CROSSING THE BILLION

Lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminthiases and trachoma

Preventive chemotherapy for neglected tropical diseases

World Health Organization

Crossing the billion. Lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminthiases and trachoma: preventive chemotherapy for neglected tropical diseases

ISBN 978-92-4-151215-2
ISBN 978-92-4-069647-1 (ePub)

Suggested citation. Crossing the billion. Lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminthiases and trachoma: preventive chemotherapy for neglected tropical diseases. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

This document was prepared by Jon Mark Walls with contributions from the Department of Control of Neglected Tropical Diseases at WHO headquarters and WHO regional offices.

Graphic design and layout by Big Mouth Gets, London, England
Printed by the WHO Document Production Services, Geneva, Switzerland

All information is correct at time of publication. For the latest updates on the data please visit:
http://apps.who.int/gho/cabinet/pc.jsp

WHO/HTM/NTD/PCT/2017.04
Cover: WHO/Yoshi Shimizu

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WE REPRESENT ONE OF THE LARGEST, MOST EXPANSIVE EFFORTS IN PUBLIC HEALTH HISTORY. THIS IS OUR STORY ...

noun \ni-ˈglekt-id\ \ˈträ-pi-kəl\ \di-ˈzēz

Neglected tropical diseases are a medically diverse group of conditions that persist among low-income populations in developing regions of Africa, Asia and the Americas. They are caused by a variety of pathogens, such as viruses, bacteria, protozoa and helminths.

CROSSING THE BILLION

FEATURES

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THE STORY

"We are often captivated by big ideas and movements that have the power to change the world in positive ways far beyond our imagination. The delivery of preventive chemotherapy for neglected tropical diseases is just that. The community of stakeholders, partners and donors has a moral imperative to complete this effort."

© WHO/ Pierre Albouy

Neglected Tropical Diseases, our future big win.

Some 18 diseases, with different aetiologies, signs, symptoms and prognosis, share one common purpose: to further deprive already disadvantaged and neglected populations. Grouping these diseases together under the umbrella of "neglected tropical diseases" has focused efforts to overcome them by both the health ministries of those countries in which they are endemic and international developmental organizations, foundations, nongovernmental organizations and the pharmaceutical industry. One of the aims of Goal 3 of the United Nations Sustainable Development Goals is to "end the epidemics" of these diseases by 2030. This can be achieved by implementing a comprehensive, holistic strategy of community-based, large-scale preventive chemotherapy and individual treatments supported by vector control, and providing safe water, sanitation and hygiene delivered in tandem with universal health coverage.

Preventive chemotherapy, one of the interventions deployed to combat neglected tropical diseases, is one of the largest, most successful public health interventions in history. It reduces the impact of diseases in areas far removed from the global spotlight. It represents an effort that is plain and simple and, fundamentally, a routine extension of one person giving a pill to another. However, delivering preventive chemotherapy is a marathon effort that requires consistent, dedicated work by donors and hundreds of thousands of health workers and volunteers year in year out.

The principle is also simple: six medicines administered in seven different combinations make it possible to treat more than one disease at a time. Putting this principle into practice is, however, an enormous task, as nearly one fifth of the globe must be covered. Preventive chemotherapy requires three main activities: the access to highly effective essential medicines, mostly donated, the decision of governments to commit human and financial resources, and the delivery of those medicines to those who require treatment. The difference that these efforts make to the lives of individuals, families and communities is generational and is a significant part of our collective work towards more sustainable, resilient, productive and equitable societies.

It has now been 10 years since the strategy of combining preventive chemotherapy and integrating strategies to treat the five targeted neglected tropical diseases began. As the community of experts, partners, donors, public health workers and volunteers coheres around this strategy and vision, it is now becoming feasible to eliminate or control these heavy burdens on humanity. This would be nothing less than a major historical achievement for the public health community.

The following pages provide a framework for understanding this integrated strategy as it has matured and continued to demonstrate its potential over the past decade. It also gives a snapshot of where we stand and will, I hope, serve as a signpost for action in the coming years as we strengthen the efforts of partners, donors and governments in this final stretch towards achieving the control and elimination goals of the 2030 Agenda for Sustainable Development.

Dr Margaret Chan
Director-General
World Health Organization

PREVENTIVE CHEMOTHERAPY TREATMENT FOR NEGLECTED TROPICAL DISEASES

THE INTERVENTION

Tailored preventive chemotherapy to combat neglected tropical diseases throughout the range of geographical settings and circumstances.

The term "preventive chemotherapy against neglected tropical diseases" (NTDs) defines the strategy of treating infected individuals to reduce morbidity and preventing transmission by administering medicines in communities at risk. Presently, WHO recommends preventive chemotherapy as a strategy to control a group of helminthic diseases (caused by worms) – lymphatic filariasis, onchocerciasis, schistosomiasis, hook-worm infection, ascariasis and trichuriasis – and the bacterial infections that cause trachoma.

These infections impose a huge burden on poor populations in the developing world, even though they can be treated with low-cost, safe oral medications administered alone or in combination annually or semi-annually. Identifying every infected individual is, however, an expensive, almost impossible task. Many earlier control programmes that adopted a "test-and-treat" approach had limited effect. The preventive chemotherapy approach first identifies infected communities and then administers the recommended medicines to either the entire eligible population (e.g. against lymphatic filariasis, onchocerciasis and trachoma) or the most vulnerable sub-groups (e.g. preschool and school-age children for soil-transmitted helminthiases and schistosomiasis) and women of child-bearing age except during the first trimester of pregnancy (e.g. for soil-transmitted helminthiases).

The aim of preventive chemotherapy is to avert the morbidity that invariably accompanies these infections. Early, regular administration of the medicines reduces the burden, alleviates suffering and reduces the extent, severity and long-term consequences of morbidity in infected individuals, eventually ensuring greater productivity and a better quality of life for people in poor settings. Under certain epidemiological conditions, community-wide preventive chemotherapy contributes to a sustained reduction in transmission.

As the aim of preventive chemotherapy is to reach large numbers of people, often in areas that are difficult to reach, the best use must be made of the existing health system and innovative drug distribution channels to ensure sustainable administration of the medicines. These channels also help to improve maternal health and the development of children into adults free of the burden of disabling disease. As communities are often affected by more than one disease that can be treated by preventive chemotherapy, coordinated, integrated approaches to administering the medicines are cost-efficient and cost-effective.

Preventive chemotherapy requires firstly that the affected communities have access to safe, quality-assured medicines that can be delivered to each eligible individual. Then, the individuals must actually swallow the medicine. Social mobilization, communication for behavioural change, monitoring and close supervision are keys to achieving high coverage of targeted and eligible at-risk groups each year.

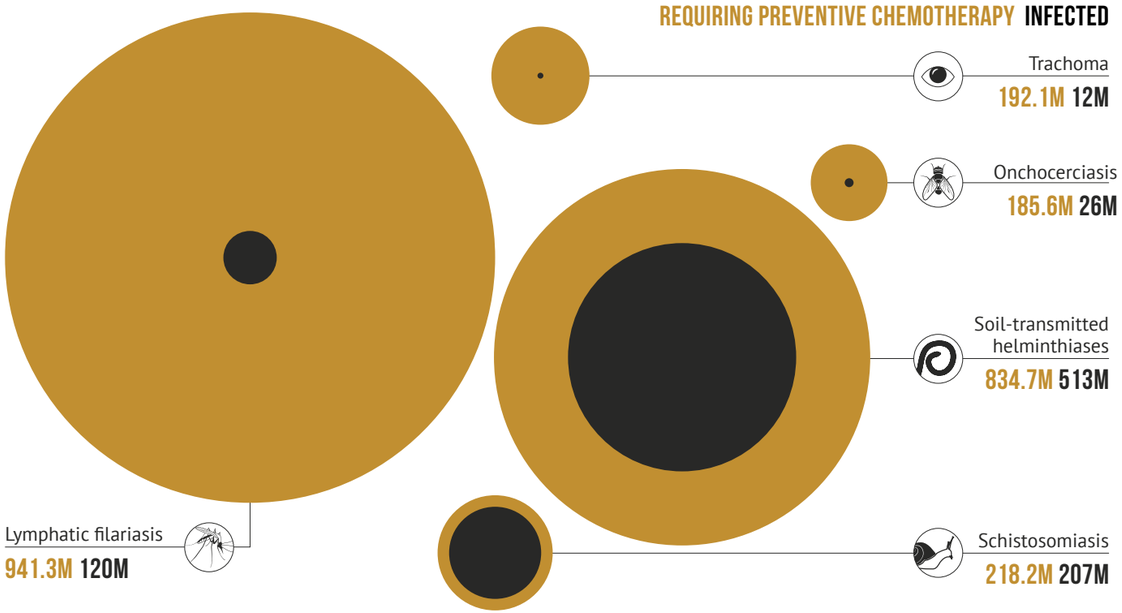
Preventive chemotherapy is achievable, as proven by the increasing numbers of people being reached each year. In 2015, over 1.5 billion[1] treatments were administered to almost 1 billion individuals for at least one of the targeted infections: lymphatic filariasis, onchocerciasis, schistosomiasis soil-transmitted helminthiases and trachoma. At a low cost – between US$ 0.30 and US$ 0.50 per person treated in most settings – preventive chemotherapy remains the most affordable, cost-effective strategy for controlling and eliminating these diseases. To be fully sustainable and to maximize impact, the strategy should be combined and delivered with other interventions, including improving access to safe drinking-water, hygiene, disease management and vector control.

More recently, food-borne trematodiases and yaws have been added to the list of NTDs that are amenable to preventive chemotherapy. These diseases are not reviewed in this report.

[1] "Billion" is defined as a thousand million (10^9)

THE PROBLEM

Five NTDs are amenable to preventive chemotherapy. They are chronic, disabling, disfiguring conditions that occur most commonly in settings of extreme poverty, especially among the rural poor and some disadvantaged urban populations.



Schistosomiasis, also known as "snail fever" because it is transmitted through freshwater snails, is caused by the larvae of worms that penetrate the skin and genital organs. In its chronic form, it can damage the liver, kidneys and spleen, cause bladder cancer, and stunt growth and learning in children.

Lymphatic filariasis, also known as "elephantiasis", is a parasitic disease caused by worms that affect the lymphatic system and is transmitted from person to person by mosquitoes. It results in severe swelling of the arms, legs and genitals, and leads to physical impairment, lost economic productivity and social discrimination. It is a leading cause of permanent disability globally.

