Global Programme to Eliminate Lymphatic Filariasis

fundamentals towards successful NTD elimination

courtesy of Nepal and GSK

World Health Organization

Lymphatic filariasis

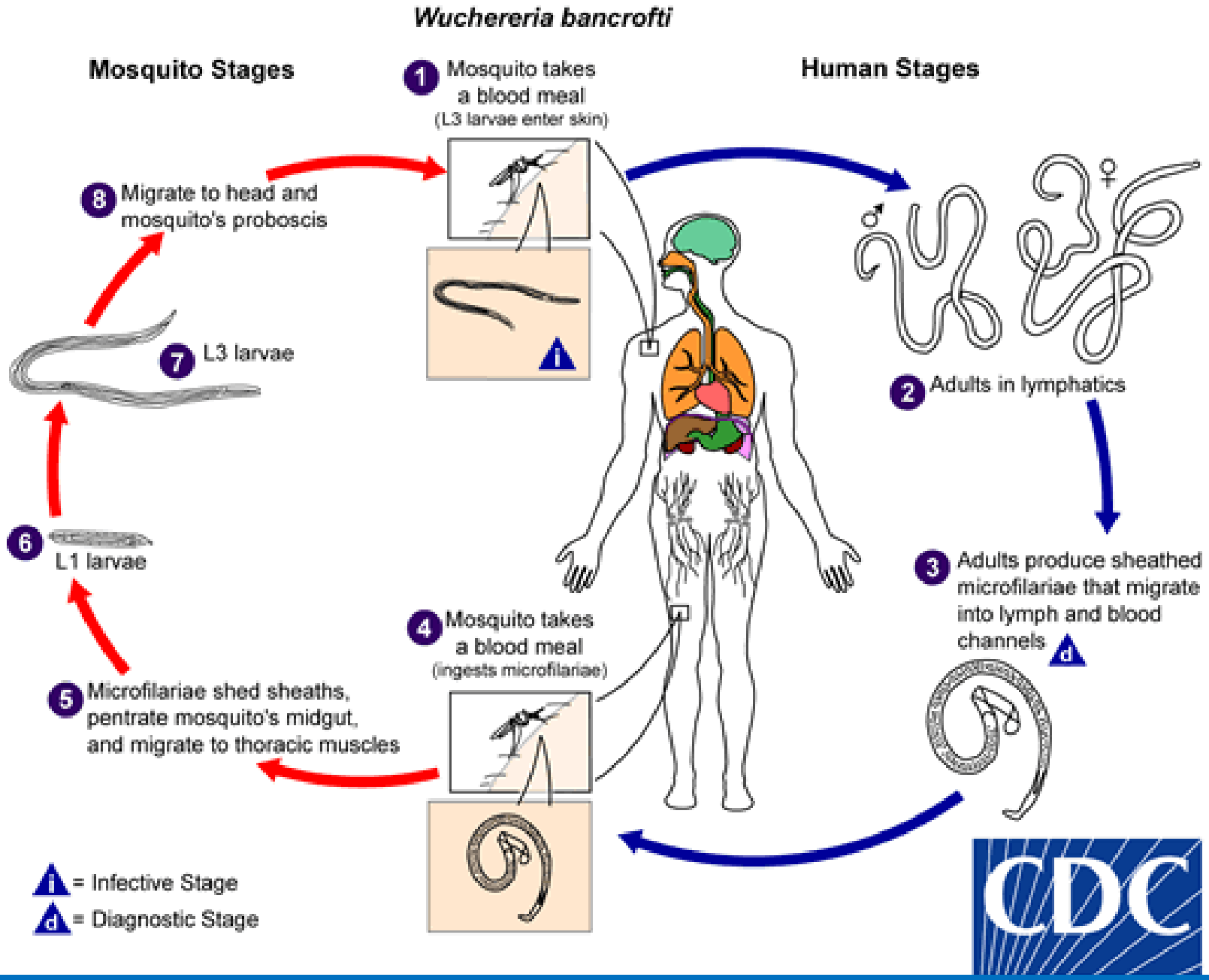
- NTD caused by three species of nematodes that nest in the lymphatic vessels
- Transmitted by mosquitoes
- Infection impairs function of lymphatic system by vessel dilatation

Image source: www.dpd.cdc.gov/dpdx

Wuchereria bancrofti

Brugia malayi

Brugia timori



LF Morbidity– a leading cause of global disability

Chronic manifestations

- Lymphoedema
- Elephantiasis
- Hydrocele

Acute manifestations

- Adenolymphangitis (ADL) ‘acute attacks’

