



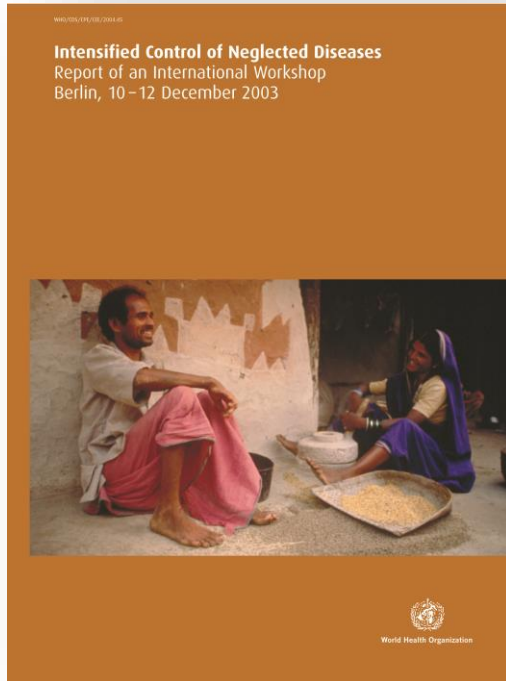
*On track for 2020?*

*Towards the WHO roadmap's targets for neglected tropical diseases*

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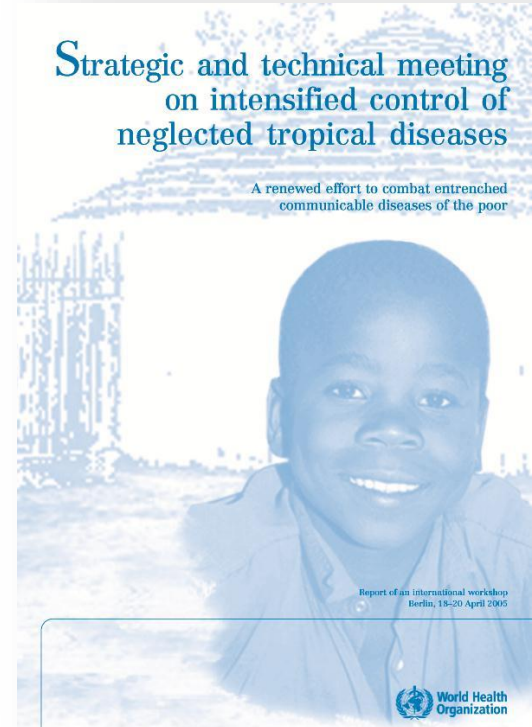
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# Origins of NTD



*"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

# Common features of Neglected Tropical Diseases

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 these 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 WHO (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.

A proxy for poverty and disadvantage

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Ethical duty

# 17 Neglected Tropical Diseases

Innovative & intensified case management	Veterinary public health / management
Preventive chemotherapy	Integrated vector management
Water and environmental sanitation	Behavioural change education

## Helminth Infections

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

## Bacterial Infections

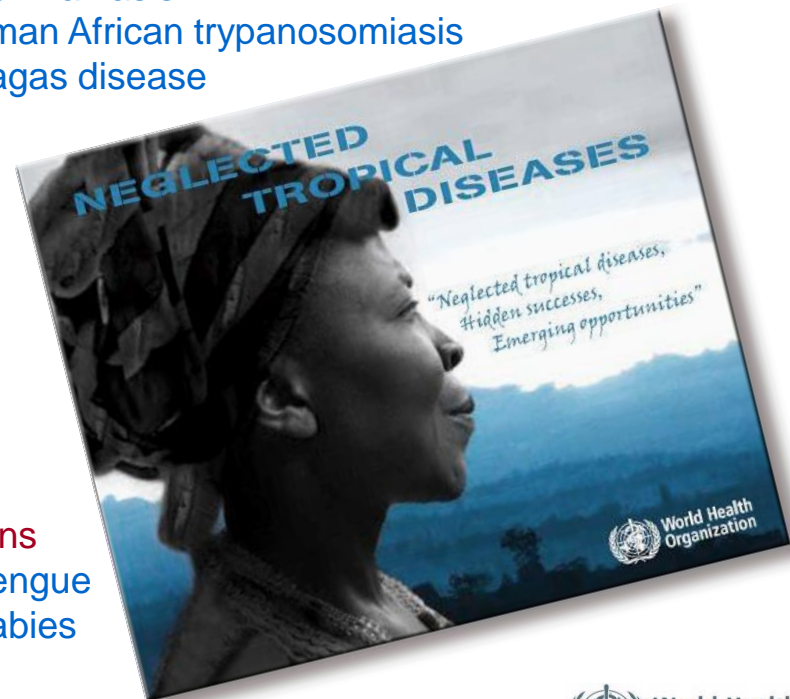
- Leprosy
- Trachoma
- Buruli ulcer
- Endemic treponematoses