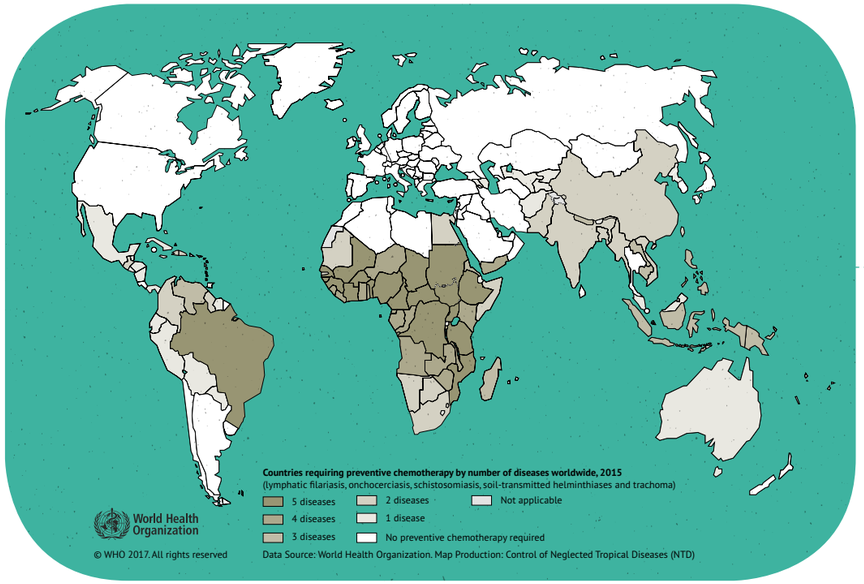
Onchocerciasis, or "river blindness", is transmitted by repeated bites from black flies infected with a parasitic worm. After infection, the larvae of the worm spread and cause severe itching, fibrous nodules under the skin and blindness. It is the second commonest preventable form of blindness due to infection.

Soil-transmitted helminthiases are infections caused by various intestinal worms, which are transmitted through human faeces in soil. Infections of moderate to heavy intensity cause various health problems, including abdominal pain, blood and protein loss, and growth retardation.

Trachoma is caused by bacteria spread by direct or indirect contact with secretions from an infected eye or nose. Repeated infections over many years can cause scarring of the eyelids, which can drag the eyelashes backwards so that they rub on the eye, scratching the cornea and irreversibly impairing vision. Trachoma is the world's most common infectious cause of blindness.

THE SCOPE

In total, 111 countries and territories are endemic for at least one NTD that can be treated with preventive chemotherapy. These diseases thrive among deprived communities where access to sanitation or hygiene is inadequate. The presence of multiple diseases in large populations presents a formidable challenge.



ONE DISEASE
39 COUNTRIES
50.4M PEOPLE

TWO DISEASES
27 COUNTRIES
692.4M PEOPLE*

THREE DISEASES
12 COUNTRIES
217.7M PEOPLE*

FOUR DISEASES
14 COUNTRIES
123.7M PEOPLE*

FIVE DISEASES
19 COUNTRIES
520.3M PEOPLE*

* NUMBER OF INDIVIDUALS REQUIRING PREVENTIVE CHEMOTHERAPY FOR AT LEAST ONE DISEASE AND LIVING IN COUNTRIES WITH NUMBER OF DISEASES.

The global scale of the five NTDs that can be treated by preventive chemotherapy and the widespread geographical settings in which they thrive pose an unparalleled public health problem. Although the problem is global, it is important to recognize the broad distribution of the diseases among and within countries.

Some 1.587 billion individuals globally require some form of preventive chemotherapy for at least one of the five diseases. It was therefore essential to develop an integrated approach in order to maximize resources for elimination and control. It was also necessary to take into account the co-endemicity of these diseases across regions, as this is the starting-point for designing and tailoring strategies for delivering preventive chemotherapy.

THE SOLUTION

Six medications are available, which are safe, effective for controlling or eliminating the infections, can be administered orally annually or semi-annually and can be used in seven possible combinations against the five diseases. Some of the medicines are effective against several diseases and some against only one. All the medications are donated.

ALBENDAZOLE (ALB)

Company: GlaxoSmithKline

Donation start date: 2000 (lymphatic filariasis), 2012 (soil-transmitted helminthiases)

Diseases treated: Lymphatic filariasis: up to 600 million tablets annually committed until elimination of disease; soil-transmitted helminthiases: limited to 400 million tablets per year

Sites of production: Nashik, India, and Cape Town, South Africa

IVERMECTIN (IVM)

Company: Merck Sharp & Dohme (MSD)

Donation start date: 1987 (onchocerciasis), 1998 (lymphatic filariasis)

Diseases treated: Lymphatic filariasis: as much as needed for as long as needed, currently 395 million tablets per year; onchocerciasis: as much as needed for as long as needed, currently 178 million tablets per year and in areas co-endemic for lymphatic filariasis and onchocerciasis, 218 million tablets

Site of production: Haarlem, Netherlands

AZITHROMYCIN (ZTH)

Company: Pfizer

Donation start date: 1999

Disease treated: Trachoma, in 2016, 120 million doses were donated

Site of production: Puerto Rico (tablets); Italy (paediatric oral suspension)

DIETHYLCARBAMAZINE (DEC)

Company: Eisai Pharmaceuticals India Pvt Ltd

Donation start date: 2014

Disease treated: Lymphatic filariasis, commitment for 2.2 billion tablets until 2020

Site of production: India

MEBENDAZOLE (MBD

Company: Johnson & Johnson

Donation start date: 2010

Disease treated: Soil-transmitted helminthiases, commitment for up to 200 million tablets per year until 2020 for school-age children

Site of production: Portugal

PRAZIQUANTEL (PZQ)

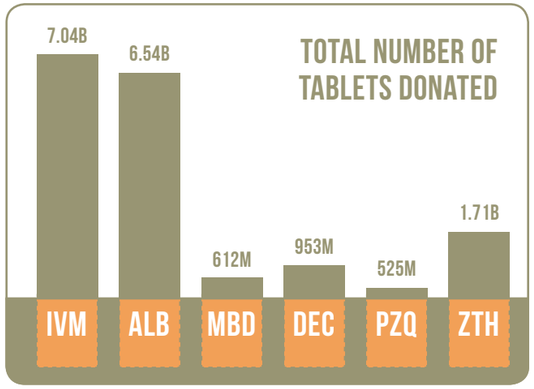
Company: Merck

Donation start date: 2008

Disease treated: Schistosomiasis, donation increasing progressively to up to 250 million tablets per year for an unlimited period

Site of production: Mexico

WHO coordinates global orders of four of the six medicines: albendazole, mebendazole, diethylcarbamazine and praziquantel. WHO also manages the donation of triclabendazole from Novartis for the treatment of foodborne trematodiases. The supply of ivermectin is managed by the Mectizan Donation Programme and that of azithromycin by the International Trachoma Initiative. Coordination of the supply and demand of mass quantities of the medicines is critical for ensuring that the medicines go from the production facility to the mouths of individuals in need. For example, in 2015, WHO oversaw orders for more than 1.5 billion tablets and their delivery to over 100 countries endemic for NTDs in 151 shipments of 4000 pallets, weighing a total of 1.46 million kg.



THE STRATEGY

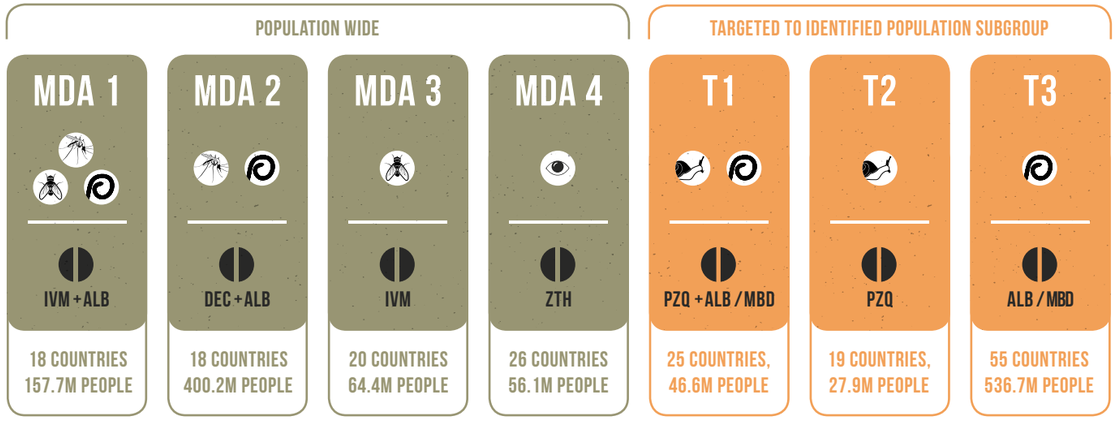
Preventive chemotherapy is an efficient, cost–effective way to control or eliminate some of the most common diseases on earth.

In 2003, WHO changed its approach to controlling and eliminating a group of NTDs, from the traditional one of targeting individual diseases to a more comprehensive approach to the health needs of the marginalized communities often affected by multiple diseases. In the new approach, interventions are integrated and coordinated to provide care and treatment to underserved populations.

The goal of this strategic shift was to ensure more efficient use of resources for the alleviation of poverty and the accompanying illnesses for millions of people.

The success of preventive chemotherapy is manifested as a reduction in the effects of the diseases, sustained decreases in transmission and removal of the association between NTDs, poverty and disadvantage.

PACKAGES FOR MASS DRUG ADMINISTRATION AND TARGETED TREATMENT ARE GROUPS OF MEDICINES, FOR MORE EFFICIENT TREATMENT OF DISEASES THAT AFFECT THE SAME POPULATION GROUPS.



The numbers presented above are for 2015 implementation.
For T3 type, this is the total number of treatments given.
MDA, mass drug administration; T, targeted treatment.

THE EXAMPLE

ETHIOPIA, A COUNTRY ENDEMIC FOR ALL FIVE NTDS THAT CAN BE TREATED WITH PREVENTIVE CHEMOTHERAPY, CONTINUES TO STRENGTHEN ITS APPROACH TO ELIMINATING AND CONTROLLING THE DISEASES.

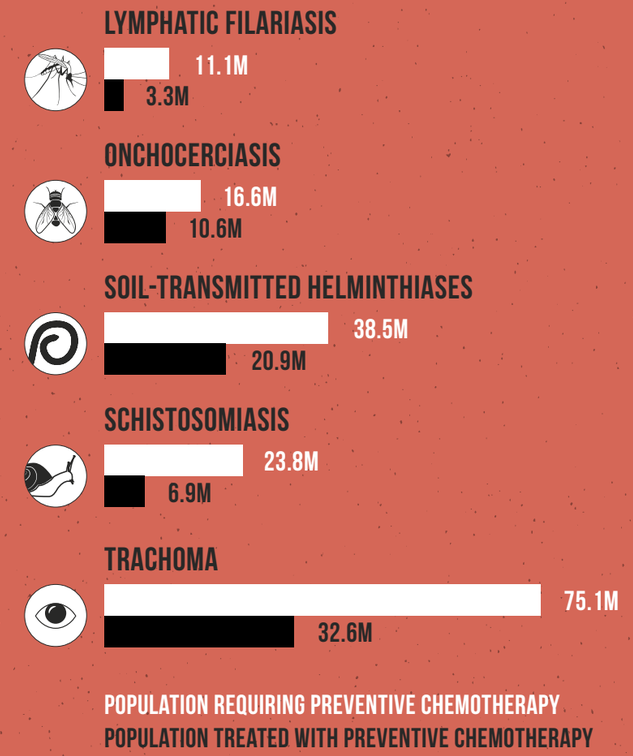
UNICEF Ethiopia, Halaba Woreda, 2016

Rod Waddington. Girl in Mekele, Ethiopia

Eric Lafforgue. Korcho village, South Ethiopia

Ethiopia is home to over 85 million people in need of preventive treatment, reflecting a much higher burden of these diseases than in other countries of sub-Saharan Africa. Since the launch of a "national master plan for NTDs" in 2013, the Government of Ethiopia has been cooperating with WHO and other partners to achieve its objectives. Continued integration of preventive chemotherapy has improved the efficiency of distribution of the medicines and increased progress in reducing the burden of these diseases.

