions and services into national health programmes and national health benefit packages. However, innovative funding and external donor support will also be required – in line with the recommendations of the Addis Ababa Action Agenda of the Third International Financing for Development Conference, agreed in July 2015 (1).

The four priority areas are:

- securing funding, including public and private

sources, both domestic and external (all strategies stress the importance of national governments playing their part);

- optimizing the use of resources by improving resource allocation; reducing the costs of medicines, diagnostics and other commodities; and improving the efficiency and effectiveness of services;
- developing innovative financing mechanisms at the global and country levels, including results-based mechanisms; and
- ensuring equity in financing the expansion of programmes, in line with UHC, such that the cost of achieving this public good is borne equitably, with no individuals facing financial catastrophe.

Exploring opportunities for collaboration and integration. Moving into the development space defined by the SDGs – with its 13 health targets, and its many other targets that have a bearing on health – is likely to increase the need for collaboration and for the coherence in approaches that collaboration implies. Such collaboration will help to avoid the risk of fragmentation of effort and competition for resources that is sometimes associated with too narrow a focus on individual programmes. At the same time, it will allow stakeholders to tackle the many cross-cutting issues that do not fit neatly into those programmes. Clearly, this has implications for the way infectious disease interventions and services are delivered, especially at the country level. As the principal convening agency charged with bringing together key stakeholders, WHO has played an important role in supporting collaboration through its worldwide network of offices at country, regional and global levels. WHO also promotes efforts to ensure that individual programme areas contribute to, and work within, the framework of countries' overall health plans and strategies.

Conclusion

Progress towards ending global epidemics of major infectious diseases by 2030 will depend in part on managing the transition into the development space defined by the SDGs. With specific regard to health, the SDGs have shifted the focus towards a more system-wide approach, underpinned by the UHC target. UHC presents a major opportunity to expand coverage for infectious diseases, but also offers a basis for a more balanced and sustainable approach to the achievement of the other health targets. In particular, it offers a way of

accommodating the changing agenda for global health which, as reflected in the SDGs, is putting greater emphasis on tackling noncommunicable diseases, while maintaining the visibility of other internationally agreed health goals that relate to the infectious diseases considered in this document.

For a new UHC-focused agenda to be more than just an aspiration, priorities and financing will need to be realigned, and planning and budgeting will need to reflect a wider set of health needs. Recognizing that this will be a complex process, WHO is committed to working with partners to achieve the optimum balance of priorities, keeping in mind ongoing challenges and future opportunities. Infectious diseases continue to pose a major health burden in many countries and can stifle their prospects for economic growth.

Even though the percentage of all deaths due to infectious diseases decreased from 23% to 17% between 2000 and 2012, such deaths occur at younger ages than deaths due to other causes, and thus account for a higher proportion of

years of life lost (2). In the WHO African Region, an estimated 50% of years of life lost are still due to infectious diseases (2). If we fail to accelerate progress towards ending these diseases, the diseases could easily rebound and the investments and progress of the MDG era could be lost.

With regard to the opportunities, it is clear that disease programmes already make a significant contribution to health systems, just as health systems are vital to the work that programmes undertake. Research into pragmatic and cost-effective ways to maximize these mutual benefits should be a priority, as part of efforts to optimize integrated approaches to health service delivery. WHO, and its Cluster for HIV/AIDS, Tuberculosis, Malaria and Neglected Tropical Diseases, is committed to embracing change (both in the way it works with partners and internally), to share lessons learnt, overcome common challenges, and initiate actions in line with convergent strategies, with the common target of ending major infectious diseases.





1 INTRODUCTION

In September 2000, the United Nations (UN) General Assembly adopted the Millennium Declaration, establishing a global partnership of countries and development partners committed to eight voluntary Millennium Development Goals (MDGs), with an end date of 2015.

Representing ambitious moral and practical commitments, the MDGs aimed to:

- eradicate extreme poverty and hunger;
- achieve universal primary education;
- promote gender equality and empower women;
- reduce child mortality;
- improve maternal health;
- combat HIV/AIDS, malaria and other diseases;
- ensure environmental sustainability; and
- develop a global partnership for development.

Three of these eight MDGs were focused on health, and several of the MDG targets – such as those for nutrition, water and sanitation – had important health implications.

On 1 January 2016, the MDGs were replaced by the Sustainable Development Goals (SDGs) – an all-encompassing and transformative global development agenda that commits both developed and developing nations to work together to address the economic, social and environmental dimensions of sustainable development. In contrast to the MDGs, which set a limited number of development goals, the SDGs comprise 17 goals around five core themes – people, planet, prosperity, peace and partnership (Box 1.1).

The SDGs reflect a desire to advance an agenda that has universal relevance, guided by the principles of equity and inclusiveness. In contrast to the MDGs, which were primarily focused on progress in developing countries, the SDGs aim to support and promote well-being for everyone, everywhere. The SDGs also give greater emphasis to the interconnectedness of development issues, and encourage integrated approaches to addressing those issues. This broad agenda provides opportunities to expand responses

to tackle social, economic and environmental determinants of health, and strengthen the health systems and the sustainability of responses, which is critical to the success of all infectious disease programmes.

The consolidated health goal (SDG 3) is at the core of the SDG framework, closely linked to each and every other goal. SDG 3 is to “Ensure healthy lives and promote well-being for all at all ages” (Box 1.2). There are 13 targets for this goal, and the target for infectious diseases is both much more ambitious and more inclusive than MDG 6. Where MDG 6 focused on halting or reversing incidence trends for HIV, tuberculosis (TB) and malaria, the SDG Target 3.3 calls for the ending of these epidemics. SDG Target 3.3 also targets the ending of neglected tropical diseases (NTDs) and the combating of hepatitis, neither of which were mentioned in the MDGs. Other important departures from the health MDGs include new SDG targets on noncommunicable diseases (NCDs) and universal health coverage (UHC).



Box 1.1. The Sustainable Development Goals

- Goal 1.** End poverty in all its forms everywhere
- Goal 2.** End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 3.** Ensure healthy lives and promote well-being for all at all ages
- Goal 4.** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Goal 5.** Achieve gender equality and empower all women and girls
- Goal 6.** Ensure availability and sustainable management of water and sanitation for all
- Goal 7.** Ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 8.** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9.** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10.** Reduce inequality within and among countries
- Goal 11.** Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12.** Ensure sustainable consumption and production patterns
- Goal 13.** Take urgent action to combat climate change and its impacts*
- Goal 14.** Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15.** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Goal 16.** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- Goal 17.** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change



Box 1.2. Sustainable Development Goal 3

Goal 3. Ensure healthy lives and promote well-being for all at all ages

- 3.1** By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births
- 3.2** By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births
- 3.3** By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
- 3.4** By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and wellbeing
- 3.5** Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
- 3.6** By 2020, halve the number of global deaths and injuries from road traffic accidents
- 3.7** By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes
- 3.8** Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
- 3.9** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
- 3.a** Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate
- 3.b** Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all
- 3.c** Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States
- 3.d** Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

WHO is the directing and coordinating authority on international health within the UN system, with a mandate to lead global efforts to control and eliminate infectious diseases. Working through its Geneva-based headquarters, six regional offices, and 149 country and territory offices, WHO provides evidence-based guidance to support the scale-up of cost-effective interventions that help to bring down the disease burden, by preventing and treating infection, illness and death. Within WHO, the Cluster for HIV/AIDS, Tuberculosis, Malaria and Neglected Tropical Diseases (WHO/HTM) is working closely with WHO regional offices, country offices and partners to contribute to these new global

priorities, building on the work that has been done in the context of the MDGs.

This report reviews the achievements of the MDG era (Chapter 2) and key factors behind the successes achieved (Chapter 3). It then discusses the new global strategies that have been developed by WHO to achieve SDG Target 3.3, and the key cross-cutting elements that will be required to end the epidemics of endemic infectious diseases within the next 15 years (Chapter 4). The report serves as a springboard for further discussion and strategic development across the WHO network, with Member States and with WHO's external partners.



2 ACHIEVEMENTS DURING THE MDG ERA

Key messages

Efforts towards the achievement of MDG 6 have led to significant decreases in incidence, mortality and prevalence of HIV, TB and malaria. Despite NTDs being sidelined in the MDGs, the NTD response has also delivered several positive results.

HIV: By 2014, annual new HIV infections had dropped to 2.0 million, down from 3.1 million in 2000, representing a decline of about 35%. HIV-related deaths fell by 24% between 2000 and 2014, from 1.6 million to 1.2 million, respectively. From the peak in 2004, HIV-related deaths fell by 42% by 2014. The number of people living with HIV rose from an estimated 9.0 million in 1990 to 36.9 million in 2014, due in part to a substantial improvement in survival rates.

Tuberculosis: Globally, TB incidence fell by an average of 1.5% per year between 2000 and 2014, for a cumulative reduction of 18%. There were an estimated 9.6 million new cases in 2014. The mortality rate fell by 47% worldwide between 1990 and 2015, with most of that improvement occurring during the MDG period. TB prevalence also dropped steeply, falling by 42% between 1990 and 2015.

Malaria: Malaria incidence rates fell by 37% globally between 2000 and 2015, with the number of cases dropping from an estimated 262 million cases to 214 million. The malaria mortality rate dropped by 60% between 2000 and 2015, with an estimated 438 000 malaria deaths occurring in 2015. Despite this progress, about 3.2 billion people in 97 countries and territories were still at risk of being infected with malaria in 2015.

Neglected tropical diseases: The main achievements for NTDs include an 80% drop in new human African trypanosomiasis cases between 2000 and 2014, to fewer than 4000 cases; near elimination of visceral leishmaniasis (kala-azar) in the Indian subcontinent; the near-eradication of dracunculiasis (guinea worm); and 18 countries being able to stop preventive chemotherapy for lymphatic filariasis, and eight countries for trachoma.

Progress towards the three explicit MDG infectious disease targets is one of the outstanding achievements of the MDG era. MDG 6 called for efforts to combat HIV/AIDS, malaria and other major diseases. It comprised two subtargets on HIV, and one on malaria and other major diseases.¹ Although no other infectious disease was mentioned by name in the goals and targets themselves, TB incidence, mortality and prevalence were three of the indicators chosen to track progress on Target 6C.² Viral hepatitis and NTDs were not part of the MDGs, despite the heavy disease burden they impose.

Progress on HIV has been particularly striking. The pronounced reversal in the HIV mortality trend resulted from a decade or so of extraordinary

efforts. These efforts included breakthroughs in basic research and development (R&D) of medicines and diagnostics; an unprecedented mobilization of financial and technical resources; and a massive scale-up in the coverage and technical support for evidence-based treatment interventions. The viral hepatitis curve tells a very different story, and is a stark reminder of how things might have been in the absence of MDG-related initiatives.

Of the five distinct hepatitis viruses, hepatitis B virus (HBV) and hepatitis C virus (HCV) account for the large majority of cases, with an estimated 240 million and 130-150 million people chronically infected, respectively (4). In 2013, HBV and HCV together caused 1.4 million deaths (6), which was higher than the estimated 1.27 million HIV deaths (including 0.4 million TB deaths among HIV-positive people) in the same year,³ 1.1 million TB deaths among HIV-negative people and 465 000 malaria deaths (7-9).

1 Target 6A: Have halted by 2015 and begun to reverse the spread of HIV/AIDS; Target 6B: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it; Target 6C: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.

2 Indicator 6.9: Incidence, prevalence and death rates associated with TB; Indicator 6.10: Proportion of TB cases detected and cured (3).

3 Deaths from TB among HIV-positive people are officially classified as deaths caused by HIV/AIDS in the *International classification of diseases* (available at: <http://www.who.int/classifications/icd/en/>).

The group of NTDs includes multiple diseases that arise from four different kinds of causative pathogens:

- Chagas disease, human African trypanosomiasis (HAT) and leishmaniasis are caused by protozoa;
- Buruli ulcer, leprosy, trachoma and yaws are caused by bacteria;
- cysticercosis/taeniasis, dracunculiasis, echinococcosis, foodborne trematodiasis, lymphatic filariasis, onchocerciasis (river blindness), schistosomiasis and soil-transmitted helminthiasis are caused by helminths; and
- dengue, chikungunya and rabies are caused by viruses.

Together, the above-mentioned NTDs represent a disease burden of at least 22 million disability-adjusted life years (DALYs) (142), roughly half the burden of TB or malaria (10).

This chapter also outlines progress on the epidemics of NTDs and hepatitis, underlining the fact that major advances have been made despite these diseases being neglected in the MDGs.

2.1 Achievement #1 – reducing the incidence rate

The emphasis of MDG 6 was on epidemic *control*, with the main aim being to halt or reverse trends in infection and disease. For each of the diseases considered here, achieving that goal posed very different challenges, and results varied, as outlined below.

HIV incidence

Progress in reducing the incidence of HIV between 2000 and 2015 was substantial (Fig. 2.1), and the MDG target was attained in 2013. Annual new infections fell to 2.1 million that year, down from 3.1 million in 2000, a decline of about 33% (11). Nevertheless, about 2 million people per year are still becoming infected with HIV, so the epidemic continues to spread. Indeed, because of improved survival rates, the HIV-positive population continues to grow, albeit at a slower rate. Of course, the slower rate of increase is good news, as is the number of new infections averted over the past 15 years. It has been estimated that, without the global response that was mounted in 2000 and boosted in 2002, there would have been 6 million new infections in 2013 alone. Cumulatively, since 2000, it is estimated that at

least 30 million new HIV infections have been averted (11).

One of the greatest achievements of the global HIV response is the steep reduction in new HIV infections among children aged under 15 years, largely due to the rapid expansion of use of antiretroviral drugs (ARVs) for prevention of mother-to-child transmission (PMTCT) of HIV. New HIV infections among children dropped by 58% between 2000 and 2014, falling from 520 000 new infections in 2000 to 220 000 in 2014 (11). In the 21 countries with a high number of pregnant women living with HIV, new infections among children fell by 48% between 2009 and 2014.

The use of ARVs in PMTCT has been so successful that elimination of this mode of infection is now a realistic goal, and WHO is leading the approach to validate elimination in countries. More than 80 countries now report fewer than 50 new HIV infections among children each year and, in June 2015, Cuba became the first country to be certified as having eliminated new HIV infections in children altogether. Annual new infections among young people (aged 15–19 years) have also fallen dramatically, dropping by 37% between 2000 and 2014. In this case, the main driver of progress has been behavioural change, including increased condom use, fewer multiple sexual partnerships and delayed sexual debut.

Tuberculosis incidence

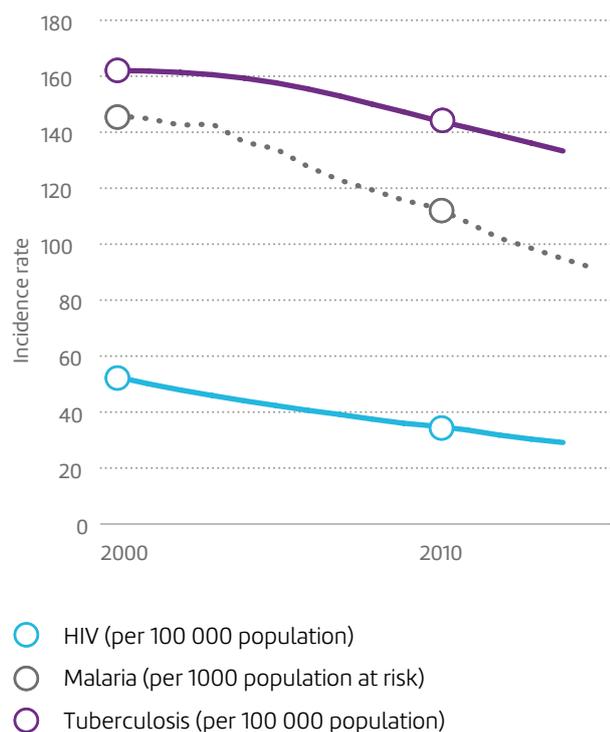
TB incidence fell at an average rate of 1.5% per year globally over the period 2000–2014, giving a cumulative reduction of 18%. The MDG target to halt and reverse TB incidence was achieved worldwide: in each of the six WHO regions, and in 16 of the 22 high-burden countries that collectively account for 80% of global TB cases (9). The fastest decline (4.5% per year in the past decade) was in the WHO European Region.

Globally, much of the explanation for the relatively slow decline in TB incidence is the problem posed by latent TB infection. About 2–3 billion people worldwide are latently infected with TB, and have a lifetime risk of developing TB disease of 5–15%. They therefore constitute a pool from which cases of disease continue to arise each year, even when transmission of infection has been reduced.

In 2014, there were an estimated 9.6 million new cases: 5.4 million men, 3.2 million women and 1.0 million children. Of the 9.6 million TB cases in 2014, 58% were in the WHO South-East Asia Region and the Western Pacific Region. The WHO

African Region had 28% of the world's cases in 2014, but had the most severe burden relative to population – 281 cases for every 100 000 people – more than double the global average of 133. India, Indonesia and China had the largest number of cases, with 23%, 10% and 10% of the global total, respectively.

Fig. 2.1. Global trends in HIV, TB and malaria incidence rates 2000–2015



Source: Estimates by WHO, UNICEF and UNAIDS (8, 9, 12)

Malaria incidence

The MDG 6 target for malaria also focused on halting and reversing the incidence rate. Despite the identical targeting, the HIV and malaria epidemics are quite different, the most obvious difference being that malaria is an acute disease that is curable. In 2000, malaria caused an estimated 262 million cases, more than 80% of which occurred in sub-Saharan Africa. Since 2000, there have been substantial reductions in malaria cases, with about 214 million cases estimated to have occurred in 2015. The decline in the number of cases is even more impressive when it is considered that, during the same period, the population at risk of malaria increased by 31% globally. Taking into account population growth, malaria incidence is estimated to have decreased by 37% globally between 2000 and 2015 (12). Reductions in malaria incidence are estimated to have occurred in all regions of the world over

the past 15 years. Of 106 countries and territories with malaria transmission in 2000, some 102 across all MDG regions are estimated to have met MDG Target 6C (12).

Incidence trends for viral hepatitis and NTDs

With regard to viral hepatitis and NTDs, the incidence picture is more complex. To begin with, both are disease groups rather than single diseases, and within those groups there are multiple diseases to consider, as outlined below.

Viral hepatitis incidence

As explained above, of the five distinct hepatitis viruses, HBV and HCV account for the greatest health burden. The lack of data precludes reliable estimates of incidence, mortality and prevalence trends for hepatitis, but recent studies offer some insights (5, 13). With regard to HBV, it appears that there was a decline in prevalence of chronic infection in most regions between 1990 and 2005, probably due to expanded immunization programmes. Within this overall positive trend, however, there are significant regional variations. For example, regions in central and tropical Latin American saw prevalence fall on average to below 2%, while the WHO African Region still carries a heavy burden, with an estimated 8% prevalence in western Africa and 5–7% in central, eastern and southern Africa. For HCV, the overall picture is of a steadily expanding epidemic, with global prevalence increasing from about 2.3% in 1990 to 2.8% in 2005 (i.e. from 122 million to 185 million people) (5, 13). Despite the missed opportunity of the MDGs and the general lack of attention to viral hepatitis, it is possible to highlight some important achievements that bode well for the future, the most important being the wide-scale implementation of universal childhood vaccination for HBV (14).