## Protozoan Infections

- Leishmaniasis
- Human African trypanosomiasis
- Chagas disease

## Viral Infections

- Dengue
- Rabies



# World Health Assembly adopts resolution on all 17 neglected tropical diseases

27 May 2013 | Geneva

SIXTY-SIXTH WORLD HEALTH ASSEMBLY

WHA66.12

Agenda item 16.2

27 May 2013

## Neglected tropical diseases

The Sixty-sixth World Health Assembly,

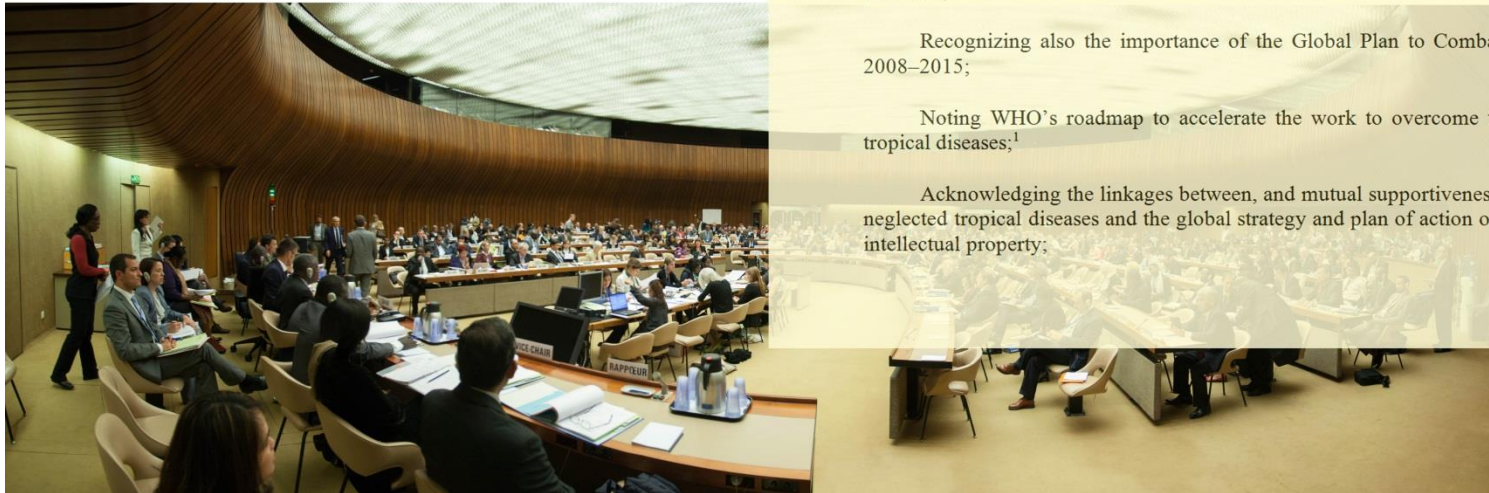
Having considered the report on neglected tropical diseases,<sup>1</sup> and recalling the previous World Health Assembly resolutions listed therein;

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;

