

Parasitic Infections in the Migrant Population; a Neglected Issue

Professor PL Chiodini



The Hospital for Tropical Diseases London

- **Imported parasitic and infectious diseases**
- **From any part of the globe**
- **Tourists, refugees, migrants, business people etc**
- **7,000,000 people in London**
 - **so a window on the world**
- **Important in sentinel surveillance**

The global importance of parasites

MALARIA IS BY FAR THE GREATEST CHALLENGE

Neglected tropical diseases (WHO)

Apart from soil-transmitted helminthiases
(affect >1 billion people):

- Schistosomiasis
- Lymphatic filariasis
- Blinding Trachoma (not a parasite)
- Onchocerciasis
- Chagas disease
- Leishmaniasis

Indigenous to Europe

May be focal in distribution

- *Toxoplasma*
- *Cryptosporidium*
- *Giardia*
- *Echinococcus granulosus*
- *Echinococcus multilocularis*
- *Fasciola hepatica*
- *Leishmania*
- (*Plasmodium*)
- *Hymenolepis*
- *Enterobius*
- *Strongyloides*

Imported into Europe

- *Plasmodium*
- *Schistosoma*
- Cysticercosis
- New World *Leishmania*
- Chagas disease
- Filariasis
- Geohelminths
- *Strongyloides*
- *Entamoeba histolytica*
- Food-borne trematodes
- Some cestodes
- Gnathostomiasis
- African trypanosomiasis

Situation in the UK

Strong Tropical links so:

- Malaria
- *Strongyloides*
- All our *Leishmania*
- Most of our *E. granulosus*
- Most of our human *Fasciola* cases
- Rare and exotic parasitoses

are all imported.....

International Organisation for Migration

- World international migrants
 - 150 million in 2000
 - 214 million in 2010
- 3.1% world population
- 49% are women

Europe 2010 (IOM)

- 72.1 million migrants
 - (8.7% of population)
 - Russian Federation 12.3 m
 - Germany 10.8 m
 - UK 6.4 m

Visiting Friends and Relations (VFR)

“Migrants from low-income countries that reside in high-income countries and return to their country of origin to visit friends and relatives.

“Second and third generation ethnic travellers can also be termed VFRs”

Field VF et al (2010) Health Information for Overseas Travel.