Neglected tropical diseases incidence

Despite being sidelined in the MDGs, an integrated approach to the prevention and control of NTDs began to take shape in the early years of the MDG era, and has delivered several positive results, including:

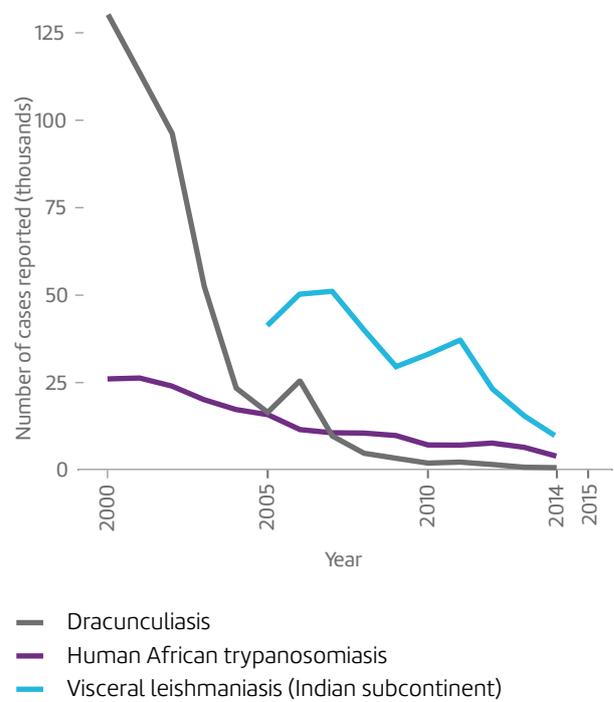
- an 80% drop in new HAT cases between 2000 and 2014, to fewer than 4000 cases;
- a reduction of 75% in the number of cases of visceral leishmaniasis (kala-azar) in Bangladesh, India and Nepal between 2005 (the year a regional programme was launched) and 2014, down to 10 209 cases; and
- near-eradication of dracunculiasis (guinea worm) – in 2000, there were more than 130 000 cases of guinea worm, whereas in 2014, there were only 126 cases.

The reported number of cases of these three NTDs targeted for elimination or eradication is depicted in Fig. 2.2.

There was also progress towards the interruption of transmission of other NTDs for which cases are not reported to WHO. This resulted, for example, in 18 countries being able to stop preventive chemotherapy for lymphatic filariasis by 2014, and eight countries reporting achievement of prevalence targets for trachoma's elimination as a public health problem by 2015. These and

other NTDs that have been eliminated in certain countries or that are under surveillance for verification of elimination are mapped in Fig. 2.3.

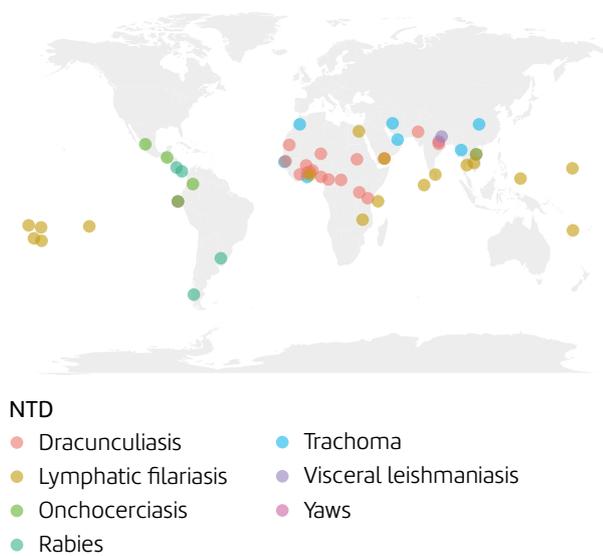
Fig. 2.2. Reported number of cases of three NTDs targeted for elimination or eradication



Source: WHO Global Health Observatory (<http://www.who.int/gho/database/en/>)



Fig. 2.3. Countries in which one or more NTDs have been eliminated or are under surveillance for verification of elimination



Source: WHO Global Health Observatory (<http://www.who.int/gho/database/en/>)

2.2 Achievement #2 – reducing the mortality rate

In many ways, the reductions in mortality rates are even more impressive than the fall in incidence, reflecting the fact that the curative interventions for the diseases considered here – including malaria, TB and NTDs – are currently highly effective. Together, HIV, TB, malaria, NTDs and hepatitis are estimated to have caused about 4.3 million deaths in 2014 (6, 8, 9, 12, 16, 142).

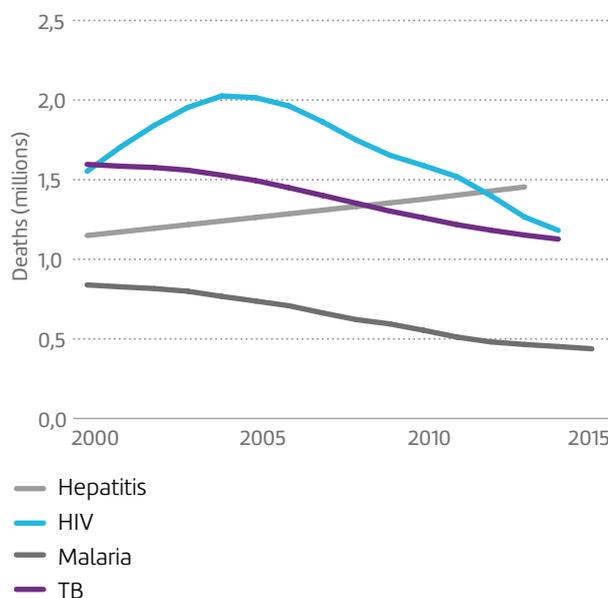
HIV mortality

HIV-related deaths declined by 24% between 2000 and 2014, with HIV claiming an estimated 1.2 million (980 000–1.6 million) lives globally in 2014, compared to 1.6 million (1.3–2.1 million) in 2000 (Fig. 2.4) (11). However, the mortality rate has fallen by 42% since the 2004 peak in HIV-related deaths. The drop in AIDS-related mortality has been even steeper among children aged under 15 years, due to the enormous progress made with PMTCT and to the expansion of paediatric HIV treatment.

Tuberculosis mortality

TB programmes have also helped achieve a remarkable drop in the TB mortality rate, which fell by 47% between 1990 and 2015, with most of the improvement coming since 2000 (9). The global target of halving the TB mortality rate by 2015 compared with 1990 was met in four WHO regions – the Region of the Americas, the Eastern Mediterranean Region, the South-East Asia Region and the Western Pacific Region – and in 11 high-TB-burden countries. Between 2000 and 2014, an estimated 43 million lives were saved through effective TB diagnosis and treatment. However, the disease burden remains large. In 2014, TB killed some 1.5 million people (of whom 1.1 million were HIV-negative and 0.4 million HIV-positive), including 890 000 men, 480 000 women and 140 000 children. About 78% of total TB deaths and 73% of TB deaths among HIV-negative people occurred in the WHO African and South-East Asia regions, and India and Nigeria together accounted for about one third of global TB deaths.

Fig. 2.4. Global trends in HIV, TB, malaria and hepatitis mortality 2000–2015



Source: Estimates by WHO, UNAIDS, and IHME (6, 8, 9, 12, 16)

Malaria mortality

Malaria programmes helped achieve a 60% drop in global malaria mortality rates between 2000 and 2015, when there were an estimated 438 000 malaria deaths, reflecting a major push to expand prevention and treatment coverage (7, 12). In certain countries, the number of deaths fell even faster. For example, 58 of the 106 countries that had ongoing transmission in 2000 were projected to achieve reductions in malaria mortality rates of at least 75% by 2015 or, where zero malaria deaths had been achieved, to maintain that level. It is estimated that 1.2 billion fewer malaria cases and 6.2 million fewer malaria deaths occurred globally between 2001 and 2015 than would have been the case had incidence and mortality rates remained unchanged since 2000 (12).

Neglected tropical diseases mortality

Progress on NTD-related mortality includes a reduction in deaths caused by visceral leishmaniasis, rabies, schistosomiasis, HAT, Chagas disease and soil-transmitted helminthiasis. Deaths from these diseases were estimated to stand at 142 000 in 2012, down from about 220 000 in 2000 (142). This decrease does not reflect the number of deaths due to dengue, which is estimated to have increased since 2000 (142). Much of the burden of NTDs is borne in terms of morbidity rather than mortality, and progress on morbidity has also been good (albeit somewhat less dramatic than that on mortality), with a decrease of 19% in the total number of DALYs between 2000 and 2012, from 1% of the global burden of disease to 0.8% (142).

2.3 Achievement #3 – reducing prevalence

HIV prevalence

The number of people living with HIV increased sharply, from an estimated 9.0 million in 1990 to 36.9 million in 2014. The increase since the early 2000s reflects a huge improvement in survival rates, following the rapid expansion of effective antiretroviral therapy (ART) for HIV over the past 15 years. By mid-2015, 15.8 million people living with HIV were receiving ART (11). Of those, 11.4 million were living in the WHO African Region, an exceptional accomplishment considering that, in 2000, only about 11 000 people in this region were receiving ART. As ART coverage increases, so will HIV prevalence, with bigger demands on the health systems responsible for providing care.

Tuberculosis prevalence

In terms of HIV, TB and malaria, TB programmes appear to have made the most progress on reducing prevalence, with an estimated 42% drop in global TB prevalence between 1990 and the end of 2015. An even greater reduction ($\geq 50\%$) was achieved in three WHO regions – the Region of the Americas, the South-East Asia Region and the Western Pacific Region – and in nine high-burden countries (9). There were an estimated 13 million prevalent cases of TB in 2014, equivalent to 174 cases per 100 000 population.

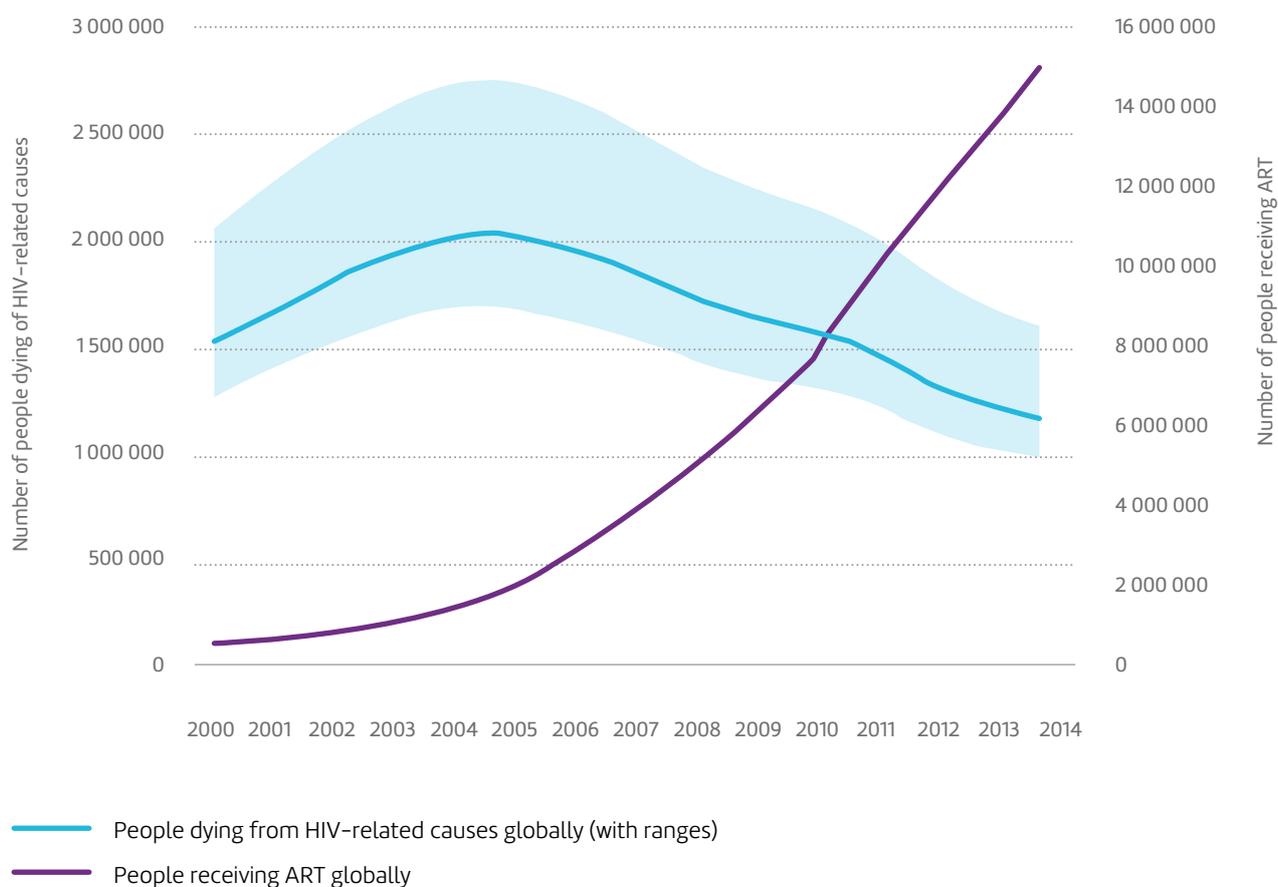
Malaria prevalence

Important progress was made on malaria, too. According to the latest parasite prevalence surveys, the proportion of children infected with malaria parasites has been halved in endemic areas of Africa since 2000 (140). Infection prevalence among children aged 2–10 years is estimated to have declined from 33% (uncertainty interval [UI]: 31–35%) in 2000 to 16% (UI: 14–19%) in 2015, with three quarters of this change occurring after 2005 (140). The number of people infected with malaria (including both symptomatic and asymptomatic cases) fell from 171 million in 2000 to 127 million in 2013 – a reduction of 26% (140). This occurred despite a 43% increase in the African population living in malaria-transmission areas.

2.4 Massive scale-up of effective interventions

The scale-up of interventions is not a health outcome but is the driver of health outcomes, and is in itself a considerable achievement. Progress on infectious diseases has been founded on the massive expansion of evidence-based interventions, supported by solid research. Such research has not only produced drugs, diagnostics and other technologies, but has also enabled barriers to implementation to be overcome, resulting in increased access to interventions in communities. With regard to ART for HIV, for example, the global total of people receiving treatment has doubled every 3–4 years since 2000 (Fig. 2.5).

Fig. 2.5. Number of people dying from HIV-related causes annually and numbers of people receiving ART globally, 2000–2014



Source: WHO estimates (11)

HIV: PMTCT and treatment scale-up

The scale-up of the use of ARVs in PMTCT was particularly successful. PMTCT reduces the transmission rate for HIV to below 5%, compared to rates of 15–45% in untreated mothers and infants (15). It is estimated that, worldwide, about 73% of pregnant women living with HIV received ARVs as part of PMTCT by the end of 2014, up from 53% in 2009 and just 1% in 2000. An estimated 150 000 children died of HIV-related causes in 2014, down 48% from the peak in 2004, when 290 000 (260 000–320 000) children died (11).

The world reached the ART coverage target of 15 million people (set by the UN General Assembly Special Session on HIV and AIDS in 2011) in March 2015, 9 months ahead of schedule (16). Since 2000, ART is estimated to have averted 7.8 million deaths globally, including 5.4 million deaths in the WHO African Region.

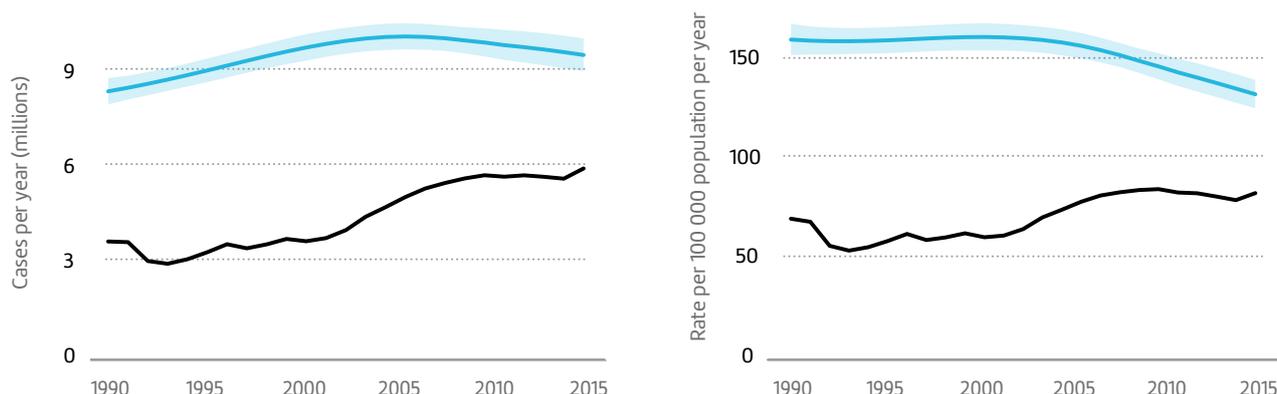


Tuberculosis: treatment scale-up

For TB, the biggest increases in treatment coverage were achieved in the late 1990s and early 2000s. It was at this time that the DOTS strategy recommended by WHO was widely adopted and expanded, including by the three highest burden countries (China, India and Indonesia), which collectively accounted for 43% of estimated global TB cases in 2014 (9). By 2007, virtually all countries had adopted

DOTS (17). The case detection rate for new and relapse cases also improved, increasing from 38% in 2000 to 63% in 2014 (9). The global TB treatment success rate has been sustained at about 85% since 2005. The lowest success rate is that of the WHO European Region, with 76% among newly detected cases, mainly due to the high incidence of drug-resistant TB. Between 2000 and 2014, TB prevention, diagnosis and treatment interventions saved an estimated 43 million lives (9).

Fig. 2.6. Global trends in the absolute number of notified TB cases (black) and estimated TB incidence (blue), 1990–2014

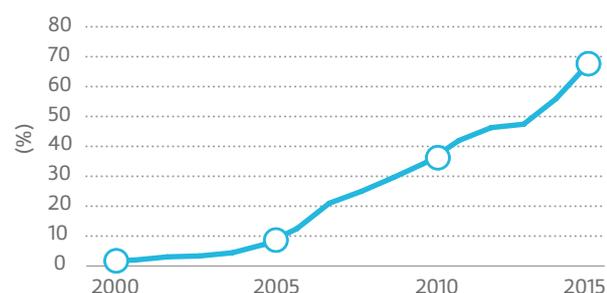


Source: WHO estimates (9)
Case notifications include new and relapse cases (all forms).

Malaria: prevention and treatment scale-up

For malaria, the gains of the past 15 years have been largely due to a massive expansion in prevention and treatment interventions, including insecticide-treated mosquito nets (ITNs), indoor residual spraying (IRS), diagnostic testing and artemisinin-based combination therapy (ACT). (Fig. 2.7) From 2000 to 2015, one billion ITNs were distributed in Africa (7). In sub-Saharan Africa, it is estimated that malaria-control interventions accounted for 70% of the reductions in malaria incidence between 2001 and 2015, averting 663 million malaria cases (UI: 542–753 million). Of the 663 million cases averted, it is estimated that 69% (UI: 63–73%) were averted due to use of ITNs, 21% (UI: 17–29%) due to ACT and 10% (UI: 6–14%) due to IRS (140).

