Towards the end of the epidemics

BASELINE REPORT

World Health Organization
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Abbreviations

- HBV: hepatitis B virus
- HCV: hepatitis C virus
- HTM: HIV/AIDS, tuberculosis, malaria (cluster at WHO)
- MDG: Millennium Development Goal
- NTD: neglected tropical disease
- SDG: Sustainable Development Goal
- TB: tuberculosis
- UHC: universal health coverage
- UN: United Nations
- WHO: World Health Organization
1. Background

1.1 The HIV/AIDS, Tuberculosis, Malaria and Neglected Tropical Diseases Cluster at WHO

The cluster focusing on HIV/AIDS, tuberculosis, malaria and neglected tropical diseases (HTM) at the World Health Organization (WHO) is one of six clusters at WHO’s headquarters in Geneva, Switzerland. Its overall objective is to reduce the global burden of endemic infectious diseases and, thus, save lives and improve people’s health.

The HTM cluster helps countries to mount comprehensive and cost-effective public health responses to the complex challenges posed by infectious diseases. It works closely with other clusters, WHO’s six regional offices and 149 country offices, organizations of the United Nations (UN) system, development partners, scientific organizations and nongovernmental groups.

The HTM cluster brings together four departments at WHO: the Department of HIV (which includes the Global Hepatitis Programme), the Global Tuberculosis (TB) Programme, the Global Malaria Programme and the Department of Control of Neglected Tropical Diseases (NTDs). It also hosts the Office of Strategic Partnerships and Cross-Cutting Coordination, the Special Programme for Research and Training in Tropical Diseases (known as TDR) and Unitaid, which works with international partners to invest in new ways to prevent, diagnose and treat HIV infection and AIDS, TB and malaria.

These departments at WHO generate strategic, policy and technical guidance at the global level; provide technical assistance to WHO’s regions and individual countries; and engage in high-level advocacy to support the country-based implementation of programmes. They also monitor and assess trends in and responses to diseases at the global, regional and country levels, and provide progress reports to the World Health Assembly and the UN General Assembly.

In line with the time-bound targets of the Sustainable Development Goals (SDGs), the HTM cluster is driving efforts to substantially reduce the global burden of infectious diseases. SDG 3, known as the health goal, aims to “ensure healthy lives and promote well-being for all at all ages”, and one of its targets, target 3.3 calls for ending by 2030 the epidemics of AIDS, TB, malaria and NTDs, and reducing the incidence of hepatitis. Achieving this target entails surpassing the considerable achievements of the Millennium Development Goals (MDGs) and requires important strategy adjustments, including accelerating disease control and elimination efforts and substantially expanding the financing available for these efforts.

Responding to its mandate, the HTM cluster will be leading WHO’s efforts to support the achievement of and monitor progress against some components (HIV, TB, malaria, viral hepatitis and NTDs) of SDG target 3.3.

1.2 The Sustainable Development Goals

The SDGs were adopted by the UN in September 2015. The goals reflect the growing complexity and interdependence of the global development agenda. The SDGs establish 17 global goals that have 169 specific targets, and if these goals are achieved by 2030 they will help to ensure the sustainability of economic and social development. SDG 3 focuses on ensuring good health and well-being, and it covers communicable and noncommunicable diseases in the context of providing universal coverage of essential health services (known as universal health coverage, or UHC).

SDG 3 recognizes the need to build on the progress made under the MDGs and also addresses a much broader range of health challenges. Notwithstanding the broader health agenda encompassed by SDG 3, WHO needs to maintain its focus and
leadership in the area of communicable diseases if global goals and targets for 2030 are to be achieved.

1.3 
**Sustainable Development Goal target 3.3: ending the epidemics**

Target 3.3 calls for ending by 2030 the epidemics of AIDS, TB, malaria and NTDs, and reducing the incidence of hepatitis, water-borne diseases and other communicable diseases. Target 3.3 has five indicators that focus on HIV, TB, malaria, viral hepatitis and NTDs (Fig. 1). This report provides an update on progress against these five indicators.

**FIG. 1**

**Sustainable Development Goal 3: the health goal. Target 3.3 and indicators**

**TARGET 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

**INDICATORS**

- 3.3.1 Number of new HIV infections per 1 000 uninfected population, by sex, age and key populations per year
- 3.3.2 Tuberculosis incidence per 100 000 population per year
- 3.3.3 Malaria incidence per 1 000 population per year
- 3.3.4 Hepatitis B incidence per 100 000 population
- 3.3.5 Number of people requiring interventions against neglected tropical diseases per year
2. Report purpose and structure

WHO, as the specialized agency for health in the UN system, has the primary role in supporting the achievement of and monitoring progress towards SDG 3. Within WHO, the HTM cluster has the responsibility for supporting the achievement of and monitoring progress towards some components of SDG target 3.3. The HTM cluster is collecting data on five indicators for the target. However, the data are often found in specific disease-related reports or strategies and, thus, are dispersed across many different departments. The purpose of this report is to assemble the data for the disease-specific indicators into one concise document to inform national and international stakeholders about progress being made towards achieving target 3.3. This report is the first attempt to present the status of the selected indicators under SDG target 3.3. It is expected to be released periodically to keep all stakeholders informed on the progress achieved for ending epidemics against these diseases while moving forward towards 2030. Primarily, this is an advocacy document providing a snapshot of the overall status of achievements made and gaps in the indicators for target 3.3, both across and within countries.