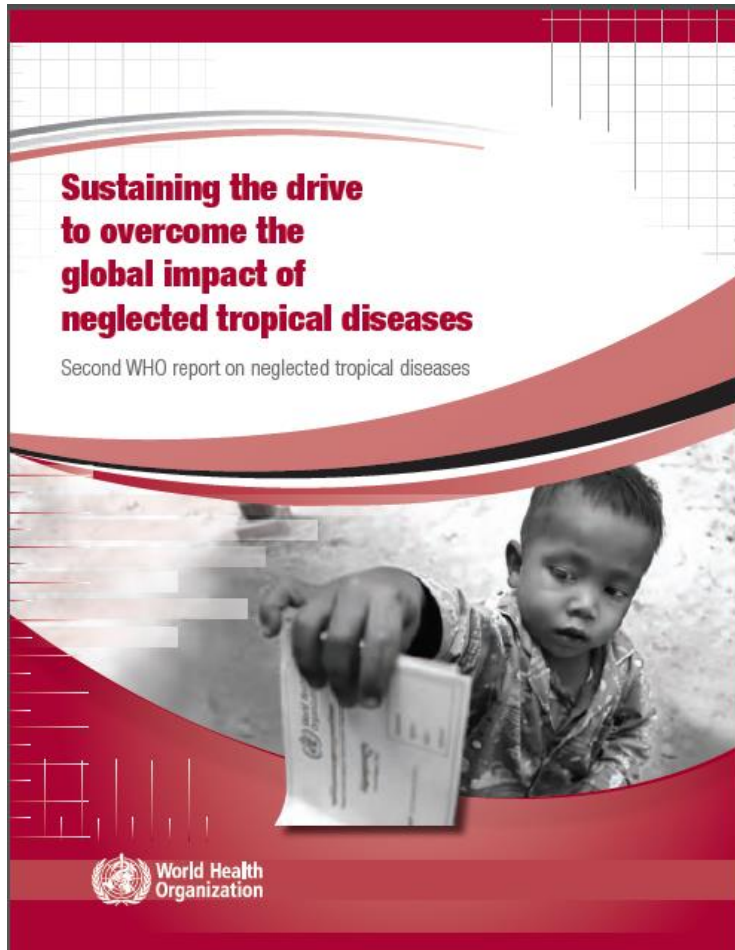
Noting WHO's roadmap to accelerate the work to overcome the global impact of neglected tropical diseases;<sup>1</sup>

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;



# Second WHO report on NTDs

[http://www.who.int/neglected\\_diseases/en/](http://www.who.int/neglected_diseases/en/)



- Defines concept of control, elimination and eradication
- Analyzes challenges at country level
- Emphasizes improvement of coordination and integration at country level
- Highlights strengthening of country level capacity
- Focuses on working with other sectors such as education, agriculture and veterinary public health



# Prevention: WHO Roadmap for rabies

Elimination as a public health problem

Elimination	Targets and milestones by 2015	Targets and milestone by 2020
<b>Rabies</b>	Established regional elimination in Latin America	Human and dog rabies free status maintained and the incidence of human bat-mediated rabies reduced in Latin America
	Coordinated regional programmes in South-East Asia and Western Pacific regions	Regional elimination in South-East Asia and Western Pacific regions, with sustainability ensured



# **NOT** recommended by WHO

## Nerve tissue vaccines

- induce more **severe adverse** reactions and are
- less immunogenic than

concentrated and purified cell-culture (CCV) and embryonated egg-based (EEV) rabies vaccines

Rabies vaccines: WHO position paper 2010 <http://www.who.int/rabies/en/>

# **Intradermal** administration of PEP in high throughput clinics

- equally safe and immunogenic
- only 1–2 vials of vaccine for complete course of PEP
- savings of about 60–80% compared with standard intramuscular vaccination
- same potency vaccines as for i.m.

Rabies vaccines: WHO position paper 2010 <http://www.who.int/rabies/en/>

# Wound washing is life saving

- wash wound with soap and water, detergent, povidone iodine or other substances with virucidal activity.
- If soap or a virucidal agent is not available, wash extensively with water.

