Neglected Tropical Diseases

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17 Neglected Tropical Diseases

- **Helminth Infections**
  - Soil-transmitted helminth infections
    - Ascariasis-Trichuriasis-Hookworm
  - Lymphatic filariasis
  - Onchocerciasis
  - Schistosomiasis
  - Dracunculiasis (guinea-worm disease)
  - Cysticercosis
  - Echinococcosis
  - Foodborne trematodes infections

- and other "neglected zoonotic diseases"

- **Bacterial Infections**
  - Leprosy
  - Trachoma
  - Buruli ulcer
  - Endemic treponematoses

- **Protozoan Infections**
  - Leishmaniasis
  - Human African trypanosomiasis
  - Chagas disease

- **Viral Infections**
  - Dengue
  - Rabies
Origins of NTD

Two years and two international consultations to define the concept of NTD Control

"Access" mentioned 41 times in the 2003 and 17 times in 2005

Access referring to:
- Treatment, medicines, tools,
- health structures, innovative approaches, education, water and sanitation

In July 2005, the Director General of WHO, Dr J.W. Lee, established the Neglected Tropical Diseases control Department
### Box 1.4.1 Common features of neglected tropical diseases

**A proxy for poverty and disadvantage**
Neglected tropical diseases have an enormous impact on individuals, families and communities in developing countries in terms of disease burden, quality of life, loss of productivity and the aggravation of poverty as well as the high cost of long-term care. They constitute a serious obstacle to socioeconomic development and quality of life at all levels.

**Affect populations with low visibility and little political voice**
This group of diseases largely affects low-income and politically marginalized people living in rural and urban areas. Such people cannot readily influence administrative and governmental decisions that affect their health, and often seem to have no constituency that speaks on their behalf. Diseases associated with rural poverty may have little impact on decision-makers in capital cities and their expanding populations.

**Do not travel widely**
Unlike influenza, HIV/AIDS and malaria and, to a lesser extent, tuberculosis, most NTDs generally do not spread widely, and so present little threat to the inhabitants of high-income countries. Rather, their distribution is restricted by climate and its effect on the distribution of vectors and reservoir hosts; in most cases, there appears to be a low risk of transmission beyond the tropics.

**Cause stigma and discrimination, especially of girls and women**
Many NTDs cause disfigurement and disability, leading to stigma and social discrimination. In some cases, their impact disproportionately affects girls and women, whose marriage prospects may diminish or who may be left vulnerable to abuse and abandonment. Some NTDs contribute to adverse pregnancy outcomes.

**Have an important impact on morbidity and mortality**
The once widespread assumptions held by the international community that people at risk of NTDs experience relatively little morbidity, and that such diseases have low rates of mortality, have been comprehensively refuted. A large body of evidence, published in peer-reviewed medical and scientific journals, has demonstrated the nature and extent of the adverse effects of NTDs.

**Are relatively neglected by research**
Research is needed to develop new diagnostics and medicines, and to make accessible interventions to prevent, cure and manage the complications of all NTDs.

**Can be controlled, prevented and possibly eliminated using effective and feasible solutions**
The five strategic interventions recommended by WHD (preventive chemotherapy; intensified case-management; vector control; the provision of safe water, sanitation and hygiene; and veterinary public health) make feasible control, prevention and even elimination of several NTDs. Costs are relatively low.

**Ethical duty**

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**World Health Organization**
Burden of the Neglected Tropical Diseases

Approximately 1 billion people are affected by more than one of the NTDs

Deaths

- Neglected Tropical Diseases: 20%
- Other Infectious Diseases: 29%
- TB: 51%
- AIDS: 24%
- Malaria: 30%

DALYS

- Neglected Tropical Diseases: 24%
- Other Infectious Diseases: 46%
- TB: 30%
- AIDS: 46%
- Malaria: 30%

Countries affected by NTDs by income group

- High-income group: 10%
- Lower middle-income group: 32%
- Upper middle-income group: 41%
- Low-income group: 41%

- More than 70% of countries and territories affected by NTDs are low-income and low middle-income countries
- 100% of low-income countries are affected by at least 5 NTDs
NTDs and Women's Health

- Reproductive Health
  - Fertility, pregnancy, neonatal health
- Sexual Health
  - Sexually transmitted infections
  - Sexual functioning
- Social Health
  - Exclusion and stigma
- Economic Health
  - Ability to work

NTDs and Children's Health

Children are taking a heavy toll on the NTDs

- Death
- Anemia
- LBW, Small for gestational age (SGA)
- Birth defects
- Stunting
- Cognitive impairment
- Heightened risk for HIV
- Possible heightened risk of malaria
NTDS, Women & Children: Social, Political & Economic Factors

A vicious circle

- Poverty
- Illiteracy
- Lack of education
- Lack of land ownership
- Lack of political power
- Gender inequality

NTDs and Conflicts and human rights: increased vulnerability

Increased exposure
Displacement, overcrowding in camps, resettlements areas, forest bush encampments

Increased Acquisition and Transmission
Treatment delays or gap, barriers to access, lack of access to water, hygiene and food

Increased morbidity and mortality
Barriers to access treatment, care

Adapted: M. McDonald. CDC Atlanta

Chris Beyrer – Center for public health and human rights
John Hopkins
Livestock contribute to the livelihoods of 70% of the world's poor. Thus, worldwide, approximately 800 million poor livestock keepers depend on their animals.