Ethiopia has one of the highest burdens of preventable blindness in the region, which is being tackled with improved strategic planning, mapping and data collection. The remaining challenges include striking a balance between and ensuring the coherence of all preventive chemotherapy programmes. The opportunity for integration of different approaches to treatment in Ethiopia facilitates logistics and dramatically reduces the costs of distribution.



Eric Lafforgue. Korcho village, South Ethiopia

THE BROADER STRATEGY

Preventive treatment of NTDs requires activities additional to the distribution of medicines, to ensure a holistic approach to the causes and effects of the diseases.

NTDs present complex challenges due to both the systemic causes of each disease, such as inadequate water management and sanitation, and the different effects of the diseases on human health. In addition to the central pillar of preventive chemotherapy, which can be expanded to control or eliminate the five targeted diseases, supplementary strategies are often used to obtain short-, medium- and long-term solutions. People with advanced manifestations of trachoma or lymphatic filariasis, for example, can benefit from surgery, which provides immediate relief of the chronic effects of these diseases.

Activities to adapt or restrict the conditions in which NTDs exist include vector control interventions, such as use of bed nets or pesticides, which provide limited medium-term protection of at-risk individuals from transmission by insects. Providing safe water, sanitation and hygiene is a fundamental long-term solution for eliminating conditions in which many NTDs occur.

Preventive chemotherapy can often bridge the gaps between these additional strategies, which address acute medical needs, environmental conditions and systemic issues that affect the prevalence of the diseases in a particular region.

LYMPHATIC FILARIASIS	✓	✓	✓	✓
ONCHOCERCIASIS	✓	●	✓	●
SOIL-TRANSMITTED HELMINTHIASES	✓	✓	●	✓
SCHISTOSOMIASIS	✓	✓	✓	✓
TRACHOMA	✓	✓	●	✓

PREVENTIVE CHEMOTHERAPY

WHO

Preventive chemotherapy is a simple, safe, cost–effective means for controlling or eliminating the five NTDs. The six well-tested, safe medicines are given in various combinations and doses and at various times, usually once or twice a year, to large affected populations. Administration is facilitated by similar approaches to distribution and the epidemiological overlap that permits integration of activities.

VECTOR ECOLOGY AND MANAGEMENT

WHO/TDR /Andy Craggs

Methods for reducing the risks for infection by the vectors – mosquitoes, black flies and freshwater snails – contribute to the control and elimination of NTDs. Vector control products include odour-baited traps, pesticides, genetically modified insects and bed nets. The WHO Vector Control Advisory Group is encouraging the identification of new techniques and approaches that could be used to respond to rapidly changing circumstances in vector control.

WATER SANITATION HYGIENE

WHO/G. Biswas

Improving water, sanitation and hygiene (WASH) controls factors that contribute to NTDs. Sanitation and hygiene can prevent trachoma, regular washing of affected areas is essential for managing the morbidity associated with lymphatic filariasis, and reducing contamination of surface water with faeces and urine prevents diseases such as soil-transmitted helminthiases and schistosomiasis by significantly reducing or eliminating transmission. Adequate hand-washing and facial cleanliness are important in combating soil-transmitted helminthiases and trachoma, by decreasing transmission of the causative organisms.

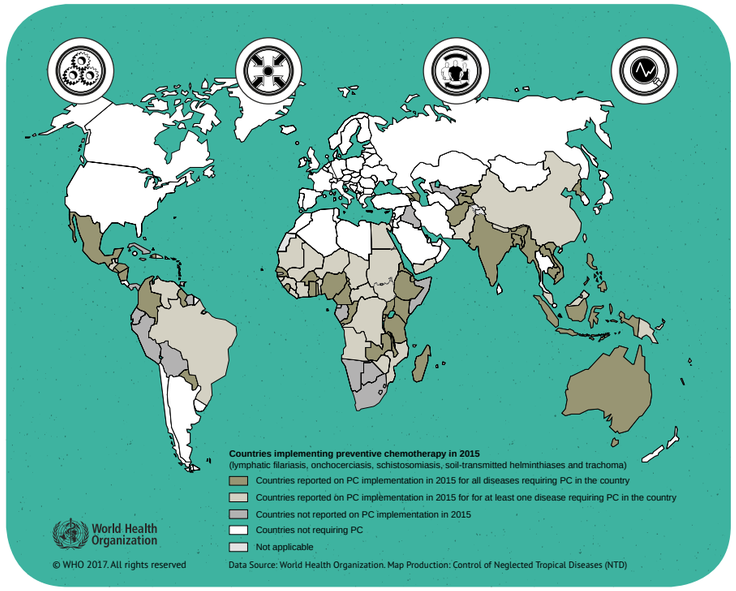
MORBIDITY MANAGEMENT

International Centre for Eye Health

NTDs affect the ability of patients to work and to integrate into society normally. Care and treatment may be required for acute and chronic manifestations of the infections. Treatment by health-care providers is recommended and for some conditions long-term self-care may be required. In some situations, like scrotal swelling, trachomatous trichiasis or intestinal obstruction, surgical intervention may be necessary. Although relatively standard procedures are available for these surgical interventions, adequate training and medical resources are often lacking or sufferers may not be aware that services are available.

THE IMPLEMENTATION

Countries and programmes have used a range of innovative strategies to administer preventive chemotherapy most efficiently and effectively. This requires integration of work by different stakeholders and adaptation to local contexts and challenges.



BANGLADESH
(CAPACITY-BUILDING)

The rate of soil-transmitted helminthiases infection in children in Bangladesh fell from 78% in 2005 to 16% in 2013 as a result of effective deworming campaigns. The success was due partly to innovative training methods, including capacity-building at schools in the "little doctor programme", in which selected schoolchildren are trained to educate their peers in integrated basic public health in their schools, including deworming, nutrition, personal hygiene and sanitation.

BRAZIL
(LOGISTICS AND DELIVERY)

Brazil has the largest NTD burden in the Americas, as it is endemic for trachoma, schistosomiasis, lymphatic filariasis, onchocerciasis and soil-transmitted helminthiases. Brazil launched an innovative school strategy in 852 priority municipalities, and, in partnership with the Ministry of Education, over 5.5 million children in 27 districts were dewormed in 2015. Active case searching led to the treatment of more than 238 000 people with trachoma. Brazil is part of a cross-border initiative to treat highly mobile, difficult-to-reach indigenous populations in the remote Amazon region for onchocerciasis several times a year.

UNITED REPUBLIC OF TANZANIA
(LOGISTICS AND DELIVERY)

The NTD programme relies on a vast network of over 67 000 trained community drug distributors, who administer treatment twice a year in schools and communities. With strong national coordination and leadership and support from partners, NTD treatment campaigns have reached most regions of the country. In 2015, 38.7 million treatments were delivered to 30.2 million individuals.

THE PHILIPPINES
(PLANNING AND COORDINATION)

The Philippine Department of Health organized the first national school deworming day in 2015, which marked a major shift from conventional decentralized local deworming campaigns. Approximately 14 million school-age children were dewormed during two campaigns that year, representing more than 70% of the children in need. The success of the campaign was due to planning and coordination with the Department of Education, nongovernmental organizations, partners and local government units.

CAPACITY-BUILDING

Developing and strengthening human and institutional resources by improving the ability to implement programmes more effectively and ensuring high-quality training of local health workers

TECHNICAL SKILLS · TRAINING · MENTORING

12.5 MILLION

In 2015, more than 8.3 million teachers and 4.2 million health workers participated in preventive chemotherapy for NTDs.

DELIVERY AND LOGISTICS

Taking preventive chemotherapy to groups and populations by facilitating the submission of requests and ensuring the most efficient distribution possible, from WHO to production facilities and finally to the affected countries and regions

PROCESSING REQUESTS · LOGISTICS · DISTRIBUTION

320

Number of fully grown elephants the weight of which is equivalent to the weight of the total number of preventive chemotherapy tablets donated in 2015

PLANNING AND COORDINATION

Drawing on experience in improving programmes in all areas and stages of implementation, developing a sound strategy to guide work, establishing partnerships and involving leadership.

LEADERSHIP · PLANNING · PARTNERSHIP

998M

Number of people who received preventive chemotherapy for at least one NTD in 2015

DATA MANAGEMENT AND ANALYSIS

Assessing factors related to the distribution of preventive chemotherapy by ensuring accurate analysis of the needs of targeted populations and the impact of the treatment distributed

COLLECTION · MANAGEMENT · ANALYSIS

84

Number of countries that reported on implementation of preventive chemotherapy in 2015

Preventive chemotherapy has four main pillars: (i) identifying and assessing needs (data analysis), (ii) finding workable strategies (planning and coordination), (iii) establishing a high-quality team (capacity-building) and (iv) executing operations.

Given the scale and diversity of the needs, challenges and contexts associated with NTDs, WHO has served as a focal point for the integrated preventive chemotherapy approach.

Data analysis is both the starting- and the end-point for distribution of preventive chemotherapy, as it provides experts with the information required to assess needs accurately and to determine the effectiveness of programmes. Using the initial or baseline survey and subsequent data on impact, experts, ministry of health officials and partners can prepare tailored implementation strategies for particular countries, regions and districts. These strategies take into account all issues, including security, remoteness and shifting population movements; flexibility is required so that approaches can be adapted to the local context to ensure the widest coverage.

To ensure that strategies can be put into operation, training and human resource strengthening are essential. Optimally skilled staff and volunteers ensure consistency, effectiveness and efficiency in administering preventive chemotherapy in every endemic implementation unit (usually a district) in a country. Strong human resource capacity ensures efficiency in processing requests and in delivery logistics.

THE IMPACT

SIGNIFICANT SOCIAL AND ECONOMIC ADVANCES CAN BE TRACED TO PREVENTIVE CHEMOTHERAPY, INCLUDING INCREASED SCHOOL ATTENDANCE, WORK PRODUCTIVITY, SOCIAL INCLUSION AND OVERALL HEALTH.

The impact of meeting the targets of the WHO roadmap on global health can be calculated in terms of averted morbidity and mortality, expressed in years lived with disability (YLD) and years of life lost (YLL). YLD reflects the number of prevalent cases of each disease multiplied by a disease-specific disability weight between 0 (perfect health) and 1 (equivalent to death), whereas YLL reflects the number of deaths multiplied by a standard life expectancy at the age of death in years.

The disability-adjusted life year (DALY) is the sum of both measures (DALY = YLD + YLL). It is a common measure of the overall burden of a disease, in which mortality and morbidity are combined into a single, common metric. Although assigning disability weights is difficult, it is the most appropriate measure of the burden of NTDs, as they are defined primarily by their tendency to disfigure and disable rather than kill.