# Bite categories and PEP

Category of exposure	Description	Post-exposure prophylaxis
Category I	Touching or feeding animals, licks on intact skin, contact of intact skin with secretions or excretions of rabid animal or person	Not regarded as exposures, therefore no PEP required
Category II	Nibbling of uncovered skin, minor scratches or abrasions without bleeding	Vaccine should be injected as soon as possible
Category III	Single or multiple transdermal bites or scratches, licks on broken skin, contamination of mucous membrane with saliva from licks and exposure to bats.	Vaccine and rabies immunoglobulin should be administered at distant sites as soon as possible. Immunoglobulin can be administered up to 7 days after injection of the first dose of vaccine

# Post-exposure prophylaxis (PEP)

- Prophylaxis should be instituted immediately.
  - If possible, the suspect animal should be identified, quarantined for observation (for 10-14 days) or euthanized for laboratory examination.

## Post-exposure vaccination (no previous vaccination)

### Intramuscular

1. A **five-dose** schedule: one dose on days 0, 3, 7, 14 and 28

**1-1-1-1-1**

2. A **four-dose** schedule: two doses on day 0 followed by one dose on days 7 and 21.

**2-0-1-0-1**

or

**2-0-1-1-0**

### Intradermal

Thai Red Cross regimen

injections of **0.1 ml** of vaccine at two different intradermal sites on each of **days 0, 3, 7 and 28**

**2-2-2-0-2**



# WHO Prequalified vaccines

Chiron Behring Vaccines Private Ltd (subsidiary of Novartis)

India - 1 dose Vial

Now GSK previously Novartis Vaccines and Diagnostics

Germany - 1 dose Vial

Sanofi Pasteur

France - 1 dose Vial

Serum Institute of India Ltd, India

India - 1 dose vial

Zydus Cadila

India - 1 dose Vial

## Rabies Immunoglobulin (RIG) for category III exposure

- 20 IU/ kg HRIG or 40 IU/ kg of ERIG
- Bites to the head, neck, face hand and genitals are category III exposures
- Infiltrate RIG into the depth of the wound and around the wound
  - Remaining RIG at intramuscular site far from that of vaccine inoculation (e.g. into the anterior thigh)

# Soon coming? A possible alternative to HRIG/ERIG

## Rabies monoclonal antibody products in human clinical trials

Manufacturer	Stage	Name (Details)
SII (India)	Phase II/III initiated <sup>1</sup>	SII RMAb (Single mAb)
Crucell (Netherlands)	Phase II completed <sup>2</sup>	CL184 (Cocktail of 2 mAbs)
Zydus Cadila (India)	Phase I/II initiated <sup>3</sup>	RABIMABS (Cocktail of 2 mAbs)
M.T.T.I and NCPC (US & China)	Phase II ongoing <sup>4</sup>	(Human Anti-Rabies Mab) Cocktail of 2 mAbs

<sup>1</sup> Clinical Trials Registration: <http://www.ctri.nic.in/Clinicaltrials/pmaindet2.php?trialid=4191> ; accessed on 2 February 2015

<sup>2</sup> Clinical Trials Registration: <http://www.ctri.nic.in/Clinicaltrials/pmaindet2.php?trialid=3169> ; accessed on 31 January 2015