This report summarizes the progress being made against HIV, TB, malaria, viral hepatitis and NTDs on the path towards meeting target 3.3 (Fig. 1). For each of these diseases the following information is presented:

- **situation** – provides an overview of the status of the disease or diseases (for example, key statistics, such as incidence, prevalence and mortality);
- **achieving the 2030 target** – describes the 2030 targets, the key interventions and the challenges to reaching the target;
- **equity** – identifies the key populations and issues pertaining to ensuring access to essential services;
- **data gaps** – highlights areas for which more information is needed to understand the epidemic and better tailor responses to it; and
- **further reading** – lists other important specific strategies, guidelines and reports relevant to the disease.
3. HIV

SDG Target 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.

INDICATOR 3.3.1 NUMBER OF NEW HIV INFECTIONS PER 1 000 UNINFECTED POPULATION, BY SEX, AGE AND KEY POPULATIONS PER YEAR

3.1 Situation
In 2015, the global HIV incidence among adults aged 15–49 years was 0.5/1 000 uninfected population (Fig. 2 and Fig. 3), with 2.1 million people becoming infected that year. HIV incidence is highest in WHO’s African Region (2.7/1 000 uninfected population in 2015); in other WHO regions the incidence among adults aged 15–49 years ranges from 0.1 to 0.5/1 000 uninfected population. The incidence is much higher in certain populations. For example, in 2014 the incidence among people who inject drugs was 17/1 000, 8/1 000 among men who have sex with men, and 5/1 000 among female sex workers. Altogether, 46% of those living with HIV are receiving antiretroviral therapy, but 1.1 million died from HIV-related causes in 2015. About 60% of the 36.7 million people living with HIV are aware that they are HIV-positive.

3.2 Achieving the 2030 target
By 2020, the UNAIDS 90-90-90 targets call for 90% of people with HIV to be aware of their infection, 90% of people who are aware they have HIV to initiate antiretroviral treatment and 90% of those receiving antiretroviral treatment to have undetectable levels of HIV in their blood. Milestone targets also include achieving a 75% reduction in new HIV infections between 2010 and 2020 (Fig. 4) and by 2020 reducing annual HIV-related deaths to less than 500 000 (Fig. 5). As soon as is practicable, countries should adopt and implement policies to achieve these goals and develop ambitious national goals and targets for 2020 and beyond; these policies should be informed by global goals and targets, such as those in WHO’s treat all policy. This will require considering each country’s context,
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including the nature and dynamics of the HIV epidemic, the populations affected, the structure and capacity of healthcare and community systems, and the resources that can be mobilized.

The main areas of strategic focus in the SDG era include targeting populations that have been left behind by responses to HIV, intensifying efforts in settings where the burden and transmission of HIV are highest, ensuring the better use of data to support programmatic decision-making, transitioning to sustainable programmes that include domestic funding for essential HIV services, and ensuring that responses to HIV are better integrated into health systems.

Key interventions to interrupt HIV transmission include, in addition to the wider initiation of antiretroviral therapy, testing for and providing counselling about HIV and other sexually transmitted infections, encouraging condom use, implementing communication and

<table>
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<th>Region</th>
<th>Estimated Number of People Newly Infected with HIV (2015)</th>
<th>Progress Status</th>
<th>Target 2020</th>
<th>Target 2030</th>
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<tr>
<td>Regional goals (EMRO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>&lt;500 000</td>
<td></td>
<td>&lt;200 000</td>
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</table>


behavioural interventions, offering voluntary medical male circumcision, providing pre- and post-exposure prophylaxis, implementing harm reduction strategies for injecting drug users, implementing universal screening of blood donations,
and eliminating mother-to-child transmission.

Obstacles to higher treatment coverage occur at each stage of the cascade of services. More effort is needed to increase outreach and testing (40% of all HIV-positive people are unaware of their status), to routinely link people who test positive to treatment, to simplify treatment protocols, and to improve monitoring of patients. Taken together, such efforts would increase the number of those starting treatment, reduce loss to follow up, and improve treatment adherence. Given the variability in infection rates among different populations, services also need to be focused effectively, taking into account the relevant population groups, geography, and age and gender (Fig. 6).

3.3 Equity

Many strongly affected populations have been left behind by responses to HIV (Fig. 7), including adolescent girls, sex workers, men who have sex with men, people who inject drugs, transgender people and prisoners. Men who have sex with men are 19 times more likely to be HIV-positive than the general population; 13% of people who inject drugs are infected with HIV; and adolescent girls in sub-Saharan Africa are almost twice as likely as adolescent boys to be living with HIV. However, the provision of antiretroviral therapy is relatively equitable across income groups in high-burden countries in sub-Saharan Africa.

3.4 Data gaps

A country’s national HIV incidence is rarely measured directly. In generalized epidemics, HIV incidence and mortality are estimated from mathematical models fitted to prevalence data that are routinely collected from antenatal care clinics and, less frequently, from seroprevalence surveys that occur every 3 to 5 years and use nationally representative samples. The number of people receiving antiretroviral therapy is obtained...
from administrative data. In countries with concentrated epidemics, routine surveillance data are less easily available, making monitoring more difficult and requiring alternative modelling strategies. Generating point estimates for prevalence (Fig. 8) that are disaggregated across socioeconomic variables is possible using national survey results, but modelling assumptions are needed to derive approximate estimates of incidence and mortality by age and sex.