LYMPHATIC FILARIASIS

DALYs AVERTED	TOTAL ECONOMIC BENEFIT
2011-2020: 13.9 M	2011-2020: 10.5B US$
2021-2030: 26.7M	2021-2030: 13.8B US$

ONCHOCERCIASIS

DALYs AVERTED	TOTAL ECONOMIC BENEFIT
2011-2020: 7 M	2011-2020: 1.19B US$
2021-2030: 12.6M	2021-2030: 2.11B US$

SOIL-TRANSMITTED HELMINTHIASES

DALYs AVERTED	TOTAL ECONOMIC BENEFIT
2011-2020: 81.7M	2011-2020: 84.4B US$
2021-2030: 119.5M	2021-2030: 95.7B US$

SCHISTOSOMIASIS

DALYs AVERTED	TOTAL ECONOMIC BENEFIT
2011-2020: 16.1M	2011-2020: 5.5B US$
2021-2030: 46.2M	2021-2030: 11.9B US$

TRACHOMA

DALYs AVERTED	TOTAL ECONOMIC BENEFIT
2011-2020: 593.3K	2011-2020: 710M US$
2021-2030: 3.48M	2021-2030: 3.6B US$

GLOBAL

PROGRESS TOWARDS 2020

Global programmes for preventive chemotherapy are generally on track. In order to sustain the momentum, however, new commitment must be secured and greater synergy guaranteed.

Since the integrated approach was begun in 2008, 14 previously endemic countries have been declared free of at least one NTD that is susceptible to preventive chemotherapy. Currently, another 12 endemic countries have been able to stop preventive chemotherapy for a least one disease, and surveillance is being conducted for the required period to validate or verify control or elimination of the disease.

Almost 991 million individuals were treated by preventive chemotherapy for at least one of the NTDs in 2015; however, progress among and within countries was varied. In the coming years, continued effort will be required to attain the objectives set for 2020. Resources must be optimized to ensure that the control or elimination targets for the five diseases will be reached. New partnerships and domestic financing must be secured in order to widen the resource base.

In order to maximize those resources, efficiency must be improved in all aspects of preventive chemotherapy while identifying and applying new techniques, particularly in diagnostics. Training and capacity-building are consistent requirements for successful delivery of medicines, while political commitment and prioritization remain essential for initiating and sustaining interventions.

STRIVING FOR SUCCESS IN 2020

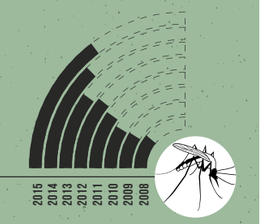
Preventive chemotherapy programmes are designed to control and eliminate the five target NTD infections by reducing the associated morbidity and transmission. Many of the medicines used in preventive chemotherapy have a broad spectrum, so that several diseases can be treated simultaneously. As the goal is to achieve high coverage through integrated use of preventive chemotherapy, co-ordinated procurement of medicines for multiple diseases is recommended. WHO has developed a "joint application package" for requesting and reporting on preventive chemotherapy and its impact on helminth infections.

Lymphatic filariasis

Goal: Elimination as a public health problem

Target: 65% coverage

2015: 59% coverage



Onchocerciasis

Goal: Elimination

Target: 65% coverage

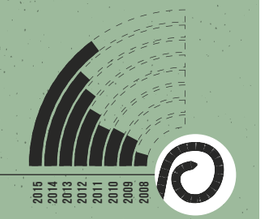
2015: 64% coverage

Soil-transmitted helminthiases

Goal: Control

Target: 75% coverage

2015: 60% coverage

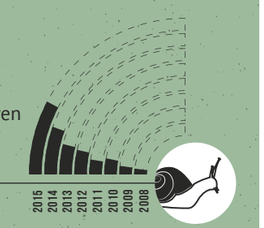


Schistosomiasis

Goal: Elimination

Target:
75% coverage in children

2015: 31% coverage

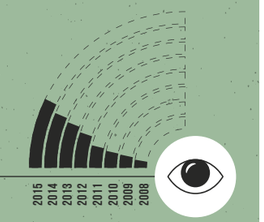


Trachoma

Goal: Elimination as a public health problem

Target: 80% coverage

2015: 29% coverage



AFRICA

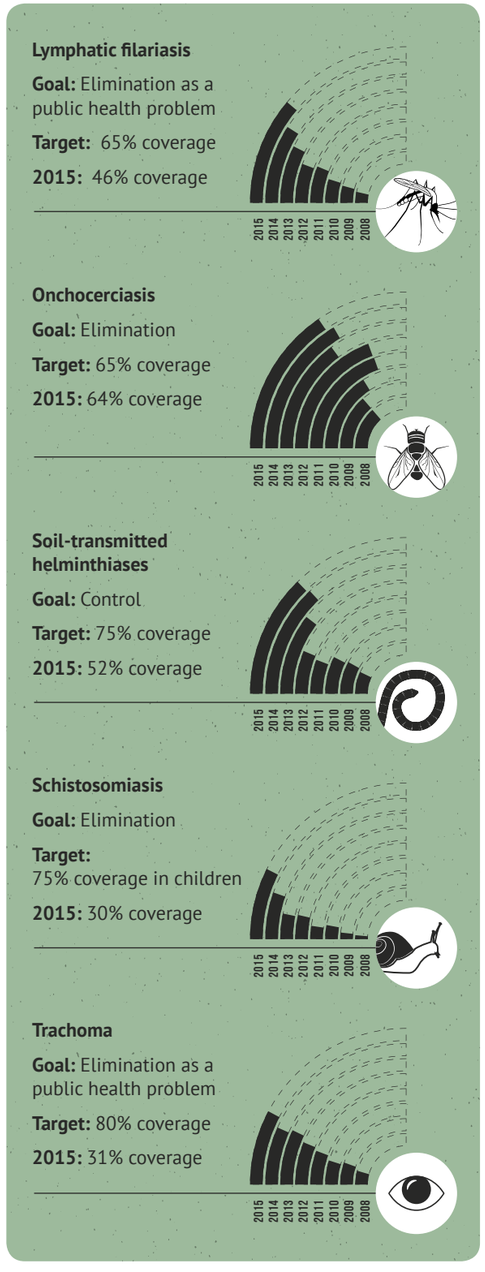
PROGRESS TOWARDS 2020

The African Region bears 39% of the global burden of the five NTDs that can be controlled by preventive chemotherapy. Thus, 44 countries in the Region are endemic for one or more of these diseases, and 17 are endemic for all five.

Countries have used donated medicines to treat 52% of the population against at least one of the diseases, and some have reached the 2020 Roadmap targets. Thus, two countries have achieved the goal for lymphatic filariasis, and for onchocerciasis mass drug administration has been stopped in multiple foci in several countries. Togo has been validated as having eliminated lymphatic filariasis as a public health problem. Morbidity due to eye and skin diseases has been greatly reduced, and 11 countries reached the target of 75% coverage of school-age children against soil-transmitted helminthiases and schistosomiases in 2015.

These successes were made possible largely because of strong political commitment in the countries, where leaders have prioritized the expansion and implementation of preventive chemotherapy. Leading organizations have provided both technical expertise and funding to guide and facilitate work towards reaching the control and elimination goals.

To provide further impetus for the control and elimination of NTDs, the WHO Regional Office for Africa launched an "expanded special project for the elimination of NTDs" in May 2016, in which the project provides technical assistance and limited funding to fill the remaining gaps in collaboration and coordination with partners.



AMERICAS

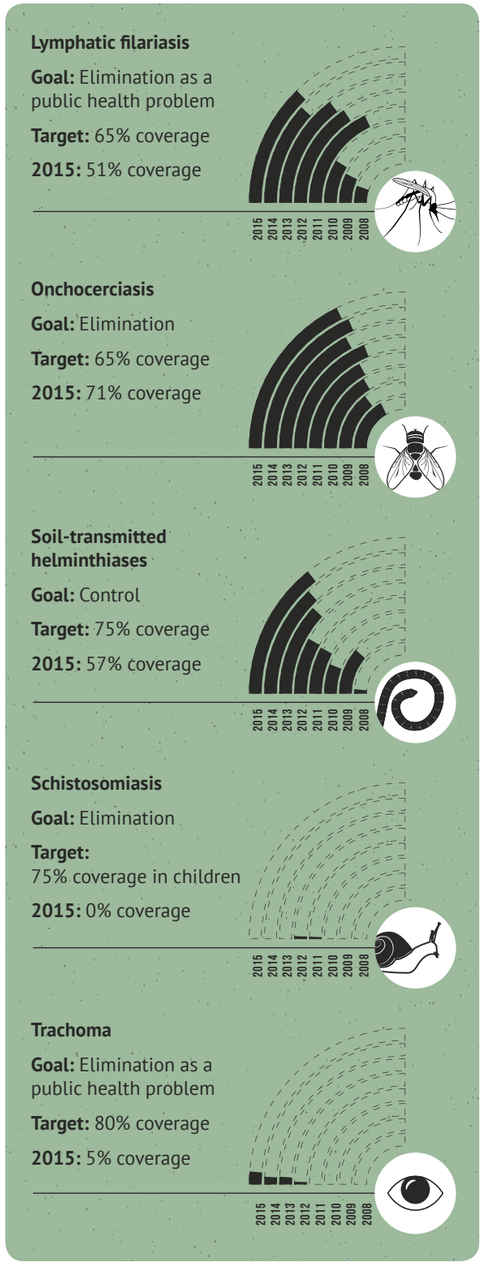
PROGRESS TOWARDS 2020

The Region of the Americas has made great progress in combating NTDs with preventive chemotherapy. The Onchocerciasis Elimination Program for the Americas, begun in 1992, is based on effective partnerships, tailored strategies and sustained commitment by governments, donors and organizations.

Through this programme, elimination of human onchocerciasis was verified in Colombia in 2013, Ecuador in 2014, Mexico in 2015 and Guatemala in 2016. Poor access to remote populations in the Bolivarian Republic of Venezuela and Brazil remains the final hurdle for eliminating the disease from the Region, because of the difficulty of treating, monitoring and conducting post-treatment surveillance in the areas that are still affected.

The elimination of trachoma as a public health problem in Mexico was validated by WHO in 2017, and 251 982 people were treated in three of four endemic countries in 2014. Three countries – Costa Rica, Suriname, and Trinidad and Tobago – had successfully eliminated lymphatic filariasis by 2010 mainly by intensive training and capacity-building at local, regional and national levels. The Region was the first to initiate mass drug administration for lymphatic filariasis in at least one implementation unit of each endemic country and has since significantly reduced infection levels below target thresholds and stopped the intervention in 41% of implementation units.

As a result of socioeconomic development and urbanization, the burden of schistosomiasis has decreased considerably; however, the Bolivarian Republic of Venezuela and Brazil still require preventive chemotherapy. The disease has been eliminated in Puerto Rico; Suriname has residual transmission, while six countries – Antigua and Barbuda, Dominican Republic, Guadeloupe, Montserrat, Martinique and Saint Lucia – need to be verified for interruption of transmission.