Social and Economic burden of LF

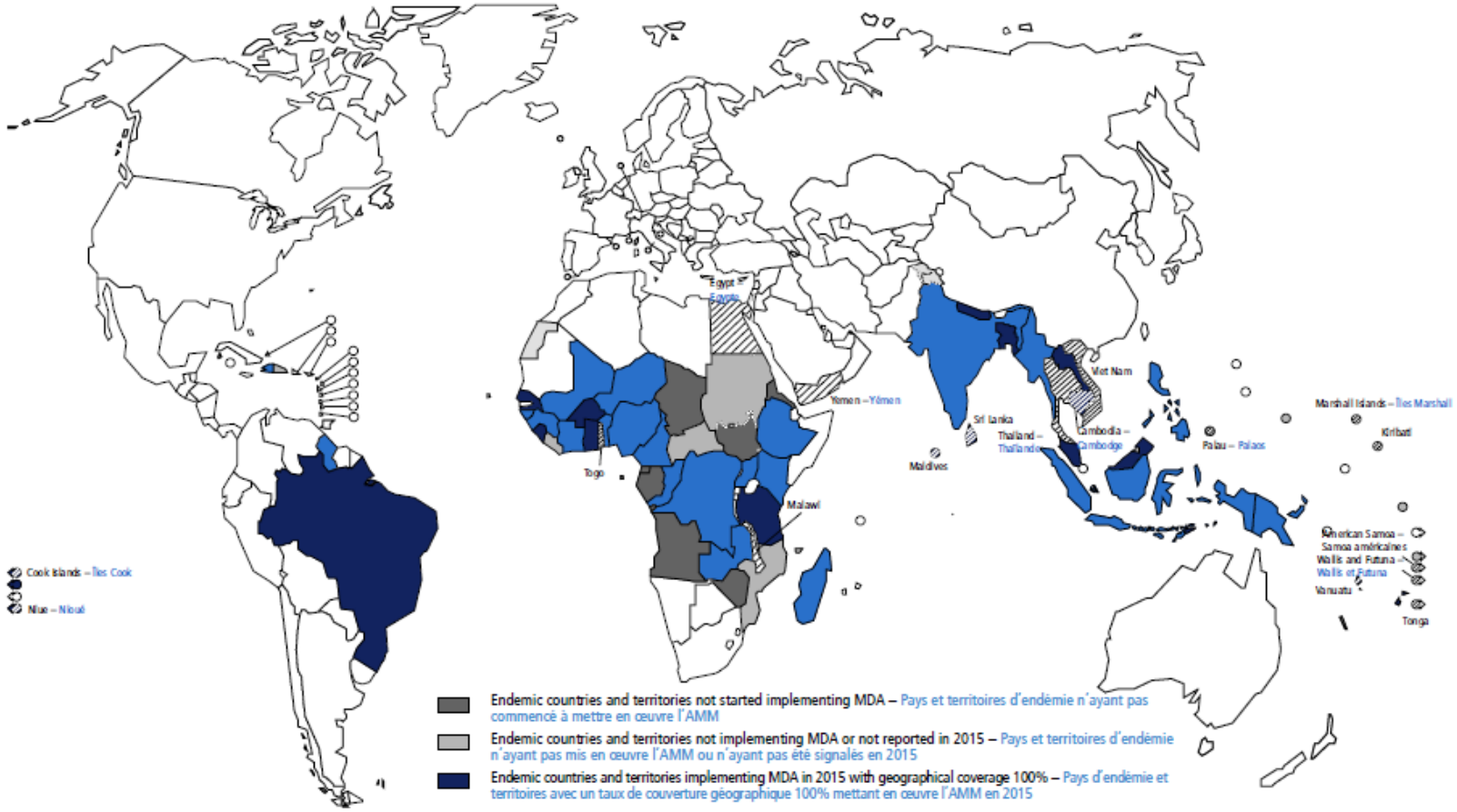
- Disfigurement, pain & disability
- Stigma
- Depressive illness
- Economic loss
- Causes and aggravates poverty

courtesy of Nepal and Kiribati

Distribution of lymphatic filariasis (LF)

Endemic in 72 countries; 856 million people require mass treatment

Map 1 **Countries where lymphatic filariasis is endemic and status of mass drug administration (MDA) in those countries, 2015**
Carte 1 **Pays où la filariose lymphatique est endémique et situation de l'administration massive de médicaments (AMM) en 2015**



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Transmission to Elimination

What are the fundamentals needed to move from transmission towards successful elimination?

1. *Global commitment* – WHA 50.29

Elimination of LF as a public health problem

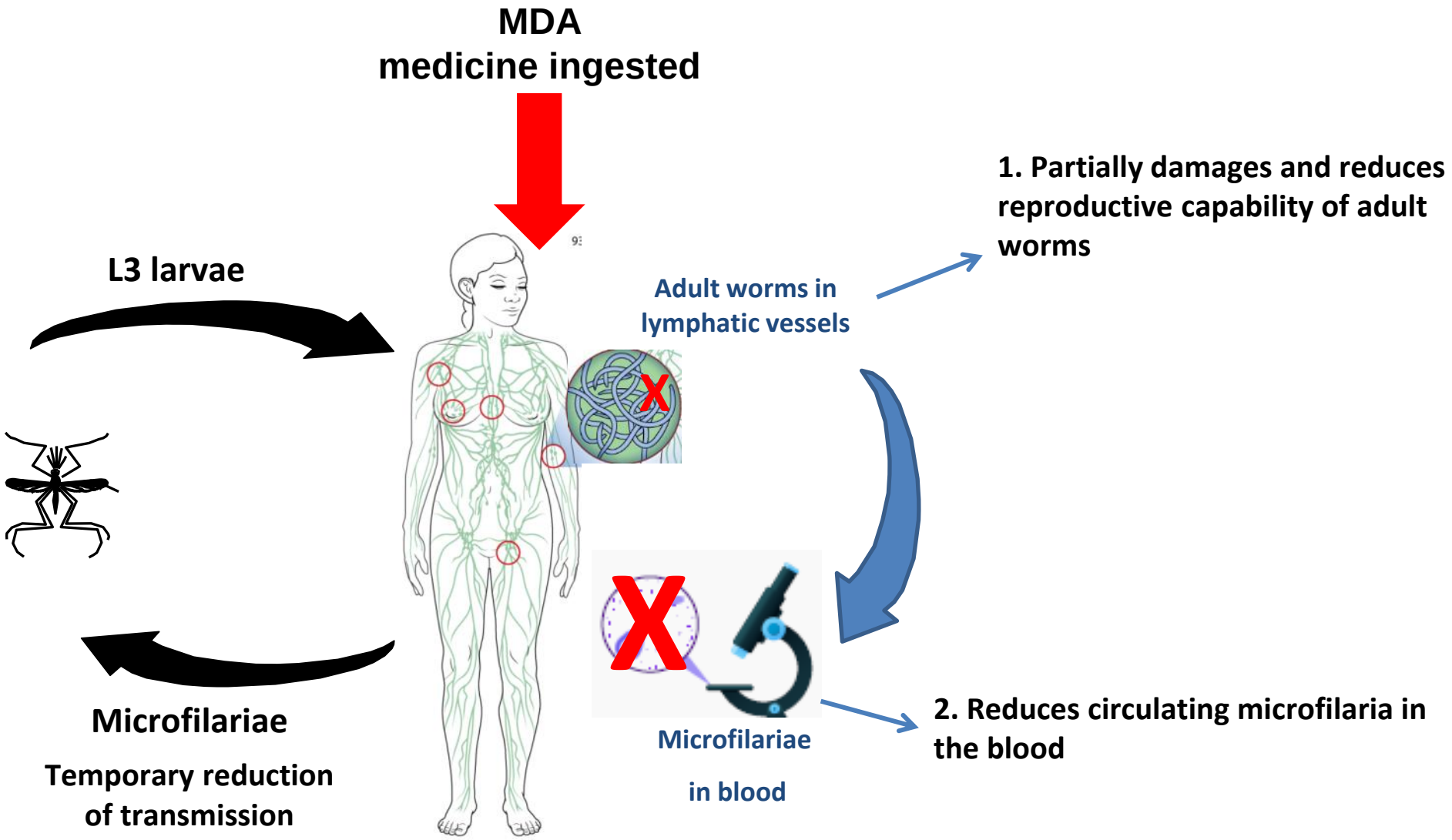
Global Programme to Eliminate Lymphatic Filariasis (GPELF) was launched in 2000

