

Leishmaniasis - a Global Challenge



India 2011 © Anna Surinyach/MSF

Marta Gonzalez Sanz

Humanitarian Symposium, Munich, 21 April 2018

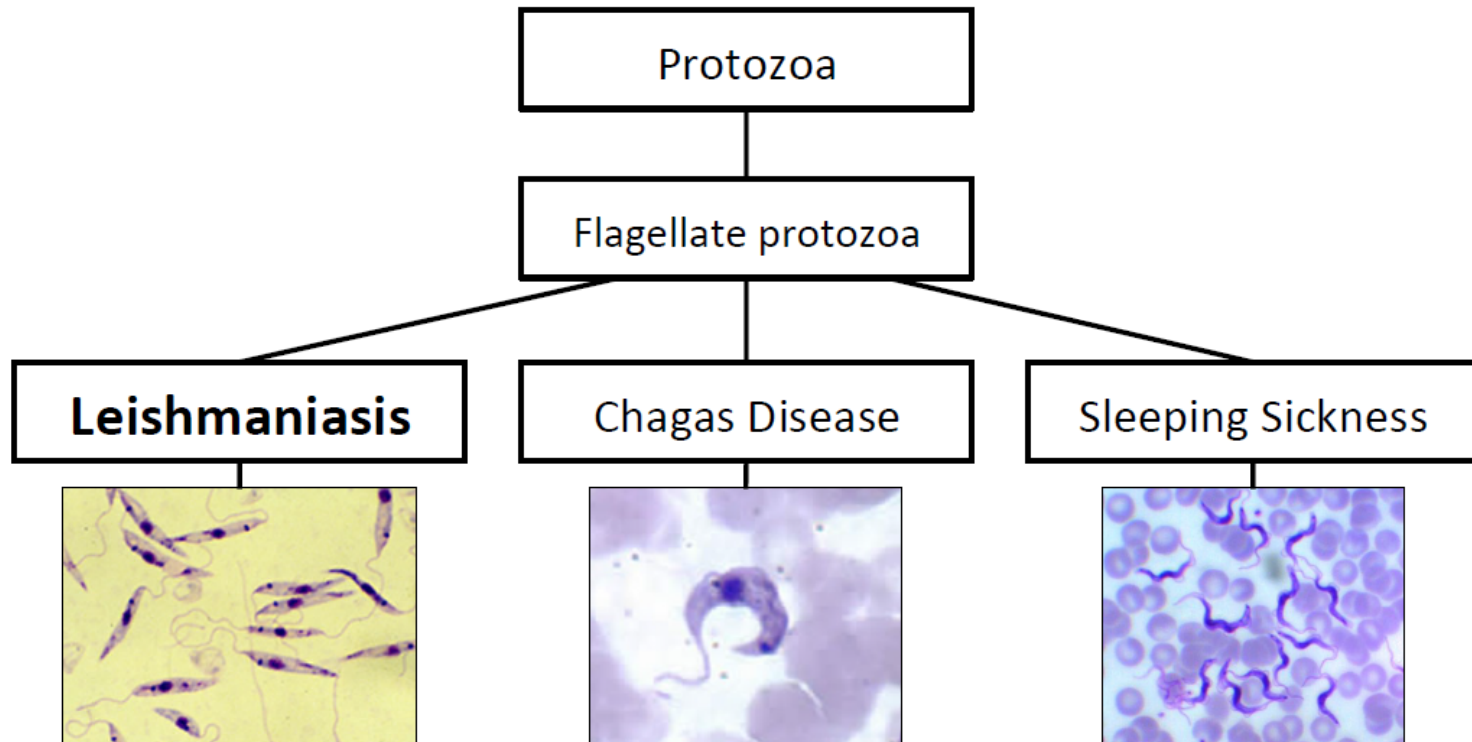
Outline

- Neglected tropical diseases
- Leishmania overview
- Burden of disease
- Challenges to elimination
- Regional differences

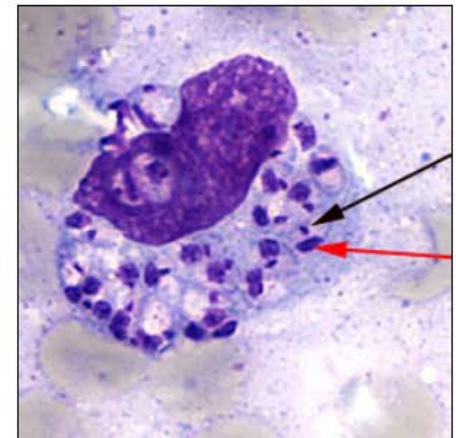
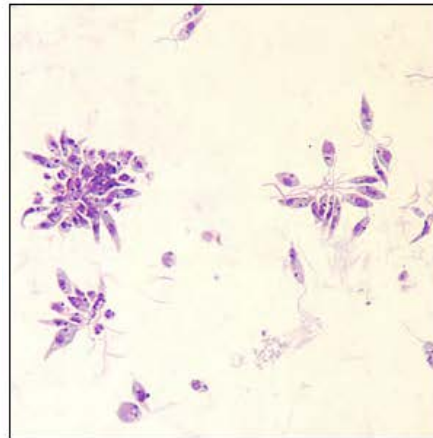
Neglected Tropical Diseases

- Buruli ulcer
- Chagas disease
- Dengue and Chikungunya
- Dracunculiasis (guinea-worm disease)
- Echinococcosis
- Foodborne trematodiasis
- Human African trypanosomiasis (sleeping sickness)
- Leishmaniasis
- Leprosy (Hansen's disease)
- Lymphatic filariasis
- Mycetoma, chromoblastomycosis and other deep mycoses
- Onchocerciasis (river blindness)
- Rabies
- Scabies and other ectoparasites
- Schistosomiasis
- Soil-transmitted helminthiasis
- Snakebite envenoming
- Taeniasis/Cysticercosis
- Trachoma
- Yaws (Endemic treponematoses)