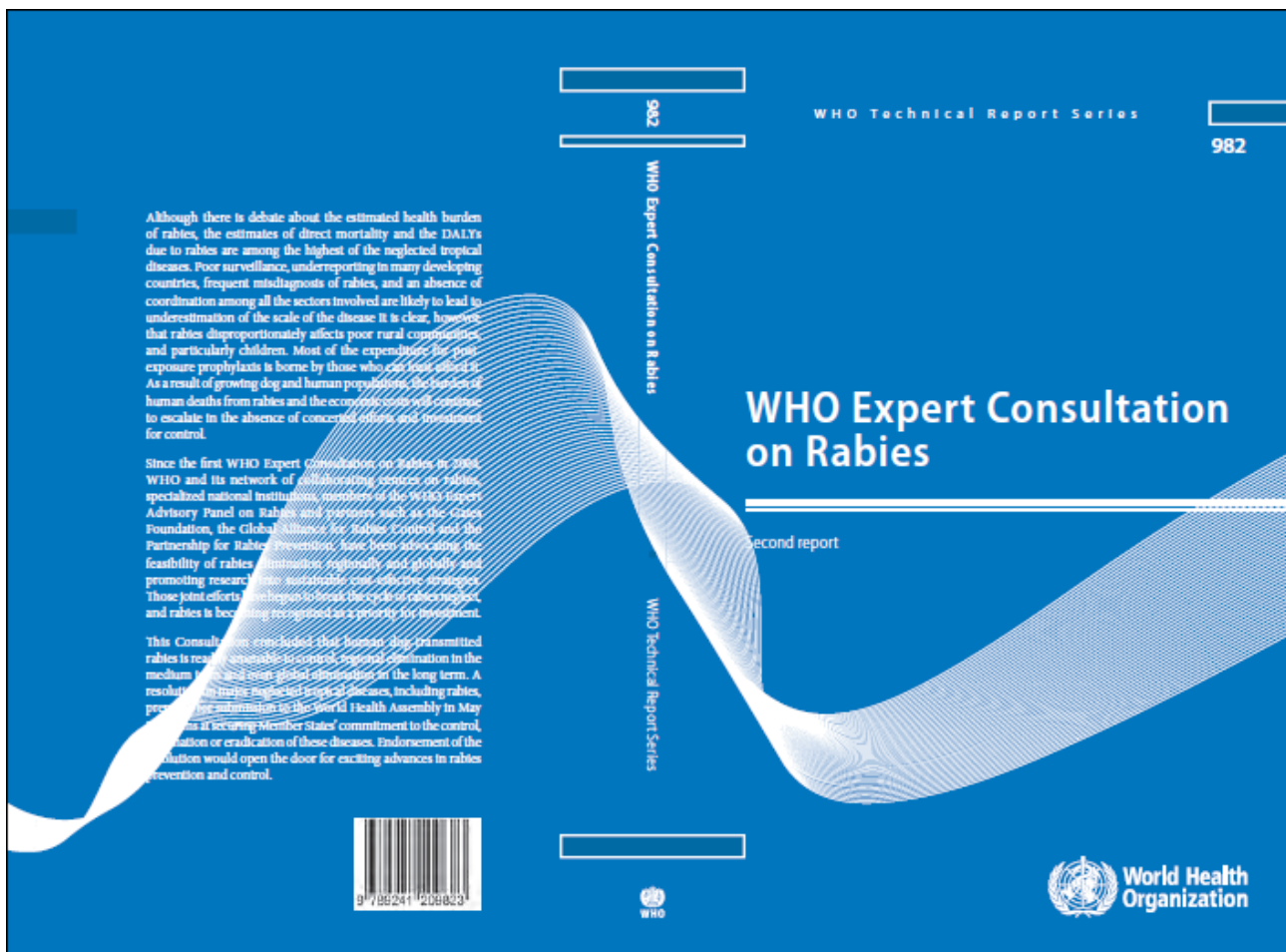
<sup>3</sup> Clinical Trials Registration: <http://www.ctri.nic.in/Clinicaltrials/pmaindet2.php?trialid=5716>; accessed on 31 January 2015

<sup>4</sup> <http://www.mtarget.com/PIPE.html> and <http://www.mtarget.com/mm5/pdfs/pipeline/RabiesMonoclonalAnti.pdf>; accessed on 2 February 2015