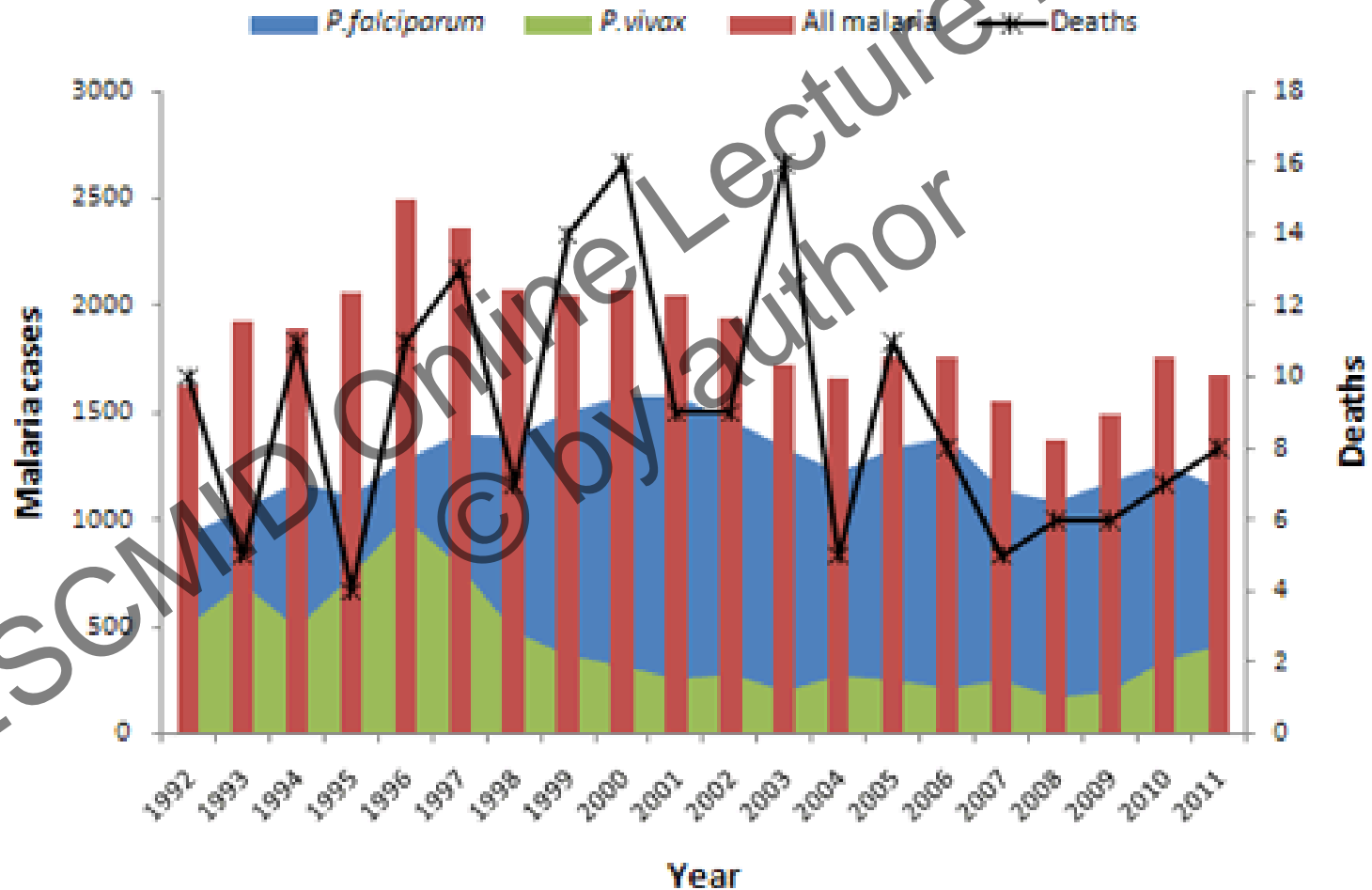
NaTHNaC, London UK

Malaria

ESCMID Online Lecture Library
© by author

Imported Malaria UK

www.malaria-reference.co.uk



VFR Malaria

- UK 2011
 - 80% (610/765)
 - VFR in their own or their family's country of origin

VFR Travellers and Malaria

- More likely to acquire malaria
 - Not seeking or unable to access pre-travel advice
 - Receiving poor advice
 - Not adhering to advice
 - Not thinking they are at risk
 - Familiar with destination
 - Believing they are immune

Relationship of advice to the Non-White % population and the Jarman Index in 1997 & 2006 (Bedfordshire, UK)

Jarman index	Mean non-white population		Malaria advice mean score vs gold standard at 100%	
	1997	2006	1997	2006
+ 30 to + 49.99	51.95 %	48.85 %	45 %	55 %
+ 10 to + 29.99	10.11 %	18.82 %	52 %	67 %
- 10 to + 9.99	5.02%	8.13 %	60 %	72 %
- 30 to - 10.01	4.27%	2.18 %	63 %	81 %

Malaria and Blood Transfusion

ESCMID Online Lecture Library
© by author

UK Donor Selection Guidelines

Implemented November 2005

OBLIGATORY

Must not donate if:

- The donor has ever had malaria
- The donor has had an undiagnosed fever (which could have been malaria) while abroad or within six months of leaving a malaria endemic area

UK Donor Selection Guidelines

Implemented November 2005

OBLIGATORY

Must not donate if:

- The donor has lived in any malarial endemic area for a continuous period of six months or more at any time of life
- Less than 12 months after last leaving a malaria endemic area

UK Donor Selection Guidelines

Implemented November 2005

DISCRETIONARY

Donors who have had malaria diagnosed:

- If more than three years have passed since anti-malarial therapy has been completed and symptoms caused by malaria have resolved, perform a validated test for malaria antibody. If this is negative, accept

UK Donor Selection Guidelines

Implemented November 2005

DISCRETIONARY

For other donors:

- If at least six months has passed since the date of the last potential exposure to malaria, or the date of recovery from symptoms that may have been caused by malaria, a validated test for malaria antibody is negative, accept.

