ANNUAL MEETING OF NATIONAL NTD PROGRAMME MANAGERS IN THE WHO AFRICA REGION

November 29 to December 1, 2023

BRAZZAVILLE, CONGO

WHO AFRICA REGIONAL OFFICE

World Health Organization

African Region

75 HEALTH FOR ALL

Session 8: ONE Health approach for NTDs

Moderator - **Dr Pauline Mwinzi**

Regional progress report on One Health Approach for NTDs - Prof Takafira Mduluza

Progress Taeniasis, rabies and echinococcosis control in the Africa region - Meritxell Donadeu

Country experience on Rabies Control (Burkina FAso) - Dr Madi Savadogo

Country experience on implementing a OH approach (Madagascar) - Dr. Jose Alphone Nely

Panel discussion

in

World Health Organization

REGIONAL PROGRESS REPORT ON ZOONOTIC
Neglected Tropical Diseases One Health

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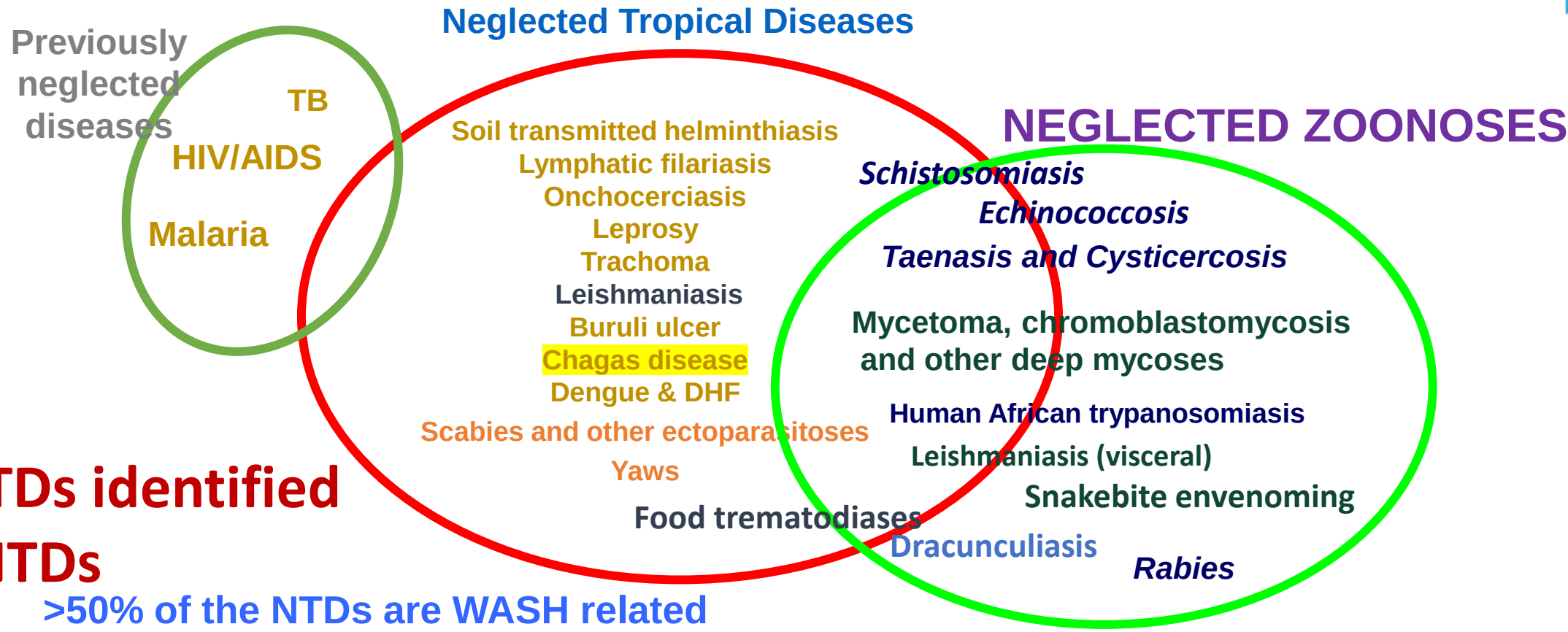
NTDs Elimination Roadmap in Poor Populations



20 NTDs identified

10 zNTDs

>50% of the NTDs are WASH related

Diseases affect the neglected people require a concerted One Health approach

Zoonotic Neglected Tropical Diseases
One Health

- The zNTDs are more neglected among the neglected diseases.
- The argument is that zNTDs place such a high burden on health systems that they compromise health service delivery and pandemic response capability.
- Addressing this would improve global health security and emerging zoonoses.
- To conduct a situational analysis as part of a joint project with GIZ on NTDs.
- Generate evidence helping make the case for including zNTDs in Primary Health Care delivery and response budgets

Common One Health issues

- One Health issues include **All that affects human health**
  - emerging,
  - re-emerging, and
  - endemic zoonotic diseases,
  - neglected tropical diseases,
  - vector-borne diseases,
  - Antimicrobial resistance
  - Food safety and food security,
  - environmental contamination,
  - climate change and
  - other health threats