3.5 Further reading
http://www.who.int/hiv/en/


FIG. 7

New HIV infections among adults by risk behaviour, worldwide, 2015

- Sex workers: 6%
- Men who have sex with men: 11%
- Transgender people*: 1%
- Clients and other sex partners of at-risk populations: 19%
- Rest of adult population: 56%

* Data from only Asia, the Pacific Islands, Latin America and the Caribbean.

FIG. 8

HIV prevalence in adults (%), worldwide, 2015

Prevalence (%) by WHO region

- Western Pacific: 0.1 (< 0.1–0.2)
- Eastern Mediterranean: 0.1 (< 0.1–0.2)
- South-East Asia: 0.3 (0.3–0.4)
- European: 0.4 (0.4–0.5)
- Americas: 0.5 (0.4–0.6)
- African: 4.4 (4.0–4.8)

4. Tuberculosis

SDG Target 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.

INDICATOR 3.3.2 TUBERCULOSIS INCIDENCE PER 100 000 POPULATION PER YEAR

4.1 Situation
TB is a treatable and curable disease, but it remains a major global health problem. In 2015, there were an estimated 10.4 million new TB cases (142 cases/100 000 population). There were 1.4 million deaths from TB and an additional 400 000 deaths resulting from TB disease among HIV-positive people. Although the number of deaths from TB fell by 22% between 2000 and 2015, TB remained among the top 10 causes of death worldwide in 2015 and is the top infectious disease killer.

TB occurs in every part of the world (Fig. 9 and Fig. 10). In 2015, the largest number of new TB cases occurred in WHO’s South-East Asia and Africa regions, accounting for 72% of new cases globally. Six countries accounted for 60% of new cases: China, India, Indonesia, Nigeria, Pakistan and South Africa. However, the African Region carried the most severe burden, with

FIG. 9

Estimated incidence of all types of tuberculosis per 100 000 population per year, worldwide, 2015

### Estimated tuberculosis incidence per 100,000 population, by WHO region, 2015

#### African

- **Benin**: 432.2
- **Madagascar**: 241.8
- **Central African Republic**: 320.5
- **Democratic Republic of the Congo**: 195.2
- **Eritrea**: 201.7
- **Guinea**: 171.8
- **Guinea-Bissau**: 171.1
- **Kenya**: 97.9
- **United Republic of Tanzania**: 87.3

#### Americas

- **Bermuda**: 0
- **Barbados**: 0
- **Montserrat**: 0
- **British Virgin Islands**: 0
- **San Juan**: 0
- **US Virgin Islands**: 0
- **Trinidad and Tobago**: 0
- **Bahamas**: 18.4
- **Mexico**: 12.0
- **Anguilla**: 21.5
- **Belize**: 25.6
- **Argentina**: 25.4
- **Belizian Republic of Virginia**: 28.7
- **Uruguay**: 30.2
- **Colombia**: 30.8
- **Pitcairn**: 33.3
- **Brazil**: 46.5
- **Paraguay**: 50.8
- **Honduras**: 60.2
- **El Salvador**: 65.9
- **Nicaragua**: 93.0
- **Panama**: 117.1
- **Peru**: 118.8
- **Dominican Republic**: 193.8

#### Eastern Mediterranean

- **Bahrain**: 322.4
- **Egypt**: 224.9
- **Iraq**: 200.3
- **Yemen**: 187.9
- **Jordan**: 279.3
- **Lebanon**: 180.2
- **Syrian Arab Republic**: 174.6
- **Saudi Arabia**: 172.2
- **United Arab Emirates**: 158.9
- **Palestine**: 145.9

#### European

- **Monaco**: 7.0
- **Iceland**: 5.1
- **Ireland**: 4.0
- **Greece**: 4.3
- **Czech Republic**: 3.5
- **Finland**: 3.6
- **Netherlands**: 2.9
- **Italy**: 2.5
- **Denmark**: 2.5
- **Czech Republic**: 1.9
- **Andorra**: 1.3
- **Bulgaria**: 0.9
- **United Kingdom**: 0.8
- **Spain**: 0.5
- **The former Yugoslav Republic of Macedonia**: 0.1
- **Croatia**: 0.3
- **Belgium**: 0.2
- **Italy**: 0.1
- **Serbia**: 0.1
- **Switzerland**: 0.1
- **Austria**: 0.1
- **Latvia**: 0.1
- **Romania**: 0.1
- **Lithuania**: 0.1
- **Lithuania**: 0.1
- **Switzerland**: 0.1
- **Czech Republic**: 0.1
- **Austria**: 0.1
- **Latvia**: 0.1

#### South-East Asia

- **Maldives**: 54.8
- **Malaysia**: 7.0
- **Sri Lanka**: 4.5
- **Bhutan**: 6.1
- **Nepal**: 15.5
- **Thailand**: 17.1
- **India**: 216.7
- **Bangladesh**: 224.9
- **Myanmar**: 365.1
- **Indonesia**: 394.9
- **Timor-Leste**: 498.2
- **Democratic People's Republic of Korea**: 568.7

#### Western Pacific

- **Japan**: 15.7
- **Australia**: 3.0
- **New Zealand**: 7.4
- **Nepal**: 8.4
- **Samoa**: 8.1
- **Tonga**: 9.9
- **China**: 362.6
- **Philippines**: 361.8
- **Viet Nam**: 361.7
- **Solomon Islands**: 394.9
- **Timor-Leste**: 422.1
- **Papua New Guinea**: 551.5
275 cases/100 000 population. Also, the highest mortality rates from TB are found in WHO’s African Region (Fig. 11).