1. **Stop transmission**
   - Mass drug administration (**MDA**)
2. **Reduce suffering and improve quality of life**
   - Morbidity management and disability prevention (**MMDP**)

2. *Effective strategies*– Mass Drug Administration

- **Annual mass treatment with antihelminthic medicine**
  (treating both infected and uninfected)
- **100% geographical coverage = *ALL* endemic districts**
- **Effective (≥65%) coverage of the *total* population ≥5 rounds**

How MDA works



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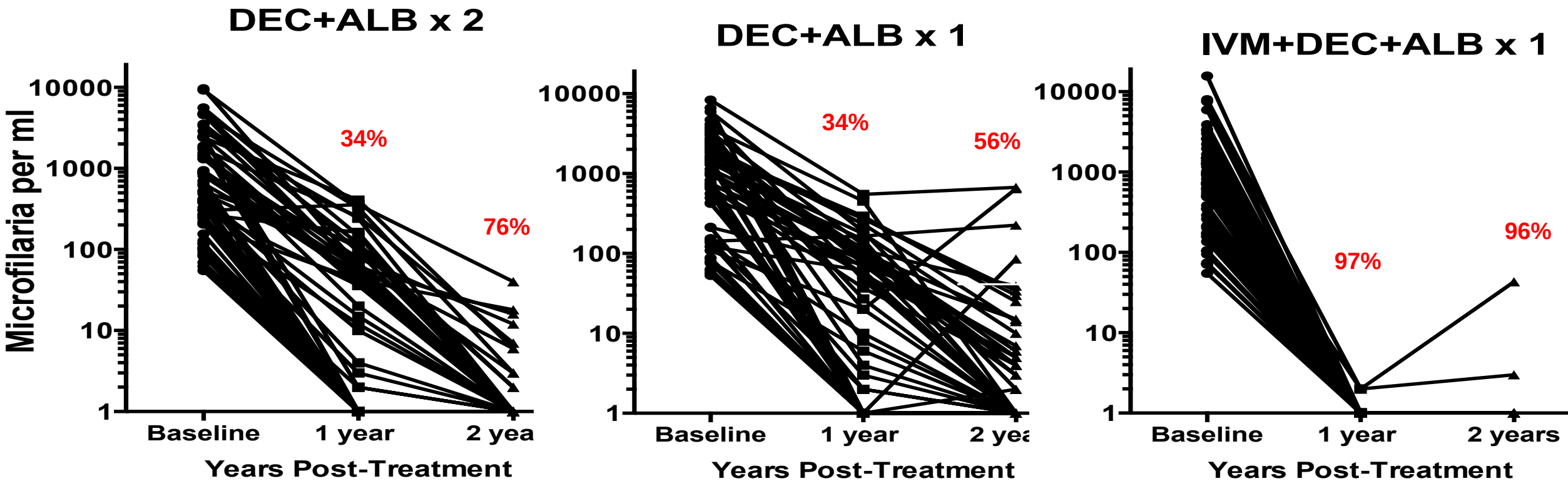
2. *Effective strategies* - MDA medicine

WHO recommends the following MDA regimens:

- ***New*** triple-drug therapy for annual MDA in special settings
  - Ivermectin + diethycarbamazine + albendazole (*IDA* or *triple therapy*)
- Annual two-drug therapy for all other areas
  - diethycarbamazine + albendazole
  - ivermectin + albendazole
- Biannual albendazole alone in loiasis co-endemic areas