Parasitic disease

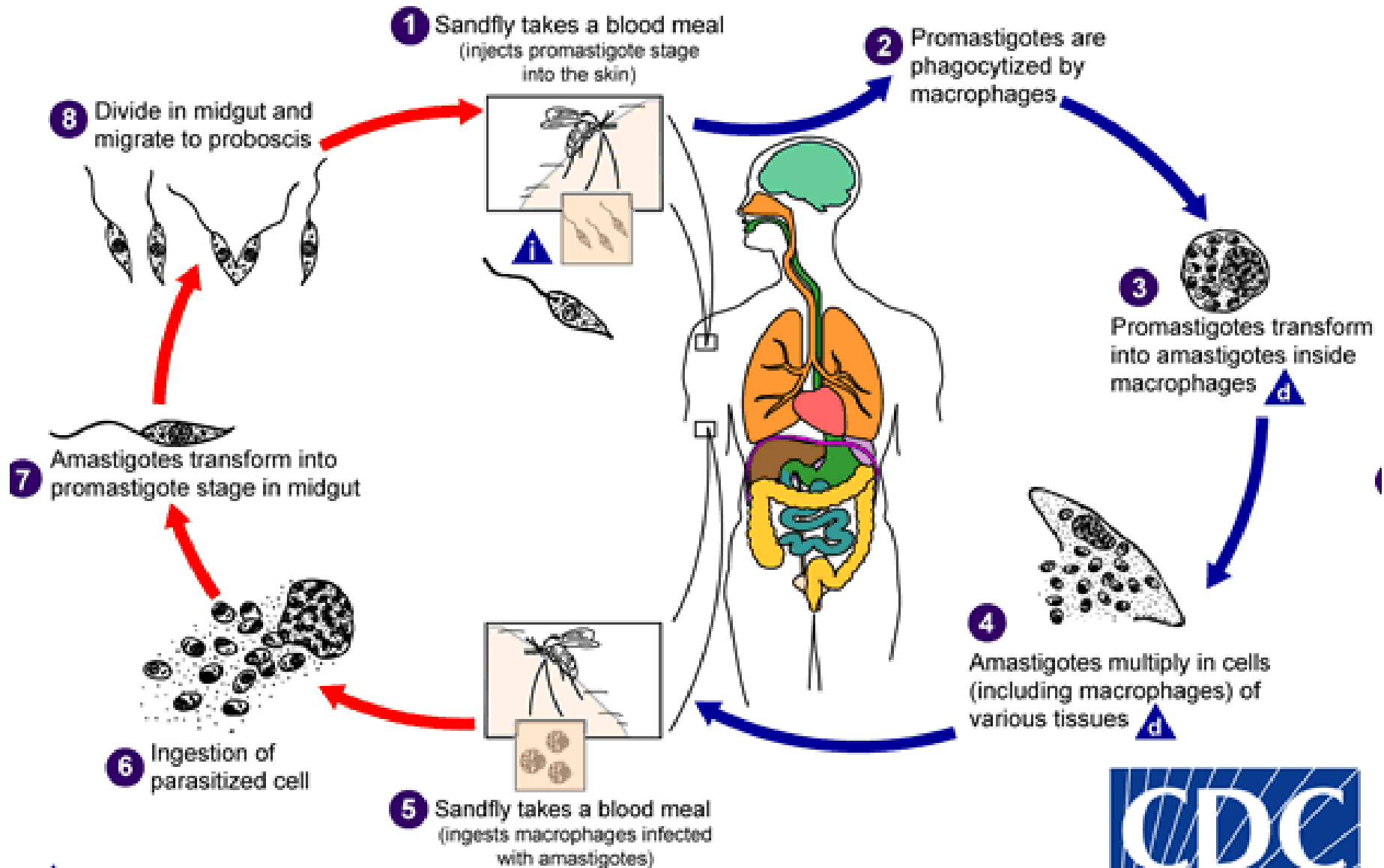


Vector Borne Disease



Sandfly Stages

Human Stages



Visceral vs cutaneous leishmaniasis



Visceral leishmaniasis



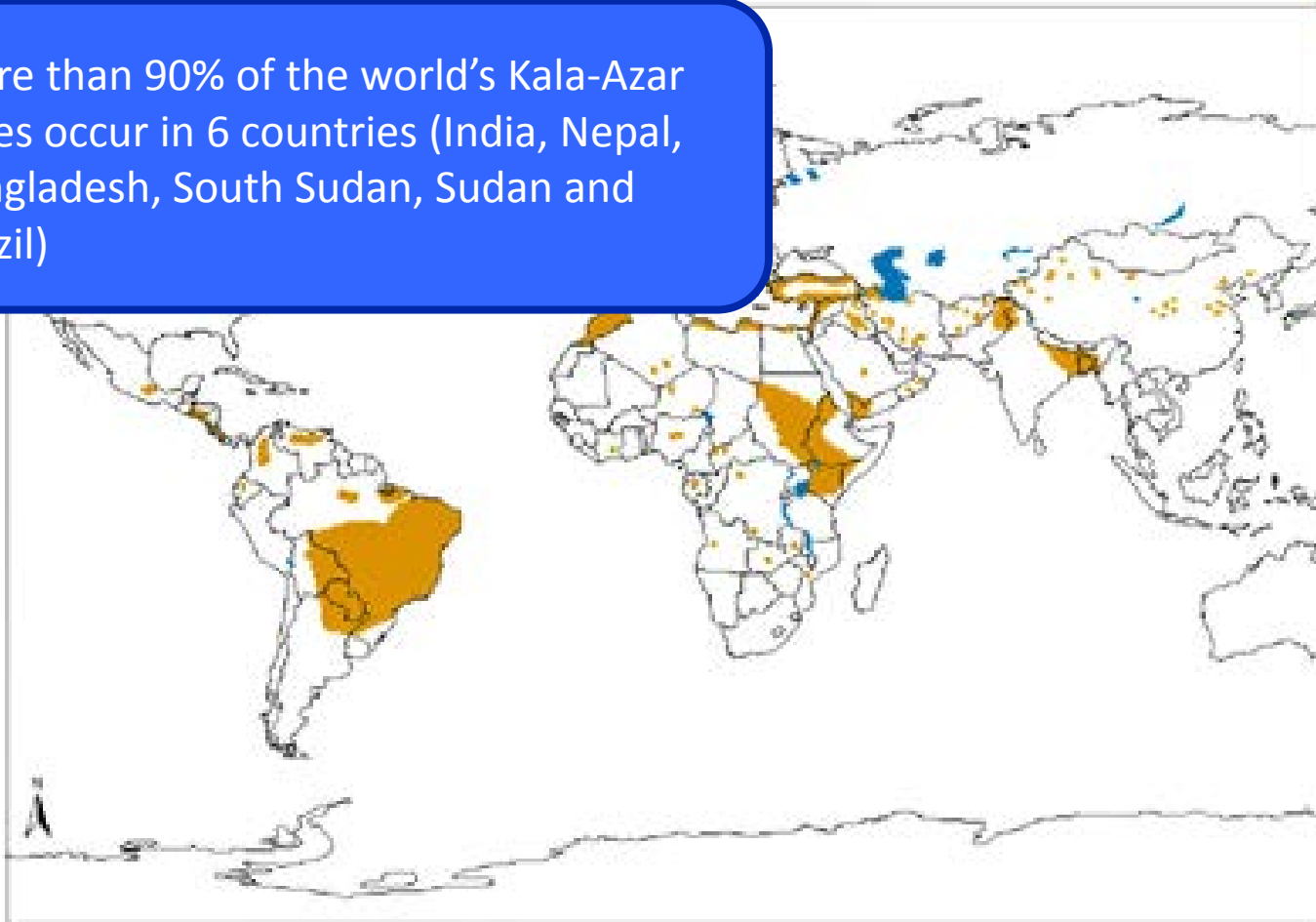
Cutaneous leishmaniasis
Mucocutaneous leishmaniasis

VL - Burden of disease

- Incidence: 200,000 to 400,000 VL cases per year
- 35 countries worldwide
- Mortality: 20,000 to 40,000 deaths per year

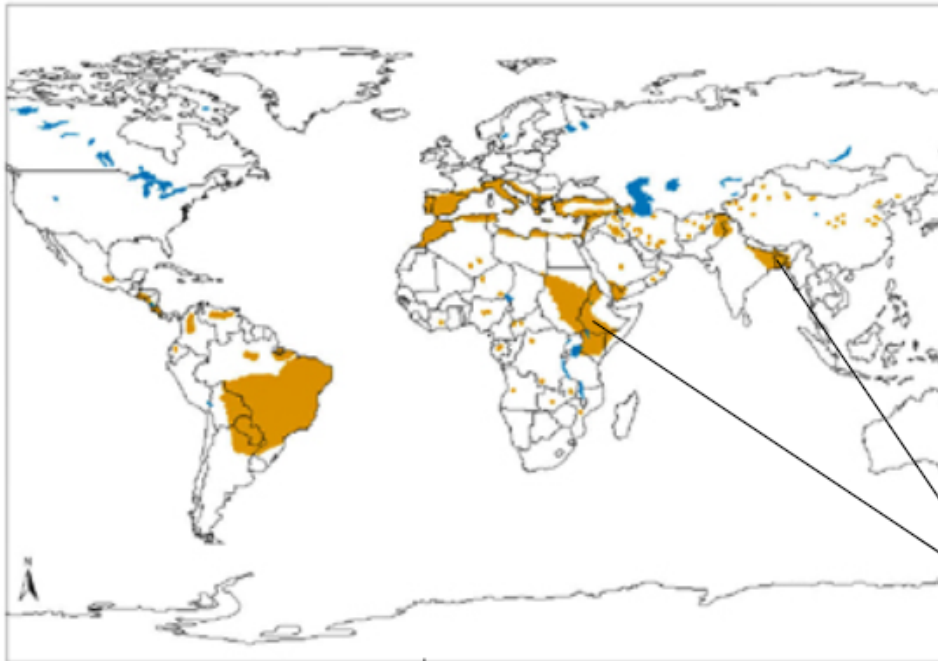
Visceral Leishmaniasis

More than 90% of the world's Kala-Azar cases occur in 6 countries (India, Nepal, Bangladesh, South Sudan, Sudan and Brazil)