With timely diagnosis and correct treatment, almost all TB cases can be cured. Globally, in 2014, the treatment success rate among new cases reported by national TB programmes was 83%. In high-income countries, the case-fatality ratio (calculated as mortality divided by incidence) averages about 6%. In all settings, rifampicin-resistant TB (known as RR-TB), including multidrug-resistant TB (known as MDR-TB), accounted for about 580 000 new cases in 2015; these cases are harder to treat because they require lengthy treatment with less-effective and more toxic and costly anti-TB agents; in 2013, the global success rate for treatment of rifampicin-resistant and multidrug-resistant TB was 52%.

4.2 Achieving the 2030 target

The 2030 targets set in WHO’s End TB Strategy (2016–2030) are to achieve an 80% reduction in the incidence of TB and a 90% reduction in the number of deaths from TB compared with levels in 2015. An earlier target is set for 2020 and is linked to making progress towards UHC: by 2020, no TB patients and their households should face catastrophic costs due to TB disease.

To reach the targets for reductions in cases and deaths, the annual decline in the global incidence of TB must accelerate from 1.5% during 2014–2015 to 4–5% per year by 2020 and then to 10% per year by 2025 (Fig. 12). A decline of 10% per year is equivalent to the best-ever performance at the national level historically (for example, in countries in western Europe during the 1950s and 1960s). In addition, the proportion of people with TB who die from the disease worldwide (the case-fatality ratio) needs to decline from 17% in 2015 to 10% in 2020 and to 6% by 2025. For this to happen, UHC for essential services that include detecting and treating TB must be achieved by 2025 because a case-fatality ratio of 6% is possible only if all those with TB disease have access to high-quality treatment. After 2025, an unprecedented acceleration in the annual decline in the global incidence of TB is required to reach the 2030 target. Achieving this will depend on technological breakthroughs – such as the development of a post-exposure vaccine or a short, efficacious and safe treatment for latent infection – so that the risk of developing TB among the approximately 1.7 billion people who are already infected is substantially reduced. Increased investment in research and development is crucial for such breakthroughs to be feasible.

To achieve the 2030 targets (and the earlier milestones for 2020 and 2025), the End TB Strategy has three pillars and associated components.

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**FIG. 12**

Trajectories of tuberculosis incidence (left) and the number of deaths from tuberculosis (right) required to achieve the targets set in the End TB Strategy.

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidence per 100,000 population per year</th>
<th>Deaths (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>125</td>
<td>1.5</td>
</tr>
<tr>
<td>2020</td>
<td>100</td>
<td>1.0</td>
</tr>
<tr>
<td>2025</td>
<td>75</td>
<td>0.5</td>
</tr>
<tr>
<td>2030</td>
<td>50</td>
<td>Target for 2035 = 90% reduction</td>
</tr>
<tr>
<td>2035</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

These are:

**pillar 1** – integrated, patient-centred TB care and prevention. This includes ensuring the early diagnosis of TB; providing treatment for all people with TB, including those with drug-resistant TB; engaging in collaborative TB/HIV activities and management of co-morbidities; providing preventive treatment to persons at high risk; and providing vaccination against TB;

**pillar 2** – bold policies and supportive systems. These include ensuring political commitment and adequate resources for TB care and prevention; engaging with communities, civil society organizations, and public and private care providers for the whole range of tasks from identifying presumed cases to diagnosing them, and offering care and support, depending upon their capacity; developing policies for UHC, and developing regulatory frameworks for case

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**FIG. 13**

The case-fatality ratio (%) for tuberculosis in 2015 (calculated as mortality from tuberculosis including mortality in HIV-positive people, divided by tuberculosis incidence)

notification and vital registration, including ascertainment of causes of deaths in hospitals and communities; ensuring the rational use of high-quality medicines and appropriate infection control measures; and taking actions to provide social protection, alleviate poverty and address other determinants of TB; pillar 3 – intensified research and innovation. This includes discovering, developing and ensuring the uptake of new tools, interventions and strategies; and engaging in research to optimize the implementation, impact and promotion of innovations.

4.3 Equity

In 2015, TB incidence rates in low-income countries were nearly 20 times higher than in high-income countries, and mortality rates from TB among HIV-negative people were almost 40 times higher. The case-fatality ratio for TB provides an indication of equity because if everyone with TB had access to high-quality treatment, then the case-fatality ratio would be about 6% in all countries. In 2015, this ratio varied widely among countries, indicating there were large inequities in access to health services, including TB detection and treatment services (Fig. 13).