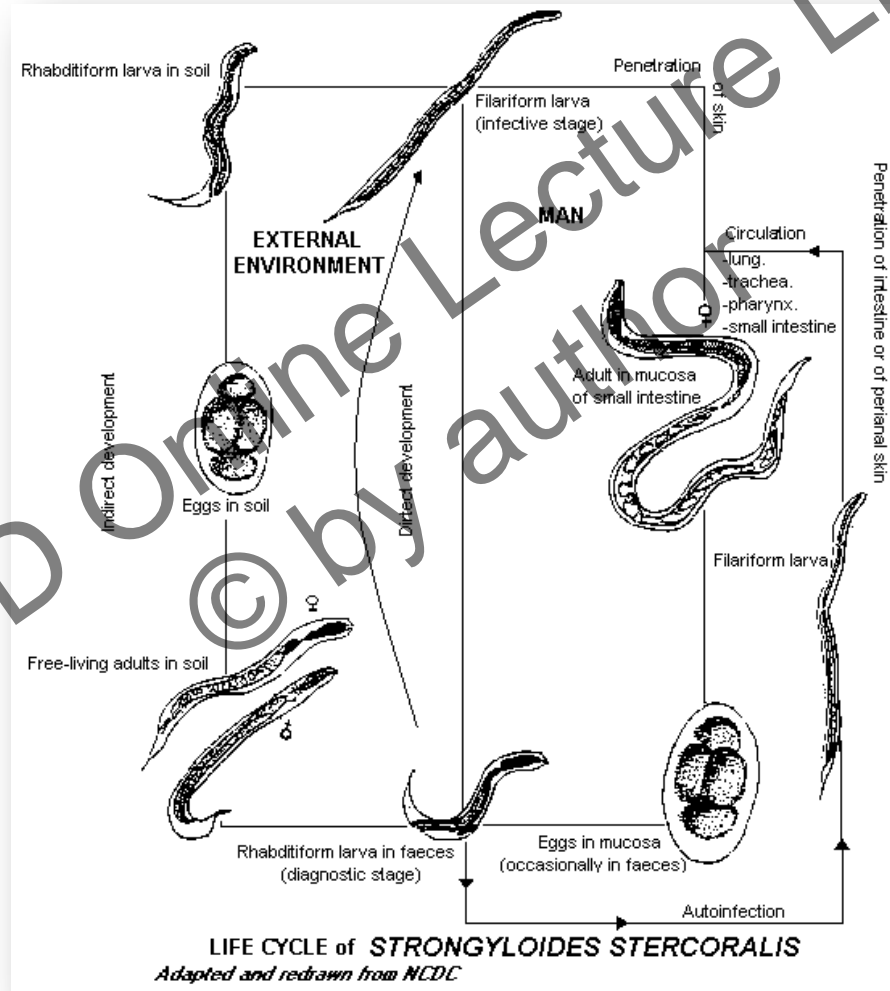
Imported but long forgotten

Strongyloides

ESCMID Online Lecture Library
© by author

Strongyloides life cycle

Carlo Denegri Foundation Atlas



A critical case

- 39y Afro-Caribbean male
- Grenada until 12y old
- Stage IVb T cell lymphoma
- 3 cycles of CHOP chemotherapy
- 3rd complicated by neutropenic sepsis
- Bled from duodenal erosions
- Transfusion; antibiotics; TPN

A critical case

- Developed small bowel obstruction
- Day 11: Laparotomy
- Necrotic nodes duodenal/jejunal flexure
- Thickened proximal small bowel
- Biopsies: see histology