Fig. 2.7. Proportion of children under five sleeping under insecticide-treated mosquito nets, sub-Saharan Africa, 2000 – 2015

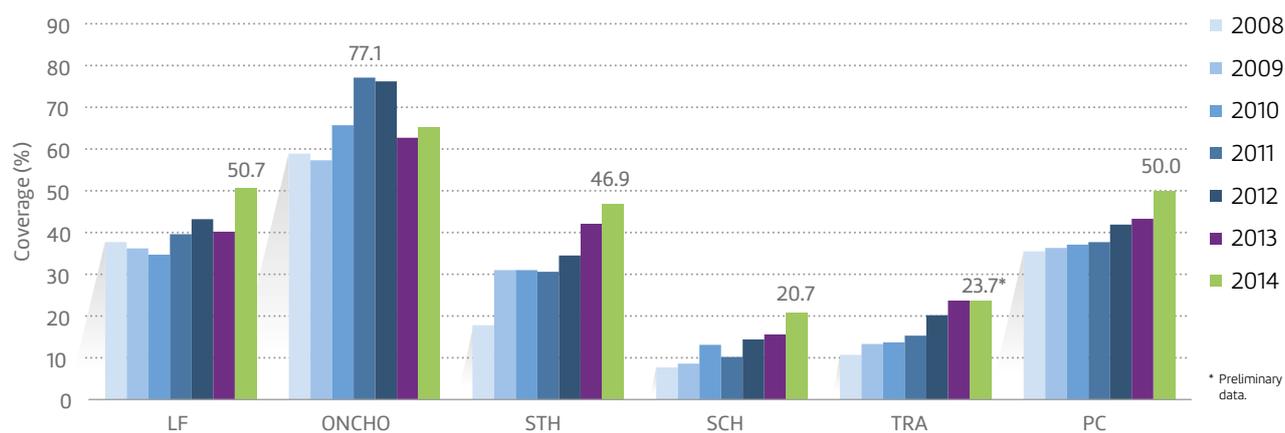


Source: WHO and UNICEF (12)

Neglected tropical diseases: treatment scale-up

Despite resource constraints, the NTD response has also expanded coverage for preventive chemotherapy. Between 2006 and 2014, more than 7 billion NTD treatments were delivered to people in need (141). In areas with co-endemicity, medicines are delivered for more than one NTD at a time. In 2012 alone, more than 800 million people were treated for at least one NTD (141). However, success is not measured only by increases in the number of people receiving treatment –sustainability is driven by reductions in the number of people requiring it. The number of people requiring mass treatment has decreased by 315 million for lymphatic filariasis alone (141). Expansion in coverage continued apace in 2014, with about 850 million people treated (141). Globally, about 50% of people requiring preventive chemotherapy for at least one NTD were receiving it by 2014 (Fig. 2.8) (18).

Fig. 2.8. Global status of NTD preventive chemotherapy, 2008–2014



LF, lymphatic filariasis; ONCHO, onchocerciasis; SCH, schistosomiasis; STH, soil-transmitted helminthiases; TRA, trachoma

Source: WHO, 2015 (18)

Viral hepatitis: vaccination scale-up

Global coverage with three doses of HBV vaccine has significantly increased since 2000 (Fig. 2.9.) It is estimated to have reached 82% by 2014, and over 90% in the WHO Region of the Americas and the Western Pacific Region (143). The latter region is on track to reach its goal of reducing the prevalence of chronic HBV infection to less than 1% by 2017. In China, vaccination efforts have reduced the prevalence of chronic HBV infection to less than 1% among children (144). Globally, an estimated 4.9 million deaths could be averted between 2011 and 2020, as a result of hepatitis vaccination efforts in 73 countries (19).

Fig. 2.9. Global immunization coverage with a third dose of hepatitis B vaccine in infants, 1990–2014



Source: WHO, UNICEF and data from Member States (143)



2.5 Conclusion

It is clear that progress towards MDG 6 has, on the whole, been impressive. The steep declines in incidence for HIV and malaria, the decline in TB incidence and the progress made in bringing down the mortality rate for all three of these diseases is cause for celebration, as is the progress made in regard to several NTDs and HBV.

Among the various reasons for the successes described, the most obvious is the galvanizing effect of the MDGs themselves. The adoption of the MDGs in 2000 was followed by an unprecedented commitment of resources to MDG-related activities across a wide range of global and national initiatives, including major increases in development aid. There was also a sharper focus on measurement and monitoring – key aspects of the MDG process that spurred countries to make greater efforts, ensured accountability, and allowed policy-makers to identify areas of relative strength and weakness. The infectious disease programmes targeting HIV,

TB and malaria have been major beneficiaries of those developments, and of the research that has driven the development of drugs, diagnostics and other technologies while supporting improved implementation in the field.

Despite the fact that NTDs were omitted from the MDGs, there has been considerable progress as a result of more integrated approaches to the control of several diseases. Also, collaborations have been developed; for example, with health workers at local community level and with all those involved in research and innovation at the global level.

Hepatitis B vaccination programmes have been a key element of the public health response to viral hepatitis. The development of effective treatment for chronic hepatitis B and hepatitis C infection provide opportunities for the expansion of a public health approach to hepatitis treatment.

Chapter 3 looks in more depth at the key factors behind the successes achieved, including the contribution made by WHO.



3 THE MAIN DRIVERS OF PROGRESS

Key messages

The global development picture underpins progress in controlling infectious diseases, supporting favourable trends in incidence, mortality and prevalence.

The MDGs drove progress by focusing on a narrow set of realizable goals (with corresponding indicators and targets) that were understandable, time bound and measurable. WHO played an important role in setting these goals and targets, and supported the development and implementation of monitoring and evaluation systems.

Progress depended on developing viable strategies and evidence-based norms concerning disease-control interventions and approaches. WHO contributed to developing global strategies and action plans to address the major infectious diseases, developed through broad consultation processes that engaged Member States and development partners.

Increased partnership and collaboration were key to driving advocacy and coordinating action. HIV, TB and malaria have been the principal beneficiaries of increased collaboration, but there has also been some consolidation of resources and alignment of effort around viral hepatitis and NTDs.

Country-level ownership and leadership was vital, including the involvement and participation of governments, communities, nongovernmental organizations and activists.

The unprecedented mobilization of resources around MDG-related activities was a key contributor to success, although resources were not always optimally distributed.

Progress was driven by research and innovation, yielding new drugs, vaccines, diagnostic technologies and other technologies, but also new ways to implement interventions, such as increased use of task shifting among health workers, and greater reliance on community-based initiatives.

Tracking progress towards the MDGs required a significant investment in developing and measuring indicators; it allowed stakeholders to track progress, determine whether interventions were working and ensure accountability.

Despite ongoing challenges, health system strengthening played an important role in supporting the activities of infectious disease programmes, and often such programmes also strengthened health systems.

Several factors contributed to the MDG achievements highlighted in Chapter 2. They include an improving global development picture; consensus around clear goals, backed by viable strategies and normative guidance; strengthening or establishment of global partnerships and collaboration; country-level leadership that involves civil society; increased resources, research and innovation; monitoring

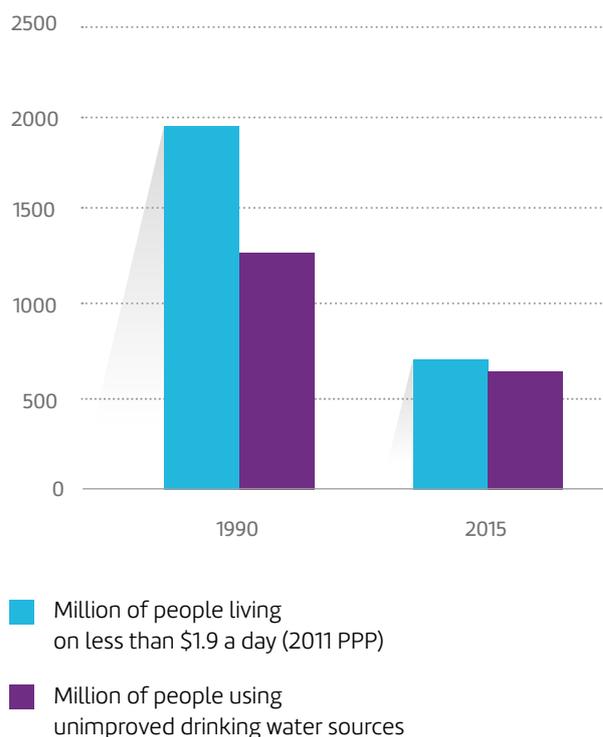
and evaluation (M&E) systems; and broader efforts to strengthen health systems. This chapter discusses these factors, providing illustrative examples for HIV, TB, malaria, viral hepatitis and NTDs, and highlighting the specific contribution of WHO. Key milestones in the fight against HIV, TB, malaria, viral hepatitis and NTDs are listed in the Annex.

3.1 An improving global development picture

The broader global development picture provides the backdrop for progress in controlling infectious diseases. Improvement across a range of key development areas has supported favourable trends in incidence, mortality and prevalence. One example is the rapid growth in the economies of many disease-endemic countries. Although such growth has been unevenly distributed, overall, it has translated into improved nutrition, housing, water, sanitation, transport and healthier behaviours.

Two examples of progress are reductions in the number of people living in poverty and in the number using an unimproved source of drinking water (Fig. 3.1). In 1990, about 2 billion people were living on less than \$1.90 per day; by 2015, this had fallen to about 600 million. The number of people using an unimproved source of drinking water decreased from 1.3 billion to 657 million in the same period.

Fig. 3.1. Number of people living in poverty and using unimproved drinking-water sources



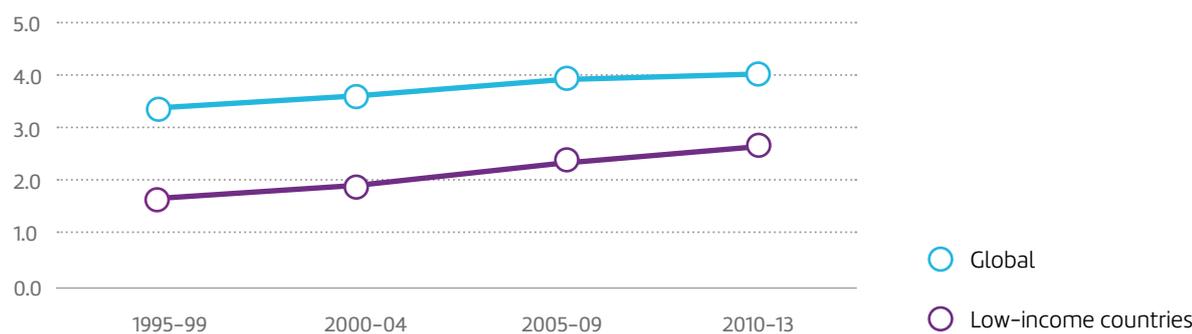
Source: World Bank, WHO/UNICEF (20, 21)



Overall economic growth has also been translated into increased expenditures on health and, in some countries, a commitment towards achieving UHC. Notable examples are Ghana (22) and Turkey (23). Growth in spending on health as a percentage of gross domestic product (GDP) has been relatively modest (Fig. 3.2), with spending on health increasing from 3.4% to 4.1% of GDP on average across 190 countries (the increase in low-income countries has been greater, from 1.7%

to 2.6% of GDP). However, government health expenditure per capita increased by about 40% between 2000 and 2013, with increases reported in all regions. This reflects the increased priority given to health in government budget allocations, as well as slight increases in fiscal capacity. These wider development trends will continue to have a strong influence on infectious disease epidemics, and vice versa.

Fig. 3.2. Public expenditure on health as a percentage of GDP, 1995–2013



Values are unweighted averages. Country income grouping is according to the World Bank analytical income classification of economies based on the 2013 Atlas estimates of gross national income per capita.

Source: WHO, 2015 (24)

3.2 Consensus around clear goals

The Millennium Summit of September 2000 brought together heads of state or government from 149 countries, and high-ranking officials from over 40 other countries. Participants agreed on the need for change and were ready to set explicit (albeit voluntary) commitments to deadlines for change (25). The MDGs thus formalized consensus around a limited set of goals that were clear, time bound and measurable, and provided the basis for concerted global and national efforts to achieve them (2). WHO played a key role in guiding global efforts to implement the MDGs, and supported countries in the development and implementation of the M&E systems needed to track progress. WHO also supported global efforts through its regular assessment of global, regional and country trends in disease burden and recommended interventions.

3.3 Viable strategies

Clear goals need to be backed by viable strategies for achieving them. WHO, the Joint United Nations Programme on HIV/AIDS (UNAIDS), the Roll

Back Malaria (RBM) Partnership and the Stop TB Partnership made a key contribution to progress by developing global strategies and action plans to address the major infectious diseases. Such strategies were developed through broad consultation processes that engaged Member States and partners. Most WHO strategies were endorsed by the World Health Assembly. In addition, the World Health Assembly and WHO regional committees adopted several disease-specific resolutions, setting goals and targets. Prominent examples of global WHO strategies are listed below.

- **HIV.** WHO developed a series of global strategies to outline the health sector contribution to the multisectoral HIV strategies of UNAIDS, including the Global Health Sector Strategy for HIV/AIDS 2003–2007 (26) and the Global Health Sector Strategy on HIV/AIDS 2011–2015 (27). Both were supported by regional strategies. The next HIV strategy will be considered by the World Health Assembly in 2016.
- **Tuberculosis.** The DOTS Strategy (1995–2005) and the Stop TB Strategy (2006–2015) were developed by WHO. These strategies guided global and national TB control efforts throughout the MDG era, and were supported by

regional strategies. The latest global TB strategy – the End TB Strategy – was endorsed by the World Health Assembly in 2014.

- **Malaria.** For malaria, WHO had only regional strategies and action plans during the MDG era. These were underpinned by the WHO Global Malaria Strategy, which was adopted by a ministerial conference in Amsterdam in 1993. The latest strategy, the Global Technical Strategy for Malaria 2016–2030, was adopted by the World Health Assembly in 2015.
- **Viral hepatitis.** In 2010, the World Health Assembly adopted resolution WHA63.18 on viral hepatitis. To facilitate implementation of the resolution, a framework for global action to prevent and control viral hepatitis infection was launched. In May 2014, the World Health Assembly called for the development of national viral hepatitis strategies. In September 2014, work was initiated on development of a global health sector strategy on viral hepatitis for the period 2016–2021, which will be considered by the World Health Assembly in 2016. The draft strategy promotes the first set of global hepatitis targets.
- **Neglected tropical diseases.** WHO was instrumental in directing efforts towards a more comprehensive approach to NTDs that addressed the health needs of poor and otherwise marginalized communities rather than simply focusing on specific diseases (28). In 2007, WHO articulated a Global Plan to Combat NTDs, 2008–2015, and in 2012 launched the associated Roadmap for Implementation. The latter sets targets for universal access to interventions and for the eradication, elimination or control of 17 NTDs by 2020 (29).

3.4 Guidance and support

To support an expansion of access to prevention, diagnosis, treatment and care, WHO has made available evidence-based guidance to countries and partners. The organization does this through its headquarters, six regional offices and 149 offices in countries, territories and areas. To implement this guidance, WHO has provided technical support to ministries of health, government agencies and other partners, and has helped countries to review and update their national strategies and action plans on infectious diseases. The organization has also assisted in the development and implementation of regional plans, convened partners to agree to common approaches, and guided efforts to build sustainable institutional capacities.

In line with its constitutional mandate, WHO provides integrated solutions to the complex set of epidemiological and operational challenges that affect countries and regions. It also works closely with other UN agencies, intergovernmental organizations, donors, academic and research groups, nongovernmental organizations (NGOs) and other technical partners whose work is fundamental to the successful implementation of WHO technical guidance. Examples of recent global technical guidance documents and strategies are listed in Box 3.1.

WHO also offers technical support to countries (particularly their ministries of health) for the implementation of the strategies, and identifies resource requirements (often as part of global planning led by WHO). All of these activities are undertaken in the context of overall WHO efforts to strengthen health systems. Box 3.2 gives more detail on the role of WHO.



Box 3.1. Examples of recent WHO global technical guidance documents and strategies

Global guidance documents

- *Guidelines for stopping mass drug administration and verifying elimination of human onchocerciasis: criteria and procedures*, December 2015 (30)
- *Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV*, September 2015 (31)
- *Consolidated guidelines on HIV testing services*, July 2015 (32)
- *Control and elimination of Plasmodium vivax malaria – a technical brief*, July 2015 (33)
- *Consolidated strategic information guidelines for HIV in the health sector*, May 2015 (34)
- *Guidelines for the treatment of malaria*, Third edition, April 2015 (35)
- *Guidelines for the prevention, care and treatment of persons with chronic hepatitis B infection*, March 2015 (36)
- *Policy brief on single-dose primaquine as a gametocytocide in Plasmodium falciparum malaria*, January 2015 (37)
- *Guidance on temporary malaria control measures in Ebola-affected countries*, November 2014 (38)
- *Guidelines on the management of latent tuberculosis infection*, October 2014 (39)
- *Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations*, July 2014 (40)
- *Implementation research toolkit, 2014* (41)
- *A global action framework for TB research in support of the third pillar of WHO's end TB strategy*, November 2015 (42)
- *Digital health for the End TB Strategy – an agenda for action*, September 2015 (43)
- *Systematic screening for active tuberculosis: an operational guide*, August 2015 (44)
- *Implementing tuberculosis diagnostics: A policy framework*, April 2015 (45)

Global strategies

- *End TB Strategy 2016–2035*, May 2014 (46)
- *Global Technical Strategy for Malaria 2016–2030*, June 2015 (47)
- *Global Health Sector Strategy on HIV, 2016–2021* (in development)
- *Global Health Sector Strategy on Viral Hepatitis, 2016–2021* (in development)

Global monitoring reports

- *World malaria report*, December 2015 (7)
- *Global health sector response to HIV, 2000–2015: focus on innovations in Africa: progress report*, November 2015 (48)
- *Global tuberculosis report*, October 2015 (9)
- *Investing to overcome the global impact of neglected tropical diseases: third WHO report on neglected tropical diseases*, March 2015 (49)

Box 3.2. The role of WHO with regard to infectious diseases

WHO is the directing and coordinating authority on international health within the UN system, with a mandate to lead global efforts to control and eliminate infectious diseases. Working through its Geneva-based headquarters, six regional offices, and 149 country and territory offices, the organization provides evidence-based guidance to support the scale-up of cost-effective interventions that help to bring down the disease burden, and prevent infection, illness and death. In addition to generating policy and technical guidance, WHO supports programme implementation through provision of technical assistance, and by advocating for accelerated action at all levels to tackle these diseases.

In line with its core roles, WHO monitors global, regional and country disease burden trends and responses, and makes its analyses available to countries and global health partners. It also monitors implementation of WHO technical guidance, and regularly evaluates progress towards internationally agreed global targets through reports for the World Health Assembly and – for some diseases – the UN General Assembly. WHO regularly provides data to the UN Statistical Commission, and the organization's monitoring reports on HIV, TB, malaria, viral hepatitis and NTDs have become key reference documents for endemic countries, donors and development partners.

WHO also supports countries in strengthening their disease surveillance systems to improve the quality, availability and management of data on infectious diseases, and to optimize the use of such data for decision-making and programmatic responses. The organization helps countries to conduct national reviews on disease-focused programmes. It supports efforts to ensure affordable access and secure supply of quality-assured essential medicines, diagnostics and other health commodities, including through the management of the Prequalification of Medicines Programme and the evaluation of vector-control products and compounds through the WHO Pesticide Evaluation Scheme (WHOPES). WHO also provides guidance on the integrated delivery of services, including on the diagnosis and treatment of HIV and TB infections, PMTCT of HIV, HBV and syphilis, and community case management of malaria, pneumonia and diarrhoea.

WHO's policy-setting processes are responsive to the rapidly changing context of infectious diseases. Independent expert groups have been set up for HIV, TB, malaria, viral hepatitis and NTDs to regularly review evidence in the areas of prevention diagnostics, treatment, care, drug and insecticide resistance, and strategic information, to inform the development of policy guidance, guidelines and clinical and operational tools. WHO relies on these groups for advice as it sets and updates global policies and recommendations. The organization also promotes the research and knowledge generation that is required to accelerate progress on infectious diseases. Finally, WHO supports efforts to build capacity, particularly in countries, to adapt and implement such policies and guidelines, and monitor and report on progress.

WHO collaborates closely with:

- other UN agencies such as UNAIDS and the United Nations Children's Fund (UNICEF);
- intergovernmental organizations, such as the African Union and Association of Southeast Asian Nations (ASEAN);
- donors, academic and research groups, NGOs and other technical partners; and
- NGOs and civil society.

WHO hosts several global partnerships and special programmes such as UNITAID and the Special Programme for Research and Training in Tropical Diseases.¹ The organization is also a cosponsor of UNAIDS, participates on the boards of the Global Fund to Fight AIDS, Tuberculosis and Malaria, and of GAVI, the Vaccine Alliance, and sits on the advisory panels of product development partnerships and other groups.

¹ The Stop TB Partnership transitioned into another hosting arrangement in the course of 2014–2015 (the UN Office for Project Services, UNOPS), and the RBM Partnership secretariat was disestablished in 2015 following a decision by its board.