Efficacy of IDA



N=61, 56, 55

N=61, 59, 56

N=60, 57, 54

Courtesy of Chris King 2017 DOLF PNG

2. *Effective strategies*

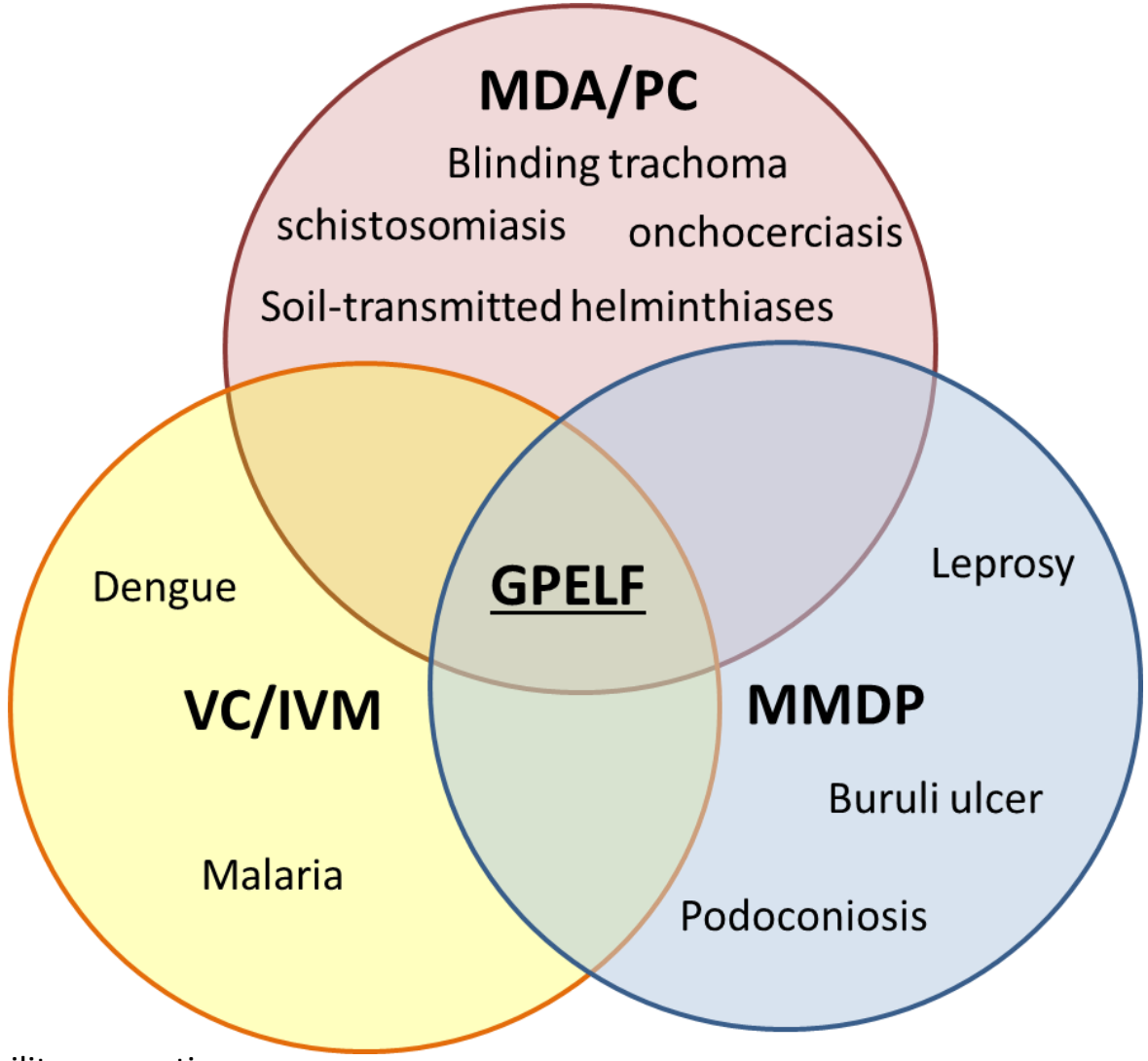
Morbidity Management and Disability Prevention

courtesy India and GSK

Health facilities must be able to provide minimum package of care in every district with known *patients*

- **surgery for hydrocele**
- **management of lymphedema**
- **treatment of acute attacks**
- **treatment of patients with LF infection**

3. *Integration:* where feasible for broad impact



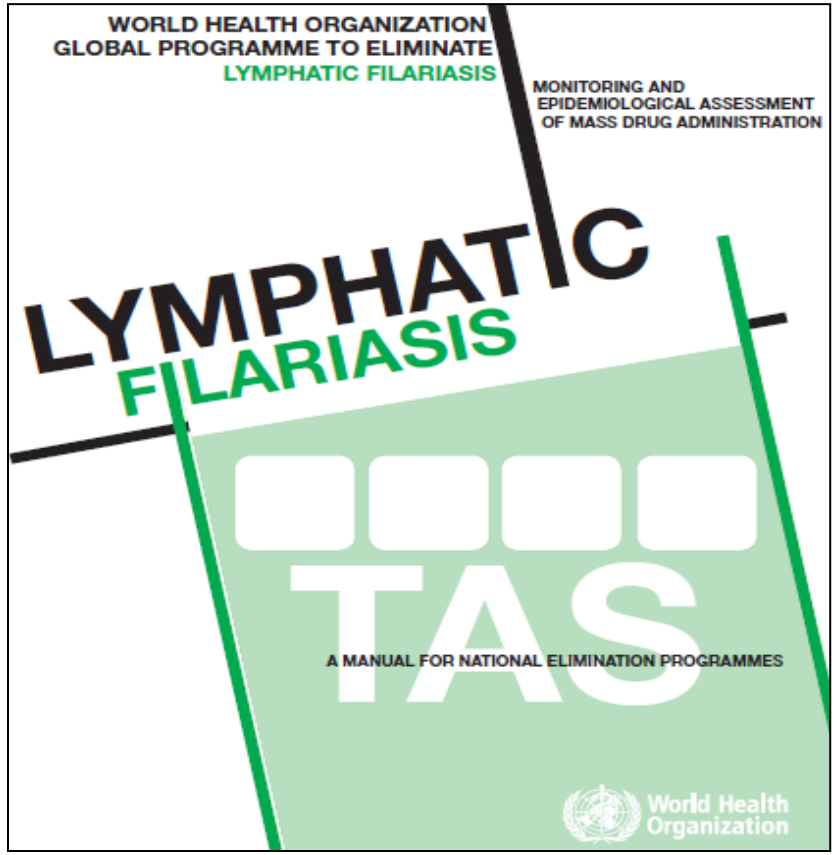
PC – preventive chemotherapy
VC – vector control
IVM – integrated vector management;
MMDP – morbidity management and disability prevention