WHO 2012

Visceral Leishmaniasis



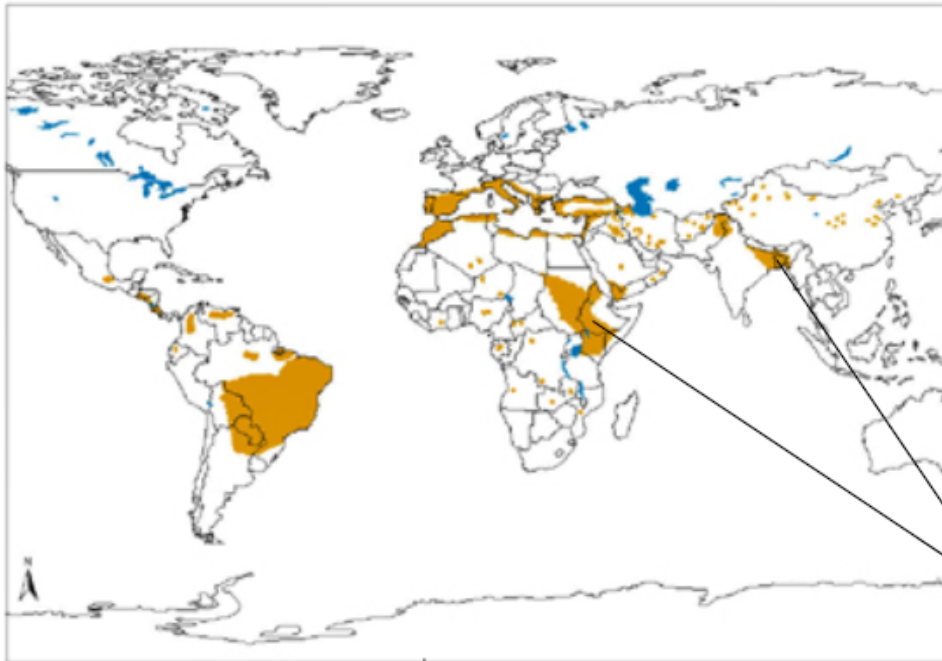
L. infantum

Pakistan, NW India,
Central Asia, Middle East
Mediterranean Littoral
Brazil, sporadic in other
parts of South / Central
America

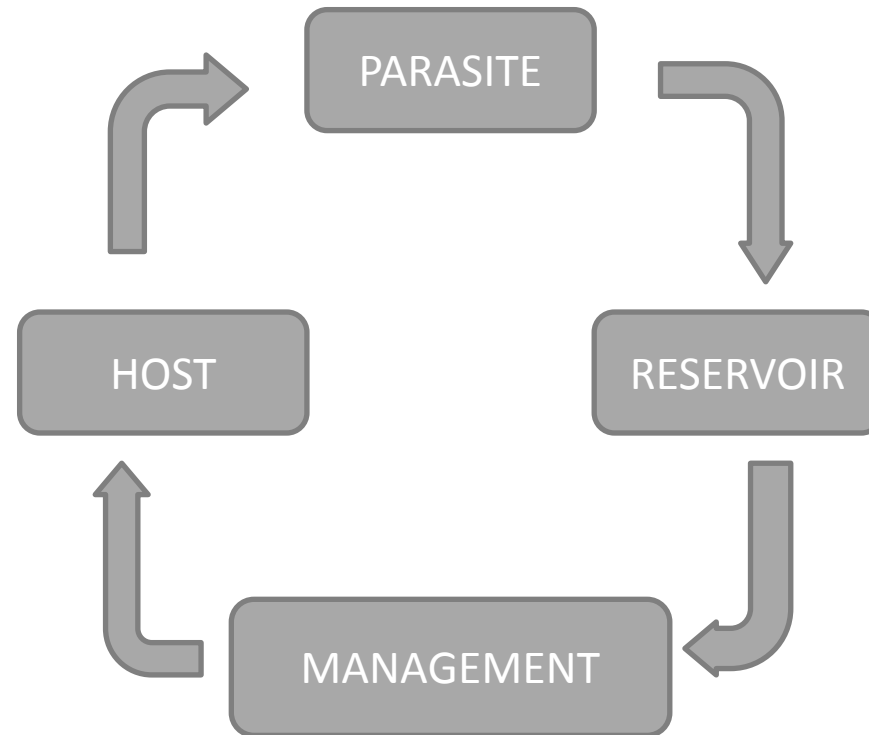
L. donovani

NE India, Bangladesh, Nepal
Sudan, Ethiopia, Kenya

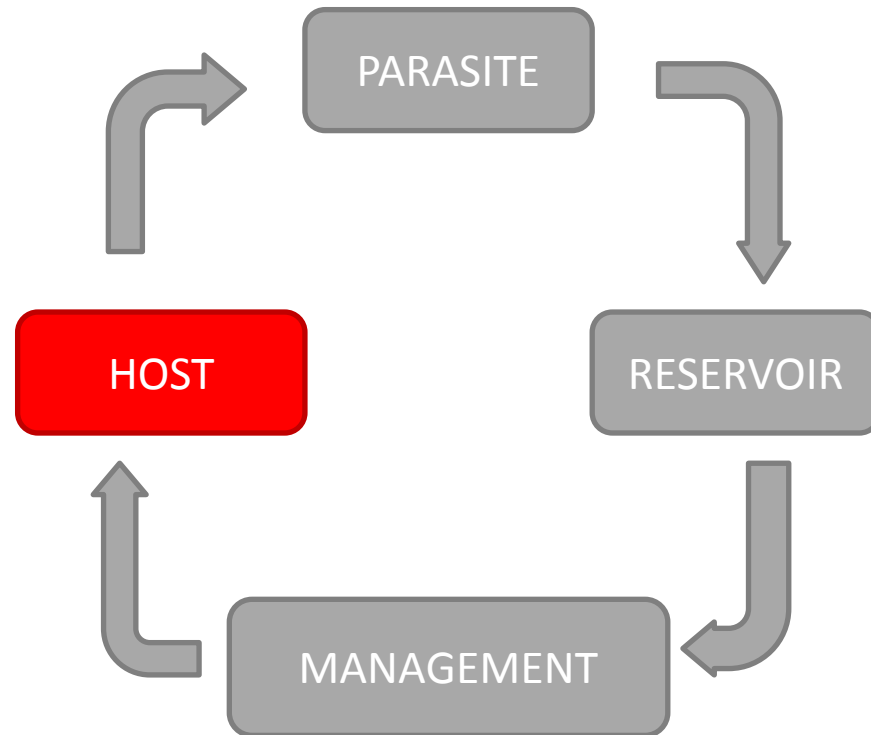
Visceral Leishmaniasis



Challenges to elimination



MAN MADE ISSUES



MAN MADE ISSUES

- Leishmaniasis is a poverty-related disease
- It affects the poorest of the poor and is associated with malnutrition, displacement, poor housing, illiteracy, gender discrimination, weakness of the immune system and lack of resources