3.5 Increased partnership and collaboration

Although the MDGs were a major factor in bringing people together, this had started to happen before 2000, as evidenced by the founding of powerful associations dedicated to mounting coordinated responses, all of which were established or initiated in the 20th century:

- UNAIDS was established in January 1996;
- the RBM Partnership was founded in 1998, jointly created by WHO, the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), and the World Bank; and
- the WHO-led Stop TB Initiative, which later became the Stop TB Partnership, was established following a meeting of the First ad hoc Committee on the Tuberculosis Epidemic, held in London in March 1998 (50).

The value of these partnerships in driving advocacy and coordinating action would be hard to overstate. A prime example was the work of UNAIDS and WHO on the "3 by 5" initiative – a global movement launched in 2003 by WHO, along with UNAIDS and a broad range of partners, that was committed to scaling up ART to reach

3 million people by the end of 2005. That target was reached in 2007. The initiative drove a rapid increase in the uptake of ART, and demonstrated that relatively complex treatment services and interventions could be rolled out in resource-poor countries and settings (16). As part of that initiative, and working in collaboration with the World Bank and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), UNAIDS also encouraged a focus on the "three ones" principles of:

- one agreed HIV action framework (a nationally devised strategic plan to coordinate the work of all partners and ensure national ownership);
- one national AIDS coordinating authority (e.g. a national AIDS council); and
- one agreed country-level M&E system.

Another good example of partnership strengthening advocacy and mobilizing collaborative action is the work of the Stop TB Partnership. This has grown to include more than 1300 international and technical organizations, government programmes, research and funding agencies, foundations, NGOs, and civil society, private sector and community actors. As part of global advocacy and resource mobilization efforts, it developed three global plans to stop TB, based on WHO's global



TB strategies. The partnership also established a Global TB Drug Facility in 2001 – a procurement mechanism that was created to solve problems experienced by countries in the 1990s in finding and funding stable high-quality TB drug supplies. By 2014, the Global Drug Facility had delivered more than 24 million treatment courses to 133 countries.

The RBM Partnership brought together more than 500 partners, including donors and multilateral development organizations, product development partnerships, NGOs, research and academic organizations and the private sector. The Partnership Secretariat, hosted by WHO, engaged in high-level advocacy to build political support for malaria control and elimination efforts, and worked to facilitate collaboration, policy coordination and communication among partners. It engaged a number of high-level ambassadors in the fight against the disease, and published two major action plans: the Global Malaria Action Plan in 2008 (51), and the Action and Investment to Defeat Malaria (2016–2030) (52) in 2015.

Although it is clear that HIV, TB and malaria have been the principal beneficiaries of increased collaboration, there has also been some consolidation of resources and alignment of effort around hepatitis and NTDs. With regard to the former, multistakeholder engagement has been key to the development and roll out of HBV vaccination; for example, with GAVI, the Vaccine Alliance, taking a lead role in bringing together the key players. Similarly, the collaboration of stakeholders in the Safe Injection Global Network – a voluntary coalition set up in 1999 with the support of the United States (US) President's Emergency Plan for AIDS Relief (PEPFAR) and a secretariat provided by the WHO Department of Essential Health Technologies – has been crucial to promoting greater injection safety and a reduction in the global burden of HIV and viral hepatitis (53).

NTDs have also benefited from more integrated approaches to prevention and control, which have coalesced around the WHO Global Plan to Combat Neglected Tropical Diseases, 2008–2015, and the associated Roadmap for Implementation. Inspired by the roadmap, a group of high-profile stakeholders – including the US Agency for International Development (USAID), the World Bank, the Bill & Melinda Gates Foundation and several pharmaceutical companies – came together under the London Declaration of 2012, pledging to provide the resources necessary for

implementation. A cornerstone of the London Declaration is the contribution of donated drugs from pharmaceutical companies. Since the adoption of the London Declaration, over 5.5 billion tablets have been donated, providing 3.5 billion treatments. In 2014, 1.45 billion treatments were made available to endemic countries, representing a 36% increase over 2011 (54).

3.6 Country-level leadership and the involvement of civil society

Country-level ownership and leadership, with the involvement and participation of communities, have been essential to the success of all responses to infectious diseases. For example, since the introduction of WHO's DOTS/Stop TB Strategy, political commitment has formed the bedrock of all TB control efforts (55) – notably in Brazil, China, India and South Africa, countries that have played major roles in shaping WHO's new post-2015 TB strategy. Country-level leadership has also been crucial in driving domestic funding for NTD prevention and control in middle-income countries. In 2012, India delivered preventive chemotherapy to 421 million people, more than any other country, using domestic resources to completely cover the cost of delivery of donated medicines (49).

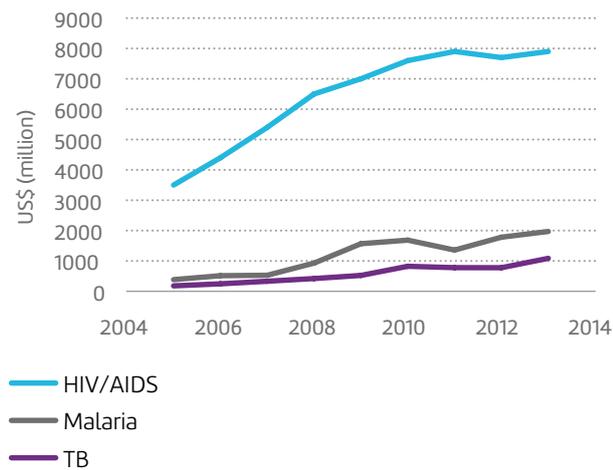
Grass-roots partnerships that bring together activists and NGOs have also been important in driving different agendas, the prime example being HIV. Starting in urban "gay" communities in the Americas and Europe, and in largely women-led community groups in Africa, HIV advocacy groups grew into a global health movement that framed the issue of access to treatment in terms of social justice and human rights, globalizing demands for access to affordable treatment (11). The value of this approach has been widely recognized, and many of the strategies now being pursued include significant rights-based components rooted in ideas of community empowerment.

3.7 Increased resources

There was an unprecedented mobilization of resources around MDG-related activities (2). Disbursements for development assistance for health tripled after 2000, growing at a faster rate than domestic health spending, although the rate of growth has slowed somewhat since the global financial and economic crisis that started in 2008.

An estimated 61% of all development assistance for health disbursed from 2000 to 2014 was targeted at initiatives related to the three MDG health goals, primarily to HIV (Fig. 3.3) (2). Official development assistance (ODA) for HIV doubled between 2005 and 2013 to US\$ 7.9 billion per year, a figure that dwarfs the ODA funding directed to other infectious diseases (56).

Fig. 3.3. ODA disbursements from donor governments, 2005–2013 (in constant 2013 US\$)



Source: Organisation for Economic Co-operation and Development data (56)

The drive to boost funding for disease programmes began in 2001 with UN Secretary-General Kofi Annan’s call for the establishment of a special

fund for AIDS. The Global Fund was created the following year, and rapidly became the largest multilateral health financing mechanism, and one of the largest donors, not only for HIV, but also for TB and malaria. The Clinton Health Access Initiative was established shortly afterwards, and focused on working alongside governments and other partners to lower the costs of HIV treatment and to help build the necessary in-country systems. In 2003, funding for HIV got an enormous boost with the creation of PEPFAR, which initially committed \$15 billion over 5 years, and was renewed in 2008 with a pledge of \$48 billion over a further 5 years (57).

Cumulatively, more than US\$ 84 billion was invested in the HIV response between 2002 and 2014, US\$ 44 billion of which came from PEPFAR. The Global Fund has disbursed more than US\$ 15.7 billion for HIV since its inception – about 50% of its total disbursements (of the remainder, about 32% was used for malaria and 18% for TB). Total funding for HIV (domestic and external) in 2015 is estimated to stand at US\$ 21.7 billion.

UNITAID is the most recent financing mechanism for HIV, TB and malaria. Created in 2006, it focuses on greater access to treatment and diagnostic commodities in low-income countries.

TB and malaria have received much less international donor funding than HIV. Total funding for TB (international and domestic) rose



from US\$ 1.7 billion in 2002² to US\$ 6.6 billion in 2015 (9). Overall, 87% (US\$ 5.8 billion) of the US\$ 6.6 billion available in 2015 was from domestic sources. International donor funding reached US\$ 0.8 billion in 2015 and dominates in the group of 17 high-burden countries outside the BRICS (Brazil, Russia, India, China and South Africa) (72% of the total funding available in 2015) and in low-income countries (81% of the total funding available in 2015) (9). Annual funding for malaria control and elimination increased tenfold between 2000 and 2014, to US\$ 2.5 billion (7), of which 78% came from international sources, predominantly the Global Fund and the US President's Malaria Initiative.

Overall, domestic spending for HIV, TB and malaria – both government and private – has increased. It remains the dominant source of health financing even in low-income countries.

The NTD response has had to depend largely on ad hoc and fragmented financing, with domestic financing at the local level supplemented by charities and community volunteers. The most notable exception was the African Programme for Onchocerciasis Control (APOC). This programme,

2 WHO began monitoring government and international donor financing for TB in 2002.

which was established by a multilateral World Bank Trust Fund and directly implemented by WHO, helped the governments of 20 countries to deliver donated ivermectin for the control of onchocerciasis (58). The financing situation for NTDs as a whole began to change following the 2012 London Declaration and since then, several international partners have committed new funding. From 2012 to 2014, foreign aid amounted to about US\$ 200–300 million per year, an amount that was important to programmes but small relative to amounts going into other disease responses. Pharmaceutical companies are fulfilling commitments to sustain and expand drug donations through 2020.

There is no major global funding mechanism for hepatitis, nor is there sufficient donor aid or adequate domestic funding in many countries (14). Supporting countries to develop investment cases and funding proposals to mobilize resources, and to formulate national health financing plans that incorporate viral hepatitis services and interventions, are key objectives of the draft Global Health Sector Strategy on Viral Hepatitis, which will be considered by the World Health Assembly in 2016 (59).



3.8 Research and innovation

Without various breakthroughs in treatment, diagnostics, and other interventions such as ITNs to prevent malaria, the successes of the past 15 years would not have happened. The same is true of implementation and operational research, both of which are required to realize the potential of new products and approaches (60). Progress towards the MDGs has depended heavily on increasing research on disease problems that affect the most neglected populations, and in particular on increasing the participation of the disease-endemic countries themselves, both as research users and providers. WHO has played a key role in orienting research towards areas that have contributed to MDG-related progress.

WHO hosts and cosponsors the Special Programme for Research and Training in Tropical Diseases (TDR), which is co-sponsored by UNICEF, UNDP and the World Bank. TDR plays a pivotal role as a facilitator and adviser in the global health research arena (61). It has led research:

- in support of five major NTD elimination campaigns;
- in generating evidence demonstrating the effectiveness of ITNs and ACT; and
- in supporting implementation research for onchocerciasis.

TDR was also pivotal in the development of six of the 22 products for NTDs registered or WHO-prequalified during 2000–2011, and led or participated actively in the development of three of these products. TDR's work on strengthening research capacity includes training thousands of individual researchers in disease-endemic countries, and supporting local researchers to run clinical trials and to develop a community-based approach to treatment delivery, two good examples being artemisinin to treat malaria, and ivermectin to treat onchocerciasis and lymphatic filariasis.

TDR has also been active in supporting public-private partnerships (PPPs), notably the Global Alliance for TB Drug Development in 2000 and the Drugs for Neglected Diseases initiative in 2003. Together with the Bill & Melinda Gates Foundation, TDR set up the Foundation for Innovative Diagnostics in 2003, a PPP that is dedicated to the development of accurate and affordable diagnostic tests for developing countries. In recognition of TDR's impact on health and its vital contribution to attaining the MDGs, UNICEF became a TDR cosponsor in 2003.

Innovative products are among the principal benefits yielded by research. The HIV response would have been unthinkable without the development of ARVs in the 1990s, originally administered as a monotherapy and subsequently using combinations of at least three ARVs (62, 63). ACT was a breakthrough treatment for malaria, which WHO recommended for the treatment of uncomplicated *P. falciparum* malaria in all endemic countries in 2001 (64). In the same year, WHO prequalified the first fixed-dose ACT, Coartem, a combination of the artemisinin derivative artemether and lumefantrine (AL). AL tablets have been included on the WHO model list of essential medicines since March 2002, and have progressively replaced other antimalarial medicines as the treatment of choice. With regard to TB, two novel anti-TB drugs – bedaquiline and delamanid – have recently been developed and registered for use in patients with multidrug-resistant TB (MDR-TB).

Breakthroughs in diagnostics include easy-to-use, fast diagnostic tests for HIV, malaria and TB. The rapid diagnostic test for malaria can be used by people untrained in traditional laboratory techniques, or in situations where the necessary equipment is unavailable. It enables health workers to distinguish between malarial and nonmalarial fevers, allowing antimalarial medicines to be targeted only to those who need them (12). The Xpert MTB/RIF test is also quick, fully automated, and able to identify both the presence of TB and of rifampicin-resistant TB. The test was first recommended by WHO in 2010, and is steadily replacing sputum smear microscopy, which requires a day, is subject to human error and does not permit detection of resistant strains (65).

Innovation is not limited to new products, but can also take the form of new ways to tackle old problems. A prime example is the implementation of innovative service delivery interventions to expand coverage of HIV health services, including increased use of task shifting among health workers, and greater reliance on community-based initiatives (66). The WHO African Region has taken a lead in this area, developing innovative service delivery models that combine the respective strengths of clinics and communities, and health and community workers; such models also extend traditional health delivery deep into communities (48). The large-scale delivery of single-administration medicines by nonmedical personnel (e.g. teachers) for the control of NTDs is another example of innovative approaches to delivering primary health-care services (67).

Research on community-based approaches has also been key to ensuring delivery of both artemisinin (to treat malaria) and ivermectin (to treat onchocerciasis and lymphatic filariasis) to as many people in need as possible. Indeed, research on community-directed treatment with ivermectin, often supported by TDR, informed APOC's work. The programme focused on empowering communities to take responsibility for ivermectin delivery – deciding how, when and by whom the ivermectin treatment should be administered. The award in 2015 of the Nobel prize to researchers who developed artemisinin and ivermectin highlights the global recognition of the importance of these discoveries (68).

3.9 Better data and monitoring

Measuring progress using a well-defined set of indicators and targets for each goal was a core component of the MDG endeavour. Baseline assessments and tracking of progress were systematically used to determine whether interventions were working and to ensure accountability. This required considerable investments in routine M&E systems and special surveys at national and global levels. WHO worked closely with countries to improve surveillance systems, and to gather and assess data on disease trends, policy adoptions, interventions, commodities and gaps.

At the global level, annual progress reports were produced by the Inter-agency and Expert Group on MDG indicators, coordinated by the UN Statistics Division, and based on the contributions of technical agencies including WHO for all health-related indicators and targets (69). Regular monitoring of progress towards the health MDGs (70) was called for by the World Health Assembly in 2008. Thus, from 2009, annual reviews of progress were conducted based on a report prepared by the secretariat, derived from WHO's annual statistical overview, the WHO Global Health Observatory and the contributions of WHO offices at all three levels of the organization (71, 72).

WHO also issued annual progress reports to comprehensively track progress and challenges on all diseases. Examples of global monitoring processes are outlined below.

AIDS response progress reporting

For HIV, a global AIDS response progress reporting mechanism was established, supported by governments, civil society and development partners. The mechanism has had one of the

highest response rates of any international health and development monitoring mechanism (16). Countries have used data for decisions to focus their interventions on the changing epidemic, with increasingly disaggregated geographical and key population data to support decisions at global, national and local levels (48). Increased investments in population-based surveys and disease surveillance, combined with better population-based measurement methods (including testing for HIV antibodies), have resulted in better data, while also improving global reporting.

Global TB monitoring

Global TB monitoring in the MDG era built on the system first established by the Global TB Programme in WHO in 1995. By October 2015, 20 rounds of annual TB data collection had been completed and 20 global TB reports had been published. Throughout this period, core data reported by about 200 countries and territories each year (covering >99% of the world's population and TB cases) included case notifications and treatment outcomes using standard recording and reporting formats first developed in the mid-1990s. From 2006, substantially intensified efforts to measure progress towards 2015 targets for reductions in TB incidence, mortality and prevalence set in the context of the MDGs were made under the umbrella of the WHO Global Task Force on TB Impact Measurement.³ By 2015, mortality was estimated from direct measurements for 129 countries, 18 countries had implemented a national TB prevalence survey following WHO guidelines in the period 2009–2015, notification data were reported for over 200 countries and territories, and global consensus was achieved on methods to be used for reporting on 2015 targets.

Annual malaria report

WHO has produced an annual malaria report since 2008, describing trends in programme funding, intervention coverage and disease trends. Monitoring of progress is challenging because malaria predominates in countries with the weakest health systems and where recording and reporting of health events is suboptimal. Some of these challenges have been overcome

³ The Task Force's three strategic areas of work were strengthened surveillance towards the ultimate goal of measuring incidence and mortality directly from notification and vital registration systems, respectively; national TB prevalence surveys in 22 global focus countries; and periodic review of methods used by WHO to produce TB disease burden estimates (73).



by the increasing use of household surveys, and a “malaria indicator survey” in particular. Analytical methods developed by WHO and its partners emphasize the need to combine various sources of data in order to obtain the most accurate picture of progress. In the most recent report, *World malaria report 2015*, data were assembled from all 96 countries and territories with ongoing malaria transmission, and a further six countries that have recently eliminated malaria and were implementing measures to prevent re-establishment of transmission (7).

Donation of NTD medicines

To meet heightened demand for donated NTD medicines, in 2013 WHO launched a joint mechanism and tools to support the delivery of such medicines. A set of forms is available to facilitate application for donated medicines, and reporting on their delivery, and to improve programme coordination and implementation: a Joint Request Form assists countries in quantifying the number of tablets required; a Joint Reporting Form simplifies reporting requirements on the number delivered; and an Epidemiological Data Reporting Form helps demonstrate impact. This mechanism puts each country’s ministry of health in control, by centralizing all requests

for medicines within the country, across all implementing partners (49).

Monitoring UHC

It is worth noting that both ART and TB treatment coverage indicators are among the eight “core” indicators proposed by WHO and the World Bank for the monitoring of UHC (21), reflecting (among other things) their strong track record in measurement. With regard to NTDs, the WHO/World Bank report recognizes that “monitoring [NTD] preventive chemotherapy coverage remains key to ensuring that the diseases of the least well-off are being prioritized from the very beginning of the path towards UHC” (21).

Health system strengthening

Despite ongoing challenges, health system strengthening has played a critical role in ensuring the effective delivery of infectious disease interventions and services; in turn, disease programmes have augmented health systems. Even though health system strengthening was not an explicit focus of the MDGs, many countries – often supported by global partners, and prompted to act by increased prosperity and popular demand (the two often going together, of course) – have made

multiple investments in specific components of health systems that have led to improvements in key areas. For example, in many countries, particularly in sub-Saharan Africa, programme implementation has been facilitated by the strengthening of public health delivery systems and health workforces (12). Similarly, several countries have initiated or developed pro-poor policies that support progress towards UHC targets.

With specific regard to infectious diseases, an increased number of health facilities and, in some countries, national health insurance schemes have made malaria services more accessible by reducing geographical and financial barriers (2). In China, where TB control is the responsibility of the National Center for Tuberculosis Control and Prevention, health system improvement, along with foreign and domestic funding for TB control, has been key to increasing TB case notifications from 2003 onwards. China met WHO implementation targets by 2005, and achieved all three of the 2015 targets (9, 67).

As mentioned above, infectious disease programmes have played an important role in supporting and improving health systems (summarized at Box 3.3). With regard to malaria, for example, the scale-up of intermittent preventive treatment in pregnancy has strengthened a package of services known as “focused antenatal care”. Additionally, the drive for universal diagnostic testing of suspected malaria has reinforced management of all febrile illnesses at the facility level, while the acceleration of

community-based diagnosis and treatment of malaria at the periphery of health services has helped to tackle two other childhood killers – pneumonia and diarrhoeal disease (67).