Online Lecture Library

**Slide withheld
at request of author**



Online Lecture Library

**Slide withheld
at request of author**



ESCMID

EUROPEAN SOCIETY
OF CLINICAL MICROBIOLOGY
AND INFECTIOUS DISEASES

Online Lecture Library

**Slide withheld
at request of author**

A critical case

- Reduced steroid dosage
- Oral ivermectin
- Oral albendazole
- But: Day 12 sputum still positive
- Commenced ivermectin subcutaneously (total of 15 doses)
- Larvae eventually cleared

Clinical features of *Strongyloides* infection

- Asymptomatic
- Diarrhoea
- Malabsorption
- Larva currens
- Hyperinfestation



ESCMID

EUROPEAN SOCIETY
OF CLINICAL MICROBIOLOGY
AND INFECTIOUS DISEASES

Online Lecture Library

**Slide withheld
at request of author**

Strongyloides treatment

- Oral thiabendazole obsolete
- Oral albendazole less effective
- Oral **ivermectin**
- Rectal thiabendazole (unlicensed)
- Subcutaneous ivermectin (unlicensed)

***Strongyloides* infection**

- Think of the diagnosis, before it is too late!
- Still missed far too often
- Exclude before immunosuppression
- Serology better in migrants than travellers
- Parenteral ivermectin may be required in hyperinfestation

Trypanosoma cruzi

Chagas Disease

ESCMID Online Lecture Library
© by author

Data from the UK Census for 2001

- UK All people
 - Total 58,789,201
- Born in South America
 - Total 76,776 (0.13% of UK total)
 - 16 to pensionable age 58,905
- 2011 Census data pending

2001 to 2008

- Almost 4-fold growth in Latin Americans in London
- Estimated 113,500 in London
- Estimated 186,500 in UK
- I.e. 61% reside in London

How Many Infected Individuals?

Schmunis and Yadon Acta Tropica 2010;115:14-21

- UK Legal Immigrants (2003, estimated)
 - South America 42,204
 - Central America and Mexico 5,147
 - Total 47,531
- Infected with *T.cruzi* (at 2.9%)
 - 1,373
- Expected to have/develop Chagas disease
 - 275

34 HTD Cases @ 30 Aug 11

- 15 Males
 - Age range 30 to 67
- 19 Females
 - Age range 33 to 58
- All migrants from South America

Age Distribution

Age	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
Male	2	1	1	5	1	3	0	2
Female	1	3	7	1	0	7	0	0

ESCMID Online Lecture Library
© by author

From 8 Different Countries

- **Bolivia 21**
- Argentina 2
- Brazil 2
- Chile 1
- Colombia 1
- Ecuador 1
- Uruguay 1
- Venezuela 1
- No data 4
- **Total 34**

Care of Seropositives

- If seen in an outside hospital suggest referral to Hospital for Tropical Diseases
- When seen at HTD offer serology screen to any siblings and to any children of seropositive females

Investigations in Clinic

- At diagnosis
 - Serology by ELISA + IFAT
 - PCR
 - ECG
 - Echocardiogram
 - Chest X-ray
 - Abdominal X-ray
 - HIV test

Follow-up

- Every year
 - Cardiac or gastrointestinal symptoms?
 - Serology
 - PCR
 - ECG
- Every 5 years, as above plus
 - Echocardiogram
 - Chest X-ray
 - ECG

UK Donor Selection Guidelines

South American Trypanosomiasis Risk

Obligatory. Must not donate if:

- Born in South America or Central America (including Southern Mexico)
- Mother was born in South America or Central America (including Southern Mexico)

UK Donor Selection Guidelines

South American Trypanosomiasis Risk

Obligatory. Must not donate if:

- Has had a blood transfusion in South America or Central America (including Southern Mexico)
- Has lived and/or worked in rural subsistence farming communities in these countries for a continuous period of 4 weeks or more

UK Donor Selection Guidelines

South American Trypanosomiasis Risk

Discretionary

- If at least 6 months following the date of last exposure a donation may be collected, and if a validated test for *T.cruzi* antibody is negative, accept the donation

Information for donors

South American Trypanosomiasis Risk

If you travel to countries where South American Trypanosomiasis is endemic you cannot donate if any of the following applies:

- You were born in South America or Central America (including Southern Mexico).
- Your mother was born in South America or Central America (including Southern Mexico).
- You had a blood transfusion in South America or Central America (including Southern Mexico).
- Has lived and/or worked in rural subsistence farming communities in these countries for a continuous period of 4 weeks or more.