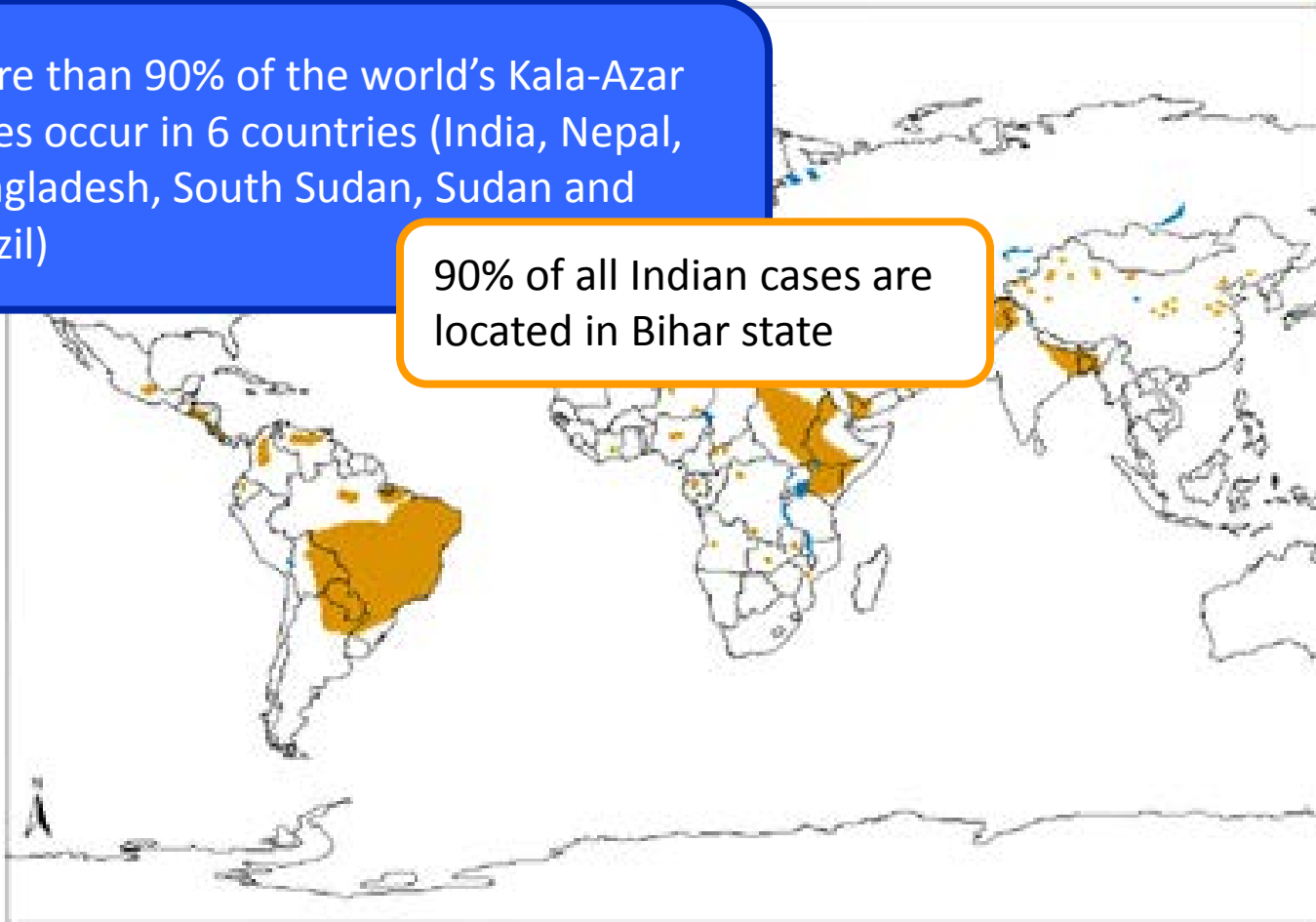
<http://www.who.int/leishmaniasis/en/>



Visceral Leishmaniasis

More than 90% of the world's Kala-Azar cases occur in 6 countries (India, Nepal, Bangladesh, South Sudan, Sudan and Brazil)

90% of all Indian cases are located in Bihar state

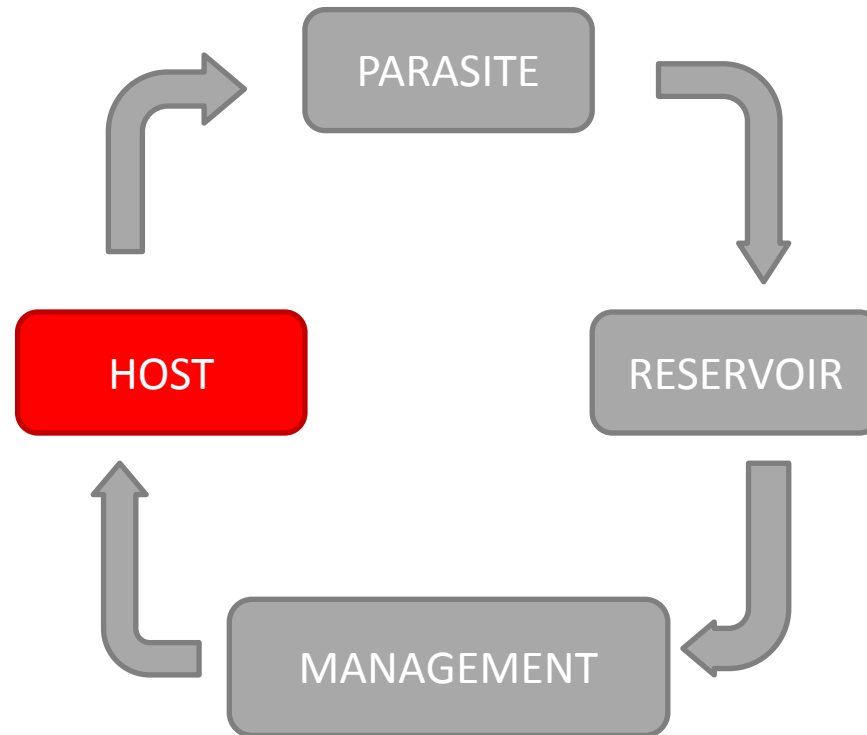


WHO 2012



<https://www.youtube.com/watch?v=bvyMN4sEEDY>

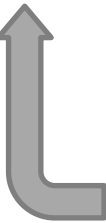
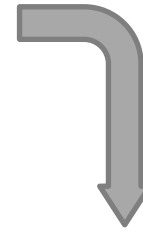
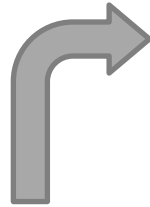
- Socio-economic
 - poverty
- Genetics
- Immunity
- Co-infections
 - HIV
 - TB
 - malaria
- Nutritional Status