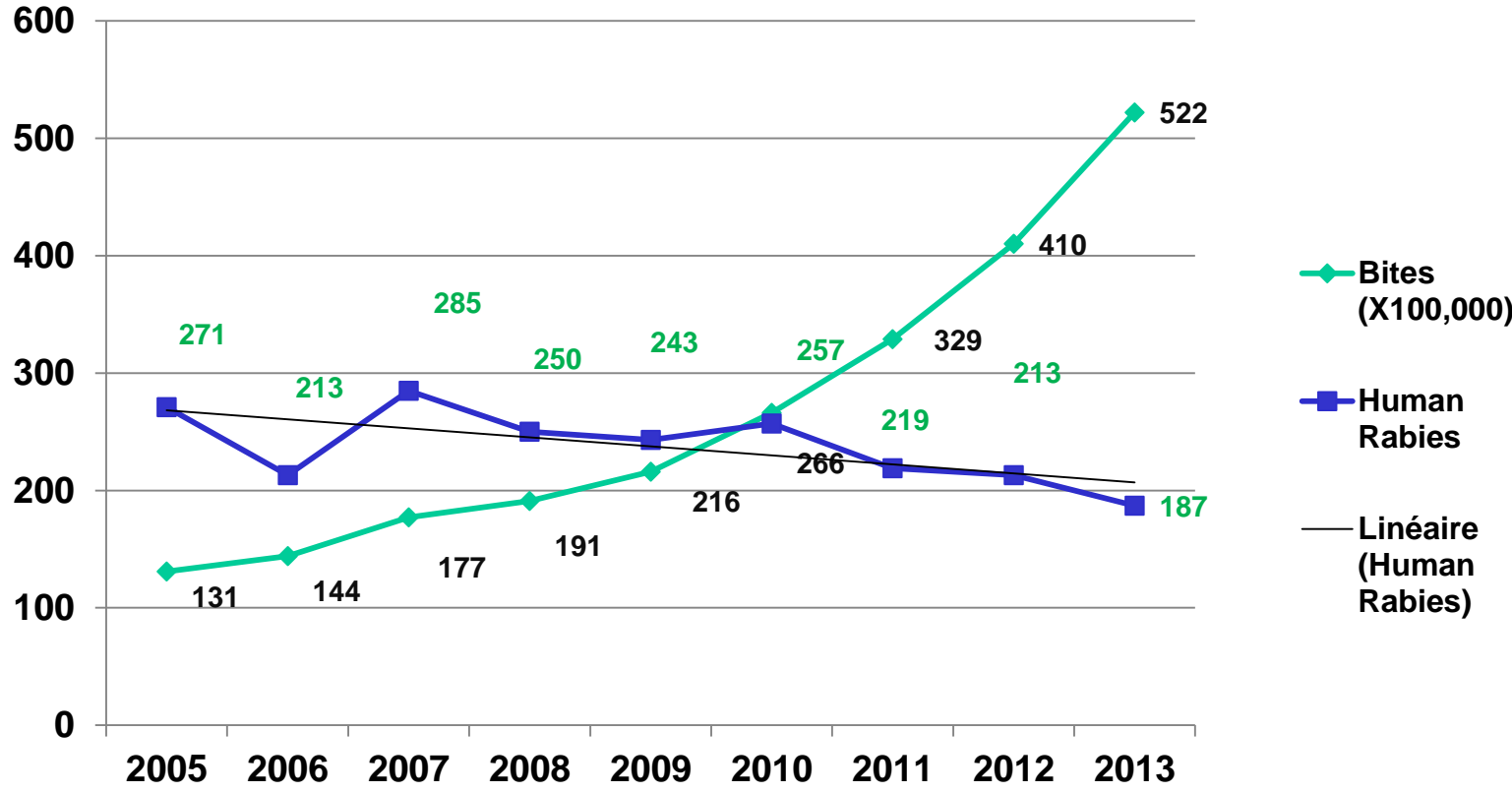


# Report of WHO Expert Consultation

<http://www.who.int/rabies/en/>



# Number of Human Rabies and Animal Bite/Rabies Exposures Philippines 2005- 2013



# RABIES, THE 100% PREVENTABLE ZOOONOTIC NTD

optimised supply + coordination = expedited achievement of zero deaths



ELIMINATION OF CANINE RABIES

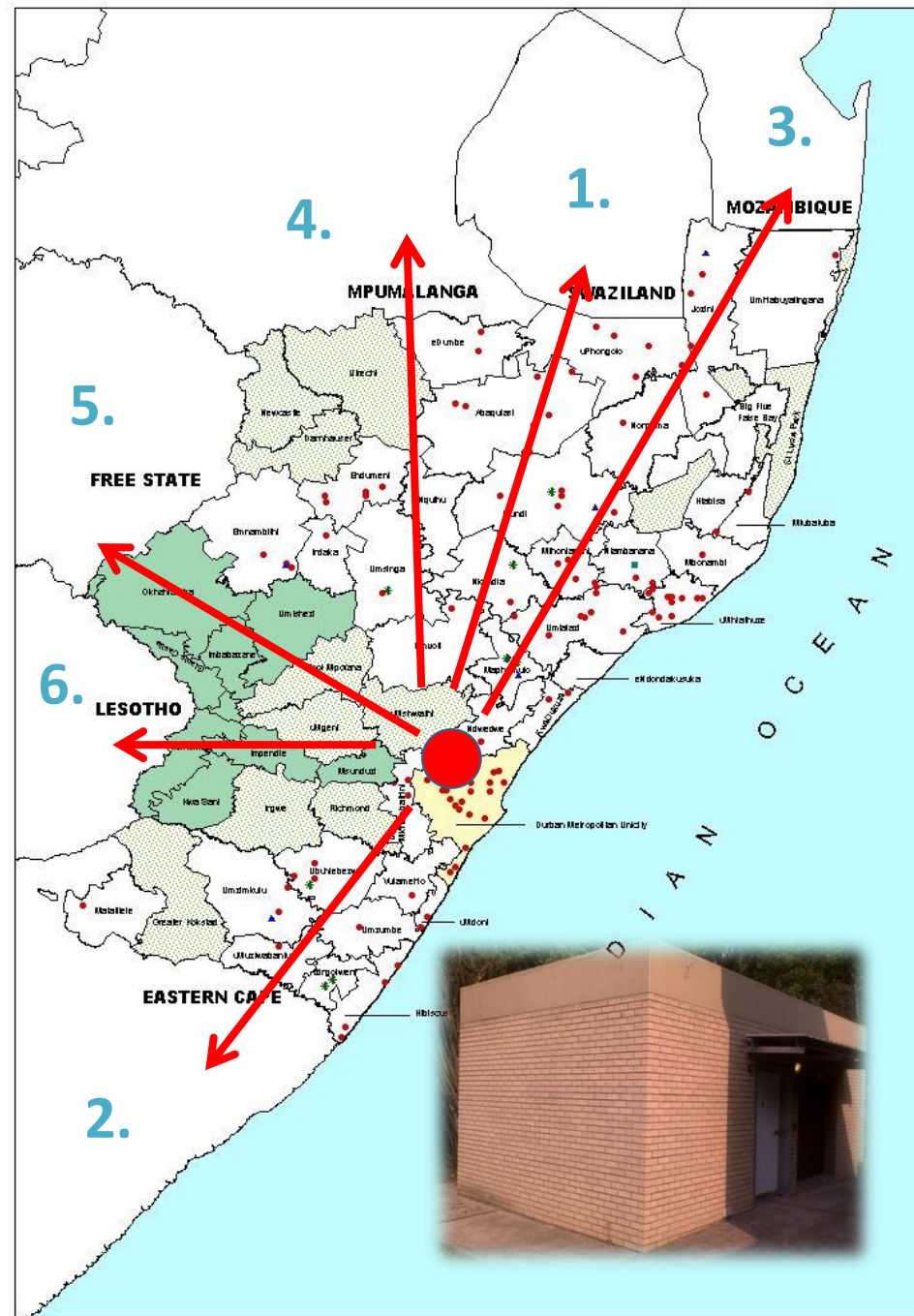
ZERO HUMAN DEATHS

ELIMINATION OF DOG-MEDIATED RABIES

# Vaccine stockpile:

A catalyst for expansion

1. Swaziland
2. Eastern Cape
3. Mozambique
4. Mpumalanga
5. Orange Free State
6. Lesotho
7. Other Countries
  - Kenya
  - Congo
  - Senegal.



# Freedom from dog-mediated human rabies is a global public good

WHO, FAO, OIE, GARC unite to eliminate human rabies and control the disease in animals



- 1. Rabies disproportionately burdens poor rural communities**
- 2. Dog-mediated human rabies can be eliminated by vaccinating dogs**
- 3. Rabies is preventable yet continues to kill**

# Accelerating the work to control rabies and keeping our client in the forefront

- **Integrating**
  - with other NTDs
  - Human animal interface
- **Rabies**
  - Catalysing through Vaccine & RIG stockpiles
- **Leveraging collaborations and resources**
  - FAO, OIE
  - other international partners and nongovernmental organizations, financing bodies, academic and research institutions, civil society and the private sector



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