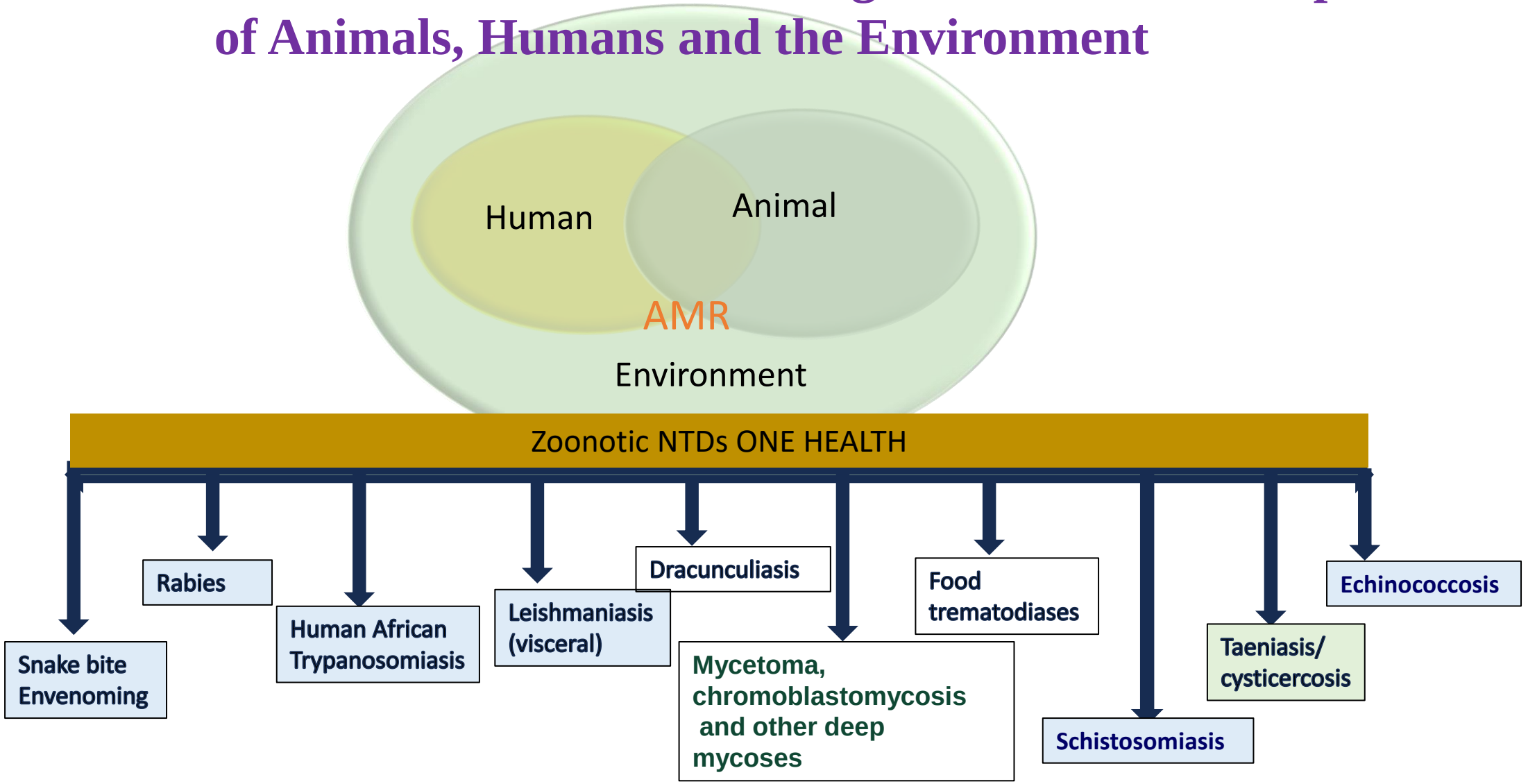
  shared by people, animals, and the environment.

Common One Health issues

- **Even the fields of:**
  - chronic disease,
  - mental health,
  - injury,
  - **occupational health**, and
  - noncommunicable diseases

Can benefit from a OH approach involving collaboration across disciplines and sectors.

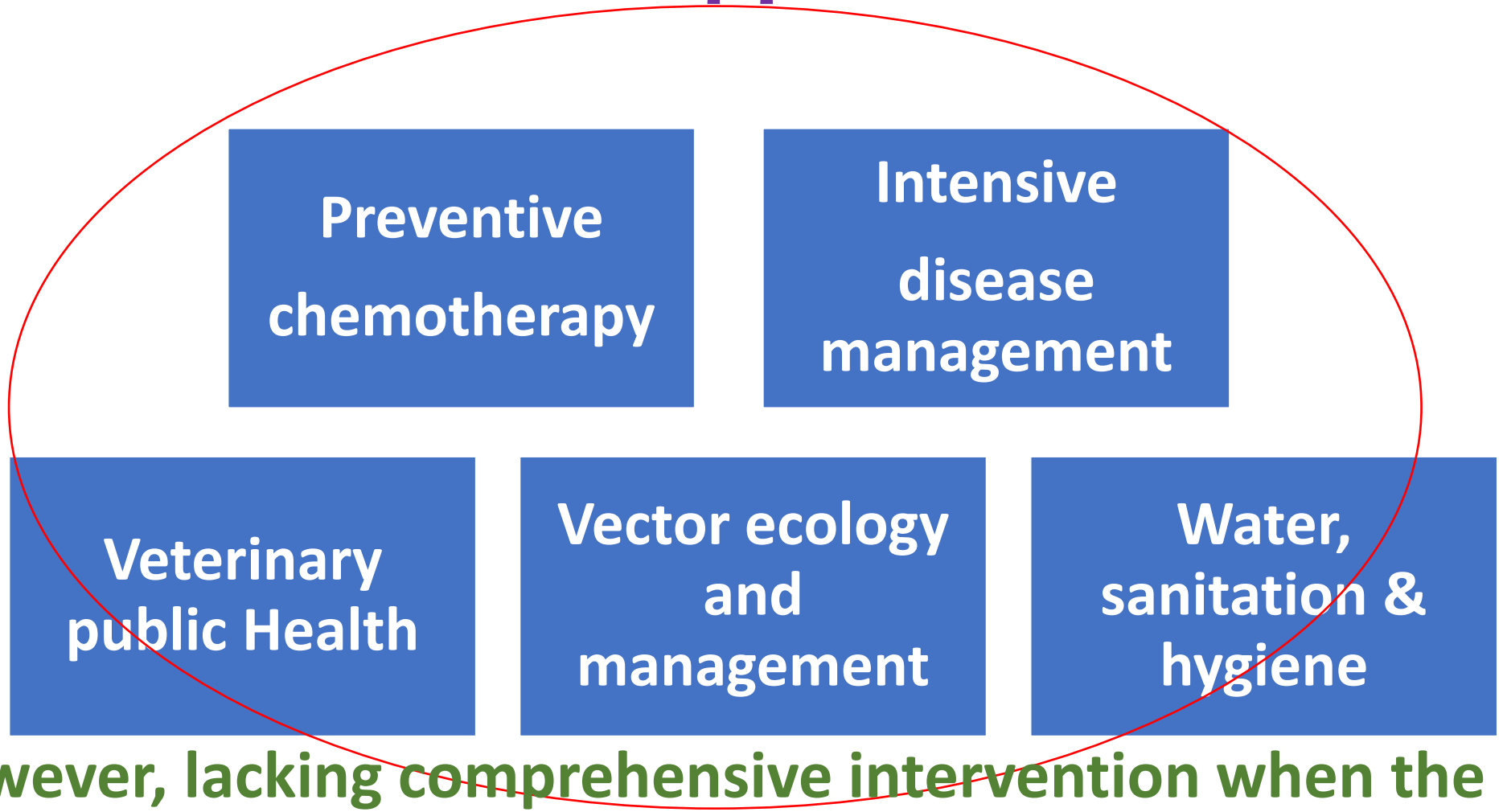
Zoonotic NTDs One Health addressing the interrelationship of Animals, Humans and the Environment