EASTERN MEDITERRANEAN

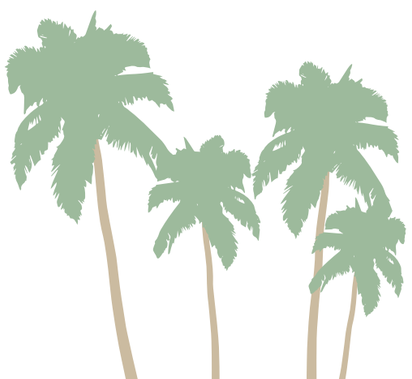
PROGRESS TOWARDS 2020

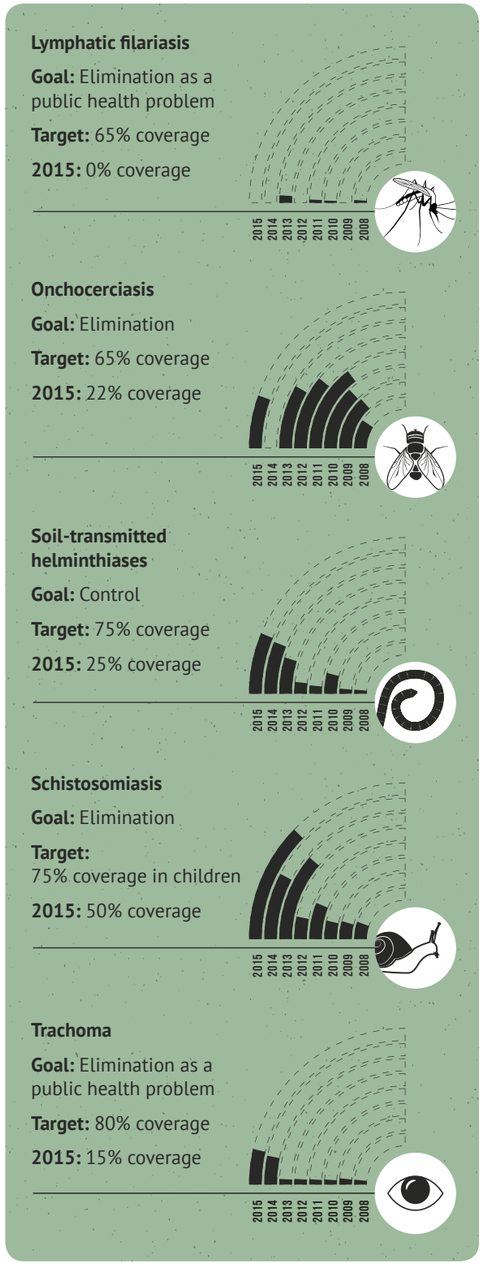
The Eastern Mediterranean Region bears approximately 5% of the global burden of the NTDs that are susceptible to preventive chemotherapy. It is diverse both geographically and epidemiologically, with high-burden and low-burden settings for each disease. Eight of 22 countries in the Region require preventive chemotherapy for at least one of the NTDs.

Those in which preventive chemotherapy is used are Afghanistan, Egypt, Pakistan, Sudan and Yemen. The programmes should be extended to cover additional diseases and additional age groups.

Mapping of NTDs is under way in Somalia and is being revised in other countries for one or more diseases. A number of countries have reached or are approaching goals such as elimination of lymphatic filariasis and trachoma as public health problems and the elimination or interruption of transmission of schistosomiasis, and dossiers are being prepared to start the validation or verification process. Both Morocco and Oman have been validated as having eliminated trachoma as a public health problem.

In view of the acute and continuing security challenges in the Region, however, maintaining treatment of affected populations can be difficult. Movement of refugees and internally displaced people and the inaccessibility of some areas because of conflict complicate effective mapping, implementation of preventive chemotherapy and monitoring of progress. These challenges require renewed commitment to achieve and validate the goals.





EUROPE

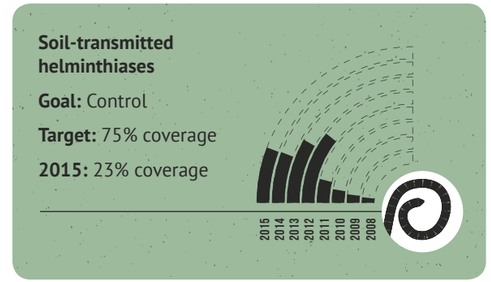
PROGRESS TOWARDS 2020

In 2015, the European Region represented less than 1% of the total global population that required preventive chemotherapy. Five countries in the Region required preventive treatment for soil-transmitted helminthiases.

The first estimates of the number of children who required preventive chemotherapy for soil-transmitted helminthiases in the European Region were published by WHO in 2011. Initially, epidemiological data were not available for most countries, and the estimates were based on other criteria, such as climate, ecology and access to improved sanitation in rural and urban areas. Originally, 11 countries were classified as requiring preventive chemotherapy.

Since then, many countries have conducted surveys to collect epidemiological, demographic and ecological data and prepared national plans of action to integrate the control of NTDs. The surveys indicate that 6 of the 11 countries did not require preventive treatment for soil-transmitted helminthiases.

In 2015, only five countries required preventive treatment, and four conducted deworming campaigns in schools, achieving a regional coverage of 36% for this age group. Kyrgyzstan and Tajikistan conducted two treatment rounds in 2015, covering all school-age children in need of treatment.



SOUTH-EAST ASIA

PROGRESS TOWARDS 2020

The Region had 47% of the global population that required preventive chemotherapy in 2015, mainly for lymphatic filariasis and soil-transmitted helminthiases. The elimination of lymphatic filariasis as a public health problem has been validated in the Maldives and Sri Lanka.

Significant progress has been made in controlling lymphatic filariasis since the Global Programme to Eliminate Lymphatic Filariasis was launched by WHO in 2000. By 2015, more than 78% of the population in the Region that required preventive chemotherapy had received it. As the Region has the largest proportion of cases of lymphatic filariasis (42% of the global population that required preventive chemotherapy for the disease in 2015), programmes in countries such as India and Indonesia play a significant role in global control.

In 2015, 459.8 million people in the Region were targeted with mass preventive chemotherapy, and 362.6 million (79%) were treated. Of the 6.2 billion treatments that have been delivered since the inception of the Global Programme, 66% were delivered in India, which accounts for 74% of the total population requiring preventive chemotherapy in the Region.

In the eight countries in which preventive chemotherapy was required for soil-transmitted helminthiases in 2015, 214.8 million school-age children were treated, equivalent to a regional coverage of 87%. Indonesia is the only country in the Region requiring preventive chemotherapy for schistosomiasis, with the disease located in one province (Central Sulawesi). Control efforts are ongoing and seek to interrupt transmission.

WESTERN PACIFIC

PROGRESS TOWARDS 2020

The Western Pacific Region has made great progress in addressing the five NTDs that can be treated by preventive chemotherapy. The elimination of lymphatic filariasis as a public health problem has been validated in five countries (Cambodia, Cook Islands, Marshall Islands, Niue and Vanuatu), and seven more countries are undergoing surveillance to validate elimination.

Cambodia, China and the Lao People's Democratic Republic have reduced the prevalence of schistosomiasis significantly and have been strengthening multisectoral interventions with WASH and control of animal reservoirs to accelerate interruption of transmission.

Three of 10 countries endemic for trachoma (Cambodia, China and the Lao People's Democratic Republic) have reported elimination of trachoma as a public health problem, and in 2016 three countries (Fiji, Kiribati and Vanuatu) initiated mass drug administration against this disease.

Regional priorities include improving coverage in areas where compliance with treatment remains a challenge, progressively extending mass drug administration for lymphatic filariasis in Papua New Guinea, strengthening complementary interventions to accelerate interruption of transmission of all the diseases and ensuring sustainable care for patients with residual morbidity.

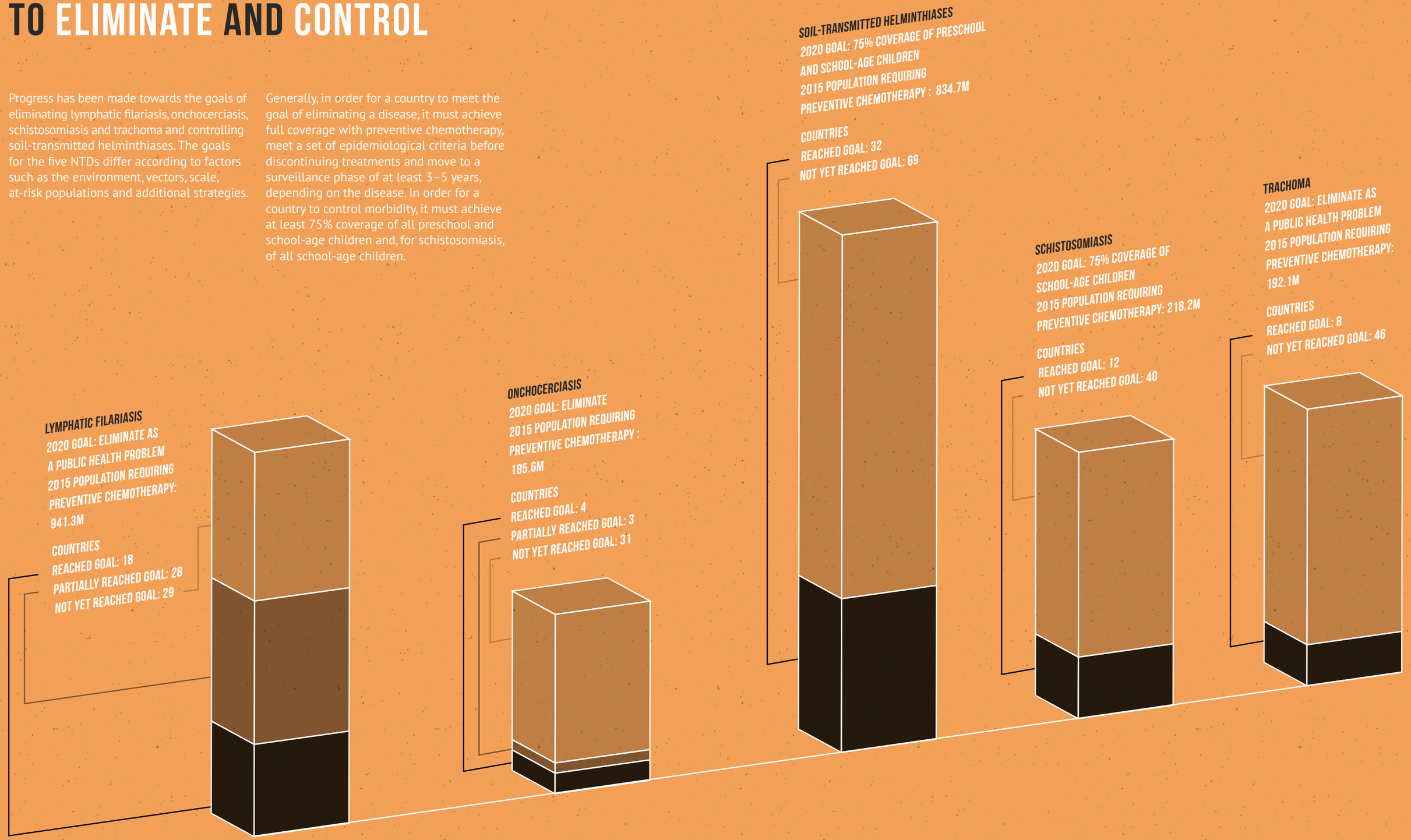
Technical and operational strategies must be adapted to the range of contexts and wide diversity in the Region. Continued strengthening of political commitment and funding will be essential for attaining the targets for 2020, and sustained human resource strengthening and training will be important in maintaining the effectiveness and efficiency of activities.