In areas where NTD control is one of the first health services proposed, it is difficult to separate its benefits from those of more general health care. For example, preventive chemotherapy for NTDs often serves as the catalyst for accelerated delivery of cost-effective primary care (49). The preventive chemotherapy strategy for NTDs launched by WHO in 2006 includes an operational model for strengthening primary health care that addresses fundamental health system elements such as drug supply chains; systems for monitoring, surveillance and evaluation; and mechanisms for engaging community action.

Similarly, work on HIV has yielded important collateral benefits in the prevention, diagnosis, treatment and care of other infections and health conditions, including cancers. Investments in HIV research have also catalysed research in various branches of health sciences, including virology, immunology, clinical care and social sciences, which have benefited a broad range of other health areas. Examples include molecular diagnostics for TB, better treatments for Kaposi sarcoma, and improved fungal antigen detection and treatment of cryptococcal meningitis (16).

In addition to global infectious disease control efforts, research also plays a crucial role in strengthening health systems, by providing evidence on how to improve the effectiveness of health system performance in support of UHC.

Box 3.3. How global infectious disease control efforts have supported health systems

The global response to HIV, TB, malaria, viral hepatitis and NTDs, including the contribution of research, has contributed to health system strengthening in a variety of ways; for example, by:

- promoting policies based on the evidence generated by research and rolling out cost-effective interventions;
- improving basic health infrastructure and commodity-delivery systems;
- establishing or improving effective M&E and surveillance systems;
- building and strengthening laboratory capacities and networks;
- promoting comprehensive childhood immunization programmes;
- establishing drug and insecticide resistance monitoring, and improving preparedness to tackle such challenges;
- training health workforce and expanding community-based programmes;
- mobilizing communities as key actors in health policy and delivery of health services;
- promoting innovative models of service delivery to reach the most marginalized, vulnerable and at-risk populations;
- championing models of innovative health financing, and generating and guiding new investments in innovation and research;
- promoting the greater involvement of affected populations and communities in planning and implementing responses;
- extending the reach of health services through actively engaging with the private sector, communities and NGOs;
- stimulating multisectoral and cross-constituency partnerships, including PPPs;
- promoting more inclusive and transparent governance of health programmes; and
- freeing up some health resources (as a result of reduced disease burden of these infectious diseases) and thus allowing countries to shift focus to other health concerns.



3.10 Conclusion

This short account of the range of success factors that have contributed to the various achievements of the past 15 years in regard to the diseases under consideration offers several useful lessons. The upside of focusing on a narrow set of objectives, and of establishing easily understood, measurable indicators is evident from the progress made, as is the adoption of a simple, clear and time-bound framework that is compelling, easy to communicate and measurable.

Clear, measurable targets, supported by enhanced monitoring capacity have allowed donor governments, international agencies and country decision-makers to collaborate. This collaboration has focused attention and resources on areas of need regarding implementation of interventions,

the research and innovation underpinning progress, and measurement of the results of initiatives undertaken. Progress also depended on developing viable strategies and evidence-based norms concerning disease control interventions and approaches. WHO has made an important contribution by supporting Member States with technical guidance and by tracking progress.

Despite the many achievements of the past 15 years, several major challenges remain. The epidemics may have lost some of their momentum but they continue to spread, and people continue to die as a result. How the world responds to these challenges in the next 5 years will determine the chances for further success. Chapter 4 looks at the strategies designed as the basis for that response.



4 MOVING TOWARDS THE 2030 TARGETS

Key messages

Meeting the ambitious new targets for 2030 will require an acceleration of progress across all disease areas, and a number of concrete actions, including:

- rapidly expanding coverage of high-impact interventions that have demonstrated their effectiveness in the past 15 years, to consolidate progress and avoid the reversal of major trends;
- improving the quality and efficiency of interventions and services across the full continuum of health services, to ensure maximum impact;
- focusing efforts on areas and populations most at risk and affected, including those that have been overlooked in the past, as a means of accelerating progress towards ending the epidemics and as a matter of equity and human rights;
- supporting national governments in their wider role – ensuring leadership, ownership and accountability so that no one is left behind, which will require a much more locally adapted response;
- ramping up monitoring and surveillance efforts to provide more granular data to better focus investments (particularly as epidemics wind down), and building robust strategic information systems as core elements of national responses integrated into broader health-information systems for sustainability;
- strategically investing in health systems to provide a solid platform for sustained action, including a strong health workforce, adaptable health services, and reliable systems for ensuring uninterrupted supply of quality-assured and affordable health commodities;
- tackling resistance to drugs and insecticides, which presents a potential obstacle to accelerating and even sustaining progress;
- focusing research on developing the products (e.g. medicines and diagnostics), technologies and approaches to improved implementation and service delivery required to change the trajectory of the response, end the epidemics and counter resistance;
- investing wisely, by integrating essential infectious disease interventions into national health benefit packages; planning and budgeting for the incremental resources needed for an “end-game” strategy; optimizing the use of those resources, including through innovative financing mechanisms; and ensuring that the cost of achieving this public good is borne equitably, with no individuals facing financial catastrophe; and
- exploring opportunities for collaboration and, where appropriate, integrated delivery of interventions for infectious diseases, between diseases and within health systems.

4.1 Introduction

SDG Target 3.3 calls for an end to the epidemics of HIV, TB, malaria and NTDs by 2030 (74), and for efforts to combat hepatitis. The call for an end to these epidemics is understood to mean a major reduction of the global disease burden that would enable the world to meet the disease-specific 2030 targets set by Member States through the WHO and UNAIDS governing bodies. Attaining these objectives will mean surpassing the considerable achievements of the MDG era,

and will require several important strategy adjustments, including an intensification of core activities in the coming 5 years.

Accelerating responses and achieving the ambitious targets will require strong commitments, adequate resources and greater efforts on the part of national governments, whose responsibility for the stewardship of their health systems is underlined in all strategies. Implementing the strategies to end the epidemics outlined in this chapter will require a stronger enabling environment for the expansion of disease-focused interventions, including

innovations in service delivery, increased capacity and efficiency of health systems, greater resources, and an optimization of resources and service delivery.

Other enablers are less obvious; they concern the way in which services are linked, and mechanisms for effective collaboration within the health system and with other sectors such as agriculture, water and sanitation. These issues relate to the broader question of global health architecture and financing that tend to be fragmented – a feature that sometimes hampered the country-level initiatives undertaken in the MDG era. Global health architecture is likely to become a central concern in the coming years, especially given the multiplicity of the SDGs and the potential for even greater fragmentation (2).

4.2 Global targets for 2030

Though ambitious, the SDG target for infectious diseases is comparable to the goals and targets called for in various World Health Assembly resolutions and proposed in the relevant disease strategies. Box 4.1 summarizes the main targets for disease burden reduction. For example, the draft Global Health Sector Strategy on HIV, 2016–2021 (59), which is aligned with the UNAIDS strategy 2016–2021, seeks to reduce the global number of annual new HIV infections by 75% by 2020 (as compared with 2010) and HIV-related deaths to below 500 000 (as compared with 1.2 million deaths in 2014). By 2030, an accelerated response could reduce the annual number of new infections by 90%, and AIDS-related deaths by 80%. The incidence and mortality reduction targets set for malaria (47) are for a reduction of at least 90% relative to a 2015 baseline, and to eliminate malaria from at least 35 countries. For TB, the targets are a 90% reduction in mortality and an 80% reduction in incidence by 2030, compared with levels reported in 2015 (75).

The NTD strategy, which has in many ways been leading the charge towards ending epidemics, has 11 targets to eradicate or eliminate diseases, globally or regionally, by 2020. WHO's proposed NTD indicator for SDG Target 3.3 ("the end of the epidemics") is a synthesis of existing NTD targets with political endorsement in the most recent World Health Assembly resolution on NTDs, adopted in 2013. A single but meaningful global target of a 90% reduction in the number of people requiring interventions against NTDs has been proposed, to avoid the problem of multiple eradication, elimination and control targets for advocacy messaging.

The targeting of viral hepatitis is more challenging, given the lack of data on the global epidemic. The draft Global Health Sector Strategy on Viral Hepatitis, 2016–2021 (59) (the first to be developed) focuses mainly on HBV and HCV. Assuming a 2015 baseline of 6–10 million new cases of chronic HBV or HCV infections, the strategy targets a 95% reduction in the number of annual chronic HBV infections and a 80% reduction in annual chronic HCV infections by 2030. The mortality target assumes 1.4 million deaths for 2015, and aims for a 65% reduction for both HBV and HCV deaths by year 2030.

HIV, TB, viral hepatitis and NTDs also have explicit coverage indicators. For example, the draft strategy for viral hepatitis proposes service coverage targets for HBV vaccination, PMTCT of HBV, blood safety, safe injections, harm reduction, HBV and HCV diagnosis, and HBV and HCV treatment. HIV has service coverage targets for HIV testing and HIV treatment, and targets for financial risk protection and domestic financing. NTD coverage indicators include service coverage for Buruli ulcer and NTDs requiring preventive chemotherapy. The End TB Strategy includes a financial protection coverage indicator and target; in addition, 10 priority operational indicators related to intervention coverage have been defined. These indicators and targets reflect a strong shared orientation towards UHC, with the targets serving as milestones or key steps on the path towards UHC by 2030.

To achieve the different targets, WHO has developed global strategies based on a common vision of a world free of these infectious diseases, aligned with SDG Target 3.3. Each disease response has different challenges, but there are several elements common to all responses. A synthesis of the strategies for HIV, TB, malaria, viral hepatitis and NTDs, highlighting their areas of commonality, is provided in Box 4.1 and Box 4.2.



Box 4.1. Main WHO disease burden reduction targets for 2030

Vision: A world free of endemic infectious diseases

Sustainable Development Goal: “By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases, and combat hepatitis ...”

Indicators and targets

Indicator	Global targets for disease burden reduction
Incidence reduction	<p>HIV Reduce new HIV infections to less than 500 000 by 2020 (compared with 2.1 million new HIV infections in 2010), and by 2030 reduce the annual number of new infections by 90%</p> <p>TB Reduce TB incidence rate by 80% by 2030 (compared with 2015)</p> <p>Malaria Reduce malaria case incidence by at least 90% by 2030 (compared with 2015)</p> <p>Hepatitis Reduce number of annual chronic HBV infections by 95%, and annual chronic HCV infections by 80% (compared with 2015) (<i>proposed</i>)</p> <p>NTDs</p> <ul style="list-style-type: none"> • Eradication of guinea worm disease (2015) and yaws (2020) • Global elimination of leprosy (2020), lymphatic filariasis (2020), trachoma (2020), onchocerciasis (2025) and human African trypanosomiasis (2020, with zero incidence in 2030) • Regional elimination of schistosomiasis (2020), rabies (2020) and visceral leishmaniasis (2020) • Regional interruption of intra-domiciliary transmission of Chagas disease (2020) • 25% reduction in the number of cases of dengue (2020, compared with 2010)
Mortality reduction	<p>HIV Reduce global AIDS deaths annually to below 500 000 by 2020, and by 80% by 2030 (compared to 2010)</p> <p>TB Reduce TB deaths by 90% by 2030 (compared with 2015)</p> <p>Malaria Reduce malaria mortality rate by at least 90% by 2030 (compared with 2015)</p> <p>Hepatitis Reduce number of HBV and HCV deaths by 65% (compared with 2015) (<i>proposed</i>)</p> <p>NTDs 50% reduction in number of deaths due to dengue by 2020 (compared with 2010)</p>

Box 4.2. Main categories of interventions along the continuum of health services

Main category of intervention	Relevant diseases
Prevention	
• Social and behavioural change	HIV, TB, malaria, viral hepatitis, NTDs
• Injection and blood safety and universal precautions	HIV, viral hepatitis
• Harm reduction for people who use drugs	HIV, TB, viral hepatitis
• Immunization	TB, viral hepatitis (HAV, HBV, HEV)
• Preventive drug treatment	HIV, TB, malaria, NTDs
Testing, diagnosis and case-finding, and treatment	HIV, TB, malaria, viral hepatitis, NTDs
Care	HIV, viral hepatitis, NTDs
• Morbidity management and disability prevention	
Vulnerability and risk reduction	
• Vector ecology and management	Malaria, NTDs
• Water, sanitation and hygiene (WASH)	Viral hepatitis (HAV and HEV), NTDs
• Veterinary public health	TB, viral hepatitis (HEV), zoonotic NTDs

Principles

- Good governance, accountability, stewardship and M&E
- Coalition of communities and civil society
- Equity, ethics and human rights
- Accelerating efforts with local adaptation of global strategies

Key elements

- Patient-centred care
- Strong political commitment to ensure UHC and social protection
- Strengthening the enabling environment through multisectoral approaches, and health system policies conducive to disease control and regulatory support
- Harnessing innovation and expanding research

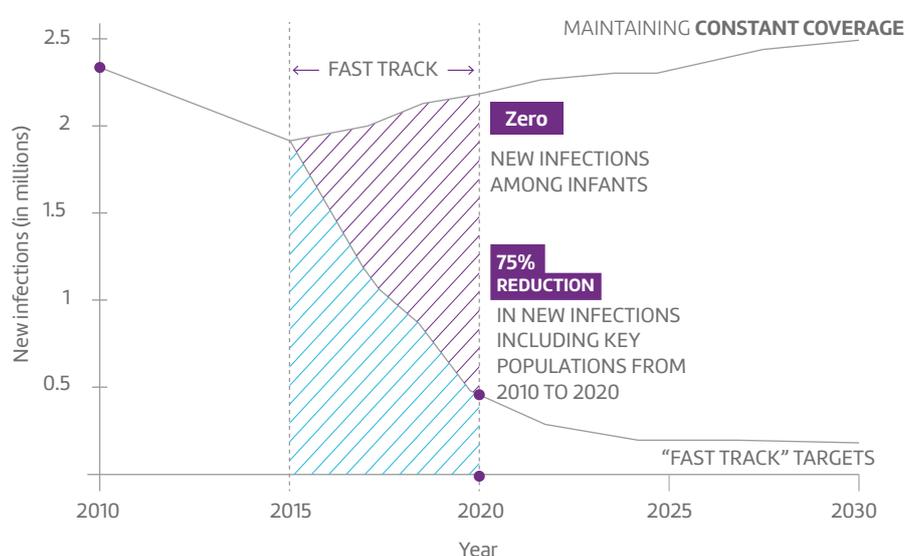
4.3 Intensifying efforts in the short to medium term

Attaining the stated targets will require a significant ramping up of activity in the short term. The strategies for HIV, malaria and TB all emphasize the importance of capitalizing on the achievements of the past 15 years, but also highlight the risk of losing hard-won terrain. The UNAIDS Fast Track approach calls for the frontloading of AIDS investments (16) to take advantage of the fragile window of opportunity presented. Their projections suggest that intensified action between 2015 and 2020 will result in a steep

decline in incidence, whereas a continuation of the current effort would risk a steady increase in AIDS-related deaths (76). WHO's draft Global Health Sector Strategy on HIV, 2016–2021 takes the same approach (Fig. 4.1) (77).

The importance of scaling up action in the next 5 years is also a key element of the RBM Partnership's *Action and investment to defeat malaria, 2016–2030* (52), which was developed through a broad stakeholder consultation process in 2014–2015. The Global Plan to Stop TB 2016–2020 developed by the Stop TB Partnership also makes this clarion call.

Fig. 4.1. Cost of inaction, number of AIDS-related deaths (2010–2030, various scenarios), decline in new HIV infections



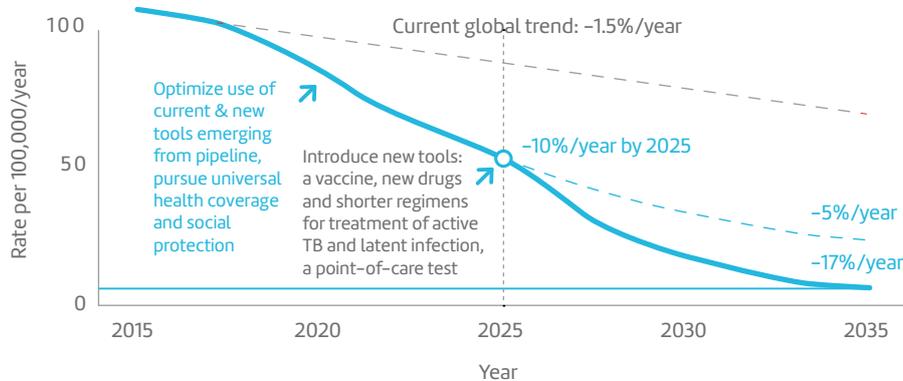
Source: UNAIDS (76)



The End TB Strategy frames the challenge in similar terms, stressing the fact that business as

usual will be insufficient to attain the ambitious targets established (Fig. 4.2) (46).

Fig. 4.2. Projected TB incidence rates per 100 000 population



Source: WHO. End TB Strategy (46)

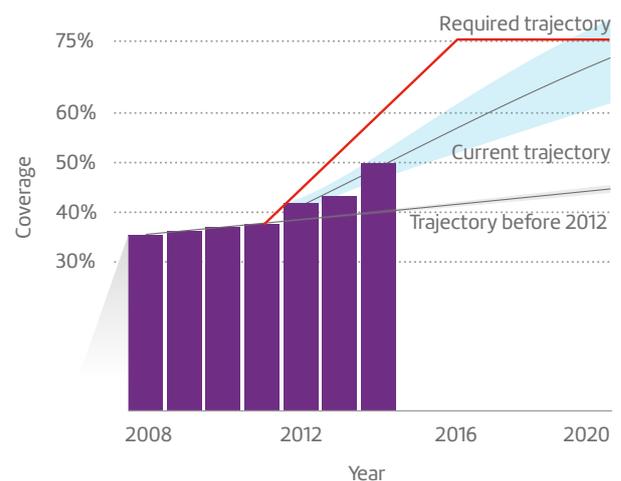
The malaria strategy focuses on attaining universal coverage of core interventions and accelerating efforts towards elimination and the attainment of malaria-free status. It also highlights the importance of enabling a rapid uptake of new tools, interventions and strategies at country level. Here too there is a concern with trend reversal, as the gains achieved between 2000 and 2014 are described as fragile and unevenly distributed. The strategy also warns of the potential for outbreaks of malaria in countries that were previously malaria free, and resurgences in countries that have made important progress in reducing malaria morbidity and mortality rates in the past decade (47).

With regard to NTDs, the story is one of sustaining in some areas and accelerating in others. For example, sustaining HAT elimination efforts since 2012 (when the NTD roadmap targets were set) should be enough to achieve the target of elimination as a public health problem by 2020 (Fig. 2.2 in Chapter 2), but acceleration is required to meet control and elimination targets for those NTDs for which the main intervention is preventive chemotherapy. Although the trajectory since 2012 already shows a marked improvement, the minimum level of coverage (75%) will not be achieved early enough (i.e. by 2016) to ensure that treatment can be stopped or its frequency reduced by 2020 (Fig. 4.3).

The draft Global Health Sector Strategy on Viral Hepatitis, 2016–2021 sets the first global

hepatitis strategies and promotes the adoption of a public health approach to addressing hepatitis epidemics. A package of six public health interventions have been identified for priority scale-up, including HBV vaccination, PMTCT of HBV, improved injection, blood and surgical safety, harm reduction for people who inject drugs, treatment for chronic HBV infection and curative treatment for chronic HCV infection.