Zoonotic NTDs and factors influencing transmission, surveillance and control

	Disease Agent					Transmission/ Exposure Routes					Livestock Animal				Companion Animal		Wildlife						Environmental Factors that Influence Transmission						
	Helminth	Protozoa	Virus	Ectoparasite	Other	Foodborne	Waterborne	Arthropod	Faecal-Oral	Direct Contact	Pigs	Cattle	Goats	Sheep	Dogs	Cats	Foxes/Canids	Fish	Crustacean	Snails	Primates	Rodents	Vector	Deforestation	Urbanization	Climate Change	Ground/Soil	Man-made Ecological Change	Human/Animal Migration
Taeniasis/Cysticercosi	X					X			X		X																X		
Echinococcosis	X								X		X	X	X	X	X	X	X					X				X	X		
Foodborne Trematodiase	X					X					X	X	X	X	X	X		X	X	X		X						X	
Schistosomiasis	X						X				X	X	X	X	X	X				X	X	X	X			X			X
Dracunculiasis	X					X	X								X	X		X	X		X								
Zoonotic Leishmaniasis		X						X							X		X					X	X	X	X				
Human African Trypanosomiasis		X						X				X											X	X	X			X	X
Rabies			X							X					X														
Scabies & Other Ectoparasite				X						X	X				X		X										X		
Snakebite envenomatior					X					X													X	X				X	X

Intervention approach to NTDs



However, lacking comprehensive intervention when the diseases involve – Human, Animal and Environmental transmission

Tackling zoonotic NTDs based on intervention strategic approaches

- **Preventive chemotherapy**
  - Large-scale distribution of medicines to entire population groups
- **Individual case-management**
  - Patient-focused diagnosis, treatment and follow-up
- **Cross-cutting strategic approaches**
  - Vector and Reservoir Control
  - Veterinary Public Health
  - WASH

❖ **NTDs call for concerted, integrated, and multi-sectorial interventions - One Health**

- Zoonotic NTDs share these characteristics
  - difficult and costly to manage – diagnosis, treatment and follow up;
  - Risk and Burden is poorly understood;
  - Lack of appropriate control tools;
  - relatively lower investment in research and development;
  - people affected often live in remote rural areas with limited access to diagnosis and treatment.

❖ **zoonotic NTDs need community engagement, integrated, and multi-sectorial interventions - One Health**

One Health Focus Areas

- Zoonotic and emerging infectious diseases
- Pandemic preparedness and response
- One Health emergencies at the human-animal-environment interface
- One Health respiratory disease surveillance
- Global health security and capacity building
- Strengthen One Health coordination in the African countries
- Strategic One Health partnerships
- Prevent zoonoses NTDs shared between people, animals and the environment.

Establish a One Health zNTD Framework

One Health zNTD Framework Key Components

zNTD Strategic Plan: Key Components

Situational anlysis

Assess country OH Performance and Commitment

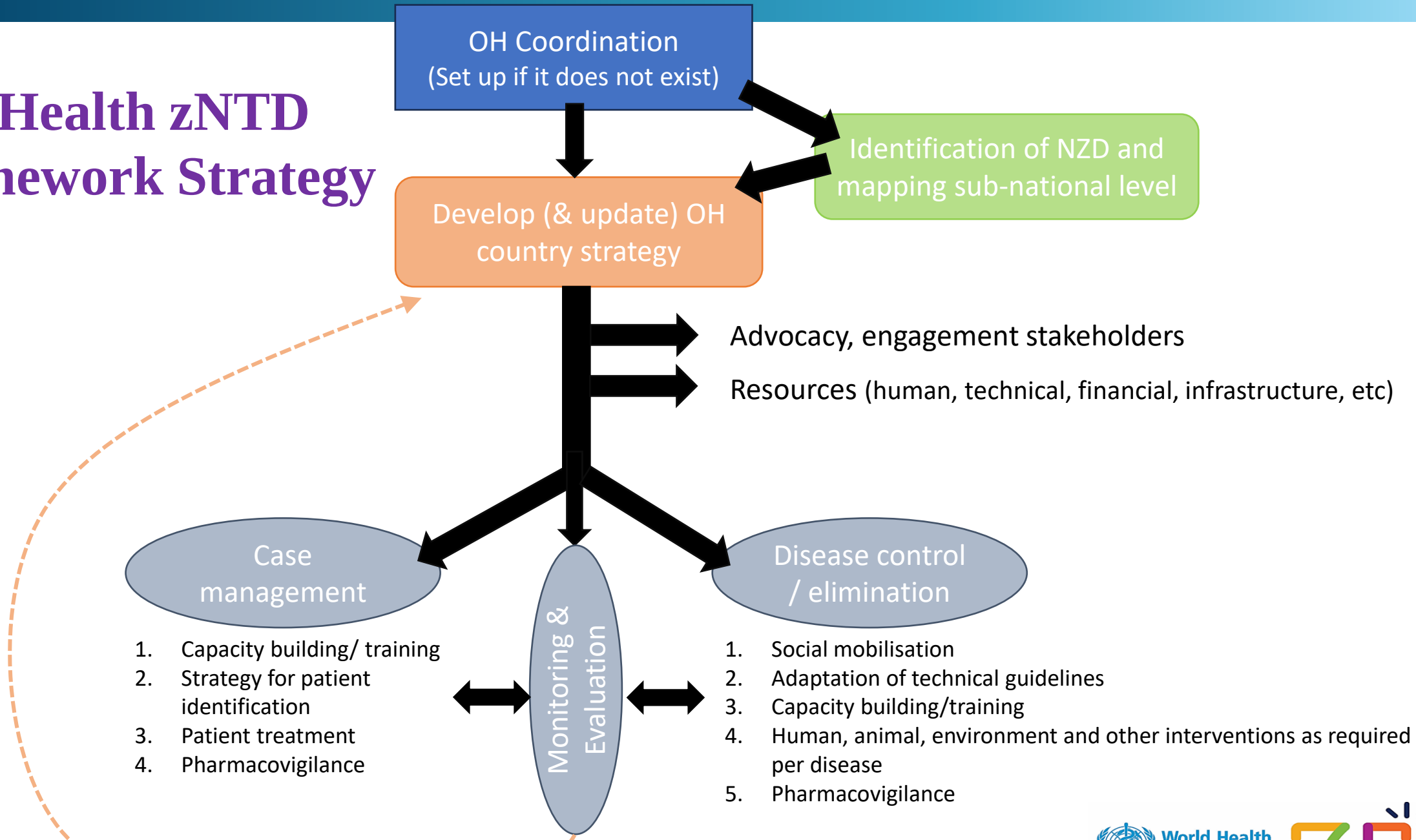
Design/Set Strategic OH Plan

Define Operational Framework

Key Issues

- Country status
- Traditional zoonoses targets and programme performance
- Awareness and OH
- Coordination and players
- Country sustainability efforts
- Concepts and Models.