MAN MADE ISSUES

- Strain
- Virulence
- Diagnosis
- Treatment

PARASITE



HOST

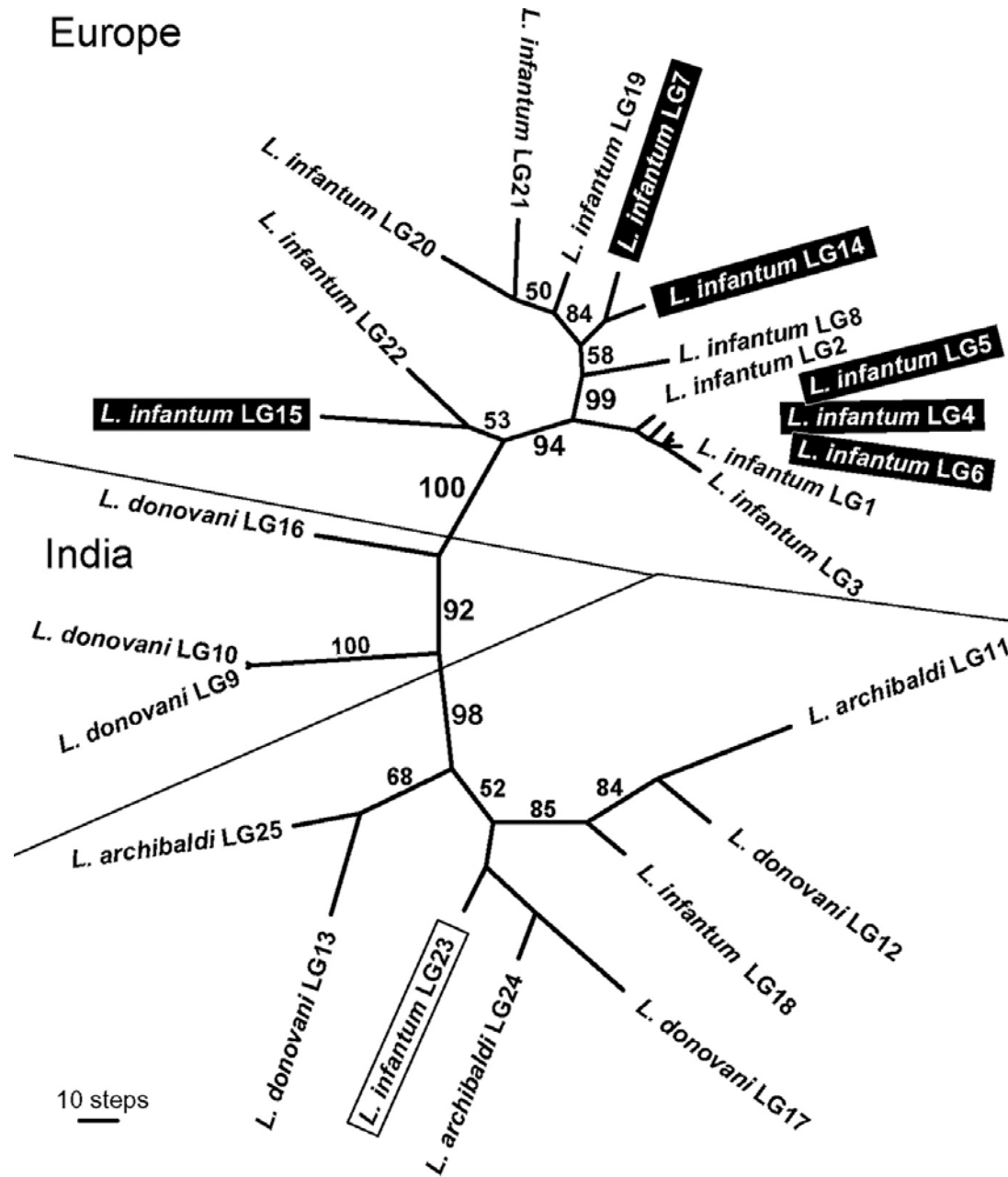
RESERVOIR

MANAGEMENT

MAN MADE ISSUES



Europe



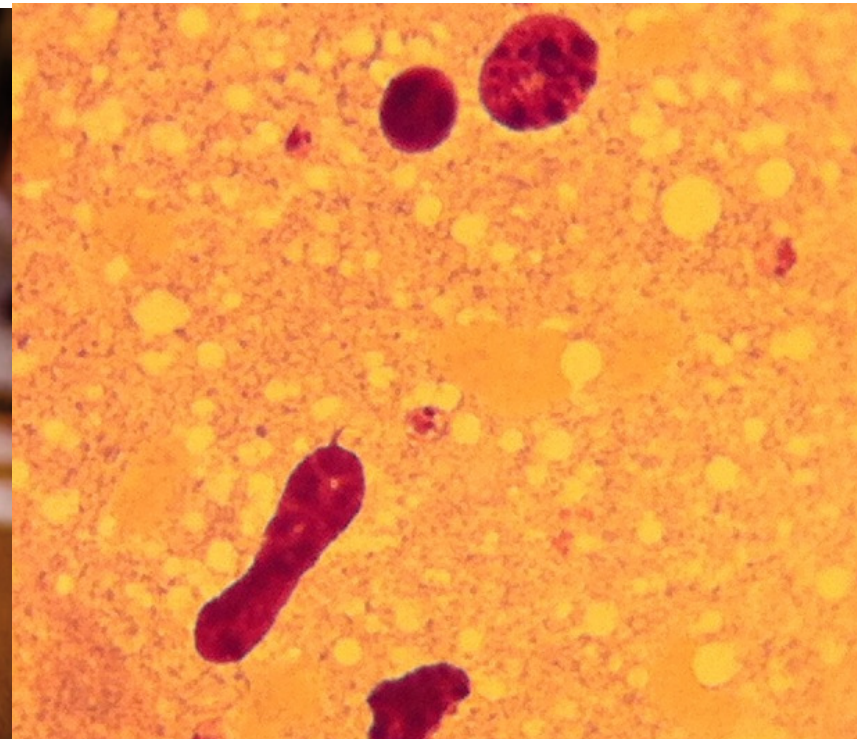
10 steps

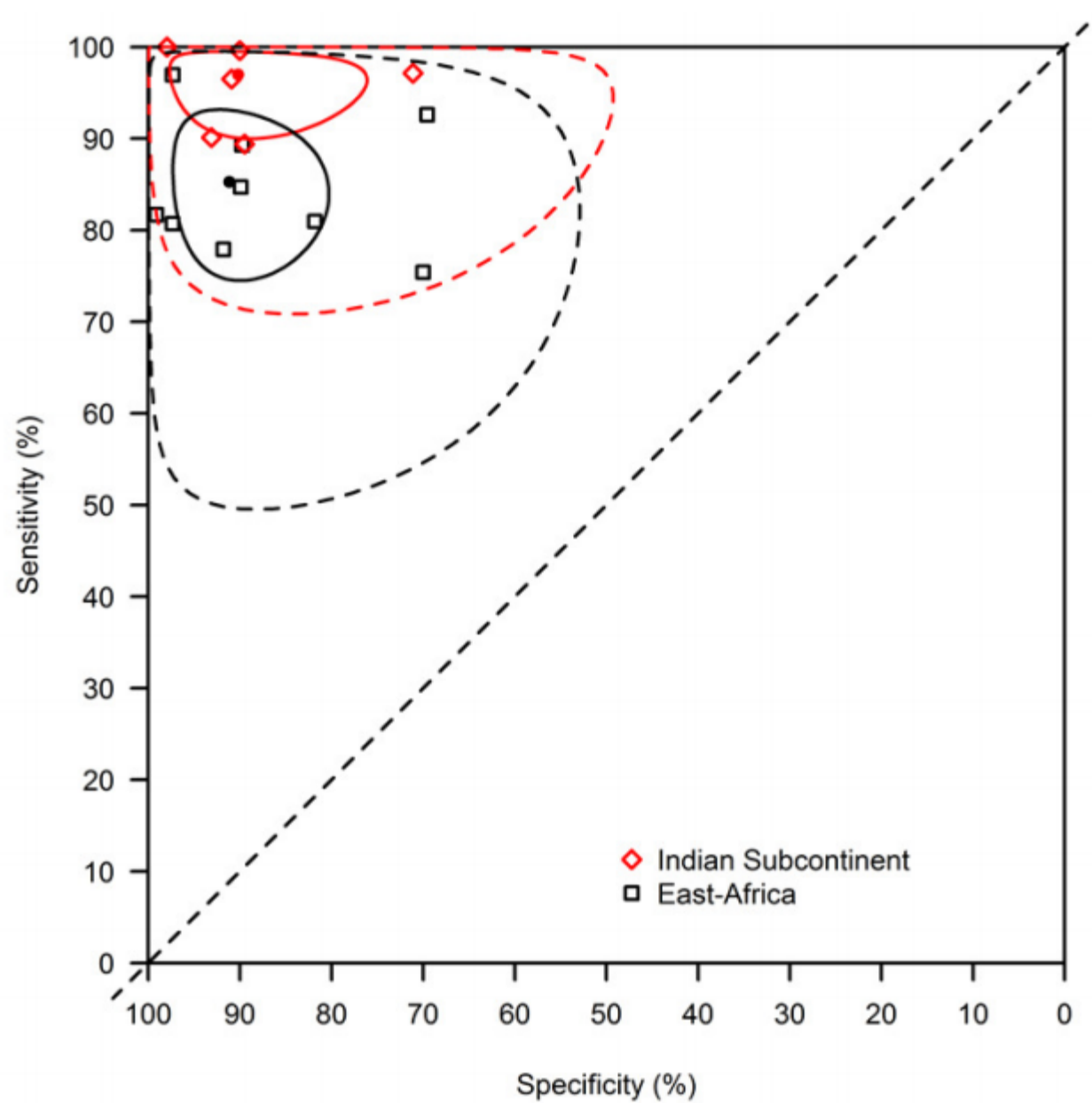
East Africa

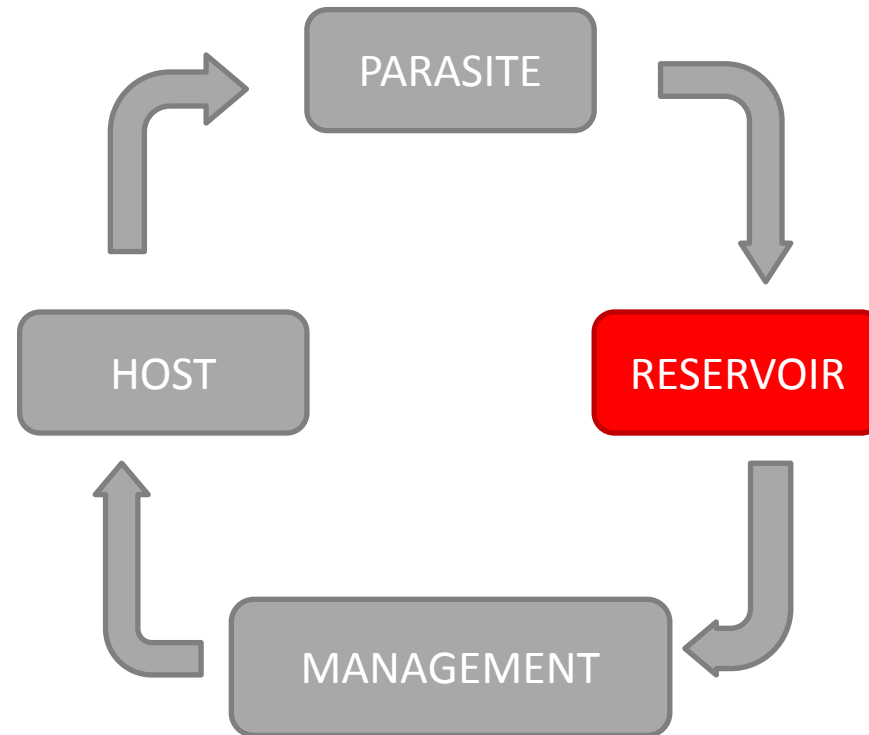
VL
CL
PKDL

Diagnosis

- Clinical definition (Fever >2weeks + spleen)
- Antibody detection: rK39
- Parasitological diagnosis (e.g. spleen aspiration)
- Serology (DAT, ELISA)
- PCR







- Anthroponotic
- VL cases
- PKDL
- Asymptomatic

MAN MADE ISSUES

Asymptomatic patients



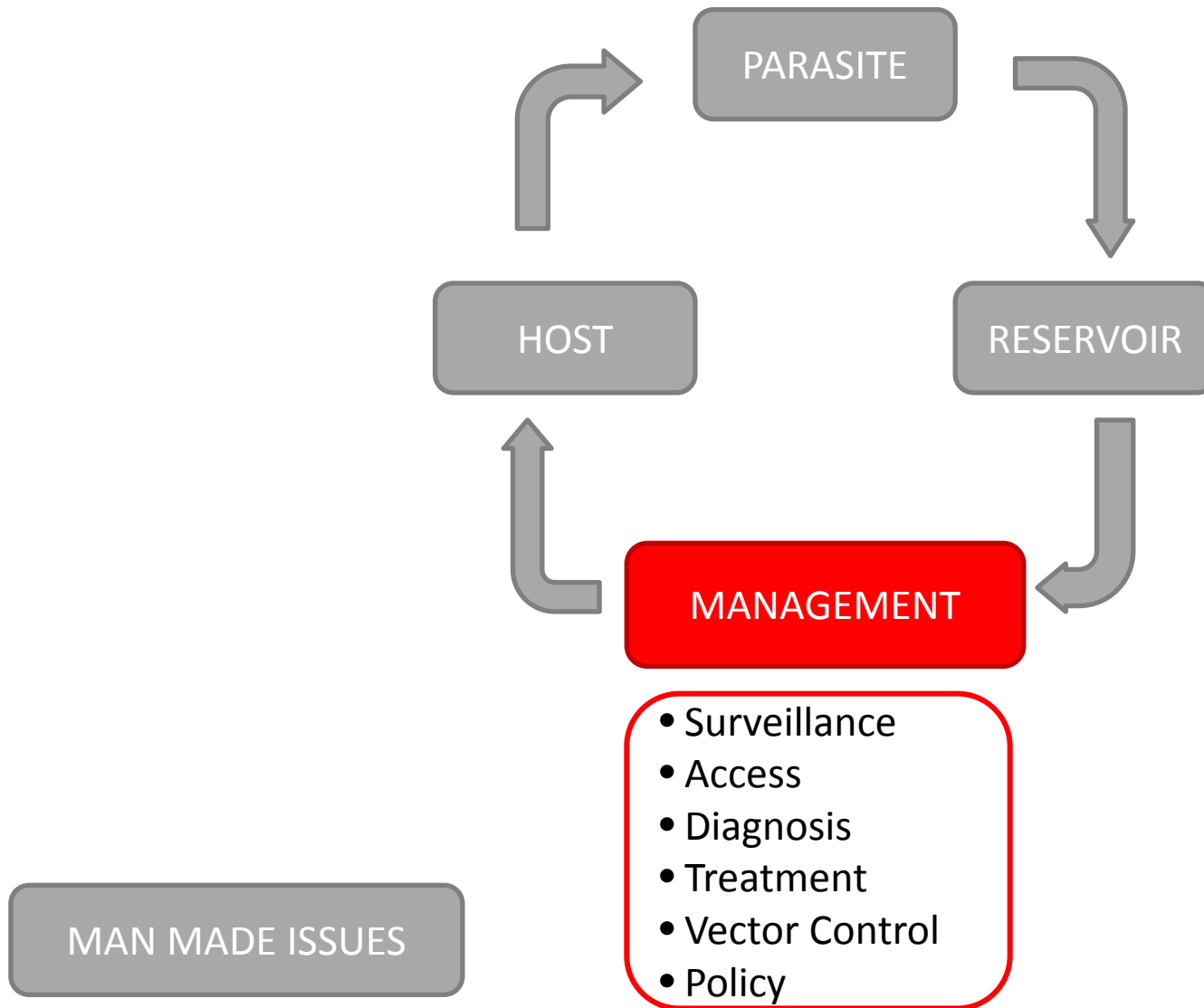
- Most VL infections are asymptomatic
- Bihar 30% past exposure
- Sero-prevalence typically rises with age
- ?Role on transmission

PKDL

Post Kala azar dermal leishmaniasis

- 5–10% of VL cases in India
- After 2–3 years in India
- A small fraction of PKDL cases appear without prior history of kala-azar
- Role on transmission





ORIGINAL ARTICLE

Single-Dose Liposomal Amphotericin B for Visceral Leishmaniasis in India

Shyam Sundar, M.D., Jaya Chakravarty, M.D., Dipti Agarwal, M.D.,
Madhukar Rai, M.D., and Henry W. Murray, M.D.

RESULTS