Fig. 4.3. Trajectories towards coverage and elimination/control targets for preventive chemotherapy for NTDs

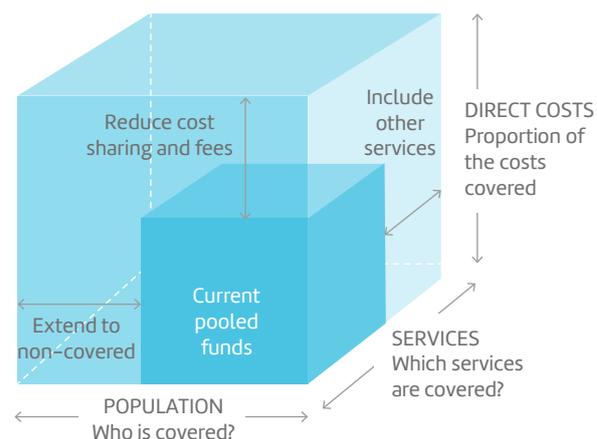


Analysis includes current and projected percentage of people receiving preventive chemotherapy for at least one disease (including lymphatic filariasis, onchocerciasis, schistosomiasis and soil-transmitted helminthiasis) out of the estimated number of people requiring preventive chemotherapy.

4.4 Ensuring universal coverage of key interventions

The achievements of the past 15 years attest to the effectiveness of the interventions that have been developed, but more needs to be done to ensure that key interventions for HIV, TB, malaria, viral hepatitis and NTDs reach everyone who needs them. This is in line with SDG Target 3.8, which is to achieve UHC (with UHC defined as “ensuring that all people can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship”) (78). UHC comprises two components – health service coverage and financial protection coverage – both of which need to be assessed at the level of the whole population. Thus, three dimensions – health services, finance and population – are typically represented in what has come to be known as the “UHC cube” (Fig. 4.4).

Fig. 4.4. Three dimensions of UHC (“the UHC cube”)



Source: WHO, 2010 (79)

The disease-specific strategies are all aligned with UHC goals or have explicit UHC components. These include defining an essential package of quality interventions and across the full continuum of services, expanding coverage of services to ensure they reach all who need them, and providing financial protection to minimize out-of-pocket payments and financial hardship. Specific areas of focus are highlighted below.



Prevention: social and behavioural change, harm reduction and universal precautions, and promotion of prevention commodities

All of the global strategies underline the importance of making progress on health promotion and disease prevention agendas. Effective prevention programmes require a combination of risk reduction and behavioural change communication, access to effective and quality prevention commodities, and a supportive social and legal environment, all of which reduce vulnerability and marginalization, and promote access to and uptake of services. For example, safer sex information and access to male and female condoms and lubricants continue to be critical interventions for preventing HIV transmission in all regions, with voluntary medical male circumcision an important intervention for high HIV prevalence settings. However, although there has been some progress in reducing risky sexual behaviour since 2000, condom use among men remains at only 22.2% because of insufficient knowledge about HIV, low acceptability and limited access (16). Other barriers to progress include social marginalization and punitive legal frameworks that stigmatize key populations (e.g. men who have sex with men, transgender people, sex workers and people who inject drugs); these barriers prevent people from accessing the health services they need and thus continue to drive the epidemic (16). The HIV and viral hepatitis strategies are focusing on ensuring high coverage of evidence-based interventions and services for key populations as a core objective. Notable among the interventions are those aimed at preventing parenteral transmission of HIV and viral hepatitis, including universal precautions, safe blood, injection safety and harm reduction (including opioid agonist pharmacotherapy and sterile needle and syringe programmes) for people who use drugs.

Prevention: preventive drug treatment

Preventive treatment is a focus for most of the disease areas. For example, a central strategic concern for NTD programmes is ensuring optimal population-wide delivery of free, single-dose, quality-assured medicines for preventive chemotherapy – used to tackle lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminthiasis, and trachoma (49). Only about half of people requiring preventive chemotherapy for at least one NTD currently receive it, and it is vital to boost coverage rates. If high-quality coverage is sustained for long enough – as few as 3 years for some

NTDs requiring preventive chemotherapy – transmission may be interrupted. Intermittent preventive therapy for malaria and isoniazid preventive therapy for TB may be more targeted, and focused on smaller numbers, but the programmes concerned are also committed to boosting coverage rates. Also of importance is the emergence of pre-exposure prophylaxis for preventing acquisition of HIV as a new addition to the HIV prevention intervention portfolio, along with the need to promote greater use of post-exposure prophylaxis for those exposed to HIV infection.

Testing, diagnosis and case detection

Improving diagnosis coverage is another strategic priority for disease programmes, each of which is struggling with different challenges. TB is a prime example because the initial symptoms of active TB may go unnoticed, which leads to delays in seeking care and to the infection (and reinfection) of others. The End TB Strategy aims to improve TB awareness, diagnosis and case reporting through the increased use of the rapid molecular diagnostic tests, the push for universal drug susceptibility testing, and systematic screening of high-risk individuals, along with preventive treatment to those who will benefit from it (80).

Lack of awareness of status is also a major concern with regard to viral hepatitis, because many infections cause no symptoms until there is irreversible damage to the liver (14). Improved testing strategies and approaches for HBV and HCV will be a key part of the push to expand viral hepatitis health service coverage.

With regard to HIV, an estimated 17.1 million of the 36.9 million people living with the disease are unaware of their status. In many cases this is because of a lack of symptoms, but it is also due to a lack of access to diagnostic services and the reluctance of individuals to access services, owing to the high levels of stigma and discrimination related to HIV infection.

Diagnostic testing for malaria is critical to ensure that antimalarial medicines are given only to patients that genuinely have malaria, and that patients with another febrile illness are able to get treatment appropriate for their condition. Asymptomatic infections also represent a reservoir of continuous malaria infection. A particular challenge is presented by *Plasmodium vivax* malaria, which has a hidden liver stage that is completely undetectable by current diagnostic methods, yet may be responsible for most of the malaria cases due to this parasite.

Early diagnosis of hepatitis infection is important for effective treatment and care. Yet globally, less than 5% of persons with chronic viral hepatitis are aware of their status. Hepatitis testing strategies are required to differentiate between acute and chronic infection, and different types of hepatitis infection. Awareness is lacking, and reliable and simple diagnostics that are appropriate for the setting of intended use and testing services are not sufficiently available. Diagnostics are also required to stage liver disease and guide initiation of treatment.

Treatment and care

As noted in Chapter 3, among the greatest achievements of the MDG era was the development of new treatments to tackle diseases. Unfortunately, too often, a significant proportion of the population in need of treatment still does not have access to it. The shortfall in ART coverage is a matter of particular concern, with only about four in 10 people with HIV receiving ART at the end of 2014 (11).

Malaria efforts are hampered by low treatment rates with the WHO-recommended ACT. There are several reasons for this:

- a large proportion of patients do not seek care, owing either to poor access to health-care providers or to a lack of awareness of necessary

care for fever, especially for children; and

- a significant proportion of patients seek care in the informal private sector, where rates of malaria diagnostic testing are low and ACT treatments are less likely to be available.

Only about two thirds of the new TB cases that occur each year are reported as both detected and treated by services of known quality. The other third of cases are either not being diagnosed, or are detected but not reported to national authorities; the quality of treatment and resulting treatment outcomes for cases in this category is unknown.

For NTDs that cannot be readily prevented using existing tools, disease management poses a particular challenge to coverage. Accessing care for Buruli ulcer, Chagas disease, dengue, HAT, leprosy and visceral leishmaniasis can impose a high financial burden on those affected, even when diagnosis and treatment are provided for free. Morbidity management and disability prevention, including hydrocele surgery and lymphedema management (as a consequence of lymphatic filariasis) is needed by those already suffering from the sequelae of infection.

Effective antiviral agents against chronic HBV and HCV infection have the potential to dramatically reduce morbidity and mortality. Direct-acting



antiviral drugs for the treatment of chronic HCV infection have cure rates exceeding 95%, with pan-genotypic regimens becoming available. Effective treatment is available for chronic HBV infection, although lifelong treatment is usually required. Of the 130–150 million people with chronic HCV infection, only 26–30 million are eligible for treatment according to the 2014 WHO guidelines (81).

Reducing risks: vector ecology and management

Progress on increasing vector control for malaria has been remarkable. Nevertheless, in 2015, at least 41 million out of the 269 million people in sub-Saharan Africa lived in households without an ITN or without protection from IRS programmes (12). Vector control is currently the main tool available for the control of dengue and other arbovirus-related diseases. Lack of coverage with integrated vector management in all but a handful of countries explains the recent re-emergence of these diseases and the increased risk over the next 15 years that is related to environmental change and unplanned urbanization.

Reducing risks: water, sanitation and hygiene

Improved water, sanitation and hygiene (WASH) can reduce transmission of malaria and several NTDs. Clean water is also critically important for people living with HIV. And yet, in 2015, 2.4 billion people still lack improved sanitation facilities. There is a clear urban–rural divide; improved sanitation facilities are used by 82% of the global urban population but only 51% of the rural population (20). Informal urban settlements and rural areas will need to receive much more investment in the future. The joint NTD-WASH Strategy 2015–2020 (82) suggests that WASH investment be targeted to those districts or communities that are NTD hotspots.

In addition to the above cross-cutting interventions, veterinary public health services are specific to a subset of the NTDs called the zoonotic NTDs (zNTDs).

4.5 Ensuring access to quality and affordable health commodities

Achieving optimal coverage with quality health services depends in part on ensuring access to quality affordable diagnostics, medicines, vaccines and other health commodities. Standardizing and regulating the quality of these products is vital, to avoid waste and inefficiency and to ensure safe

and effective use. WHO supports countries and procurement agencies in four key areas:

- *WHO publishes the model list of essential drugs.* In the 38 years since it was first published, the model list has served as the basis for dozens of national lists and has led to a global acceptance of the concept of essential medicines as a tool to promote better quality health care, and better health equity (83). All drugs required as part of the WHO HTM strategy figure in the model list (84); recent additions including groundbreaking treatments for HCV and MDR-TB (85).
- *WHO helps countries to source quality products through its prequalification programme.* Among other things, this programme applies unified standards of acceptable quality, safety and efficacy in order to comprehensively evaluate medical products, based on information submitted by the manufacturers, and inspection of the corresponding manufacturing and clinical sites. First established in 1989 for vaccines, the programme since then has been expanded to cover about 250 medicines, ranging from ARVs to antimalarial drugs, as well as medical devices (86). The programme has played a key role in supporting disease-response efforts. For example, by the end of 2013, WHO had prequalified 23 HIV diagnostics and one adult male circumcision device, 234 medicinal products for treating HIV-related conditions and 12 active pharmaceutical ingredients for use in manufacturing related pharmaceutical products (87).
- *WHO encourages quality manufacturing with its Good Manufacturing Practice (GMP) initiative.* Dating back to 1968, this initiative defines quality measures for both production and quality control. It also defines general measures to ensure that processes necessary for production and testing are clearly defined, validated, reviewed, and documented, and that the personnel, premises and materials are suitable for the production of pharmaceuticals and biologicals including vaccines. Since 1969, more than 100 countries have incorporated the GMP provisions into their national medicines laws, and many more have adopted its provisions and approach in defining their own national GMP requirements (88).
- *WHO supports effective technology transfer.* Transfer of processes to an alternative site occurs at some stage in the life cycle of most products, from development, scale-up, manufacturing, production and launch, to the

post-approval phase (89). Transfer of health-related technologies to developing countries can enable recipient countries to produce the product locally, which may result in increased access to the product and improved health. WHO supports technology transfer in a variety of ways, notably through the Technology Transfer Initiative within the office of the Assistant Directors-General on Health Systems and Innovation, which works to identify where transfer of health-related technologies to developing countries will improve access to these products and lead to improved health; and, when appropriate, to promote and facilitate this technology transfer.

Supply chain management for medicines is another core concern. Access to good-quality medicines is compromised when the structures and processes within each link are suboptimal. If structures and processes are not transparent and there are insufficient institutional checks and balances in place, the system is also vulnerable to corruption. WHO's Good Governance for Medicines (GGM) programme provides guidance on improving efficiency in procurement and supply, and includes tools to assess the transparency and vulnerability of selected areas of the public pharmaceutical sector. The programme comprises three stages: a national transparency assessment, the development of a national good governance framework, and the implementation of a national GGM programme. GGM programmes are currently being implemented by 37 Member States and Territories (90).



Ensuring access to essential medicines is a major concern. Substantial progress has been

made in improving access to medicines for HIV, malaria and TB, but access to medicines for other infectious diseases, including chronic viral hepatitis infection, acute diseases and NCDs, remains unacceptably low, with large disparities between high-, middle- and low-income countries, and within countries (91). WHO's strategy to improve access to essential medicines is based on the principles of evidence-based selection of a limited range of medicines, efficient procurement, affordable prices, effective distribution systems and the rational use of medicines. Member States use the WHO *Guideline on country pharmaceutical pricing policies* as a reference for pricing medicines and ensuring sustainable medicine supply systems.

The manufacture and distribution of generic medicines has helped with access to essential medicines and their affordability. WHO has supported generic medicine manufacture and use in a variety of ways; in particular, by encouraging the exploitation of policy flexibilities in the World Trade Organization agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (92). However, despite some successes – for instance, the exploitation of TRIPS flexibilities has been crucial in reducing the price of ART treatment (16) – action to take advantage of TRIPS flexibilities has been limited. For example, although international instruments are now in place allowing countries to enact legislation that permits the generic manufacture of patented pharmaceuticals, few countries have enacted appropriate legislation and most of those that have done so have yet to make use of such legislation (93).

The particular challenges faced in regard to medicines and diagnostics for NTDs are discussed below. Major concerns include a lack of commercial incentives to develop needed medical products, which results in a lack of products on the market and a lack of products in the research pipeline (94).

4.6 Leveraging health system strengths and strengthening health systems within the context of UHC

UHC-related priorities and goals inform the strategy focus on leveraging health system capacity to ensure optimal intervention coverage, while also supporting health system strengthening.

Health system weakness not only acts as an obstacle to the broad UHC-related agenda,

it also hampers specific disease-response efforts. Substantial investments are needed to strengthen basic health infrastructures, commodity-delivery systems, human resources (for disease control activities and the research underpinning them) and health-information systems, including basic vital registration systems. In many countries, meaningful UHC-related reform will require a shift towards greater decentralization of services (including outreach beyond fixed health facilities), to provide people-centred integrated health services for all, regardless of their location, gender or socioeconomic status.

The chronic shortage of skilled health professionals is a matter of particular concern. WHO's work in this area includes the establishment of the Global Health Workforce Alliance, set up in 2006 as a common platform to address the health workforce crisis. The Alliance estimates that there is a gap of about 5 million skilled health workers in sub-Saharan Africa and South-East Asia (95). The draft Global Strategy on Human Resources for Health: Workforce 2030 will be considered by the World Health Assembly in May 2016.

Health system strengthening will be a major focus of SDG-related efforts as reflected in SDG

Target 3.8, which calls upon countries to "Achieve UHC, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all". Two other SDG targets also address health system issues:

- Target 3b, which focuses on the development of drugs and vaccines (for diseases primarily affecting developing countries) and ensuring access to affordable medicines; and
- Target 3c, which focuses on health financing and workforce in the least developed countries.

Many of the strategies highlight the importance of health system strengthening to create a solid platform for sustainable action. For example, the HIV and viral hepatitis strategies both stress that achieving targets will require robust and flexible health systems characterized by strong health-information systems, efficient service delivery models, a sufficient and well-trained workforce, reliable access to essential medical products and technologies, adequate health financing, and strong leadership and governance.

Reciprocally, disease programmes have much to contribute to broader health systems, as stressed in the WHO discussion paper *HIV, universal health coverage and the post-2015 development agenda* (96). The paper points out that accelerating the scaling up



of essential HIV treatment and prevention services will, in itself, result in substantial benefits to broader health systems. For example, it will transform national capacity to address other health priorities, such as NCDs, maternal and child health, emerging diseases and outbreaks of infectious diseases. The WHO draft strategies on HIV and viral hepatitis also stress the benefits of greater integration for health systems, including strengthening human resources, procurement systems, injection and blood safety, and treatment of infections. Both these strategies use a common organizing framework of UHC, with explicit references to strengthening all components of a health system.

The Global Technical Strategy for Malaria 2016–2030 also stresses the role to be played by health systems in ensuring optimal access to high-quality treatment. At the same time, it highlights the fact that the expansion of malaria programme interventions can help strengthen health systems – notably maternal and child health programmes and laboratory services – as well as supporting the development of stronger health-information systems, and boosting capacity for disease and entomological surveillance.

The need for government stewardship and accountability

Health system strengthening depends on robust national-level support; thus, encouraging such support is a strategic priority. The End TB Strategy explicitly states that, for the strategy to work, the “intensive participation” of national governments as well as communities and private stakeholders will be required. There is, in other words, an explicit acknowledgement of the limits to what disease-specific programmes can achieve on their own, and the strategy is as much an invitation to dialogue and collaboration as it is a statement of intention. The call for intensive participation is also, unmistakably, a challenge to national governments, stressing their responsibility for driving (and largely funding) reform. Government stewardship and accountability is presented in the End TB Strategy as one of four underlying principles, while the strategy also lists as prerequisites many of the building blocks of a UHC-oriented health system. Finally, one of the first milestones of the strategy is the elimination of “catastrophic costs” for TB patients and their families by 2020.

The UHC theme is recurrent, as is the theme of government stewardship and accountability, in the various WHO strategies on infectious diseases. Both the HIV and viral hepatitis strategies are

explicitly based on the UHC framework, with three of the five strategic directions being based on the three dimensions of UHC. The malaria strategy makes a priority of universal access to malaria prevention, diagnosis and treatment. Similarly, the coverage targets of the NTD strategy to 2020 are considered important steps on the path towards the UHC target of 80% essential health service coverage by 2030. NTD preventive chemotherapy has been proposed as a tracer intervention for monitoring equity in progress towards UHC, as a contribution of the NTD community to making the fairest use of whatever financing is available for UHC over the next 15 years.

The importance of financial risk protection

UHC is not limited to health service coverage – protection against financial risk is a core UHC goal (79). This protection is vitally important for progress on national infectious disease agendas, given that one of the principal obstacles to increasing diagnosis and treatment coverage is the deterrent effect of direct charges for services paid for out of pocket, which are a particular obstacle for the poor (97). All of the disease strategies highlight this issue, with the TB strategy going so far as to make the elimination of catastrophic costs for TB patients and their families by 2020 one of its milestones, as explained above. Global out-of-pocket spending (a driver of catastrophic costs) decreased slightly from 35% of total health spending in 2000 to 31% in 2013. That said, average levels remain high, particularly in low-income countries (42%) (2).

UHC is a core concept in the post-2015 development agenda. It presents multiple opportunities to advance different development agendas, and to serve as a platform for balancing and organizing different areas of activity devoted to improving public health. WHO has been one of the main drivers of UHC-oriented reform, which gained momentum as an idea and an aspiration following the 2005 World Health Assembly call for countries to plan for the transition to such coverage (98). UHC is presented as a foundational concept in the 2008 *World health report* on primary health care (99), is the subject of the pivotal 2010 *World health report* on health financing for UHC (79), and the 2013 *World health report* on research for UHC (100). Other WHO initiatives in this area include the above-mentioned Global Health Workforce Alliance, and the P4H Network (101) – a WHO and World Bank-hosted global network of development partners committed to supporting

country reforms related to UHC and social health protection.

4.7 Focusing on specific locations and populations

The vital importance of reaching populations and subgroups that have tended to be passed over or underserved in service delivery and coverage efforts in the past is another prerequisite for ending the epidemics, and is of course a UHC imperative. Focusing on specific locations or populations not only ensures equity but may also help to optimize the use of limited resources in the latter stages of response efforts for relevant diseases in the “end game”. These populations may be defined by their remoteness, marginalization, mobility or specific behaviours that make them vulnerable or at risk, as outlined below.