4. *Standardized tools:* Recommended diagnostic tests

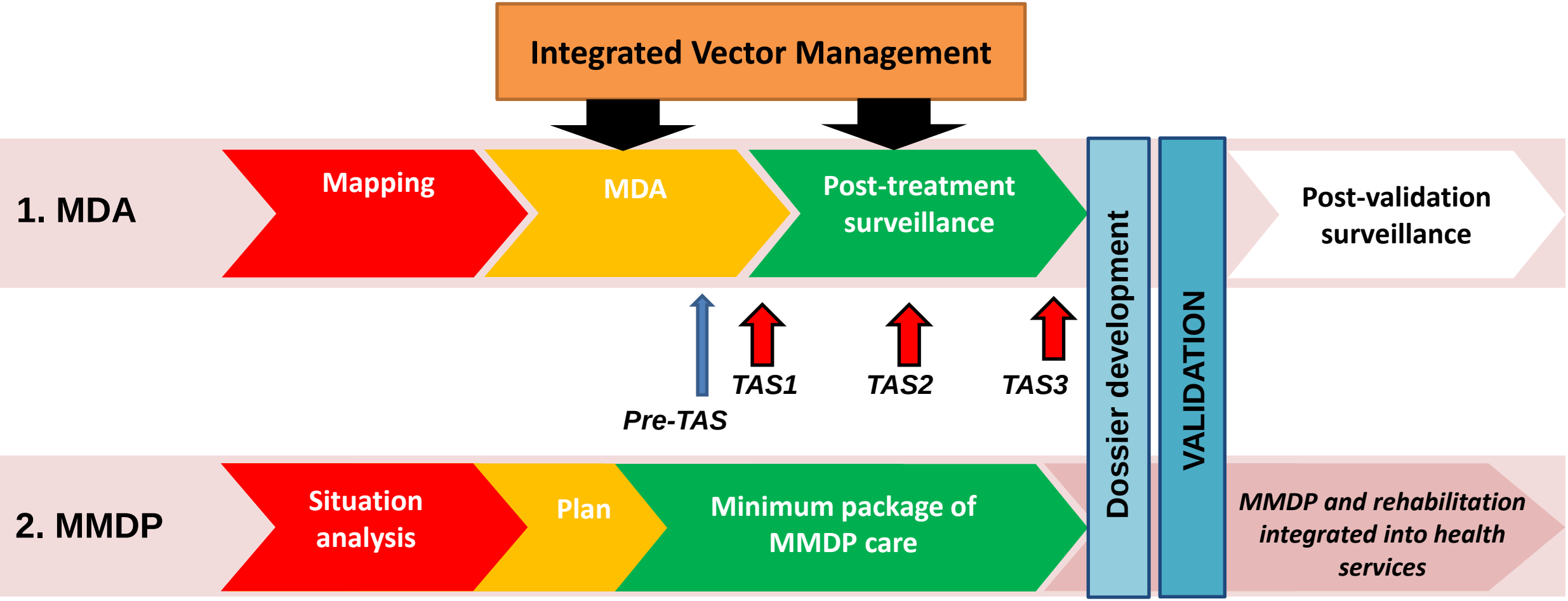
Field assay	Detection target	Recommended for use during
Blood film	Microfilariae	Mapping, Sentinel site and Spot-check site monitoring
Alere Filariasis Test Strip (FTS)	Filarial **antigen** (Ag)	Mapping, Sentinel site and Spot-check site monitoring, and **T**ransmission **A**ssessment **S**urvey (**TAS**)
Brugia Rapid™ test	Antifilarial **antibody** (Ab)	**TAS**

4. *Standardized tools:* Transmission Assessment Survey

- Decision making tool, **tells when to stop MDA**
- Standardized survey with robust, yet practical statistical design
- Uses children as an indicator of incident infection
- Measures whether prevalence of infection is **below a threshold** (critical cut-off) **at which transmission is assumed no longer sustainable**, even in the absence of MDA