One Health zNTD Framework Strategy



Questionnaire

Survey

44 NTDs Elimination Master Plans/
(completed MPs and associated experts consultation)

Survey 1a: One Health zNTDs & NTDs
All countries Master Plans
Target Zoonotic diseases & NTDs

Survey 1b: Country Visit on One Health
Expert Country visit, details on zNTDs One Health:

- **Human Health NTDs and zNTDs**
- **Veterinary zNTDs**
- **Environment, Public health WASH & zNTDs**
- **Agriculture & Forestry (game parks and ranching)**

List of Zoonoses

- **Programme epidemiological profile**
- **Drivers of zNTDs transmission in the country (environmental, animal, human, climatic and occupational activities)**
- **One Health Programme coverage**
- **One health Programme outcomes and impact**
- **Governance**
- **Policy and guidance**
- **Planning: Review health sector, zNTDs and specific disease plans.**
- **Service delivery : Strategies to cover populations at risk; Guidance on the conduct of Interventions**
- **Human resources management: Information on Human resources responsible for zNTDs services delivery.**
- **Information system: Quality of data and data collection system at national and sub-national levels**
- **Medical Products and Technologies: Review drug supply chain management at national and sub-national levels**

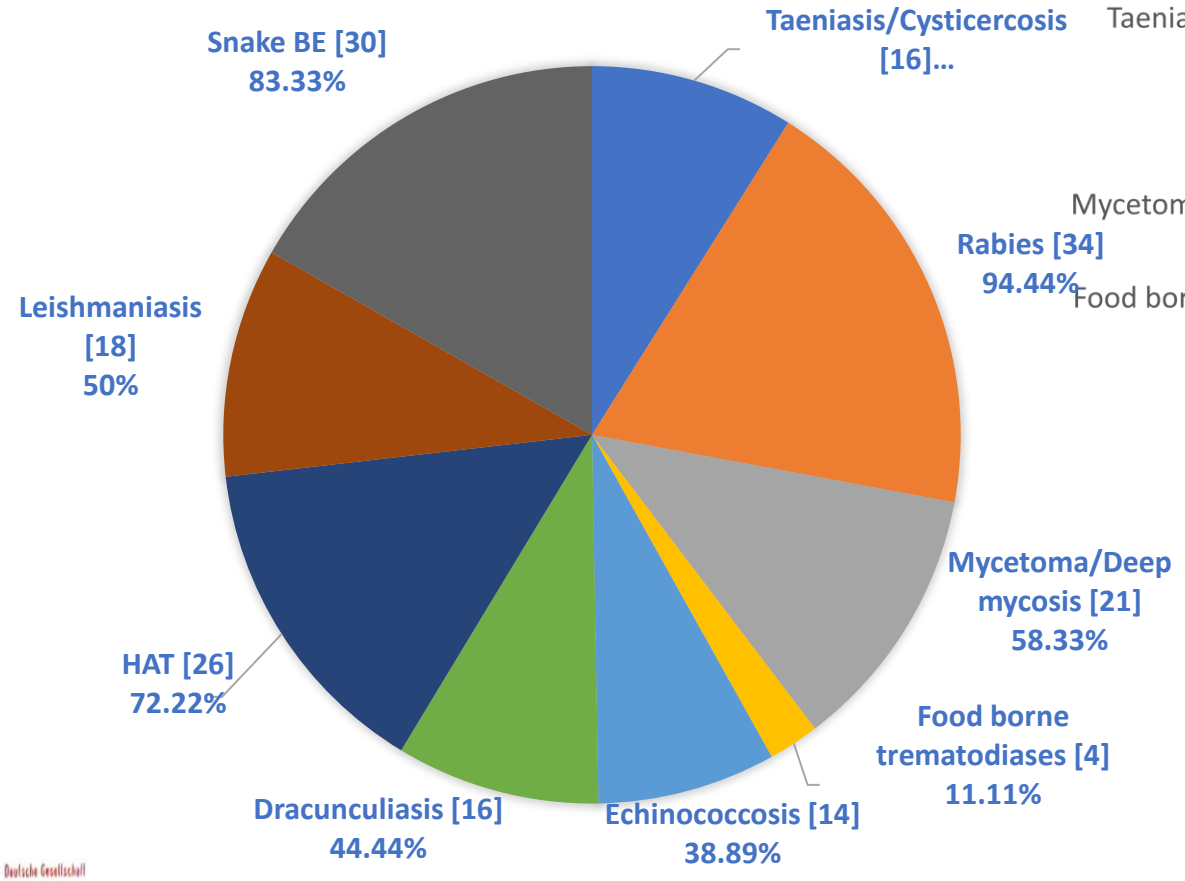
Mapping countries to help identify gaps

Starting point - 1

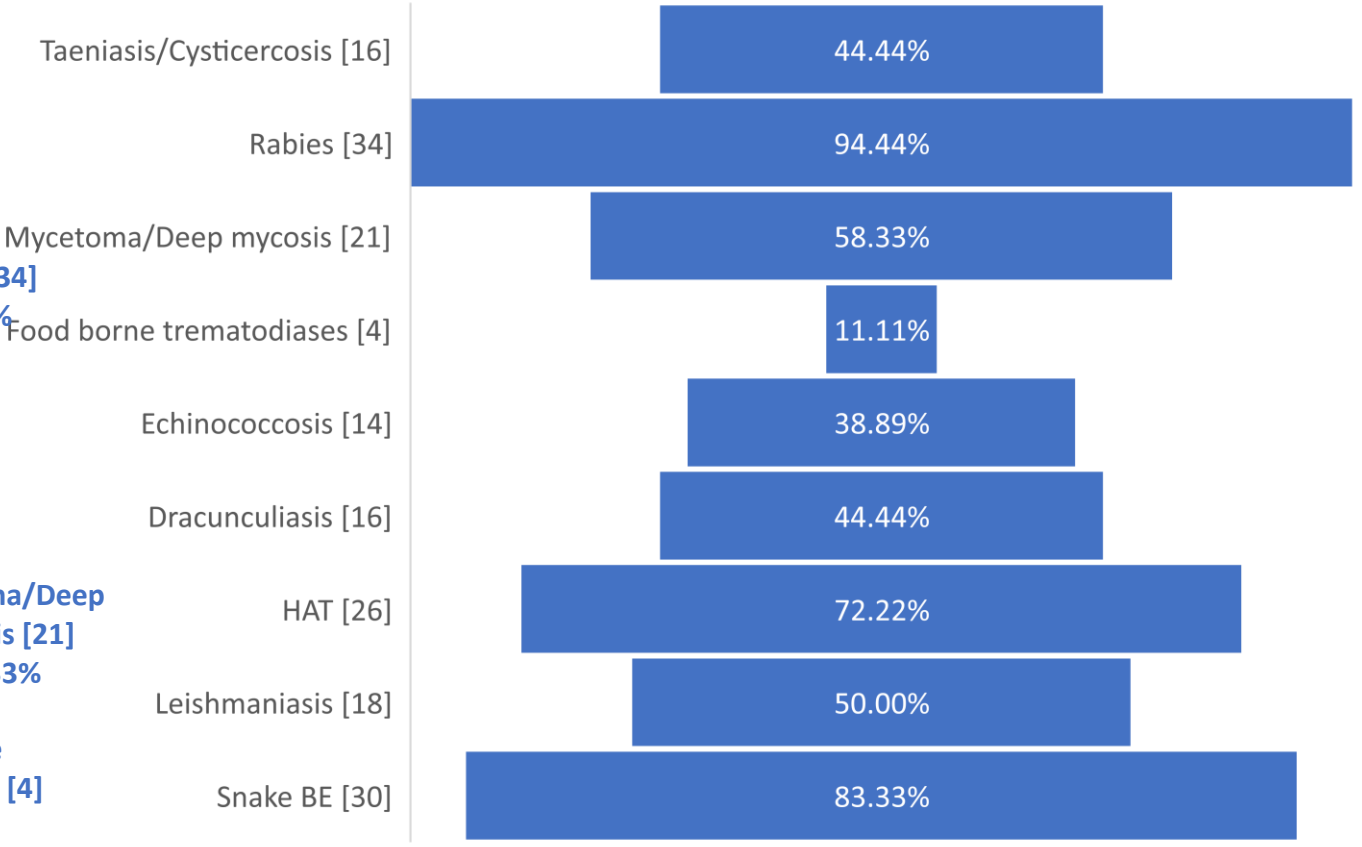
1. Mapping using Master Plans (36/44)
2. One Health activities consult country experts
3. Country zNTDs
4. OH Players/organizations
5. zNTD strategy
6. Coordination mechanisms

Master Plans information on zoonoses (zNTDs)

PROPORTION OF 36 COUNTRIES



Proportion of 36 Countries



giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

World Health Organization

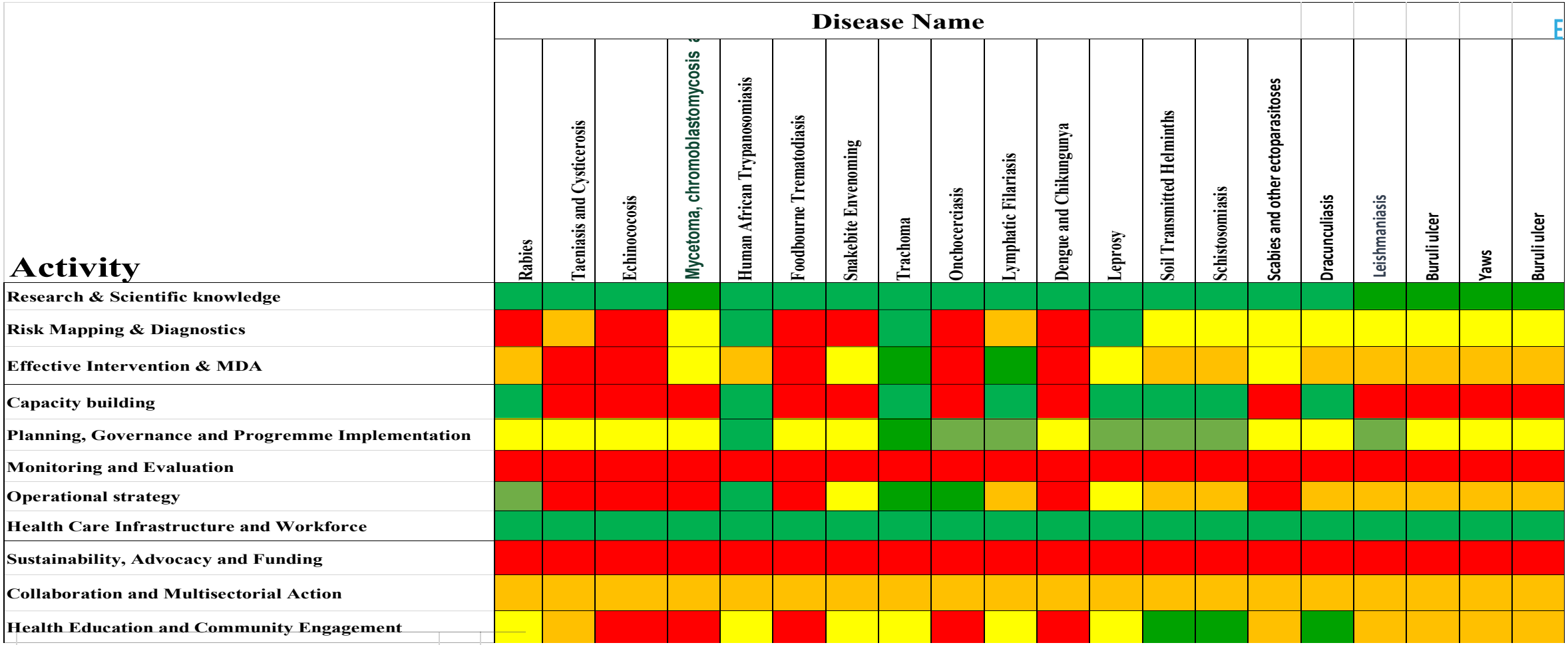
T. sol Endemicity and free roaming pigs and zNTDs not mentioned in the MPs

Country	No mention of presenceof zNTDs
Malawi	No Taeniasis and cysticercosis
	No Cystic and alveolar echinococcosis.
	No Rabies
	No Snake Bite Envenoming
Cameroon	No Taeniasis and cysticercosis
Nigeria	No Cystic and alveolar echinococcosis.
South Africa	Taeniasis & cysticercosis
Zanzibar	Snake Bite envenoming
Madagascar	Snake Biteenvenoming