The only exception to the above is when you had a validated test for T.cruzi (Trypanosoma Cruzi) antibody which was negative and the test was performed at least 6 months following the date of last potential exposure.

If you wish to obtain more information regarding a personal medical issue please contact your local [help line](#).

Please do not contact this web site for personal medical queries, as we are not in a position to provide individual answers.

Screening in practice

- Antibody testing by ELISA introduced in the NBS in 1999
- ELISA screen by National Blood Service
- Repeat reactive donations discarded, confirmed in NTMRL using an IFAT and two ELISAs, both different from the screening ELISA .
- Confirmed positives referred to HTD

Screening in practice

- 38585 donors tested
- Three seropositive donors detected
- No known cases of transfusion-transmitted *Trypanosoma cruzi* infections in the UK

Seropositive Donors

Age @ pick-up	Gender	Born in	Mother	Risk areas
43	Female	Uruguay	Brazilian	Rural Uruguay
57	Male	Brazil	Brazilian	Amazon basin
22	Female	Argentina	Argentina	No information

ESCMID

©

Online Lecture Library
by author

Compare with total cases

- **Bolivia 21**
- Argentina 2
- Brazil 2
- Chile 1
- Colombia 1
- Ecuador 1
- Uruguay 1
- Venezuela 1
- No data 4
- **Total 34**