A total of 410 patients — 304 of 304 patients (100%) in the liposomal-therapy group and 106 of 108 patients (98%) in the conventional-therapy group — had apparent cure responses at day 30. Cure rates at 6 months were similar in the two groups: 95.7% (95% confidence interval [CI], 93.4 to 97.9) in the liposomal-therapy group and 96.3% (95% CI, 92.6 to 99.9) in the conventional-therapy group. Adverse events in the liposomal-therapy group were infusion-related fever or rigors (in 40%) and increased anemia or thrombocytopenia (in 2%); such events in the conventional-therapy group were fever or rigors (in 64%), increased anemia (in 19%), and hypokalemia (in 2%). Nephrotoxicity or hepatotoxicity developed in no more than 1% of patients in each group.



Kala-azar to be eradicated from Bihar by 2015: Dr Harsh Vardhan

Banjotkaur Bhatia, TNN | Sep 3, 2014, 01:27AM IST

g+1 0 in Share

PATNA: Union health minister Dr Harsh Vardhan has vowed to eliminate kala-azar from Bihar and other parts of the country by 2015. For this, the ministry will take a slew of steps including providing Ambisome injection that cures the disease with a single shot. Bihar, incidentally, accounts for 80% kala-azar cases in the world, with 33 districts of the state affected by the disease.