4.4 Data gaps

The data available to estimate the burden of TB disease (incidence, prevalence and mortality) have improved considerably, but gaps in the data remain. To directly measure TB incidence requires that notifications of TB cases are a good proxy indicator of incidence. Currently, this is the case only in countries that have high-performance surveillance systems and where the quality of and access to healthcare means that few cases remain undiagnosed. Elsewhere, the underreporting of detected TB cases and underdiagnosis or overdiagnosis mean that notification data are not good proxies for TB incidence and adjustments must be made to account for these problems. Inventory studies that measure the level of underreporting of detected cases can be used to quantify the extent to which notification data underestimate the number of detected cases. National population-based surveys of the prevalence of TB disease can also help to improve estimates of the burden of TB. To measure deaths from TB, national (or sample) vital registration systems must be developed or strengthened, especially in Africa.

4.5 Further reading

http://www.who.int/tb/en/

5. Malaria

SDG Target 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.

5.1 Situation
Almost half of the world’s population, living in 96 countries and territories, is at risk of malaria. In 2015, malaria incidence was 94 cases/1 000 persons at risk, with an estimated 212 million cases and 429 000 deaths; more than two thirds of these deaths occurred in children younger than 5 years (Fig. 14). Sub-Saharan Africa bears the highest burden, with an incidence of 244/1 000 persons at risk, accounting for roughly 90% of cases and deaths globally (Fig. 15).

The *Plasmodium falciparum* malaria parasite is responsible for the majority of deaths from malaria. However, *P. vivax* caused nearly 8.5 million cases in 2015, accounting for about half of the total number of malaria cases outside of Africa; *P. vivax* can also cause severe disease and death.

![Percentage of total malaria deaths that occur in children younger than 5 years, sub-Saharan Africa, 2015](Image)
## FIG. 15

### Malaria incidence per 1,000 population at risk by WHO region, 2015

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>African</strong></td>
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5.2 Achieving the 2030 target

Global targets aimed at eliminating malaria include by 2030 achieving 90% reductions in malaria incidence and mortality compared with rates in 2015, eliminating malaria from at least 35 more countries, and preventing malaria from becoming re-established in all countries identified as malaria-free.

The Global technical strategy for malaria 2016–2030 comprises three pillars: (a) ensuring universal access to malaria prevention strategies, and to diagnosis and treatment; (b) accelerating elimination efforts and ensuring that endemic countries and areas attain malaria-free status; and (c) transforming malaria surveillance into a core intervention, recognizing that strengthened surveillance can reduce malaria incidence particularly when the incidence is low.

Key interventions against malaria include encouraging people to sleep under insecticide-treated mosquito nets, using indoor residual spraying of insecticides, providing intermittent preventive treatment during pregnancy, and increasing care-seeking and access to diagnostic testing and treatment with artemisinin-based combination therapies.

A requirement for achieving the 2030 target is adequate funding.

In 2015, total worldwide funding for malaria control and elimination activities was estimated to be US$ 2.9 billion, only 46% of the US$ 6.4 billion milestone for 2020 required in the global strategy, indicating that substantial increases are required. Shortfalls in funding ultimately result in gaps in the coverage of interventions (Fig. 16).

5.3 Equity

The use of insecticide-treated mosquito nets among vulnerable groups, such as young children and pregnant women, is higher than in the population as a whole, but children aged 5–14 years have lower rates of use (Fig. 17). As malaria
incidence falls, the disease often becomes increasingly concentrated in marginalized population groups, including high-risk occupational groups; ethnic, religious and political minorities; and communities living in hard-to-reach areas and border regions. It may be more difficult and costly to provide services to these groups due to challenging infrastructure, security concerns, language barriers, traditional beliefs and political considerations.

**5.4 Data gaps**

In the absence of reliable data, a geostatistical model is used to derive incidence estimates for some countries in Africa. Estimates of deaths due to malaria in high-burden countries are also derived from models, which for children in Africa are based on verbal autopsy studies that, in turn, largely rely upon the presence of fever to identify deaths from malaria. Monitoring the incidence of malaria by key variables that measure equity will require a much greater investment in surveillance systems than is currently made.

**5.5 Further reading**

http://www.who.int/malaria/en/

6. Viral hepatitis

SDG Target 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.

INDICATOR 3.3.4
HEPATITIS B INCIDENCE PER 100,000 POPULATION

6.1 Situation
In May 2016, the World Health Assembly endorsed the Global Health Sector Strategy on Viral Hepatitis for 2016–2021. The Strategy called for eliminating viral hepatitis as a public health threat by 2030 (that is, reducing new infections by 90% and mortality by 65%) by expanding a set of core interventions to sufficient coverage levels (Fig. 18).

In 2015, viral hepatitis caused 1.34 million deaths. Most of these deaths were due to chronic liver disease and primary liver cancer. Globally, in 2015, an estimated 257 million people were living with chronic hepatitis B virus (HBV) infection, and 71 million people were living with chronic hepatitis C virus (HCV) infection. The HBV epidemic affects mostly WHO’s African and Western Pacific regions, with these regions accounting for 68% of prevalent infections. The HCV epidemic affects all regions, with major differences between and

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**FIG. 18**
Baseline (2015) and targeted (2030) coverage (%) of interventions for hepatitis B virus (HBV) and hepatitis C virus (HCV) from the Global Health Sector Strategy on Viral Hepatitis

- HBV vaccination
- HBV preventing mother-to-child transmission
- Blood safety
- Injection safety
- Harm reduction
- HBV diagnosis
- HCV diagnosis
- HBV treatment
- HCV treatment