5. *Strategic Framework*



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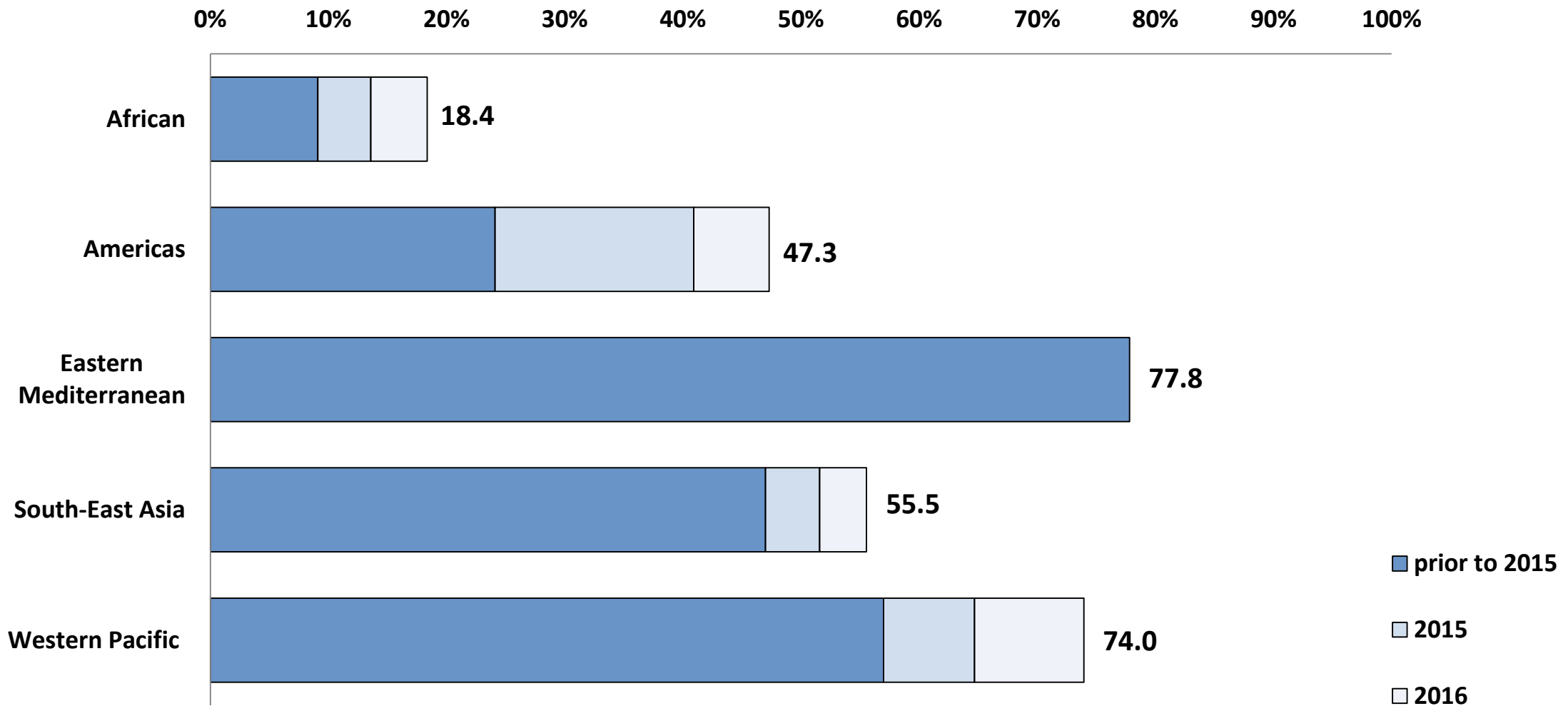
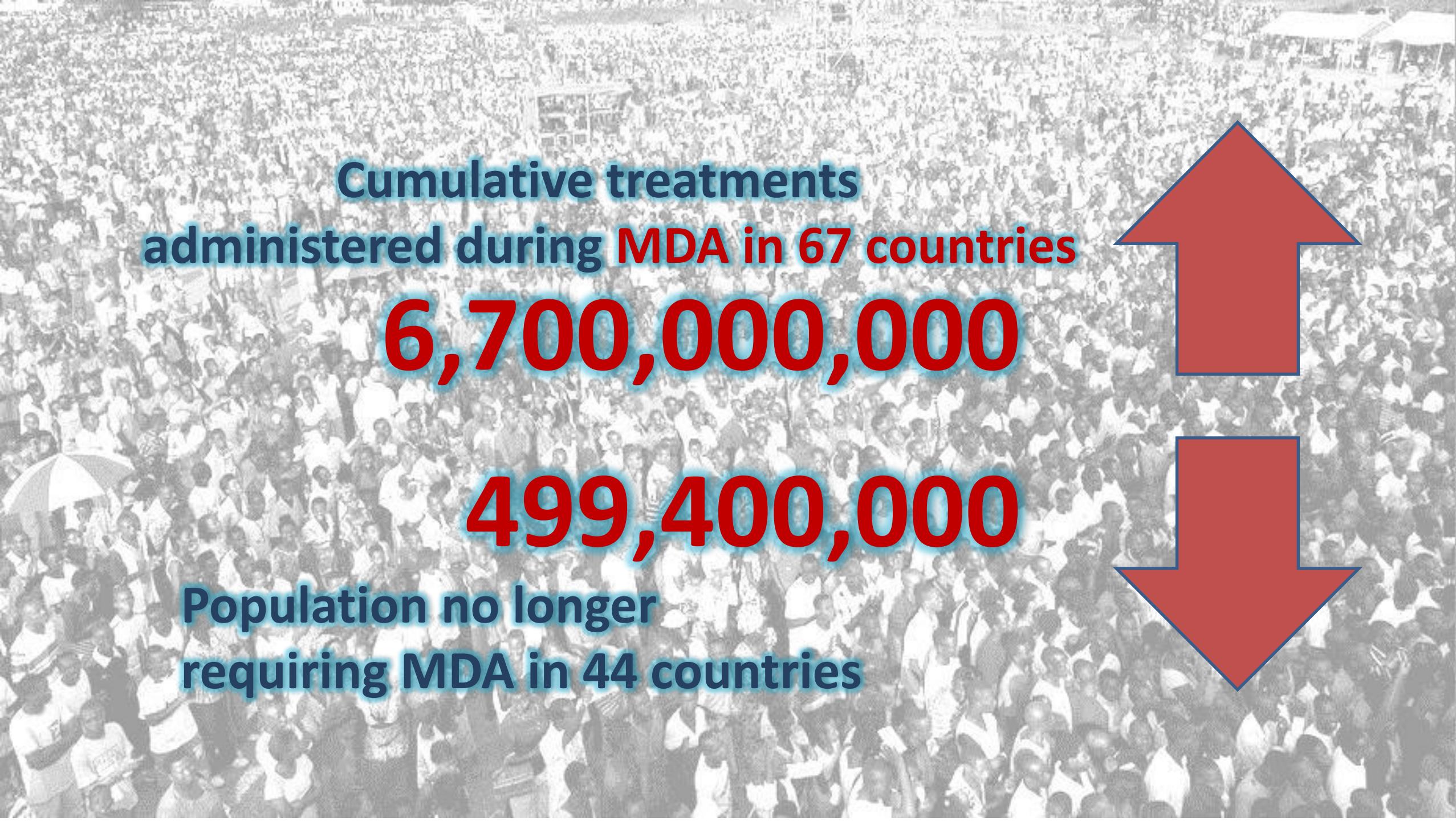
6. *Measurable progress:* proportion of implementation units that have completed TAS and no longer require MDA*