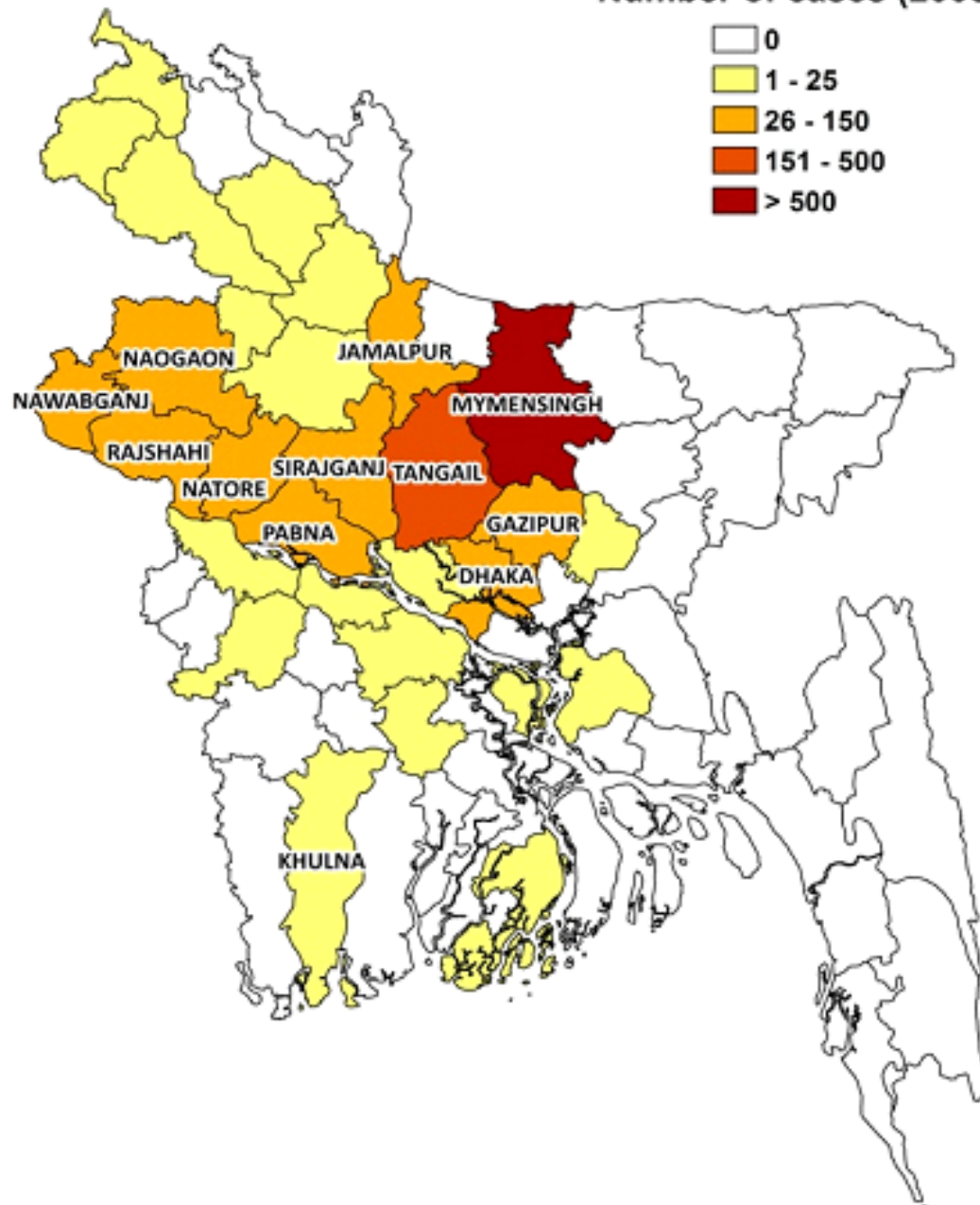
Ambisome injection, which costs \$18 each, will be funded by WHO and other agencies to the government of India. Ambisome, experts said, will prove to be a milestone because of its 98% efficacy. In the first phase, the new treatment protocol will be introduced in Vaishali, Saran, Sitamarhi, East Champaran and Saharsa districts.



Union Health Minister Harsh Vardhan with senior BJP leader Sushil Kumar Modi launching the Non-invasive Kala-azar Detection kit in Patna.

...et al on writer.com/deliver/checkbox?checkbox=0&ch=7&...ater...source...checkbox&state=india

**Visceral Leishmaniasis
Number of cases (2008)**

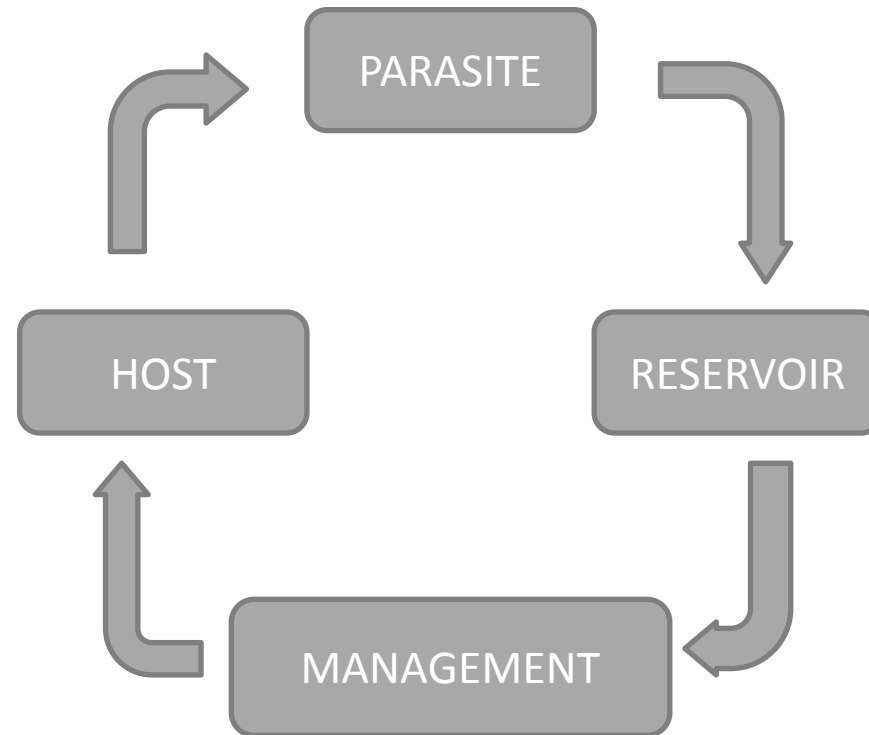




POLICY PLATFORM

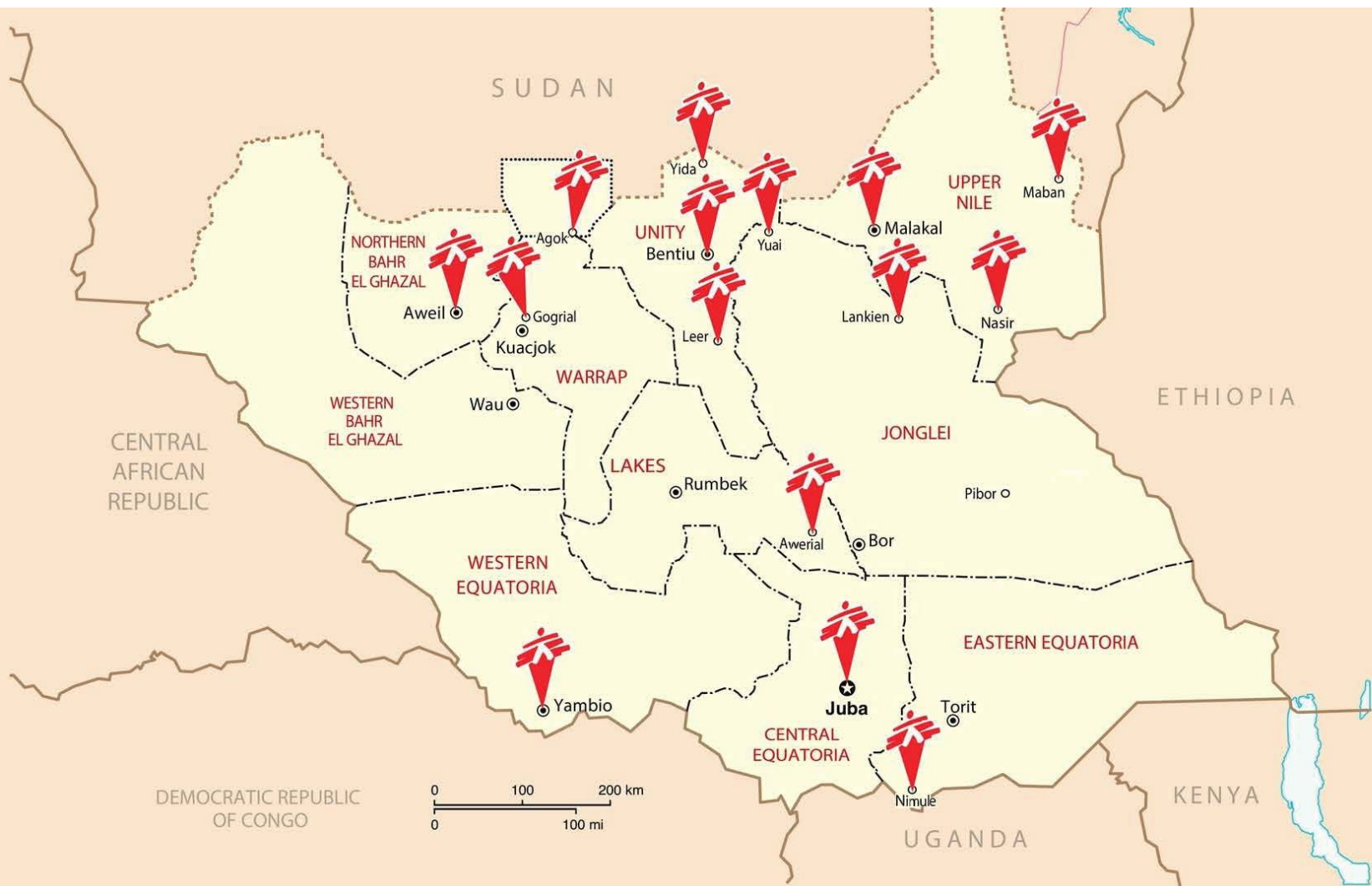
Sustaining visceral leishmaniasis elimination in Bangladesh – Could a policy brief help?