Pere P. Simarro, PhD,1 José R. Frans, MD,1 Giuliano Crechi, MD,1 Mauro Paone, MD,1 Abdoulaye Bâ, PhD,1 José S. Ruiz-Palacios, PhD,2 and Jean G. Jammie, PhD

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NTDs, migration and travels
NTDs and Climate change

Parasites and vectors.

Alteration of economics and subsequent social unrest

Increased pollution, overcrowding of some areas, lack of hygiene, low quality water

Land use

Natural disasters like floods, volcano eruptions lead to greater movement in population and disruption to agriculture
"We must not fail the billions who look to the international community to fulfill the promise of the Millennium Declaration for a better world…"

UN Secretary-General, Ban Ki-moon

"It is clear that improvements in the lives of the poor have been unacceptably slow, and some hard-won gains are being eroded by the climate, food & economic crises"
Economical impact of NTDs – Cost benefits of interventions

High cost of illness

Cost to individual households
E.g. Even when diagnosis and medicines are free, most households affected by visceral leishmaniasis experience impoverishment and indebtedness (Uranw et al 2013, Meheus et al 2013)

Cost to health systems and society at large
E.g. The cost of Chagas disease > US$ 7 billion per year (Lee et al 2013)

Affordable interventions

About US$ 5 billion in medicines pledged for the period 2015-2020
US$ 3 billion (US$ 500 million per year) needed to deliver those medicines to > 1 billion people
through preventive chemotherapy, active case finding and individual treatment and care by the general health system
NTD strategic approaches

- Intensified case management, surgery and chronic care
  - African trypanosomiasis
  - Buruli ulcer
  - Chagas Disease
  - Dengue
  - Echinococcosis
  - Leishmaniasis
  - Leprosy
  - Lymphatic filariasis
  - Rabies
  - Schistosomiasis
  - Trachoma
  - Yaws

- Transmission control
  - Integrated vector management
  - Veterinary public health
  - Water and environmental sanitation
  - Behavioural change education

- Preventive chemotherapy
  - Soil-transmitted helminthiases
  - Schistosomiasis
  - Lymphatic filariasis
  - Onchocerciasis
  - Trachoma
  - Foodborne trematode infections
  - Cysticercosis

- Yaws Eradication
- Dracunculiasis eradication
- Water and environmental sanitation
- Vector control
- Intensified Disease Management
- Veterinary Public health
- Preventive Chemotherapy
Partners and Country commitments

A roadmap for implementation, January 2012

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
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<tbody>
<tr>
<td>Eradication</td>
<td>Dracunculiasis (guinea-worm disease)</td>
<td>Yaws</td>
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<tr>
<td>Global elimination</td>
<td></td>
<td>- Lymphatic filariasis</td>
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<td></td>
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<td>- Leprosy</td>
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<td></td>
<td>- Human African trypanosomiasis</td>
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<td>- Blinding trachoma</td>
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<td>Regional elimination</td>
<td>- Onchocerciasis in Latin America</td>
<td>- Human rabies transmitted by dogs in the South-East Asia Region</td>
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<td></td>
<td>- Human rabies transmitted by dogs Latin America</td>
<td>- Schistosomiasis in Brazil and the Western Pacific Region</td>
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<td></td>
<td>- Schistosomiasis in the Eastern Mediterranean (urogenital), Caribbean and Mekong</td>
<td>- Visceral leishmaniasis in the Indian subcontinent</td>
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<td>- Blinding trachoma in Latin America</td>
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<td>- Blinding trachoma in Pacific Islands</td>
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<tr>
<td>Country elimination</td>
<td>Human African trypanosomiasis in selected countries-</td>
<td>- Chagas disease in most Latin America countries</td>
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<tr>
<td></td>
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<td>- Human rabies transmitted by dogs in selected countries in the Western Pacific Region</td>
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## The key role of drug donations and Pharma commitment

Results build trust, and with trust, commitment escalates.