- **Remoteness.** In some cases these populations are geographically isolated, and getting treatment to them is largely a question of outreach beyond fixed health facilities. This is the case for many NTD interventions, including so-called total community treatment for yaws, a disabling and disfiguring disease that “begins where the road ends” (49). It is also the case with the malaria strategy, which proposes an intensification of efforts in defined geographical areas, entailing the targeting of both parasites and vectors in transmission hotspots, guided by active case detection and case investigations as part of malaria surveillance and response programmes (47).
- **Marginalization.** In other settings, the barriers to reaching the excluded are socio-behavioural rather than geographical. The HIV strategy emphasizes the fact that key populations – including sex workers, men who have sex with men, people who inject drugs and transgender people – account for an estimated 35% of new infections globally (11). The strategy also stresses the fact that, regardless of where or how they live or the legality of their activities, people must be given access to high-quality HIV services that are delivered free of discrimination and stigma. Not all key populations are marginalized by laws or societal attitudes, but many are. The HIV and viral hepatitis strategies both have sections on creating and sustaining enabling environments that aim to reform policies, laws and regulations. They also recommend the provision of services for mobile and displaced populations, prison

populations and people affected by conflict. The End TB Strategy also calls for a focus on the marginalized and stigmatized, including the poor, cultural or ethnic minorities, prisoners and substance users. All of these groups are at greater risk of TB infection and disease and are likely to have worse treatment outcomes than the general population (102). The strategy encourages advocacy, communication and social mobilization, and underlines the value of promoting the use of the Patients’ Charter for Tuberculosis Care (46).

- **Mobility.** The second pillar of the TB strategy is partly focused on addressing the social determinants of TB; it tackles the problem of TB among vulnerable groups such as migrant workers, travellers and homeless people. Similarly, WHO’s strategy for Chagas disease – an NTD endemic in Latin America and now present in Canada and the United States of America, and in countries of the WHO European Region and Western Pacific Region – recognizes the importance of providing services to immigrants from endemic countries, while also acknowledging the difficulty of doing so (103).
- **Vulnerability.** Individuals and populations may be vulnerable to infectious diseases if they are unable to control their exposure to such infections and are unable to access effective prevention and treatment services. For example, in sub-Saharan Africa, gender inequality and gender-based violence contribute to HIV incidence and prevalence rates that are twice as high among adolescent girls and young women as among young men. The draft viral hepatitis strategy notes that not all hepatitis interventions and services will be required by all populations and in all locations. It emphasizes the need to identify and target those populations that are most vulnerable, at risk and affected (e.g. infants in settings of high HBV prevalence), and settings where the risk of exposure to HBV or HCV is high (e.g. blood transfusion and other health services that lack effective universal precautions) (59).

4.8 Increasing integration and collaboration

Collaboration around specific agendas and the formation of partnerships committed to supporting those agendas were crucial to the successes of the past 15 years, and will be at least as important in the SDG era. WHO, as the principal convening agency charged with bringing together

key stakeholders, has played an important role in supporting collaboration through its worldwide network of offices at country, regional and global levels. At the same time, WHO has drawn on its extensive experience, expertise and connections with leading experts to determine optimal approaches to improving health. New agencies and partnerships are able to depend on the objective policy guidance and technical advice WHO provides, as are national governments, civil society, financial donors, private foundations, the corporate sector and technical agencies.

To consolidate its normative role, WHO is intensifying interaction with Member States and strengthening partnerships with other global bodies (e.g. UNICEF, the Global Fund and the World Bank) and with foundations, organizations and corporations that serve a wide range of functions in public health. For example, WHO works closely with GAVI, the Vaccine Alliance, carrying out the normative work that underpins successful immunization programmes. This includes facilitating R&D, setting standards and regulating vaccine quality, and marshalling the evidence to guide vaccine use and maximize access (67). WHO normative guidance also plays a key role in guiding investments made by the Global Fund, ensuring that concept notes submitted by countries are based on WHO recommendations

for evidence-based interventions, and quality-assured medicines and other health products.

Moving into the development space defined by the SDGs, with its 13 health targets, and many other targets that have a bearing on health, is likely to increase the need for collaboration, and the coherence in approaches collaboration implies. Such collaboration will help to avoid the risk of fragmentation of effort and competition for resources that may be associated with too narrow a focus on individual disease-specific programmes (2). Similarly, it has been observed that there are many cross-cutting issues that do not fit neatly into disease-specific programmes (2). Clearly, this has implications for the way infectious disease interventions are delivered, and WHO promotes efforts that ensure programmes contribute to, and work within, the framework of countries' overall health plans and strategies.

Collaboration is not limited to health sector stakeholders. Multisectoral collaboration is built into the SDGs, which encourage connectedness across all three dimensions of sustainable development. Also, it was a priority issue for the Open Working Group, which explicitly called for enhanced global partnership for sustainable development, complemented by multistakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources (104). The activities of





sectors other than health – for example, education, urban planning, transport, industrial and foreign policy, and agriculture – have a profound impact on the infectious disease burden. A good illustration is WASH, one of the five key interventions within the global NTD roadmap. To date, the WASH component of the NTD strategy has not received attention commensurate with its importance; hence, focused efforts are urgently needed (82). WHO is supporting initiatives for multisectoral collaboration in this area, notably with the publication of a joint NTD-WASH Strategy 2015–2020 (82). The strategy aims to support efforts to combat NTDs by targeting investments in improved WASH first to those communities that need it most; that is, communities that are endemic for NTDs.

In many cases, collaboration will take the form of more integrated approaches to service delivery, and such approaches are already being used. National-level examples include Thailand's integration of HIV and other infectious disease interventions into national health benefit packages. Other examples include the integrated delivery of preventive chemotherapy for at least five NTDs to the more than 1 billion people at risk (105). Community-directed distributors of medicines for NTDs have also delivered

public health interventions such as vitamin A supplementation and primary eye care (106). Another example is the collaboration between HIV and TB programmes in the WHO African Region, where several integration initiatives have helped turn around the TB/HIV response, saving an estimated 5.9 million lives between the years 2000 and 2014 (11).

There are also positive examples of programme integration with health systems, such as the incorporation of HIV interventions into maternal and child health services. Such interventions include HIV testing and counselling for pregnant women and for those considering pregnancy, and the provision of ART and counselling on infant feeding to reduce the risk of vertical transmission (67). The SDGs themselves promote integrated approaches, and provide an opportunity for disease programmes to be more effectively integrated in the broad health and development agenda, linking up with other post-2015 priority health areas, notably NCDs, mental health, and sexual and reproductive health (107).

WHO has long supported greater programmatic and service delivery integration of (or where appropriate, linkages between) disease-specific programmes and the broader national health programme (108). Thus, WHO is already publishing practical guidance to support such initiatives (109–111).

It is important to recognize the challenges faced, and acknowledge that not all integration attempts have been immediately productive (112, 113). Nevertheless, a body of evidence is developing across a range of services, including evidence for the benefits to be derived by combining interventions for HIV, TB, malaria and NTDs (114). There are also many opportunities to integrate services to address infectious diseases and NCDs, especially for chronic and subchronic diseases such as HIV, TB, viral hepatitis and several of the NTDs (115). The sharing of decades of experience among experts on infectious diseases and NCDs is leading to new policies that combine the prevention and treatment of both. Although it is clear that the implementation of novel, joint strategies will require adjustments to health systems, there is mounting political impetus for change (67), the clearest expression of which is the SDGs themselves.

4.9 Improving monitoring and surveillance

Monitoring was crucial to the success of the MDGs. Tracking progress towards the SDGs will be no less important, and because of the wider diversity of goals is likely to be more demanding. The health goal alone comprises 13 targets, including one for UHC. Meanwhile, several of the targets under SDG 3 have multiple subtargets which will probably require at least 25 indicators to track.

The SDG resolution calls for a data revolution, and puts considerable emphasis on the importance of systematic follow-up and review of implementation at national, regional and global levels. The follow-up and review process will be voluntary and country led, and the SDG resolution states that national governments should “set their own national targets guided by the global level of ambition but taking into account national circumstances” (74). The United Nations Statistical Commission will provide a proposal for a global indicator framework (and associated global and universal indicators) by March 2016, for subsequent adoption by the United Nations Economic and Social Council.

The main SDG health goal for infectious diseases is to be monitored by Global Indicators 3.3.1 – 3.3.5, which are based on the incidence of HIV, TB, malaria and viral hepatitis, and the number of people requiring interventions against NTDs. Meeting the monitoring demands of the SDGs may be daunting, but it presents an opportunity to focus on strengthening country health-information systems, using an integrated, comprehensive approach and based on each country’s individual needs. Where appropriate, these efforts should be supported by well-aligned investments by international partners. It has been estimated that ensuring effective monitoring of the SDGs will require \$1 billion a year, at least half of which will need to be raised through domestic resource mobilization (116).

Monitoring of all diseases considered in this report continues to pose several challenges that will have to be addressed. Some of these challenges are outlined below:

- Many countries still lack direct measurements of mortality from national vital registration systems of high coverage and quality that use standard coding of causes of death according to the *International classification of diseases*. Such data are essential for the accurate

and routine tracking of deaths. The biggest challenge is in the WHO African Region, where such systems are weak or not yet in place.

- Only 66 of the 106 countries that had ongoing malaria transmission in 2000 could provide data judged to be sufficiently complete and consistent to allow for assessment of trends between 2000 and 2013 (117).
- There is underreporting of detected TB cases. The ultimate goal is to use TB case notification data as a direct proxy of TB incidence. This requires a high-performance surveillance system, so that the number of detected but not reported cases is negligible; it also requires UHC, so that there is limited underdiagnosis of cases. WHO has already developed a TB surveillance checklist for systematic assessment of the performance of TB surveillance and development of M&E plans that address identified gaps (118). Also, WHO has called for major efforts to ensure that all cases are detected, notified to national surveillance systems and treated according to international standards (9).
- Monitoring of viral hepatitis is either patchy or nonexistent (14).
- NTD monitoring is complicated by underreporting by the poorest and remotest communities or, in the case of dengue and other arbovirus-related diseases, misdiagnosis of other febrile illnesses, including malaria (119).
- Agreement on standard terminology and standardized coding is not yet in place for some aspects of HIV monitoring. There is a multiplicity of data streams from nonstandardized sources, including programme data from health facilities and community-based programmes, and surveillance data from surveys and facilities, making it impossible to aggregate and analyse data (16).

Data gathering needs to be recognized as a core activity used to track progress, ensure accountability, and inform policy and strategy development. The Global Malaria Strategy, for example, calls for malaria surveillance to be made a core intervention. The strategy encourages all countries where malaria is endemic and those countries where re-establishment is a possibility to establish effective health management and information systems. Such systems are essential for the effective assignment of resources to the most affected populations, as well as for identifying gaps in programme coverage, detecting outbreaks and assessing the impact of interventions to guide changes in programme orientation (47). The malaria

strategy also highlights the fact that moving towards elimination requires increasingly timely programmatic responses (treatment of infected individuals and vector control) to prevent onward transmission of parasites. That is, in settings where there is very low level transmission, surveillance systems need to be particularly sensitive and trigger a locally tailored response to every detected infection (47).

Integrated monitoring and surveillance are also major areas of focus. Following a recommendation by the Strategic and Technical Advisory Group for NTDs, WHO has led the development of an integrated NTD database to improve reporting by NTD programmes at the national and subnational levels. The integrated database consolidates all NTD data into a single repository that harmonizes data flow pathways, promotes country ownership of NTD programme data and improves data security. However, integration across NTDs will not solve all problems. The four NTDs that are zNTDs suffer from particularly weak surveillance, in part because animal and food surveillance is often not linked to human surveillance. Lack of integrated data on zNTDs supports the misconception that the burden of these diseases is low, which in turn leads to a lack of funding for surveillance and reporting or control efforts.

The scaling up of national statistical capacities and the strengthening and modernization of statistical systems will require ensuring effective institutional arrangements and internal coordination, sustainable human resources, sustainable financial resources and technical cooperation. National statistical offices should have a clear mandate to lead the coordination among national agencies involved and to become the data hub for monitoring (47). As the only global agency with the mandate to cover the whole health agenda, WHO is following these developments closely, and will continue to work closely with other partners in the UN family and beyond. WHO is committed to maintaining and strengthening the core functions in the 12th Global Programme of Work (120), particularly in terms of defining indicators and improving ways of measuring and reporting on progress.

4.10 Drug and insecticide resistance

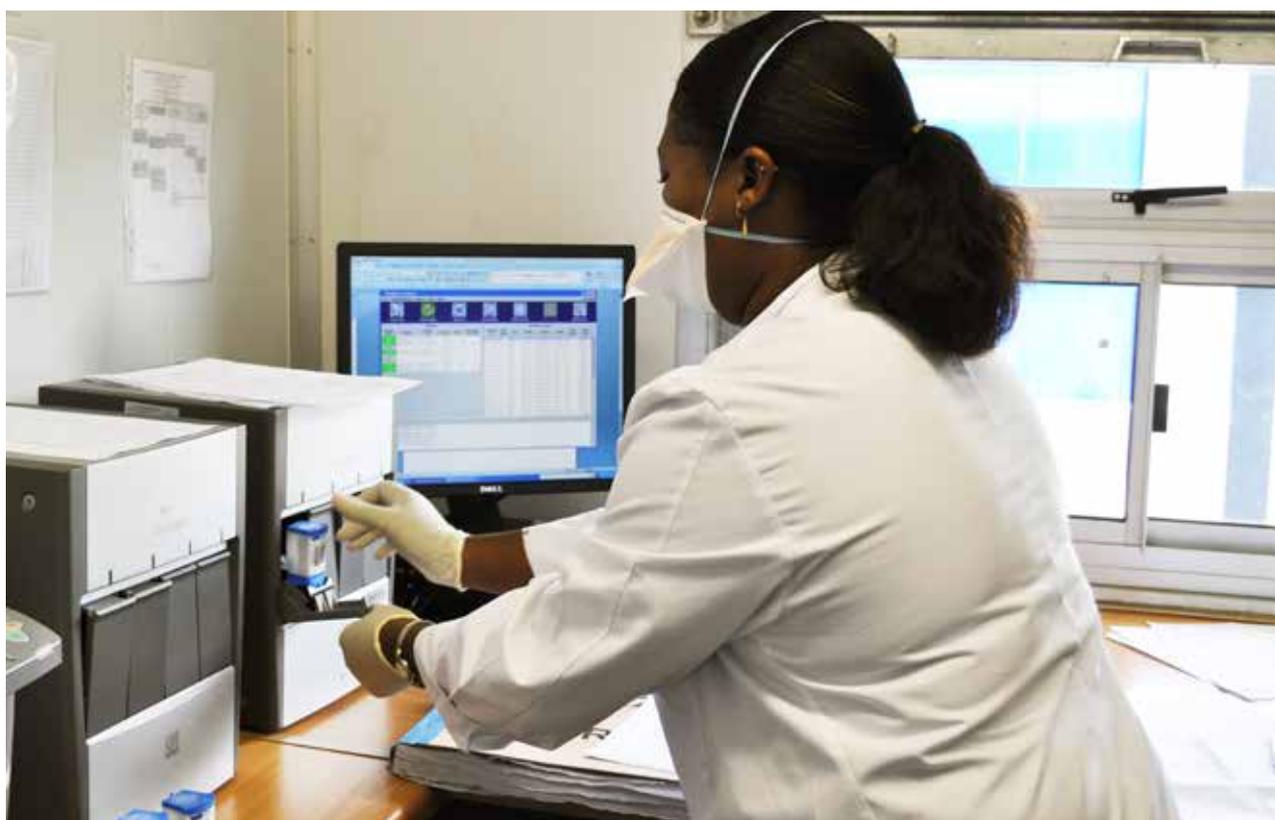
Tackling resistance to drugs and insecticides is a priority for all programmes, as this common concern is a potential obstacle to attaining targets. With regard to TB, the emergence of resistant bacteria has been driven by natural selection and

poor adherence to treatment regimens (rifampicin was discovered over 40 years ago, and the microbe has had time to adapt). There were an estimated 480 000 new cases of MDR-TB in 2014 (about 5% of total TB incidence), and although there is no evidence that the epidemic is worsening at the global level, there are several hotspots (9).

Emerging multidrug resistance is also a major concern in the context of global malaria efforts. *P. falciparum* is already resistant to artemisinin in five countries, and multidrug resistance has been reported from multiple locations in western Cambodia. The emergence of multidrug resistance not only threatens progress achieved in this region, but could lead to a rise in the disease burden in other parts of the world. Hence, the elimination of *P. falciparum* malaria is judged to be an urgent priority in the Greater Mekong subregion (47).

HIV drug resistance is also a growing concern. In recent years, signs of increasing ARV resistance have started to emerge in several settings, requiring urgent attention. The wide implementation of the WHO treat-all recommendation, and the scale-up of pre-exposure prophylaxis using ARVs are likely to further increase HIV drug resistance in all regions of the world. HIV strategies emphasize the need to preserve the effectiveness of ART, and treatment programmes should monitor the quality of the services they deliver. Population-level monitoring of HIV drug resistance is important for guiding the selection of the most appropriate ARV regimens for treating people living with HIV. The rapid expansion of treatment for chronic HCV treatment will require monitoring for the possible emergence of drug resistance.

On the insecticide front, the major strategic concern is overreliance on pyrethroids, the only class of insecticide that is used in long-lasting insecticidal nets, and also the class that is applied in many IRS programmes. WHO's work in this area includes the WHO Pesticide Evaluation Scheme (WHOPES), which assists Member States with implementation of vector-control programmes (121). WHOPES established the Global Collaboration for the Development of Pesticides for Public Health, in response to the need to stimulate the development of alternative insecticides and application technologies (122). In 2012, WHO launched the Global Plan for Insecticide Resistance Management in Malaria Vectors, with a five-pillar strategy to tackle the growing threat of insecticide resistance, and to



facilitate the development of innovative vector-control tools and strategies (123).

Tackling drug and insecticide resistance will depend on both developing new medical products and ensuring rational use of the products we already have. Strategic priorities include intensified research and innovation, augmented resistance surveillance, and effective use of new diagnostic technologies to support monitoring and ensure rational use of medicines.

4.11 Advancing the research agenda

The achievements of the past 15 years have been built on progress in research (60):

- the development of new products, including diagnostics and drugs;
- approaches for prevention and treatment of the disease problems that typically affect the most neglected populations; and
- implementation and operations required to make diagnostics, drugs and vaccines widely available, and realise their full potential.

All these types of research will need to continue if progress is to be maintained. Key research imperatives are discussed below.

Developing new products

The development of new products is crucial to support disease-response agendas. For example, the target to end the TB epidemic by 2030 will require an effective post-exposure vaccine or better preventive treatment for the 2–3 billion people already infected with *Mycobacterium tuberculosis*. In the absence of novel tools, new TB cases will continue to arise even if transmission is substantially reduced; thus, the accelerated fall in TB incidence beyond historic levels required to achieve 2030 targets will not be feasible (75). Similarly, in the absence of new tools to treat (and particularly to prevent) HIV transmission, the scale-up of existing treatment and prevention tools for HIV infection will not be enough to achieve the end of AIDS by 2030 (124). Curbing the re-emergence of dengue and other arbovirus-related diseases will require a combination of vaccines, treatments and sustainable vector-control technologies. As noted above, emerging resistance to medicines and insecticides is a major concern for several diseases, and investment in research in these areas should be prioritized.

Developing better ways to deliver services

Progress towards the SDGs also depends on optimizing the use of currently available health interventions through implementation



research. For example, extending access to ART for all people living with HIV will require innovations in service delivery for expanding HIV testing services and delivering ART to different populations in challenging settings. Similarly, the effective delivery of pre-exposure prophylaxis of HIV infection will require new approaches to service delivery, particularly through community systems. Implementation research will play a critical role in guiding the adaptation of services to effectively deliver these services. In many instances, researchers in disease-endemic countries will be best placed to push forward in these areas, and it is vital that these countries play an important role in setting the research agenda, and in contributing to that agenda at both the local and global level. This will require increased investment, the support of both individuals and institutions, and the bringing together of academic institutions with health providers to ensure effective translation of evidence into policy.