28	11	4.	Countries

Endemic	Suspected Endemic	Transmission in some communities	Ranking: No. of free roaming pigs in African country	# of pigs
Angola	Equatorial Guinea	Algeria	Nigeria	8.0
Benin	Eswatini	Botswana	Malawi	7.8
Burkina Faso	Gabon	Eritrea	Uganda	2.7
Burundi	Gambia	Ethiopia	Angola	3.7
Cameroon	Guinea		Burkina Faso	2.5
Cape Verde	Lesotho		Madagascar	1.8
Central Africa Rep	Liberia		Mozambique	1.7
Chad	Mali		Cameroon	2.0
Congo	Niger		Tanzania	1.5
Ivory Coast	Sierra Leon		Zambia	1.4
DRC	South Sudan		Namibia	0.2
Ghana			Ivory Coast	0.4
Guinea Bissau			Kenya	1.4
Kenya			Rwanda	1.5
Madagascar			Senegal	0.5
Malawi			Mali	0.5
Mozambique			Sierra Leon	0.3
Namibia			South Sudan	1.3
Nigeria			Togo	1.3
Rwanda			South Africa	1.4
Senegal			Zimbabwe	1.2
South Africa			Burundi	0.8
Togo			Centra Africa Republic	1.1
Uganda			Cape Verde	0.8
Tanzania			DRC	1.0
Zambia			Ghana	0.8
Zanzibar			Gabon	0.2
Zimbabwe			Ethiopia	0.3
			Congo	0.1
			Chad	0.1

Gap Assessment of Current zNTD Programme Action



Key

- Successful intervention with designed implementation
- One sector intervention
- Siloed intervention
- Lack of concerted OH activity

World Health Organization African Region

HEALTH FOR ALL

Setting up the Foundations for One Health Capacities

- Develop mechanisms to support an overarching NTDs One Health governance and legal framework
- Define zNTDs One Health national capacities, assess performances and identify needs.
- Define planning mechanisms for zNTDs One Health coordination, including partner collaborative mechanisms, and capacity building strategies applicable at national down to community levels.
- Define processes and develop methodologies for assessing countries' vulnerabilities to zNTDs challenges.
- Design a monitoring and evaluation framework for the continuous improvement of the national zNTDs One Health actions, performance and capacities.
- Establish financial needs to build zNTDs One Health capacity at national level.
- Advocate for political prioritization of zNTDs One Health work in national and community health strategies and plans.
- **Generate an enabling environment for the effective implementation of zNTDs One Health.**

Identified Key issues from consultations

Develop and Strengthen community level participation

- Community engagement/Community beneficiary engagement
- Community training in risk identification
- Collaboration between communities and program implementers

Integration within other intervention programmes

- Partnerships between programmes
- M & E and data sharing (the Vet, WASH and NTDs programme).

Coordination of implementation partners (highly Fragmented)

- Field workers and the affected Communities
- Funding Partners
- Resources mobilization, aggregation and sharing.

Training at grass roots involving the affected population and Community Health Workers

Zoonotic NTDs One Health strategy – Lessons so far

- Possible but difficult to implement.
- Stakeholder/players not working together (silos).
- Re-visiting country health systems strategy.
- Multi-sectorial approach.
- Lack of dedicated funding.
- Requires catalyst – dedicated activities in a programme format.
- Sustainability envisaged once the '**big wheel**' start turning (when benefits are realized).

Thank you!

Merci

Obrigado

World Health Organization

One Health increasing impact and sustainability of efforts against NTDs

Bernadette Abela (WHO Team Leader)
Meritxell Donadeu (WHO consultant)

Brazzaville, November 2023

One Health: approach for action against neglected tropical diseases 2021-2030

One Health companion document for the to road map

https://www.who.int/publications/i/item/9789240042414

OpenWHO course “One Health in action against Neglected Tropical Diseases”

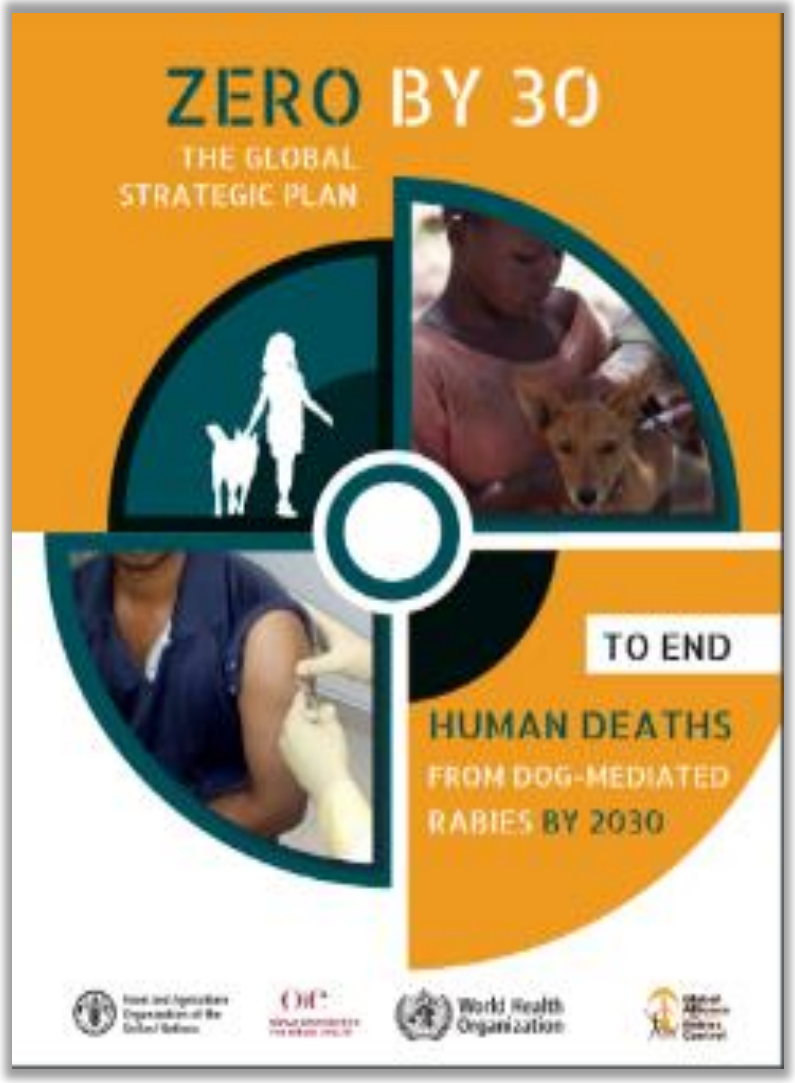
https://openwho.org/courses/NTDs-one-health