Best days for public health are ahead of us, says WHO Director-General Dr Margaret Chan
Director-General of the World Health Organization
Address to the Sixty-fifth World Health Assembly. Geneva, Switzerland. 21 May 2012

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Commitment</th>
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<tbody>
<tr>
<td>Albendazole</td>
<td>Unlimited supply by GlaxoSmithKline for as long as needed for lymphatic filariasis; donation made through WHO</td>
</tr>
<tr>
<td>AmBisome</td>
<td>Up to 445,000 vials from Gilead during 2012-2017 for visceral leishmaniasis in Africa; donation made through WHO</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>Unlimited quantity from Pfizer for blinding trachoma until at least 2020</td>
</tr>
<tr>
<td>Diethylcarbamazine</td>
<td>Up to 2.2 billion tablets from Eisai until 2020 for lymphatic filariasis; donation made through WHO</td>
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<tr>
<td>Efomithine</td>
<td>Unlimited quantity from Sanofi by 2020 for human African trypanosomiasis; donation made through WHO</td>
</tr>
<tr>
<td>Ivermectin</td>
<td>Unlimited supply by Merck &amp; Co., Inc., for as long as needed. Donation made directly to countries for lymphatic filariasis and onchocerciasis</td>
</tr>
<tr>
<td>Mebendazole</td>
<td>Up to 200 million tablets per year from Johnson &amp; Johnson by 2020 for soil-transmitted helminthiasis control programmes for school-age children; donation made through WHO</td>
</tr>
<tr>
<td>Melarsoprol</td>
<td>Unlimited quantity from Sanofi by 2020 for human African trypanosomiasis; donation made through WHO</td>
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<tr>
<td>Multidrug therapy (rifampicin, clofazimine and dapsone in blister packs) and loose clofazimine</td>
<td>Unlimited supply by Novartis for as long as needed for leprosy and its complications; donation made through WHO</td>
</tr>
<tr>
<td>Nifurtimox</td>
<td>Up to 400,000 tablets per year from Bayer during 2009-2014 for human African trypanosomiasis; donation made through WHO</td>
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<td></td>
<td>Up to 1 million tablets per year from Bayer during 2012-2017 for the second-line treatment of Chagas disease; donation made through WHO</td>
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<tr>
<td>Pentamidine</td>
<td>Unlimited quantity from Sanofi by 2020 for human African trypanosomiasis; donation made through WHO</td>
</tr>
<tr>
<td>Praziquantel</td>
<td>Up to 260 million tablets per year from Merck KGaA for unlimited period for schistosomiasis; donation made through WHO</td>
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<tr>
<td>Suramin</td>
<td>Up to 10,000 vials per year from Bayer until November 2012 for human African trypanosomiasis; donation made through WHO</td>
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<tr>
<td>Triclabendazole</td>
<td>From Novartis for fascioliasis; donation made through WHO</td>
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**Major steps for NTDs**

- **April 2007**: Global WHO/NTD partners meeting in Geneva
- **25 August 2010**: Informal Consultation with Neglected Tropical Diseases (NTD) Stakeholders on the way forward to globally expanding NTD interventions
- **October 2010**: Launch of the first WHO Global report on NTDs
- **April 2011**: Endorsement of the Roadmap targets by the WHO/NTD STAG
- **15 January 2012**: Official launch of the Roadmap
- **31 January 2012**: London Declaration to support the targets of the Roadmap for 10 NTDs
- **14 January 2013**: Launch of the second WHO Global report on NTDs
- **27 May 2013**: Adoption of the Resolution WHA66.12 by the World Health Assembly
World Health Assembly resolution for 17 NTDs

27 May 2013 | Geneva

SIXTY-SIXTH WORLD HEALTH ASSEMBLY
Agenda Item 16.2
27 May 2013

Neglected tropical diseases

The Sixty-sixth World Health Assembly,

Having considered the report on neglected tropical diseases,¹ and recalling the previous World Health Assembly resolutions listed therein,

Recognizing that increased national and international investments in prevention and control of neglected tropical diseases have succeeded in improving health and social well-being in many countries;

Recognizing also the importance of the Global Plan to Combat Neglected Tropical Diseases 2008–2015;

Noting WHO’s roadmap to accelerate the work to overcome the global impact of neglected tropical diseases;¹

Acknowledging the linkages between, and mutual supportiveness of, control and elimination of neglected tropical diseases and the global strategy and plan of action on public health, innovation and intellectual property;

WHA66.12
Issues to be addressed

- Logistics issues
- Distribution of drugs, diagnostics and medical devices
- Implementation of control/elimination programmes

"Orphan programmes" like

- Yaws eradication programme,
- Food Born trematodes
- Neglected Zoonosis Diseases (Echinococcosis, Neurocystycercosis,..), etc

Key areas: Access to Diagnostics

Gaps in R&D

- Drugs
- Important needs for diagnostics (routine, confirmation, point of care, point of cure, etc)

- Medical devices for diagnostic and morbidity management (Ultra sound, dressings, pace makers, etc…)

- Monitoring of elimination
Partners in Germany

Major contributors for drug access and support to control programmes

- Bayer – HAT and Chagas
- Merck KgaA - Schistosomiasis

Implementation and R&D

- Malteser Germany – HAT
- Medical mission Institute Würzburg
- Bernhard Nocht Institute for Tropical Medicine
- University of Heidelberg
WHO welcome the German NTD Network as a key partner.

WHO need a political commitment of the German government and a closer institutional support.