* Measuring progress on the HBV treatment target is limited by the absence of data on the proportion of persons eligible for treatment and the absence of a functional cure.
WHO's Eastern Mediterranean and European regions have the highest prevalence of HCV infection. In 2015, global coverage with three doses of HBV vaccine in infancy reached 84% (Fig. 18). This has substantially reduced HBV transmission during the first 5 years of life, as reflected by the reduction in HBV prevalence to 1.3% among children younger than 5 (Fig. 19). The prevalence of HBV infection in children younger than 5 years is a surrogate indicator of the cumulative incidence of chronic HBV infection in this age group and was selected as an SDG indicator for target 3.3. However, coverage with the initial birth dose of the vaccine is still low, at 39% (Fig. 18).

Other prevention interventions are available, but implementation has been insufficient. Although in some regions injection drug use is the primary route of HCV transmission, the provision of effective harm reduction services has

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Source: WHO, work conducted by the London School of Hygiene and Tropical Medicine.
been inadequate. Globally, 5% of healthcare-related injections remain unsafe (Fig. 18). As a result, in 2015, an estimated 1.75 million new HCV infections occurred worldwide.

Access to affordable hepatitis testing is limited (Fig. 18). Few people with viral hepatitis have been diagnosed (that is, only 9% of HBV-infected persons or 22 million persons, and only 20% of HCV-infected persons or 14 million persons have been diagnosed). Among those in whom viral hepatitis has been diagnosed, treatment has reached only a small fraction. In 2015, 8% of those diagnosed with HBV infection, or 1.7 million persons, were receiving treatment, and 7.4% of those diagnosed with HCV infection, or 1.1 million persons, had started treatment. Although the cumulative number of persons treated for HCV reached 5.5 million in 2015, only about half a million of these had received the newer, more effective, and better tolerated class of medicines known as direct-acting antivirals. In 2015, there were more new HCV infections than patients who started treatment.

6.2 Achieving the 2030 target

Fig. 18 outlines how baseline coverage in 2015 compares with the 2030 target. The world is on track to meet the target with respect to interventions to deliver HBV vaccination (Fig. 20), and ensure blood safety and injection safety. However, significant progress is needed to meet the target for preventing mother-to-child transmission and reducing harm. Finally, interventions aimed at testing and providing treatment had a promising beginning, but a major expansion is needed in the context of UHC.

The 2015 baseline estimates of service coverage can guide countries and global partners on the road to eliminating viral hepatitis. First, a strategic information system based on data from surveillance and programmes is needed to direct policy changes and the implementation of interventions. Second, coverage of testing and treatment needs to be rapidly expanded. Third, hepatitis services need to be delivered through a public health approach to benefit all. Fourth, sustainable financing is required to enable UHC, the overarching framework for health in the SDGs. Fifth, innovations are necessary; new diagnostics, treatments and vaccines urgently need to be developed, tested and delivered to transform the response to hepatitis and attain the elimination targets.

6.3 Equity

Within countries, population groups differ in terms of the incidence or prevalence of infection with HBV or HCV. Vulnerability and needs vary also. Groups in need of specific prevention, testing, care and treatment approaches include healthcare workers, persons who inject drugs, indigenous peoples and minorities, prisoners, migrants, men who have sex with men, persons co-infected with HIV and hepatitis, and blood donors.

The hepatitis C epidemic and injection drug use are two public health issues interconnected at the levels of transmission, management and mortality. Worldwide, 11.8 million persons who inject drugs are in need of hepatitis prevention and treatment services. Injection drug use accounts for 1% of new HBV infections and 23% of new HCV infections. Among persons with chronic infection, 0.5% of those living with HBV and 8% of those living with HCV currently inject drugs.

Low- and middle-income countries account for the largest proportion of persons living with HBV infection (96%) and HCV infection (72%), yet access to testing and treatment is more limited in these
### Coverage (%) with three doses of hepatitis B virus vaccine in the countries that have included it in their routine immunization schedule, by WHO region, 2015

#### African Region
- Equatorial Guinea: 92
- South Sudan: 91
- Central African Republic: 91
- Guinea: 95
- Liberia: 91
- Chad: 81
- Nigeria: 84
- Angola: 87
- Niger: 86
- Mali: 86
- Madagascar: 84
- South Africa: 87
- Mauritania: 86
- Uganda: 86
- Burundi: 87
- Comoros: 86
- Kenya: 88
- Cameroon: 88
- Sierra Leone: 89
- Zimbabwe: 89
- Ghana: 88
- Malawi: 85
- Togo: 89
- Eritrea: 91
- Sao Tome and Principe: 92
- Angola: 93
- Mauritius: 93
- Rwanda: 94
- Seychelles: 95
- Sudan: 96
- United Republic of Tanzania: 96

#### Americas Region
- Canada: 85
- Haiti: 84
- Panama: 82
- Guatemala: 79
- Ecuador: 75
- Dominican Republic: 74
- Nicaragua: 73
- El Salvador: 71
- Trinidad and Tobago: 69
- Colombia: 69
- El Salvador: 68
- Costa Rica: 67
- Grenada: 67
- United States of America: 66
- Paraguay: 65
- Argentina: 64
- Belize: 63
- Saint Kitts and Nevis: 62
- Bahamas: 61
- Guyana: 61
- Uruguay: 61
- Brazil: 60
- Cuba: 59
- Barbados: 59
- Chile: 58
- Bolivia (Plurinational State of): 57
- Saint Vincent and the Grenadines: 56
- Antigua and Barbuda: 55
- Belize: 55
- Saint Lucia: 55