*Percent of all known endemic implementation units (IU) in countries by region that have completed TAS1 or previous stop-MDA surveys and reported meeting criterion for stopping MDA. IUs where endemicity is unknown have not been included.

6. *Measurable progress*: MDA status of countries

MDA not started	MDA started but not at scale	MDA scaled to all endemic IUs	Post-MDA Surveillance	Elimination as a Public Health Problem
Equatorial Guinea Gabon Sao Tome and Principe South Sudan *New Caledonia*	Angola Cameroon Central African Republic Chad Congo Democratic Republic Congo Ethiopia Guinea-Bissau Nigeria Sudan *Comoros* *Eritrea* *Madagascar* *Guyana* *Indonesia* *Papua New Guinea*	Benin. Burkina Faso Côte d'Ivoire, Ghana, Guinea, Liberia, Mali Mozambique, Niger Senegal, Sierra-Leone Tanzania, Uganda, *Kenya, Zambia,* *Zimbabwe* *Dominican Republic* *Haiti* *India, Myanmar* *Nepal, Timor-Leste* *French Polynesia* *Fiji, FSM, Lao PDR* *Malaysia, Samoa* *Brunei Darussalam* *Philippines, Tuvalu*	Malawi *Brazil* *Egypt* Yemen *Bangladesh* *American Samoa* *Kiribati* *Palau* *Vietnam* *Wallis and Futuna*	 Togo Maldives Sri Lanka Thailand Cambodia Cook Islands Marshall Islands Niue Tonga Vanuatu
5 (7%)	16 (22%)	31 (43%)	10 (14%)	10 (14%)


Cumulative treatments
administered during MDA in 67 countries
6,700,000,000
499,400,000
Population no longer
requiring MDA in 44 countries

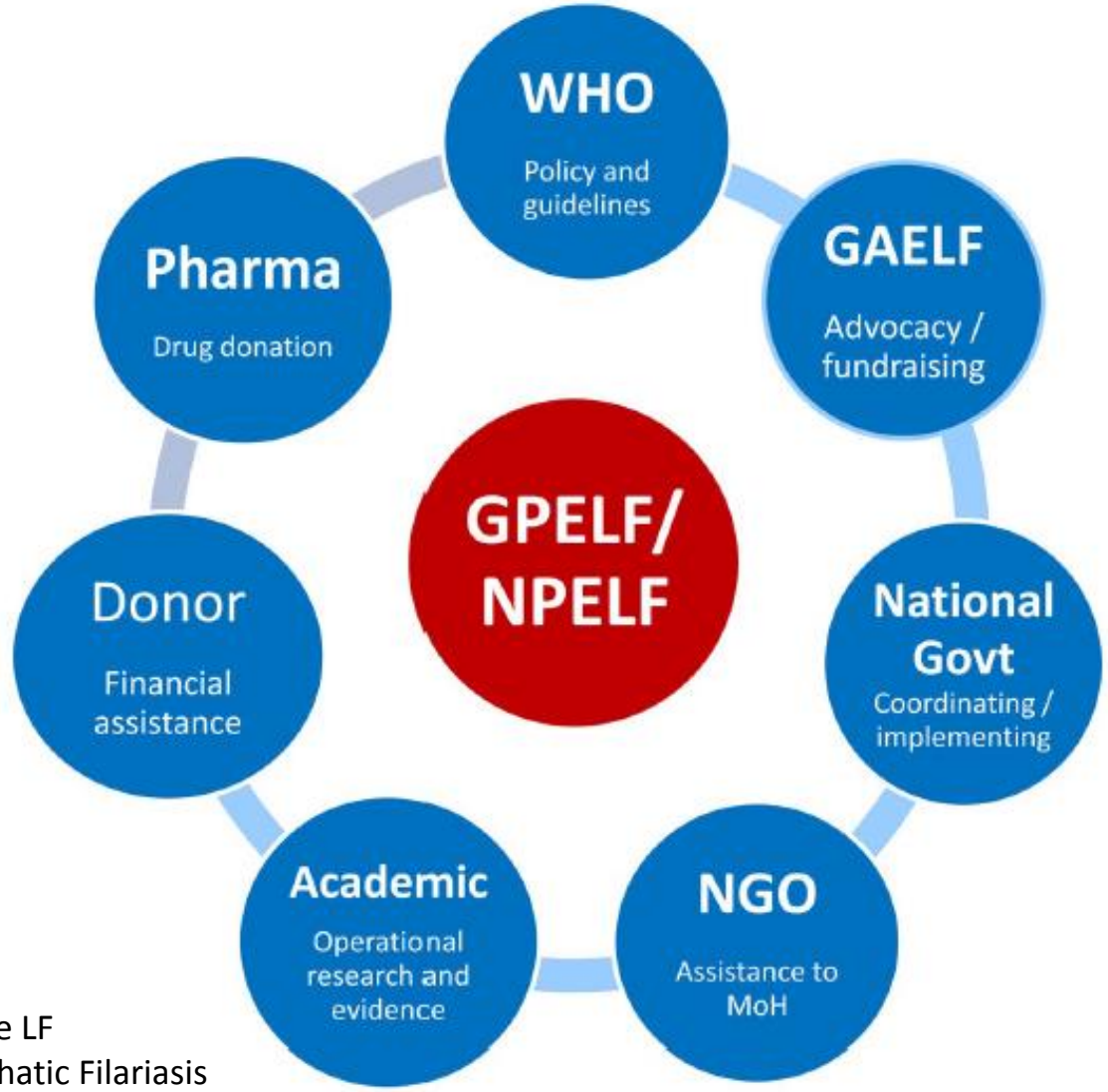
Prevented or cured more than 97 million cases