RABIES

Controlling rabies needs a One Health approach

Rabies is 100% preventable

The “Zero by 30” plan is a coordinated strategy to act now



GAVI's Vaccine Investment Strategy

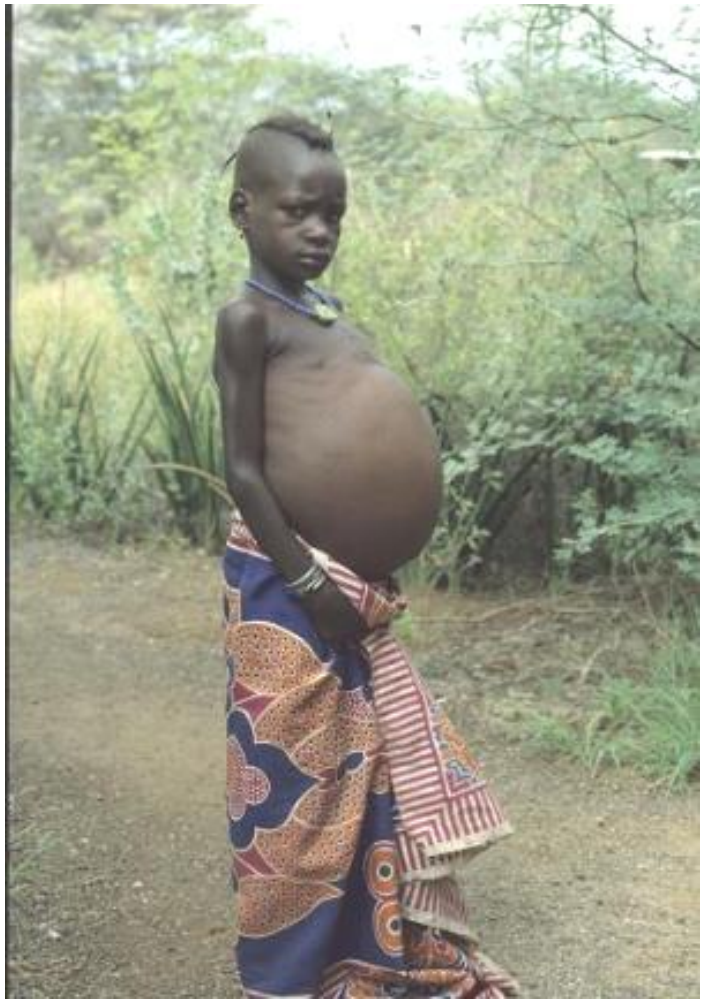
WHO supported the **inclusion of rabies Post Exposure Prophylaxis (PEP) in GAVI's *Vaccine Investment Strategy.***

- Planning has started. We expect first human vaccine on the ground Q4 2024. First applications in July 2024.
- Need to work with the Extended Program for Immunization (EPI).
- Current criteria consider countries to have strategy in place and at least some activities in the prevention (dog vaccination and community engagement).

Webinar coming soon!

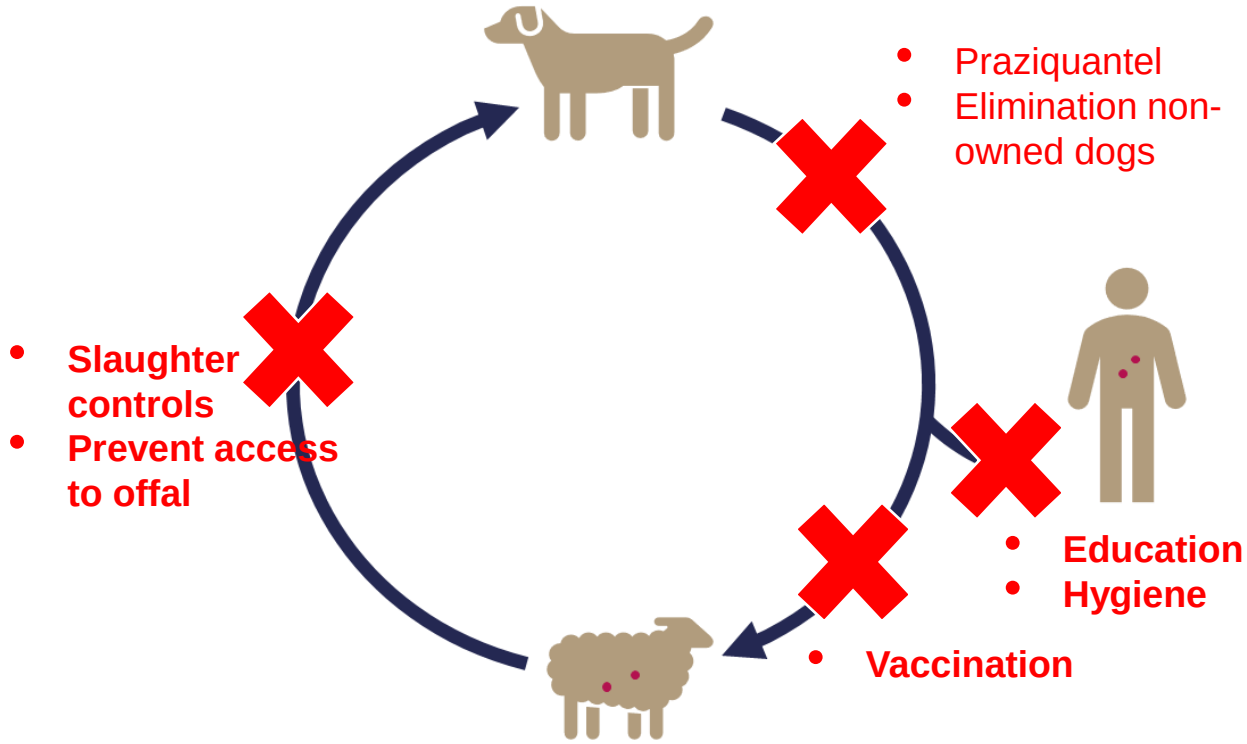
Cystic echinococcosis

Cystic echinococcosis



Cystic echinococcosis (humans)
Hydatid disease (animals)