#### Eastern Mediterranean Region
- Syrian Arab Republic: 91
- Somalia: 83
- Iraq: 80
- Yemen: 78
- Pakistan: 77
- Afghanistan: 76
- Lebanon: 73
- Djibouti: 71
- Egypt: 69
- Sudan: 68
- Libya: 67
- United Arab Emirates: 66
- Bahrain: 65
- Iran (Islamic Republic of): 63
- Saudi Arabia: 62
- Tunisia: 60
- Jordan: 59
- Kuwait: 59
- Mexico: 58
- Oman: 58
- Qatar: 58

#### European Region
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- Sweden: 56
- San Marino: 54
- Bosnia and Herzegovina: 51
- Montenegro: 50
- France: 49
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- Austria: 37
- Belgium: 37
- Kazakhstan: 36
- Portugal: 36
- Belarus: 36
- Luxembourg: 36
- Monaco: 36
- Turkmenistan: 36
- Uzbekistan: 36

#### South-East Asia Region
- Myanmar: 55
- Timor-Leste: 53
- Indonesia: 52
- India: 51
- Nepal: 50
- Bangladesh: 49
- Bhutan: 48
- Maldives: 47
- Sri Lanka: 47
- Thailand: 47

#### Western Pacific Region
- Samoa: 60
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- Papua New Guinea: 58
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- Micronesia (Federated States of): 57
- Tonga: 56
- Marshall Islands: 55
- Kiribati: 55
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- Solomon Islands: 53
- Brunei Darussalam: 53
- India: 53
- Cook Islands: 53
- Fiji: 53
- Malaysia: 53
- Mongolia: 53
- Nauru: 53

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**FIG. 20**
countries. To increase access and reduce health inequities, strategies for delivering hepatitis prevention and harm reduction services can be tailored to different populations and settings through integration, decentralization and task-shifting.

6.4 Data gaps

The first-ever global report on viral hepatitis described what is known about the current status of viral hepatitis in the world. However, data collection systems are not in place in many parts of the world to generate the necessary strategic information. These limitations explain why the initial report provided estimates only at the regional level. They also point to the need for stronger mechanisms to collect, transfer, analyse and disseminate data about viral hepatitis.

- Mortality is poorly measured in routine reporting at the national level.
- Some countries still lack population-based estimates of the prevalence of infection.
- Key prevention measures are poorly monitored. Improving injection safety requires surveys of healthcare facilities, and there are major data gaps in information about harm reduction efforts.
- The incidence of HCV infection is technically difficult to measure.
- Systems to monitor the cascade of care are still being established.
- The capacity to test for HBV and HCV infection at the country level is unclear.

6.5 Further reading

http://www.who.int/hepatitis/en/


7. Neglected tropical diseases

SDG Target 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.

7.1 Situation
Key interventions against NTDs include delivering mass treatment; providing individual treatment and care; improving water, sanitation and hygiene (known as WASH strategies); implementing vector control measures; delivering veterinary public health services; as well as delivering supportive interventions to strengthen health systems.

The first evidence of the end of NTDs will come as diseases are eliminated or controlled and the numbers of people requiring mass or individual treatment and care are reduced. Treatment and care are the interventions discussed in this section. A number of the other wide-ranging interventions described above can be addressed by SDG targets and indicators for UHC (target 3.8) and access to water and sanitation (targets 6.1 and 6.2).

In 2015, 1.59 billion people required mass or individual treatment and care for NTDs, down from 2 billion in 2010 (Fig. 21). Of these, 960 million were in lower middle-income countries. The 523 million people requiring treatment in low-income countries represented 58% of the population there.

Almost all of these 1.59 billion people required mass treatment for at least one of the following NTDs: lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminthiases or trachoma. More than 3.9 million people needed individual treatment and care for other NTDs, such as Buruli.

![Figure 21](image-url)
ulcer, dengue, dracunculiasis (guinea-worm disease), human African trypanosomiasis, leprosy, the leishmaniases and endemic treponematoses (yaws) (Fig. 22).

7.2 Achieving the 2030 target

In 2015, 165 countries reported people requiring treatment and care for NTDs (Fig. 23). Between 2010 and 2015, 95 countries had reduced the number of people requiring treatment and care for these diseases (Fig. 24).

For NTDs targeted for elimination or eradication by World Health Assembly resolutions, ending NTDs implies reducing the number of people requiring treatment and care to zero. Diseases targeted for eradication include dracunculiasis (by 2015) and yaws (by 2020); those targeted for global elimination are leprosy, lymphatic filariasis and trachoma (all by 2020); onchocerciasis (by 2025); and human African trypanosomiasis (by 2020, with zero incidence in 2030); those targeted for regional elimination are schistosomiasis, rabies and visceral leishmaniasis (all by 2020); and Chagas disease is targeted for regional interruption of intradomiciliary transmission (by 2020).