(Ramaiah, Ottesen 2014 PLoS NTD)

Forecasted to avert >US $100 billion in economic loss

(Turner et al 2016 Infect Dis Pov)

7. *Partnerships*



NPELF – national programmes to eliminate LF
GAELF – Global Alliance to Eliminate Lymphatic Filariasis

7. *Partnerships:* Government Leadership

7. *Partnerships*: Donations - medicines

	Ivermectin	Diethylcarbamazine (DEC)	Albendazole
Dosage	150-200 µg/kg	6mg/kg	400mg
Manufacturer	Merck Sharp & Dohme (MSD)	Eisai	GSK
Commitment	a. Since 1997 **b. 2017-2025**	2014-2020	Since 2009 until elimination is achieved
Donation	a. Needed amount for LF elimination in oncho-coendemic countries **b. Up to 280 million tablets per year for IDA**	Up to 2.2 billion tablets	Up to 600 million tablets annually

7. *Partnerships:* Operational research

- Research that directly contributes to the achievement of GPELF aims
  - raises level of awareness and directs investments
  - develops more effective strategies
  - identifies programme challenges and solutions
  - facilitates costing, forecasting and planning

Conclusion

What are the fundamentals driving GPELF towards success?

1. Global commitment
2. Effective strategies
3. Integrated approach
4. Standardized tools
5. Strategic framework
6. Measurable progress
7. **Partnerships**

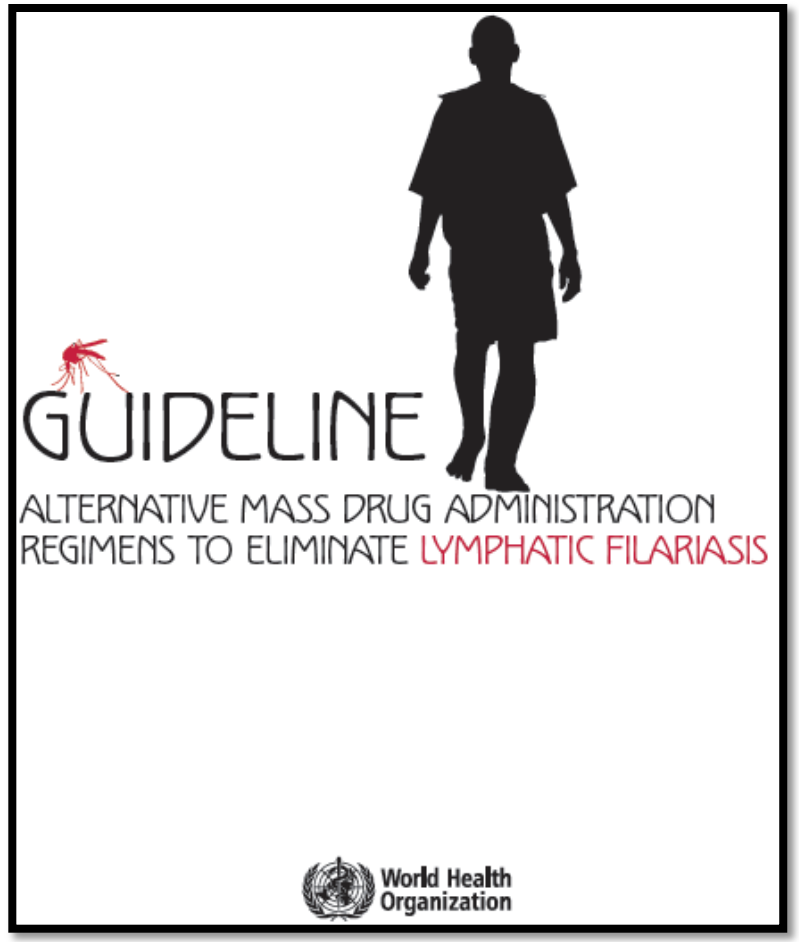
Swiss TPH
Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse

Associated Institute of the University of Basel

Swiss Centre for International Health
Health Systems Support Unit
Data-Evaluation-Evidence-Policy (DEEP) Group

WHO Guideline development group meeting

Systematic Review: alternative MDA strategies for the elimination of lymphatic filariasis



Xavier Bosch-Capblanch, Peter Steinmann, Amanda Ross, Heather Ames, Meike Zuske

Geneva, 17-19 May 2017

http://www.who.int/lymphatic_filariasis/resources/9789241550161/en/

Current obstacles to success

- MDA has not started in all endemic districts
- Sustaining effective coverage for ≥5 MDA rounds
- Sub-optimal results of impact surveys
  - 10% of TAS have failed across 14 countries
- Persistent transmission in certain settings
  - *Aedes* vector
  - Zoonotic *Brugia malayi*
- Need more sensitive tools/responsive targets for measuring impact of better regimens

courtesy of Zanzibar and GSK

Thank you

Swiss TPH!

World Health Organization