Alyssa Fitzpatrick¹*, Noor Saad M. S. Al-Kobaisi¹, Jessica Beitman Maya¹, Yu Ren Chung¹, Satyender Duhan¹, Erdene Elbegdorj¹, Sushant Jain¹, Edward Kuhn¹, Alexandra Nastase¹, Be-Nazir Ahmed², Piero Olliaro^{3,4}



- Conflict
- Migration
- Climate change

MAN MADE ISSUES



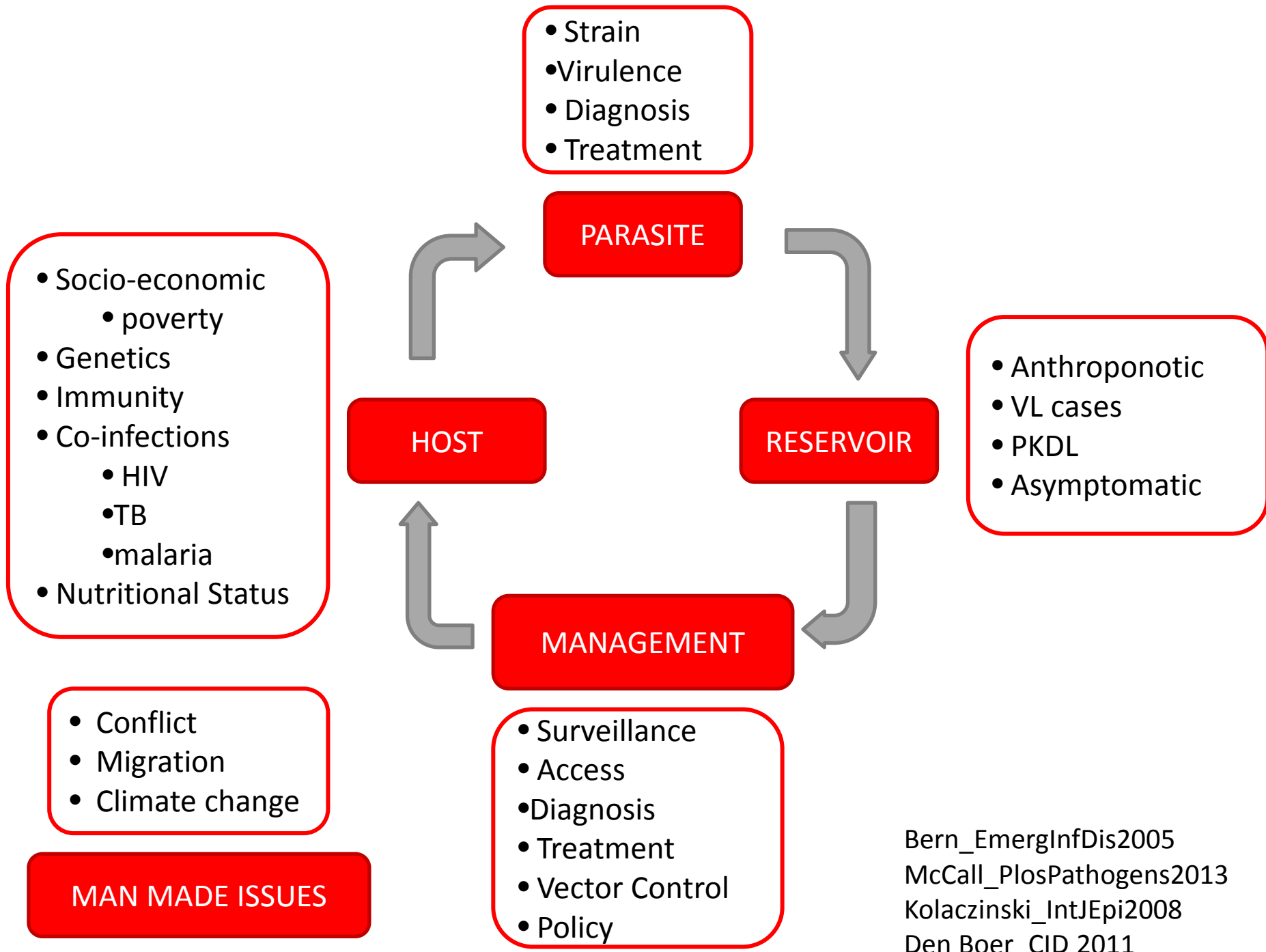




South Sudan 2014 © Karel Prinsloo/MSF

Sodium Stibogluconate (SSG) & Paromomycin Combination Compared to SSG for Visceral Leishmaniasis in East Africa: A Randomised Controlled Trial

Ahmed Musa¹, Eltahir Khalil¹, Asrat Hailu², Joseph Olobo³, Manica Balasegaram^{4,5}, Raymond Omollo⁵, Tansy Edwards⁶, Juma Rashid⁷, Jane Mbui⁷, Brima Musa¹, Abuzaid Abdalla Abuzaid¹, Osama Ahmed¹, Ahmed Fadlalla⁸, Ahmed El-Hassan¹, Marius Mueller⁴, Geoffrey Mucee⁷, Simon Njoroge⁷, Veronica Manduku⁷, Geoffrey Mutuma⁷, Lilian Apadet⁷, Hudson Lodenyo⁷, Dedan Mutea⁷, George Kirigi⁷, Sisay Yifru⁹, Getahun Mengistu², Zewdu Hurissa⁹, Workagegnehu Hailu⁹, Teklu Weldegebreal¹⁰, Hailemariam Tafes¹⁰, Yalemtehay Mekonnen², Eyasu Makonnen², Serah Ndegwa¹¹, Patrick Sagaki¹², Robert Kimutai^{5,7}, Josephine Kesusu^{5,7}, Rhoda Owiti^{5,7}, Sally Ellis⁵, Monique Wasunna^{5,7*}



Bern_EmergInfDis2005
McCall_PlosPathogens2013
Kolaczinski_IntJEpi2008
Den Boer_CID 2011

TAKE HOME MESSAGE

- Visceral Leishmaniasis is a Neglected Tropical Disease that affects the poorest of the poor
- Regional differences make the management more challenging in the poorer settings
- Efforts should be made to improve the available diagnostics tools and treatments
- Leishmaniasis is a treatable and curable disease
- The morbidity and mortality due to leishmaniasis can and should be reduced
- Elimination is not yet a reality

ANY QUESTIONS???

THANK YOU