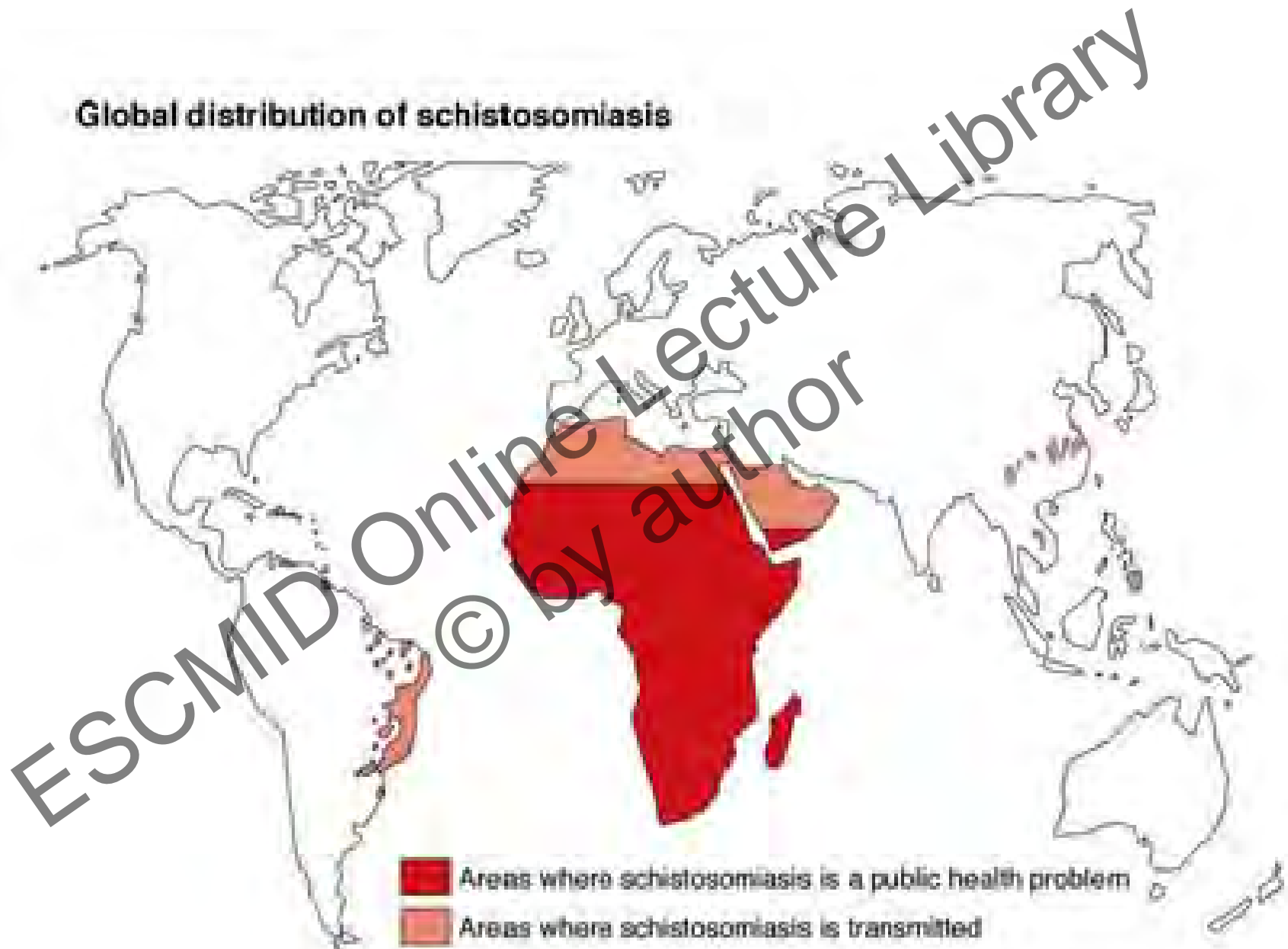
For the Future

- Raise awareness of the risk of transfusion-transmitted Chagas disease
- Encourage uniformity in screening protocols
- Ensure good quality care is available for donors found to be infected

Schistosomiasis

- 779 million people at risk
(Steinmann et al, 2006 Lancet Inf Dis 6: 411-25)
- 200 million people infected
- 80% live in sub-Saharan Africa
- 120 million symptomatic
- 20 million with severe disease
(Hatz 2005 J Travel Med 12: 1-2)
- Annual mortality 280,000
(Southgate et al, 2005 J Helminthol 79:181-5)

Global distribution of schistosomiasis





ESCMID

EUROPEAN SOCIETY
OF CLINICAL MICROBIOLOGY
AND INFECTIOUS DISEASES

Online Lecture Library

**Slide withheld
at request of author**



ESCMID

EUROPEAN SOCIETY
OF CLINICAL MICROBIOLOGY
AND INFECTIOUS DISEASES

Online Lecture Library

**Slide withheld
at request of author**

Schistosomiasis at HTD

- 28% residents of or migrants from an endemic country
- 62% travellers

Schistosomiasis at HTD

- 68% *S.haematobium*
- 29% *S.mansoni*
- 2% *S.haematobium* plus *S.mansoni*
- 1% *S.intercalatum*

Schistosomiasis at HTD

- *S.mansoni* in:
 - 45% residents
 - 22% travellers
- *S.haematobium* in:
 - 94% of those exposed in Malawi

Coping with imported parasitic infections

- Assess risk and impact
- Ensure high quality diagnosis
- Avoid onward transmission
- Avoid occult reservoirs of infection (Eg *T.cruzi*)
- Consider implications for blood, tissue and organ transplantation services