THE 4D'S OF PREVENTIVE CHEMOTHERAPY TREATMENT

TO ELIMINATE AND CONTROL

Progress has been made towards the goals of eliminating lymphatic filariasis, onchocerciasis, schistosomiasis and trachoma and controlling soil-transmitted helminthiases. The goals for the five NTDs differ according to factors such as the environment, vectors, scale, at-risk populations and additional strategies.

Generally, in order for a country to meet the goal of eliminating a disease, it must achieve full coverage with preventive chemotherapy, meet a set of epidemiological criteria before discontinuing treatments and move to a surveillance phase of at least 3–5 years, depending on the disease. In order for a country to control morbidity, it must achieve at least 75% coverage of all preschool and school-age children and, for schistosomiasis, of all school-age children.



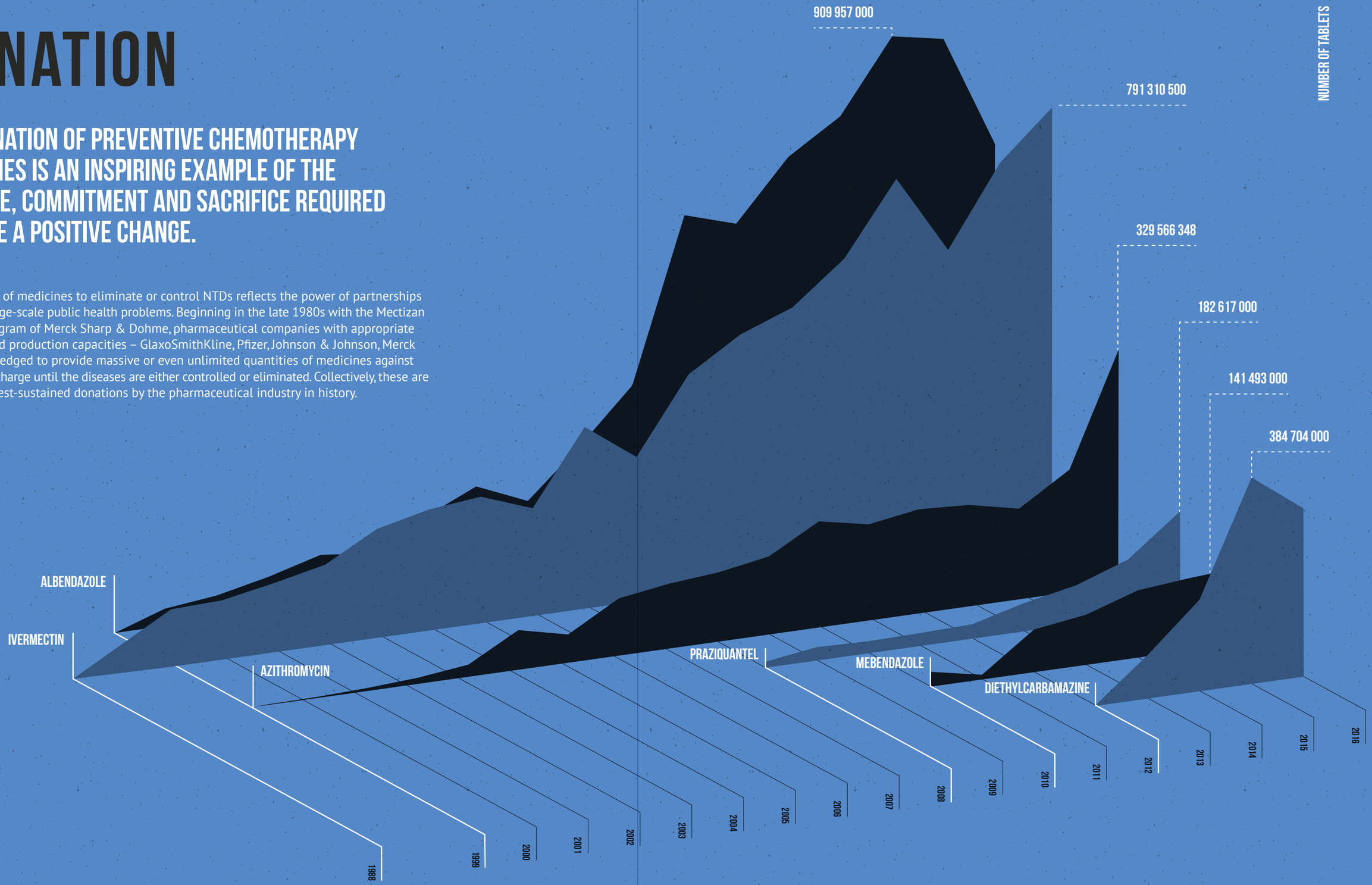
DONATION

"DONATIONS OF ESSENTIAL MEDICINES HAVE CHANGED WHAT IS POSSIBLE TO ACHIEVE WITH PREVENTIVE CHEMOTHERAPY."

DONATION

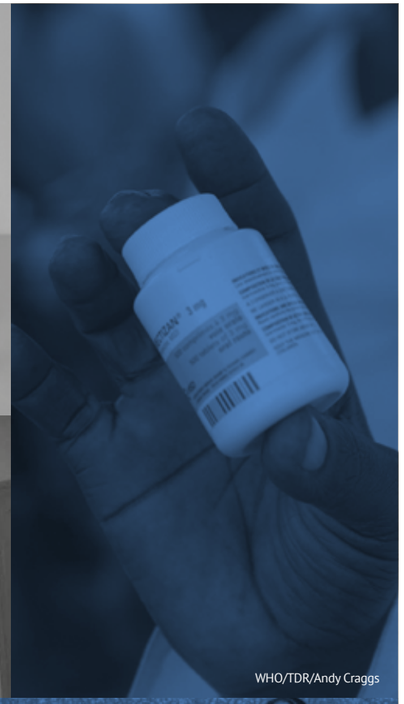
THE DONATION OF PREVENTIVE CHEMOTHERAPY MEDICINES IS AN INSPIRING EXAMPLE OF THE COURAGE, COMMITMENT AND SACRIFICE REQUIRED TO MAKE A POSITIVE CHANGE.

The donation of medicines to eliminate or control NTDs reflects the power of partnerships to address large-scale public health problems. Beginning in the late 1980s with the Mectizan Donation Program of Merck Sharp & Dohme, pharmaceutical companies with appropriate medicines and production capacities – GlaxoSmithKline, Pfizer, Johnson & Johnson, Merck and Eisai – pledged to provide massive or even unlimited quantities of medicines against NTDs free of charge until the diseases are either controlled or eliminated. Collectively, these are the largest, best-sustained donations by the pharmaceutical industry in history.



DONATION

WHO/G. Biswas


WHO/TDR/Andy Craggs


WHO/TDR /Andy Crump


RTI/Envision

WHO/G. Biswas

APPLYING THE SOLUTION

Initially, the access of affected populations to the medicines used for preventive chemotherapy was limited, despite their relatively low cost. The timing and dynamics of each of the large donations differed, although they shared common features, including a process of application, review and coordination. While the companies that developed and produced the medicines recognized that they would be used to treat some of the poorest people on earth. Thus, in the absence of market demand, standard approaches and models for bringing a medicine to the market would not necessarily apply. Most governments of endemic countries were unable to afford the treatments, even at cost, and the donor community evolved accordingly.

Leadership and vision were needed to use the medicines in developing countries, not only from pharmaceutical companies for donation but also from partner organizations for setting up channels and techniques for distribution, increasing awareness and sustaining commitment by governments. The need for the medicines and their efficacy were evident. Application of the solutions was more difficult.

ADAPTING THE MODEL

In the years before the development and donation of the medicines, the strategy for combating NTDs was based mainly on environmental control, with measures such as use of pesticides to reduce transmission and individual treatment. As the potential of safe medicines such as azithromycin, albendazole, diethylcarbamazine, ivermectin, mebendazole and praziquantel was unleashed after many years of use and large-scale donations, public health experts increasingly considered wide-scale preventive chemotherapy for treating affected communities for NTDs.

Adding improved sanitation, vector control by spraying and disease management to preventive chemotherapy constituted a holistic approach to addressing the various facets of the diseases and controlling the causes and effects of infections. Access to most of the donated medicines is managed by WHO through an integrated application process known as the “joint application package”, comprising a joint request for selected medicines, a joint reporting form and an epidemiological reporting form.

Applications are assessed by regional programme review groups made up of independent public health and disease experts, which make recommendations to WHO on the best use of the donated medicines. Although donated medicines meet most of the requirements for preventive chemotherapy, additional supplies are required in countries where donated medicines are not available or not requested, where the available quantities do not meet all the programme needs, or where the donation is limited to specific target groups. This particularly applies for albendazole, diethylcarbamazine and praziquantel.

THE NEXT STEP

The donation of medicines by pharmaceutical companies transformed how the public health community framed and addressed the issue of NTDs. The success of the programmes depends on their sustainability, scale, duration, focus and delivery to affected people. The companies have committed themselves to making donations that reasonably ensure the control or elimination of the diseases globally. A strong health system and strong partnerships accompanying the donations augment the impact of the medicines.

DECISION

"IN THE HISTORY OF HUMANKIND, THE WORLD HAS NOT OFTEN HAD BOTH THE TOOLS AND THE KNOWLEDGE TO GIVE SO MANY PEOPLE SUCH A LEVEL OF HOPE FOR A BETTER LIFE. WE HAVE NO EXCUSE, NO REASON AND NO ARGUMENT FOR WITHHOLDING PREVENTIVE CHEMOTHERAPY FROM THOSE WHO NEED IT."

DECISION

THE DECISION TO COMBAT NTDs IS ONLY THE FIRST STEP. THEIR CONTROL OR ELIMINATION IS A LONG JOURNEY THAT REQUIRES LONG-TERM, DEDICATED COMMITMENT.

Since the 1990s, the approaches of donors, development agencies and nongovernmental and international organizations to international development have matured. Many previous "top–down" and "copy-and-paste" models and externally-led initiatives applied rigid implementation frameworks that often excluded input from local and regional actors.

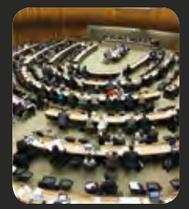
As donations by pharmaceutical companies have continued in the late 2000s and methods for delivering preventive chemotherapy have been refined, strong, sustained commitment by the governments of endemic countries was recognized as essential to ensure the success of the programmes. To determine the types and level of the involvement of national governments, it has been important to define how they can best lead and complement the technical expertise and resources of the international community.