Controlling other NTDs means reducing the frequency of providing interventions. Taken together, existing World Health Assembly-endorsed targets should lead to a 90% reduction in the average number of people requiring treatment and care each year.

Reducing the number of people requiring treatment and care does not depend solely on the actions of the health sector: for example, controlling soil-transmitted helminthiases requires providing universal access to water and sanitation; controlling dengue requires vector control as an adaptive response to urbanization and climate change.

![FIG. 22 Number of people (in thousands) requiring treatment and care for a neglected tropical disease, by disease, 2010–2015^a,b](image)

HAT, human African trypanosomiasis; STH, soil-transmitted helminthiases.
^a These are reported numbers; best estimates and 95% uncertainty intervals refer to missing values.
^b The total for echinococcosis represents data from only the European Region and Mongolia; data are not routinely reported from other countries. The numbers for rabies represent deaths only; data for the larger number of people requiring post-exposure prophylaxis are not routinely reported. The number of people requiring treatment and care for Chagas disease, cysticercosis, foodborne trematodiases, and mycetoma are not routinely reported.

7.3 Equity

People requiring interventions against NTDs are poor and marginalized. Therefore, monitoring NTDs and the coverage of interventions is key to ensuring that those who are the least well off are prioritized from the beginning of the path towards providing both UHC and universal access to safe water and sanitation. Indeed, monitoring for NTDs can help the health, hygiene and sanitation sectors achieve their universal access goals by better targeting the poorest and most marginalized populations.

7.4 Data gaps

Being able to disaggregate data by disease will be important to monitoring successes and failures. Gaps in NTD reporting systems include a lack of information about the number of people requiring...
Number of people requiring treatment and care for a neglected tropical disease, by WHO region, 2010–2015

**African Region**
- Nigeria
- United Republic of Tanzania
- Uganda
- Mozambique
- Madagascar
- Angola
- Mali
- Niger
- Ghana
- Kenya
- Senegal
- Zambia
- Burkina Faso
- Rwanda
- Central African Republic
- Sudan
- Democratic Republic of the Congo
- Cameroon
- Côte d’Ivoire
- South Sudan
- Benin
- Namibia
- Comoros
- Botswana
- Sao Tome and Principe
- Gambia

**Eastern Mediterranean Region**
- Kuwait
- United Arab Emirates
- Saudi Arabia
- Lebanon
- Oman
- Bahrain
- Libya
- Qatar
- Jordan
- Monaco
- Tunisia
- Iran (Islamic Republic of)
- Syrian Arab Republic
- Djibouti
- Egypt
- Iraq
- Somalia
- Yemen
- Afghanistan
- Sudan
- Pakistan

**European Region**
- Maldives
- Sri Lanka
- Thailand
- Bhutan
- Timor-Leste
- Democratic People’s Republic of Korea
- Nepal
- Myanmar
- Bangladesh
- Indonesia
- India

**Americas Region**
- Canada
- Saint Vincent and the Grenadines
- Saint Kitts and Nevis
- Uruguay
- Chile
- Grenada
- Barbados
- Antigua and Barbuda
- Argentina
- United States of America
- Bahamas
- Belize
- Dominica
- Costa Rica
- Trinidad and Tobago
- Saint Lucia
- Cuba
- Suriname
- Bolivarian Republic of Venezuela
- Jamaica
- Panama
- El Salvador
- Guyana
- Paraguay
- Nicaragua
- Dominican Republic
- Bolivia (Plurinational State of)
- Ecuador
- Honduras
- Guatemala
- Colombia
- Haiti
- Mexico
- Brazil

**South-East Asia Region**
- Philippines
- Indonesia
- Thailand
- Malaysia
- Timor-Leste
- Bhutan
- Lao People’s Democratic Republic
- Myanmar
- Bangladesh
- Singapore
- Brunei Darussalam
- Malaysia
- Marshall Islands
- Nauru
- Niue
- Tonga
- Samoa
- Timor-Leste
- Micronesia (Federated States of)
- Vanuatu
- Fiji
- Nauru
- Palau
- Marshall Islands
- Tuvalu
- Australia
- Kiribati
- Tonga
- Samoa
- Cook Islands
- Palau
- Timor-Leste
- Micronesia (Federated States of)
- Marshall Islands
- Nauru
- Niue
- Tonga
- Samoa
- Timor-Leste
- Micronesia (Federated States of)
treatment and care for Chagas disease and for zoonotic NTDs, as well as the incident number of people who require and request surgery or rehabilitation. When using reporting systems for donated medicines, data disaggregation by sex and by urban or rural area is optional or depends on which diseases are co-endemic. Some disaggregation by age is available.

Fig. 21–24 present conservative estimates of the number of people requiring treatment and care for NTDs, assuming perfect co-endemicity of some NTDs at the level of the smallest available reporting unit and age group. By 2030, improved data on co-endemicity and models will be used to validate this approach. Any changes over time in case-detection rates will have to be taken into account when making comparisons with the baseline.

7.5 Further reading
http://www.who.int/neglected_diseases/en/


We will not achieve the SDGs without making significant and sustained progress against infectious diseases. Ending the epidemics of AIDS, TB, malaria, viral hepatitis and neglected tropical diseases will require our undivided attention and redoubled commitment, even as we integrate health into all development activities and strive to achieve universal health coverage.

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