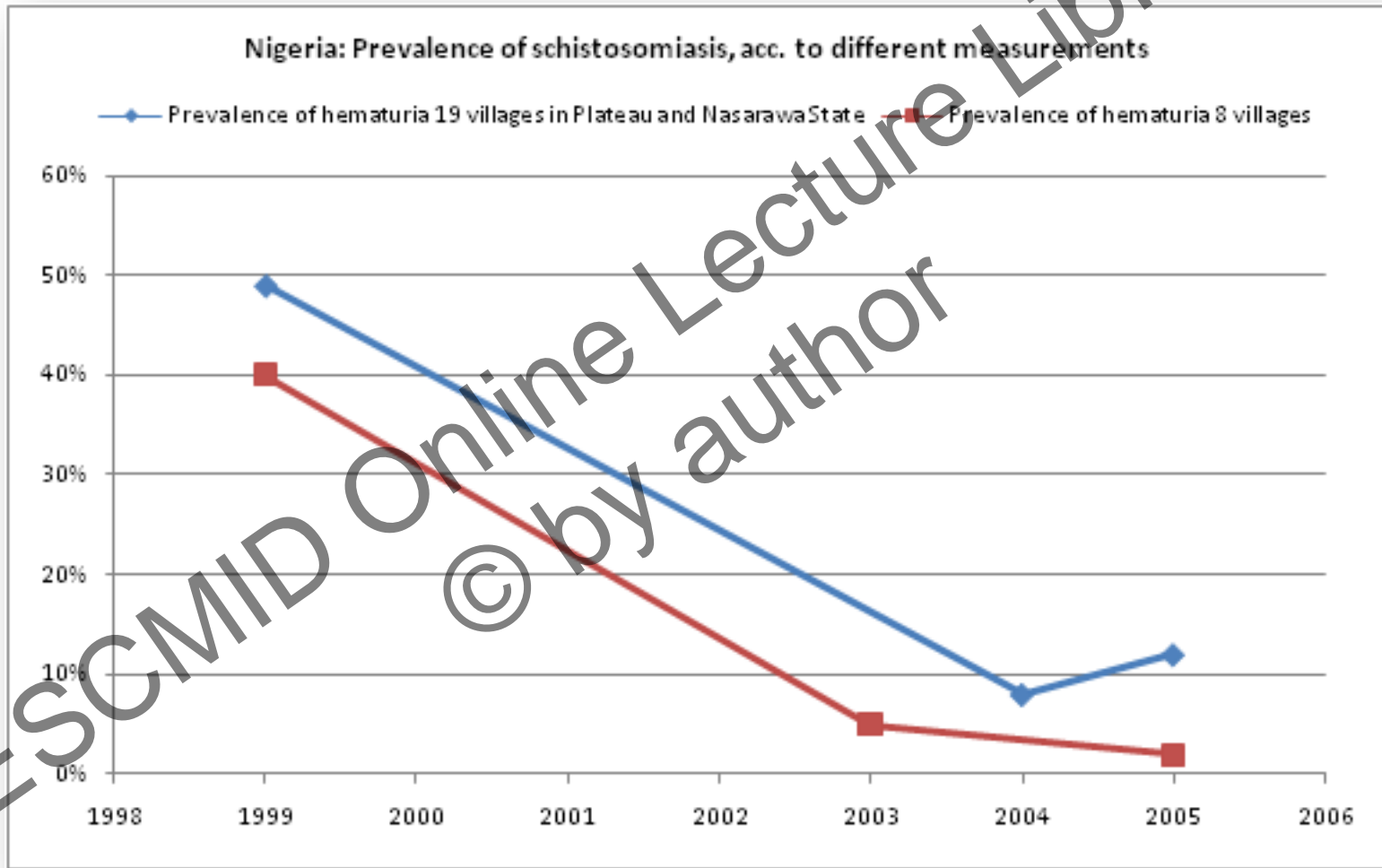
How to improve things

- Improve surveillance
- Enhance the care of migrants
- Greater investment in Clinical Parasitology
- ESCMID European Study Group on Clinical Parasitology (ESGCP) since 2007

For the Future

Ultimately, the best way to decrease the burden of imported parasitic infections is via action locally in the tropics to control or eradicate them from their endemic areas

Data from the Carter Center



For the Future

Meanwhile, be ready for changing patterns of travel and migration and the effects they will have on the nature and presence of imported parasitic infections

www.thehtd.org