Often, political commitment is considered to consist of high-level international declarations and coordinated agreements between external organizations and national governments. Although such top–down decisions are important for articulating the broad long-term vision of NTD control and elimination, regional and local commitment to the health system is essential to ensure that all communities are reached. Commitment to both top–down and bottom–up local leadership is the starting-point for ensuring that donated medicines are effectively delivered to those in need.

2010
First NTD report

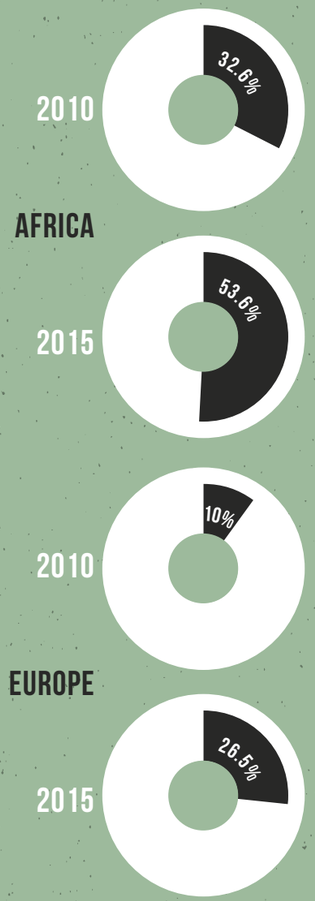
2012
London Declaration

2013
World Health Assembly



2014
Addis Ababa Commitment

2015
Leaders' Declaration G7 Summit



3 GOOD HEALTH AND WELL-BEING

IF THE DECISION BY A GOVERNMENT MINISTER TO DIRECT RESOURCES TO PREVENTIVE CHEMOTHERAPY IS THE BACKBONE OF PROGRESS TOWARDS CONTROLLING OR ELIMINATING THESE NTDs, THE DECISION BY COMMUNITY VOLUNTEERS TO GIVE THEIR TIME TO DISTRIBUTE MEDICINES TO THEIR NEIGHBOURS IS THE BEATING HEART.

INSTITUTIONAL

NTD programmes created within ministries of health and on a par with other programmes, such as women's and maternal health, HIV and AIDS, tuberculosis and malaria, act as a focal point for coordination and consolidation of work.

As successful preventive chemotherapy initiatives have been launched and expanded in endemic countries, health structures in government ministries have guided local implementation so as to maximize the use of local knowledge.

Strong commitment by governments ensures that institutions can effectively provide sustainable sources of personnel, established networks and local channels, in coordination with external partners.

FINANCIAL

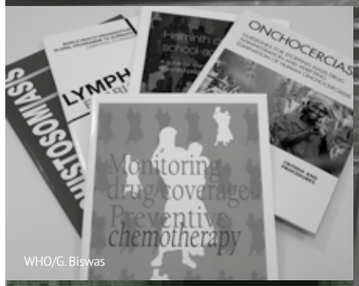
External funding provides the catalyst for launching preventive chemotherapy programmes, by supporting most of the initial costs of elements such as donated medicines and strategic support. As integrated NTD programmes in endemic countries have developed operationally, increased responsibility has been shifted to governments and national public –private partnerships. This has resulted in financing strategies that are better adapted to the contexts of the countries battling their burden of NTDs.

THE NEXT STEP

NTDs are included in Goal 3.3 (to ensure healthy lives and promote well-being for all at all ages) of the United Nations 2030 Agenda for Sustainable Development, and they have become more prominent on the global development agenda. As NTD control and elimination continue, such references will serve as signposts to guide governments and the international community along their strategic and operational paths.


WHO/Pierre Albouy


WHO



WHO/G. Biswas


WHO /Pierre Albouy


WHO /Bachir Chaibou


WHO\TDR /Andy Craggs


WHO/G. Biswas

DELIVERY

"ADMINISTERING OVER 1 BILLION PILLS TO 1 BILLION PEOPLE UNDER SOME OF THE MOST CHALLENGING CONDITIONS ON EARTH IS DIFFICULT BY ANY INDIVIDUAL OR ORGANIZATIONAL STANDARD. DOING SO WITH THE GREATEST PRECISION, SAFETY AND TIMING IS UNPARALLELED."

DELIVERY

DELIVERING PREVENTIVE CHEMOTHERAPY IN AN INTEGRATED STRATEGY ALLOWS THE NECESSARY SCALE.

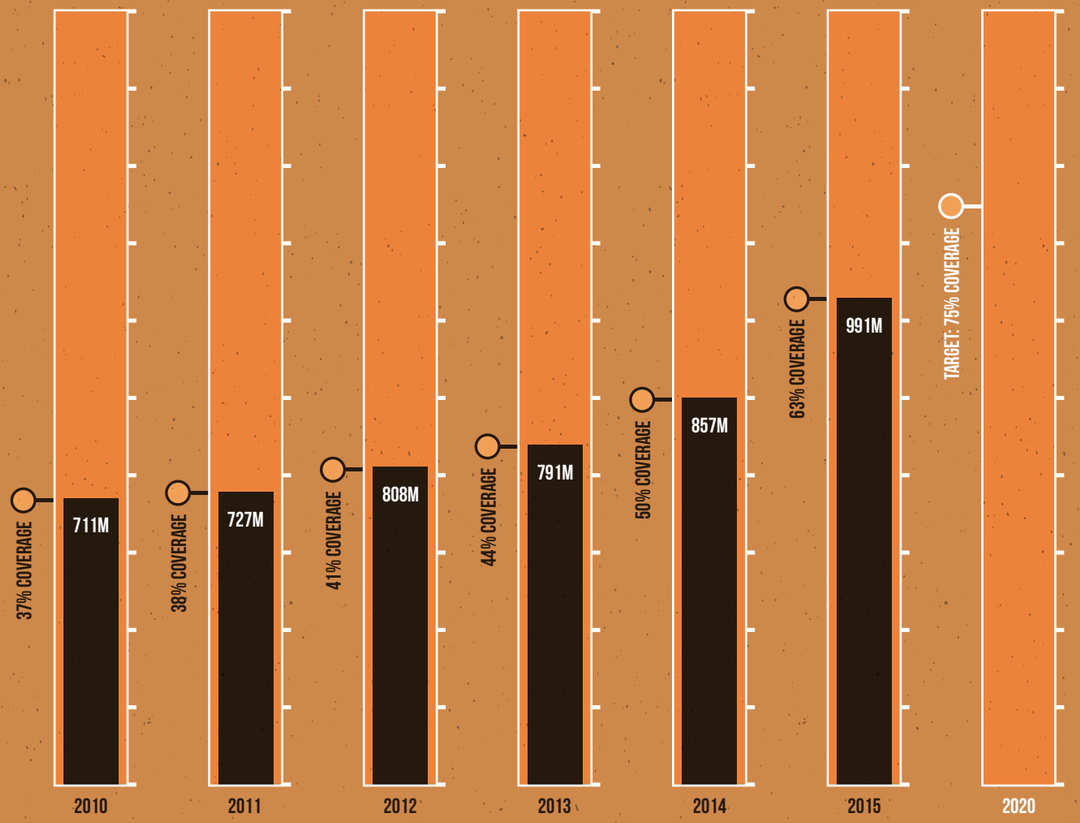
THE SHIFT TO INTEGRATED DELIVERY

Integration of the delivery of preventive chemotherapy for several diseases marked an operational turning-point in ensuring that donated medicines reached individuals. In the mid-2000s, it became clear that the overlap of work in planning, funding, mapping, the supply chain, distribution, advocacy and training among the programmes for different NTDs was significant, and ways were explored to strengthen coordination. Although progress was being made in each disease programme, experts identified possibilities for more efficient use of resources and more effective use of medicines. A move was therefore made from vertical, disease-specific programmes to an integrated approach, to reduce duplication of efforts.

This required re-thinking of the work of programmes at strategic and operational levels and in some instances required programmes to give up a certain degree of independence in the short term to improve their long-term impact. Although integration of preventive chemotherapy had been tested in limited areas, national integrated delivery requires new coordination among ministries of health, pharmaceutical donors, partner organizations and WHO.

In the same way that the generous donations from pharmaceutical companies reoriented the focus from the environment to the individual, integrated delivery shifted operations from siloed programmes to coordinated partnerships.

NUMBER OF INDIVIDUALS TREATED FOR AT LEAST ONE OF THE DISEASES AMENABLE TO PREVENTATIVE CHEMOTHERAPY (LYMPHATIC FILARIASIS, ONCHOCERCIASIS, SOIL-TRANSMITTED HELMINTHIASES AND SCHISTOSOMIASIS)



The value in the black bar indicates the number of individuals treated with preventive chemotherapy during the year.

The percentage coverage indicates the proportion of individuals treated with preventive chemotherapy out of the total in need of treatment during the year.

DELIVERY


WHO


WHO/TDR /Andy Crump

WHO/TDR /Andy Crump

WHO/TDR /Andy Crump

WHO/TDR /Andy Crump


WHO/TDR /Andy Crump

ONCE THE MEDICINES HAVE BEEN DONATED AND DECISIONS MADE, SUCCESS RELIES ON DELIVERY. THIS IS WHERE THE HIGH-LEVEL HANDSHAKES END AND THE LEGWORK BEGINS. LOGISTICS IS THE ESSENCE, AT BOTH MICRO AND MACRO LEVELS.

THE FIRST MILE

Preparing for delivery is critical. Before integration of preventive chemotherapy, disease programme teams in affected countries worked individually with stakeholders by mapping the requirements, making estimates and developing strategies for delivering treatment. Although activities for different diseases naturally overlapped, training, advocacy and community distribution were not always well coordinated.

Preparing for integration required a change in the thinking of decision-makers, restructuring in ministries of health and realignment among partner organizations and WHO to accommodate the new strategies and work. Districts were redefined in terms of packages of treatment instead of individual disease-specific treatments for several diseases endemic in the area. Planning and coordination of integrated delivery accommodates gaps in resources, expertise and information, and builds networks of partners.

THE NEXT MILE

Training and advocacy were critical in preparing treatment delivery. In order to distribute and record treatments effectively, tens of thousands of volunteers in each country were trained to ensure correct delivery of the treatment packages for multiple diseases. Public information campaigns on radio, television and posters helped to generate awareness of the days assigned for integrated mass drug administration.

Strategies for delivering each drug package or combination of treatments and diagnostics depend on the at-risk population. Community leaders, public health workers and community drug distributers together determine the most efficient distribution strategies for each area. For example, treatments for soil-transmitted helminthiases and schistosomiasis are often distributed at school, as these diseases are treated primarily in school-age children.

Treatment for diseases such as lymphatic filariasis, onchocerciasis and trachoma is often distributed in communities, by setting up distribution stations at busy community hubs or by mobile distribution to remote areas by volunteers. It is the local volunteer community drug distributors who do most of the ground work and who most need training.