Increasing investment in research

Funding research for infectious diseases is a major concern. For example, both the Global Plan to Stop TB 2011–2015 (125) and the new Global Plan to End TB 2016–2020 (126) estimate that about \$2 billion per year is required to fund R&D for new TB diagnostics, drugs and vaccines, whereas the annual amount of funding available has stagnated at about US\$ 0.7 billion in recent years (127).

One of the persistent challenges faced in combating all of the diseases considered in this report is the establishment of sustainable mechanisms to fund the R&D needed to develop new drugs, diagnostics and vaccines for populations in low- and middle-income countries, where the standard commercial incentives for R&D may not apply.

In response to the problem of market failure, WHO is exploring new ways to support research and the development of innovative approaches to funding R&D in meeting the challenge of the SDGs (e.g. through the development of a pooled R&D fund). Shaping the research agenda and stimulating the generation, translation and dissemination of valuable knowledge is a core WHO function, and the organization plays an important role in directing research efforts towards areas that might otherwise be neglected. TDR is also well placed to support the necessary initiatives, having more than 40 years of experience working with its networks and partners, and helping to launch new mechanisms to support R&D. For example, TDR was instrumental in the creation of one of the first product development partnerships with the launch of the Medicines for Malaria Venture in 1999.

Acknowledging the importance of research in the SDGs

Currently, the SDGs do not acknowledge the importance of research for infectious diseases. This makes it less likely that the public and philanthropic funding needed to support research into new health technologies and new interventions will be forthcoming. The only specific mention of research (for health) in the SDGs is Target 3b, which is aimed at advancing research to meet the health needs of low- and middle-income countries, but excludes several important categories of health interventions (e.g. diagnostics, microbicides, devices and other health tools) and makes no mention of implementation research. Research is similarly neglected in the UN proposals for SDG indicators.

Although the SDG goals and targets are largely decided, as noted above, indicators will not be finalized until March 2016. Thus, there is still time to ensure that proper consideration is given to including effective indicators to measure global health research (including the development of new products) in the final global monitoring framework. Without such indicators, and the measurability (and credibility) they bring to targets, the mobilization of financial resources and political commitment for global health research from all countries will be compromised, as will the capacity to monitor progress and hold countries accountable.

The WHO global strategies put considerable emphasis on addressing the main research concerns, emphasizing the importance of

developing new tools and maximizing their use, as well as maximizing the use of existing tools. For example, the third pillar of the End TB Strategy is entirely devoted to supporting intensified research, which it splits into two main priorities: the discovery, development and rapid uptake of new tools, interventions and strategies; and research to optimize implementation and impact, and promote innovations. Research into a new vaccine that will be effective before and after exposure to TB infection is a particular focus, as is a safer and more effective treatment for latent TB infection. There is a critical need for new and effective TB vaccines. The Bacille-Calmette-Guérin (BCG) vaccine is almost 100 years old, and although it protects against severe forms of TB in children, its efficacy in preventing pulmonary TB in adults is highly variable. Regarding the drug rifampicin, there are already some promising candidates in the pipeline to meet the resistance challenge, including eight new or repurposed anti-TB drugs that are in advanced phases of clinical development (9). The strategy also highlights the need for better diagnostics, and safer and easier treatment, including shorter drug regimens for TB disease (75).

Innovation for the acceleration of progress towards ending the HIV epidemic is a key aspect of the HIV and viral hepatitis strategies, both of which stress the need for innovations in prevention, diagnostics, medicines and service delivery (59, 77). The HIV strategy emphasizes the importance of research in contributing major advances in areas such as virology and immunology, and in the development of new prevention and treatment technologies, notably:

- the development of a wide portfolio of highly effective and safe ARVs;
- the use of ARVs in pre-exposure prophylaxis; and
- new diagnostics and new service delivery approaches for different populations, including ways to combat stigma and design patient-friendly health services.

Work continues on developing an effective cure and vaccine, and priority must be given to developing next-generation diagnostics and therapies such as injectable long-acting ARV formulations (16).

The malaria strategy makes research one of two supporting elements for its three-pillar strategy, the focus being on research for the development of new and improved tools, and implementation research to optimize the impact and cost-

effectiveness of existing tools and approaches. The strategy also prioritizes action to facilitate rapid uptake of interventions in populations at risk (47). The viral hepatitis strategy stresses the need for innovation for acceleration, with R&D of new products being backed with operational research. It also stresses the need for collaboration between researchers and policy-makers, to ensure that research findings are translated into practice rapidly and on a scale sufficient to have the desired impact (59).

The NTD strategy also calls for a push on two fronts, there being an urgent need for new tools and ways to optimize use of the tools available. Relative to other major health programmes, NTD prevention and control are constrained by the smallest number of products on the market and, along with maternal and child health, the smallest number of products in the pipeline (94). As of 2015, most of these are still in the early stages of development, and it will be some time before any of them could be market ready. New vaccines and medicines are thus urgently needed, but so are diagnostics, the priority being the development of diagnostic tools and treatment regimens that can be administered in the field. For example, the priority for Buruli ulcer research is to evaluate a rapid point-of-care diagnostic test that may offer a simpler and faster way to confirm suspected cases of Buruli ulcer than current diagnostic methods (49, 128).

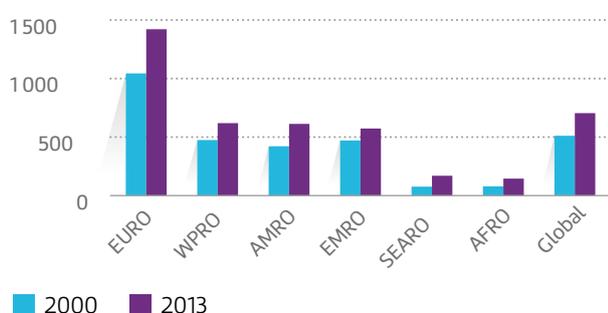
4.12 Financing the expansion of service coverage

Despite the extraordinary mobilization of resources associated with the MDGs, described in Chapter 3, there is an urgent need to increase and sustain predictable, long-term financing to expand coverage with infectious disease interventions. Key to achieving this will be integrating essential interventions and services into national health programmes and national health benefit packages; also required are external donor support and innovative financing mechanisms. This was the main thrust of the recommendations that came out of the Third International Conference on Financing for Development in Addis Ababa (the Addis Ababa Action Agenda). The agenda calls for “cohesive nationally owned sustainable development strategies, supported by integrated national financing frameworks” (129). It also calls for a greater focus for development assistance towards low-income countries, fragile states and poor or marginalized populations,

and emphasizes the importance of developing innovative financing mechanisms and raising private funds.

Government spending on health has increased in recent years. Government per capita health expenditure rose by about 40% between 2000 and 2013, with increases reported in all regions (Fig. 4.5). This reflects the increased priority for health that governments are making in their budget allocations, as well as slight increases in fiscal capacity (2). Although this positive trend is encouraging, more needs to be done.

Fig. 4.5. Per capita government health expenditure, by WHO region and globally, 2000 and 2013 (in constant 2005 PPP international \$)



Source: WHO, 2015 (24)

Country income grouping is according to the World Bank analytical income classification of economies based on the 2013 Atlas estimates of gross national income per capita.

Of the three diseases targeted under the MDGs, HIV has come closest to fully realizing its funding targets (just under US\$ 22 billion in 2015). However, because of the demands placed on the international HIV response – notably in terms of expanded ART coverage (a function of changing treatment initiation thresholds and increased survival rates) – it has been estimated that an additional US\$ 8–12 billion needs to be available annually by 2020 (16). Based on reports to WHO from the 122 countries that account for 95% of reported TB cases, funding for TB prevention, diagnosis and treatment reached a total of US\$ 6.6 billion in 2015, which was US\$ 1.4 billion short of the estimated US\$ 8 billion that was needed. That figure does not take into account the resources required for R&D for new TB diagnostics, drugs and vaccines, estimated at about US\$ 2 billion per year (127). According to the Global Plan to End TB 2016–2020, funding requirements amount to about US\$ 13 billion per year in the next 5 years, including US\$ 11 billion for implementation of existing interventions and US\$ 2 billion per year for R&D (126).

International and domestic funding for malaria control and elimination totalled US\$ 2.7 billion in 2013. This represented a threefold increase since 2005, but was still less than half the estimated US\$ 5.1 billion required to achieve global targets for malaria control and elimination. Although the support of international donors is crucial, domestic funding must also be stepped up. Globally, domestic funding for malaria was reported to be US\$ 550 million in 2014. Such reports underestimate total domestic contributions to malaria control, because the estimates are generally restricted to direct expenditures on malaria control activities by national malaria control programmes, and they exclude health system costs associated with treating patients. However, without increased domestic and international funding there is a real danger that ground will be lost in the face of re-established transmission (126).

International funding for NTDs has increased since 2012; however, NTD programmes continue to be disproportionately dependent on two major bilateral donors and one philanthropic donor. Higher levels of domestic investment will thus be needed to drive increased access to NTD interventions in the period 2015–2030,



especially among middle-income countries. International funding has been estimated at about US\$ 300 million in 2014, excluding donated medicines. More than twice this amount is needed to meet targets for preventive chemotherapy and disease management, and as much as 10 times to cover the needed investments in vector control (49). The NTDs must become an integral part of national health plans and budgets, and health financing reform.

With regard to viral hepatitis, no major global funding mechanism exists apart from HBV vaccination programmes, and donor aid or domestic funding is lacking or inadequate in many countries. Publicly funded treatment is available in some countries for people chronically infected with HBV and HCV. This funding includes coverage for inpatient hospital treatment, but the amount spent by governments on such treatment is unknown (14). Highly effective and safe medicines for the treatment of chronic HCV infections result in cures rates exceeding 90%. However, the high cost of these medicines greatly limits access to treatment and has significant implications for health budgets in countries with high prevalence of HCV. The draft Global Health Sector Strategy on Viral Hepatitis stresses the fact that efforts to increase investments in viral hepatitis need to be part of broader efforts to increase overall investments in health, so that all priority health services can be scaled up towards UHC. Key strategic objectives are supporting countries to develop investment cases and funding proposals to mobilize funding, and supporting the development of national health financing plans that incorporate viral hepatitis programmes (59).

Four priority areas are identified in the WHO global strategies:

- *Securing funding for infectious disease interventions and services*, including from public and private sources, both domestic and external. All of the strategies stress the importance of national governments playing their part. For example, the End TB Strategy makes an explicit appeal for “political commitment with adequate resources for TB care and prevention”. The HIV and viral hepatitis strategies underline the fact that innovative funding and external donor support may be helpful for filling gaps (in the short term) and funding “surge” efforts to change the trajectory of the epidemics, but will not necessarily provide sustainable funding of essential services in the long term.
- *Optimizing the use of resources* (i.e. more health for the money) by improving resource allocation;

reducing the costs of medicines, diagnostics and other commodities; and improving the efficiency and effectiveness of services. The emphasis on integration across programmes, and between programmes and health systems that is apparent in several of the strategies is clearly an important part of the move to more strategic purchasing.

- *Developing innovative financing mechanisms at the global and country levels*. Examples include “sin taxes” on alcohol and tobacco, and the use of levies on airline tickets, mobile telephones and remittances. Innovative financing is not just about raising more funds, it is also about getting more value for the money spent. Some countries and donors are also using results-based financing and results-based aid to increase value for money (130). Other mechanisms, such as development impact bonds, seek to better engage private sector investment with a reward for achievement of agreed outcomes. The application of such mechanisms should be closely monitored to determine when and where they might work best in the context of ending epidemics (79).
- *Ensuring equity in financing the expansion of interventions and services*. National governments in particular need to establish equitable mechanisms to pool funds to provide financial risk protection for consumers of medical services. This could be achieved, for example, through taxation or contributions to individual health insurance schemes or broader national UHC programmes. A particular concern in this regard is making sure that the design of UHC benefit packages includes outreach and prevention, as well as facility-based care.

4.13 Conclusion

The shift from controlling to ending epidemics has profound implications for country and global strategies. The ramping up of disease responses required to attain that ambitious goal will require more and better use of resources (both global and national, and public and private) and, in particular, a greater role for national governments. Key strategic objectives – including accelerating the expansion of coverage, reaching populations thus far underserved, and bolstering research capacity and monitoring and surveillance – all depend on greater government involvement and commitment, starting with greater commitment to health system strengthening.

The drive to end epidemics will also require greater integration across disease programmes, and between disease programmes and the health systems within which they work. For example, an increased focus on neglected populations and transmission hotspots – important aspects of several strategies – presents opportunities to exploit linkages in surveillance and service delivery. That such opportunities exist is one of the underlying assumptions of the three interlinked global health sector strategies being developed by WHO for consideration by the 69th World Health Assembly in 2016 (131). The proposed strategies, two of which are included in this chapter, address three major public health issues – HIV, viral hepatitis and sexually transmitted infections – in a post-2015 environment. Although each of the three health areas have their own specificities and thus require disease-specific approaches, they also have many common features, with common modes of transmission, overlapping key populations, and similar needs in terms of health interventions, service delivery and supportive relevant research.

The same can be said of all the diseases considered in this report. Such joint strategy formation exercises are likely to be of increasing importance in the coming years.

Integration of one kind or another is likely to underpin the majority of development trends in the next 15 years. This includes UHC, which is meaningless unless health services are integrated across the full continuum of care, from prevention to palliation, primary to tertiary, and cradle to death bed. The idea of integration is woven into the SDGs themselves, encouraging as they do connectedness across all three dimensions of sustainable development (economic, social and environmental), and recognizing that eradicating poverty and inequality, creating inclusive economic growth, and preserving the planet are inextricably linked – to each other and to population health (2). These trends present tremendous challenges for everyone in the global development community, including those engaged in addressing HIV, TB, malaria, viral hepatitis and NTDs. However, they also present tremendous opportunities to explore new collaborations and exploit new synergies.

5 CONCLUSION

The progress made in the past 15 years has put the world in a position where it can drive towards ending global epidemics of major infectious diseases by 2030. Achieving this ambitious goal will depend in part on how well we manage the transition into the development space defined by the SDGs. With specific regard to health, the SDGs have shifted the focus towards a more system-wide approach, underpinned by the target of UHC and a focus on health impact.

UHC presents a number of opportunities for expanding coverage of interventions and services for infectious diseases. It also offers a basis for a more balanced and sustainable approach to the achievement of the other health targets. In particular, UHC offers a way of accommodating the changing agenda for global health; that is, putting greater emphasis on addressing the social, economic and environmental determinants of health, building stronger health systems and tackling NCDs, while maintaining the visibility of other internationally agreed health goals that relate to the infectious diseases. Key will also be disaggregating progress, so that universal access leaves no population behind and is truly universal. The SDGs reflect this changing agenda.

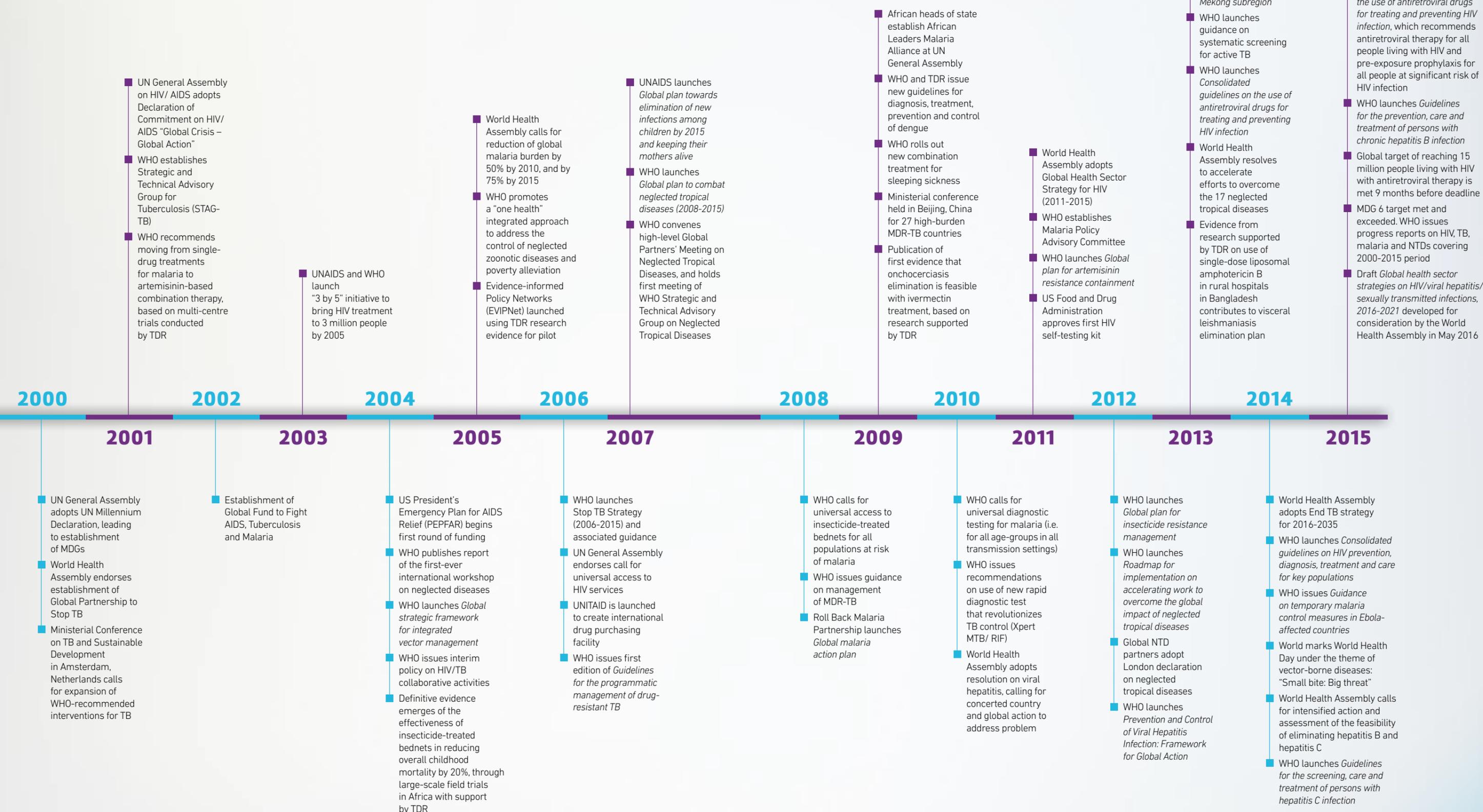
For a new UHC-focused agenda to be more than just an aspiration, priorities and finance will need to be realigned, and planning and budgeting will need to reflect a wider set of health needs. This process will be complex; therefore, WHO is committed to working with partners to achieve the optimal balance of priorities, keeping in mind ongoing challenges and future opportunities. Infectious diseases continue to pose a major health burden in many countries and can stifle

those countries' economic growth. It is also a major investment in health and human capital, underpinning sustainable economic development.

Although the percentage of all deaths due to infectious diseases decreased from 23% to 17% between 2000 and 2012, such deaths occur at younger ages than deaths due to other causes, and thus account for a higher proportion of years of life lost (2). In the WHO African Region, an estimated 50% of years of life lost are due to infectious diseases (2). If urgent action is not taken to accelerate progress towards ending these diseases, the diseases could easily rebound, and the investments and progress of the MDG era could be lost. Drug and insecticide resistance are major threats that could increase mortality rates. Few countries have achieved the path towards sustainable development without decisively reducing and freeing their populations from the burden of infectious diseases. This is both a means and an end of sustainable development.

Disease programmes and the research underpinning them make a significant contribution to strengthening health systems, just as health systems are vital to the work that those programmes undertake. Research into pragmatic ways to maximize these mutual benefits should be a priority as part of efforts to optimize integrated approaches to health service delivery. WHO, and its HTM cluster, is committed to embracing change (both in the way it works with partners and internally), sharing lessons learnt, overcoming common challenges and initiating actions in line with convergent strategies, with the common target of ending major infectious diseases.

ANNEX: KEY MILESTONES IN THE FIGHT AGAINST HIV, TB, MALARIA, HEPATITIS AND NTDS (2000 • 2015)



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