THE NEXT STEP

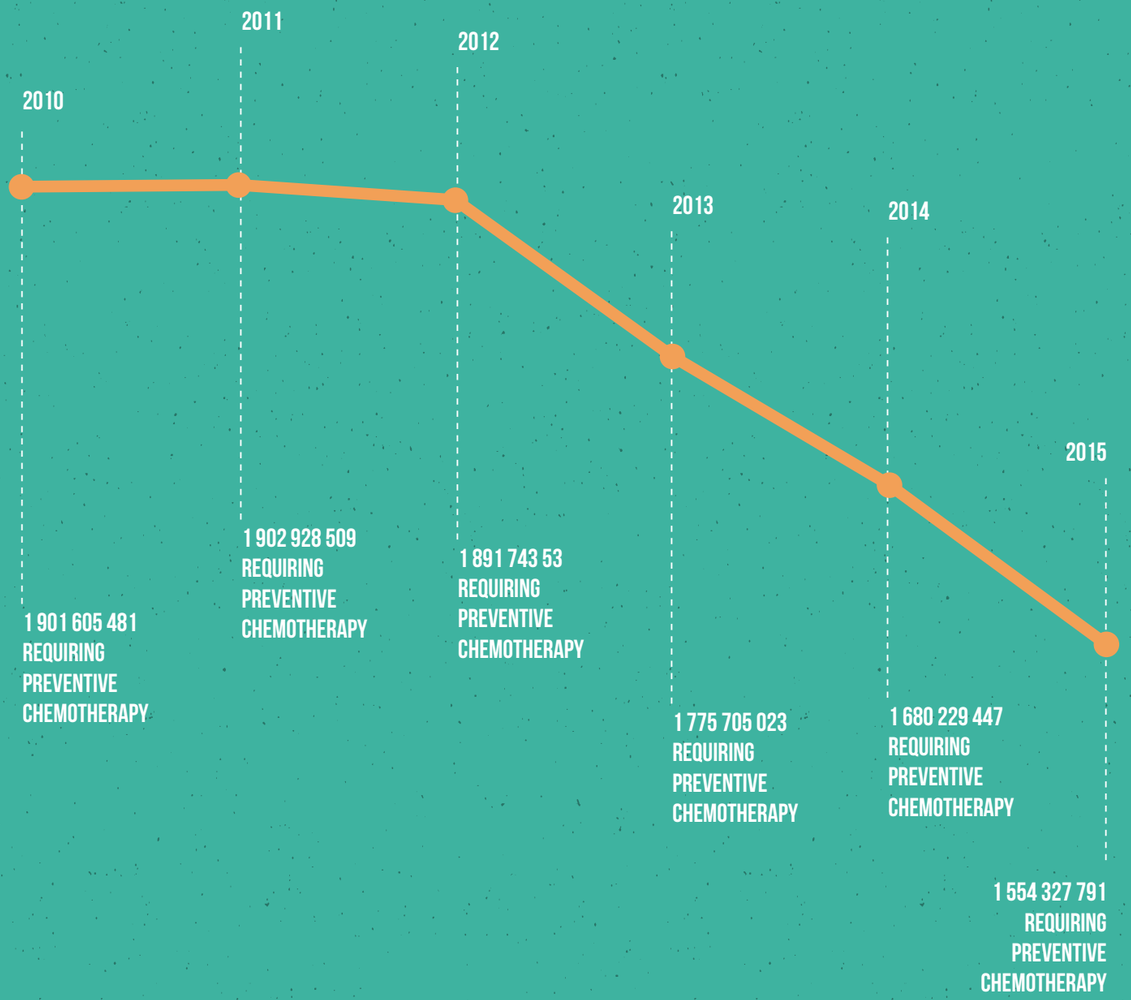
Since pilot-testing of integrated preventive chemotherapy delivery in 2006, global progress has been made in the control and elimination of the five NTDs. Increased donations from pharmaceutical companies combined with stronger political commitment and better delivery methods have ensured success. In the coming years, attaining the targets for 2020 will require continuous strengthening of three pillars: donation, decision and delivery, along with close monitoring for quality of imple-mentation and evaluation of their impact on the diseases.

DIFFERENCE

"HOW DO YOU MEASURE THE VALUE OF ONE DAY OF LIFE FREE FROM DISEASE FOR ONE PERSON? IT IS FAR GREATER THAN AN HOURLY WAGE OR SOME OTHER DRY ECONOMIC MEASURE. CAN WE IMAGINE THE VALUE OF THE 100 MILLION YEARS OF HIGH-QUALITY LIFE GAINED THROUGH PREVENTIVE CHEMOTHERAPY IN SHAPING OUR INDIVIDUAL AND COLLECTIVE WORLD?"

DIFFERENCE

INTEGRATED PREVENTIVE CHEMOTHERAPY CUTS ACROSS ALL AREAS AND SECTORS.



Population requiring PC for at least one of the diseases - (LF, ONCHO, STH and SCH)

COUNTRIES ACKNOWLEDGED BY WHO AS HAVING ELIMINATED* LYMPHATIC FILARIASIS (LF), ONCHOCERCIASIS (ONCHO) OR TRACHOMA (TRA), BY YEAR

*Human onchocerciasis is verified as eliminated; lymphatic filariasis and trachoma are validated as eliminated as public health problems.

Data Source: World Health Organization. Map Production: Control of Neglected Tropical Diseases (NTD)

World Health Organization

DIFFERENCE


WHO/G. Biswas


WHO/TDR /Andy Craggs


WHO/TDR /Mark Edwards


WHO/TDR /Andy Craggs


WHO/G. Biswas

THE FULL IMPACT DERIVED FROM THE IMPLEMENTATION OF LARGE-SCALE PREVENTIVE CHEMOTHERAPY TREATMENT IS GENERATIONAL AND WILL ONLY BE KNOWN IN THE MANY YEARS TO COME. IT IS CLEAR, HOWEVER, THAT TODAY, IT IS A FIRST STEP FOR MILLIONS TOWARDS A LIFE OF HEALTH, PRODUCTIVITY AND FULFILMENT.

The full impact of large-scale preventive chemotherapy treatment is generational. It will be realized only many years from now. Today, however, it is a first step for millions of people towards a life of health, productivity and fulfilment.

Preventive chemotherapy treatments have benefited children, women and entire populations by preventing new infections and disease, alleviating pathology associated with the different infections and, in some cases, curing infections and resulting in improvement in the nutritional status of children infected with soil-transmitted helminthiases, preventing blindness from onchocerciasis and trachoma and the chronic manifestations of lymphatic filariasis and schistosomiasis.

Large-scale preventive chemo-therapy has reduced levels of infection below critical thresholds. As a result, it is no longer required in over 350 million individuals previously at risk, 315 million people across 41 countries at risk of lymphatic filariasis and 1.4 million at risk of onchocerciasis no longer require treatments against that disease. WHO has verified four countries as having achieved elimination of human onchocerciasis. The Organization has validated eight countries for lymphatic filariasis and three countries for trachoma for having eliminated these diseases as public health problems. These achievements have yielded economic benefits: elimination of lymphatic filariasis is estimated to have averted more than US$ 100 billion in financial losses during the lifetime of groups that have benefited; and preventive chemo-therapy against onchocerciasis has saved an estimated 17.4 million DALYs in Africa during 20 years at a cost of US$ 27 per DALY.

In addition to the direct benefit to the infected individual and the reduction in transmission, preventive chemotherapy also extends the reach of the health systems from the facilities into the communities, thereby strengthening universal health coverage. A network of more than 517 000 community drug distributors and 77 000 health workers are involved in the distribution of the preventive chemotherapy medication in Africa.

Achieving the Roadmap targets set for 2020 by WHO as well as the larger goal of the Sustainable Development Agenda of reducing the numbers of at-risk populations needing interventions for NTDs by 90% by 2030 will demand enhanced, sustained commitment by the health ministries of endemic countries, donors, partners and the pharmaceutical industry. Countries and areas that have not yet begun preventive chemotherapy in the endemic areas need to initiate and expand to full geographical coverage.

WHO WEBSITES RELATED TO PREVENTIVE CHEMOTHERAPY

Capacity strengthening
http://www.who.int/neglected_diseases/preventive_chemotherapy/Capacity_strengthening/en/

Foodborne trematodiases
http://www.who.int/foodborne_trematode_infections/

Global Health Observatory – Preventive chemotherapy data portal
http://apps.who.int/gho/cabinet/pc.jsp

Integrated NTD database
http://www.who.int/neglected_diseases/data/ntddatabase/

Joint application package and training materials
http://www.who.int/neglected_diseases/preventive_chemotherapy/reporting/

Lymphatic filariasis
http://www.who.int/lymphatic_filariasis/

Preventive chemotherapy manuals and guidelines
http://www.who.int/neglected_diseases/preventive_chemotherapy/resources/PCT_specific_manuals/en/

Neglected tropical diseases
http://www.who.int/neglected_diseases/

Onchocerciasis
http://www.who.int/onchocerciasis/

Preventive chemotherapy and transmission control
http://www.who.int/neglected_diseases/preventive_chemotherapy/

Schistosomiasis
http://www.who.int/schistosomiasis/

Soil-transmitted helminthiases
http://www.who.int/intestinal_worms/

Trachoma
http://www.who.int/trachoma/

Weekly Epidemiological Record (articles and reports on preventive chemotherapy diseases)
http://www.who.int/neglected_diseases/preventive_chemotherapy/resources/wer/

Yaws
http://www.who.int/yaws/

WHO REGIONAL WEBSITES ON NEGLECTED TROPICAL DISEASES

Regional Office for Africa http://www.afro.who.int/

Expanded Special Project for Elimination of Neglected Tropical Diseases (ESPEN)
http://www.afro.who.int/en/espen.html

Regional Office for the Americas http://www2.paho.org/hq/

Neglected, tropical and vector borne diseases
http://www2.paho.org/hq/index.php?option=com_topics&view=article&id=37&Itemid=40760&lang=en

Regional Office for the Eastern Mediterranean http://www.emro.who.int/index.html

Neglected tropical diseases
http://www.emro.who.int/entity/neglected-tropical-diseases/index.html

Regional Office for Europe http://www.euro.who.int/en/home

Communicable diseases
http://www.euro.who.int/en/health-topics/communicable-diseases

Regional Office for South-East Asia http://www.searo.who.int/en/

Neglected tropical diseases
http://www.searo.who.int/entity/vector_borne_tropical_diseases/

Regional Office for the Western Pacific http://www.wpro.who.int/en/

Malaria, other vectorborne and parasitic diseases programme
http://www.wpro.who.int/mvp/ntd/en/

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Crossing the billion tells the story of a simple intervention that takes a massive effort to deliver.

Preventive chemotherapy – one of the interventions deployed by the World Health Organization (WHO) to combat at least five diseases – involves administering six medicines in seven different combinations, making it possible to treat more than one disease at a time. This publication celebrates the 10 years since the strategy of combining preventive chemotherapy and integrating strategies to treat those diseases amenable to the intervention began.

Preventive chemotherapy is one of the largest, most successful public health interventions in history, benefitting a billion people worldwide. This achievement results from the decision by governments to commit human and financial resources, the donation by pharmaceutical companies of essential medicines, and the dedication of community volunteers to distributing medicines to their neighbours.

The difference that these efforts make to the lives of individuals, families and communities is generational and is a significant part of WHO's collective work towards more sustainable, resilient, productive and equitable societies.

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World Health Organization