Cystic echinococcosis control



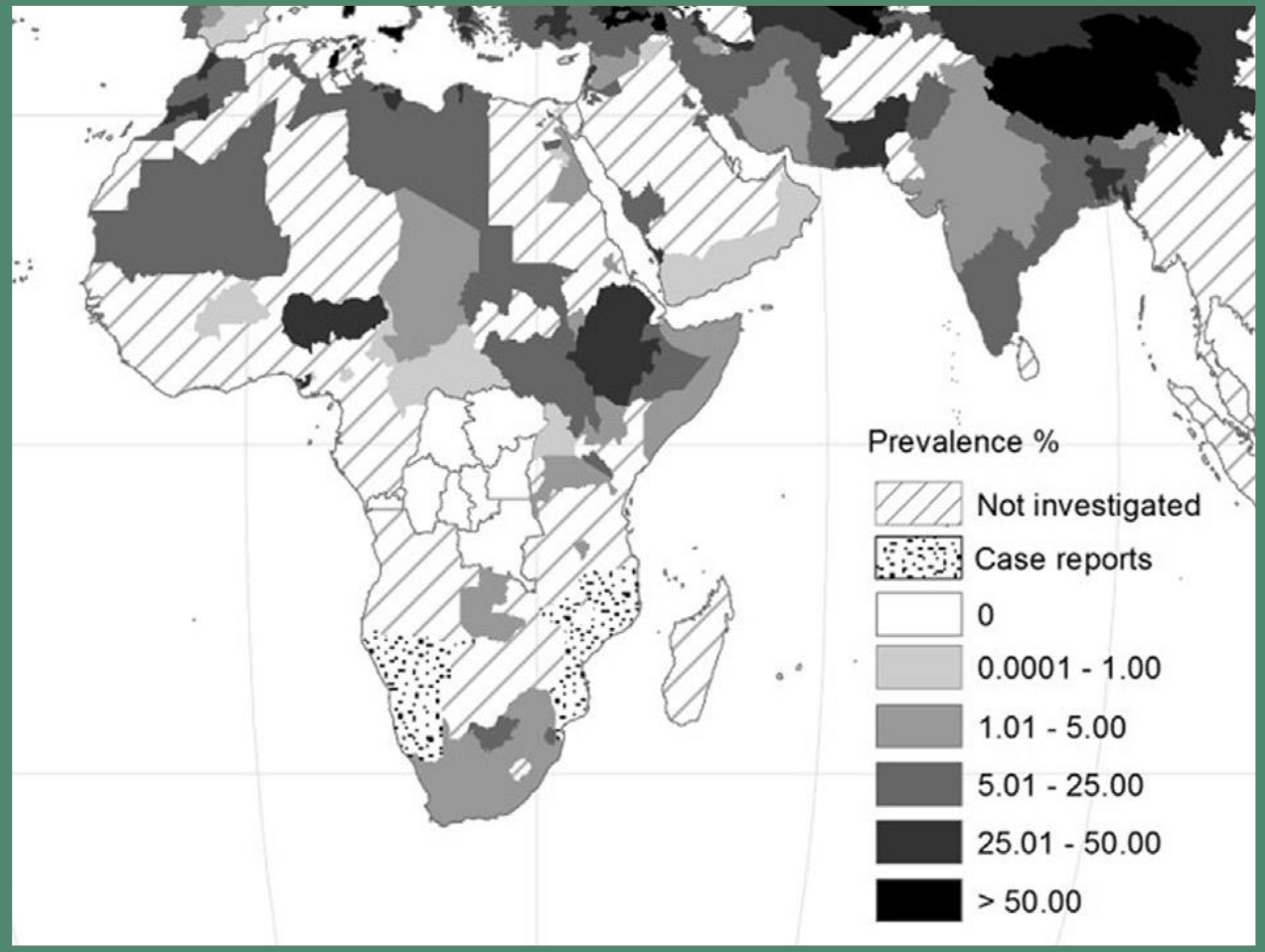
Considerations

1. Interventions in dogs could be combined with rabies
2. Sheep vaccine (EG95) produced in Africa (Morocco).

MCI Sante Animale

Global distribution of cystic echinococcosis

(Map shows animal infections)

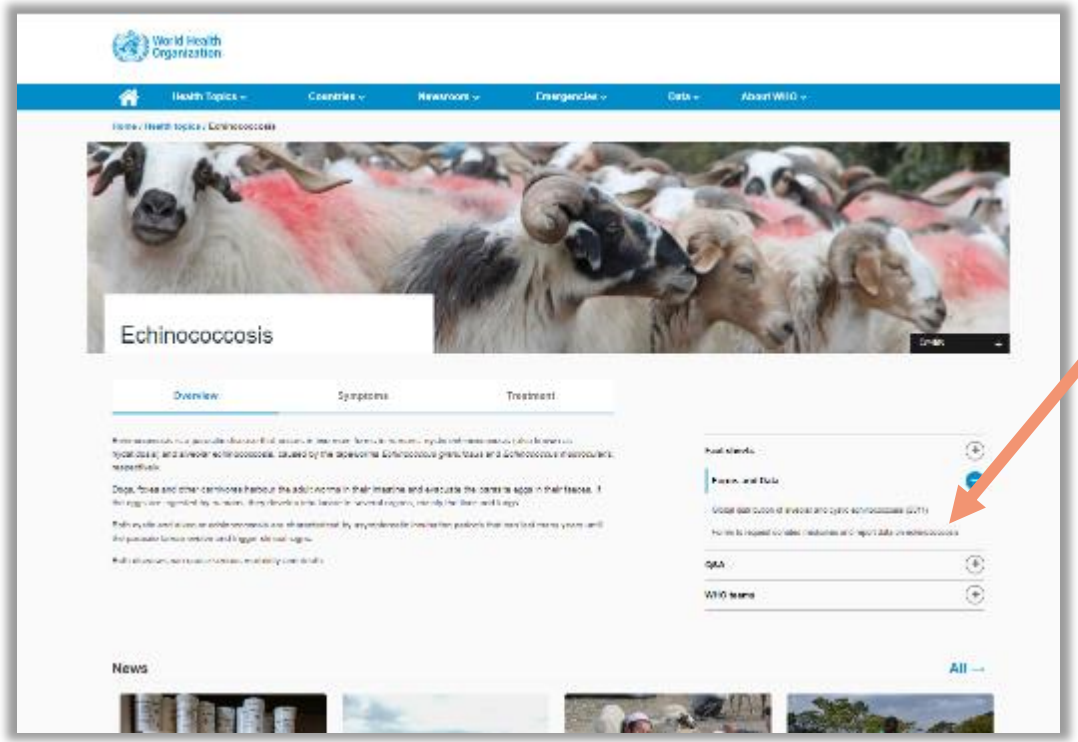


Modified from Deplazes et al. 2017. *Adv Parasitol.* 95:317-445

DATA NEEDED from countries where disease is present to confirm if it is a public health problem

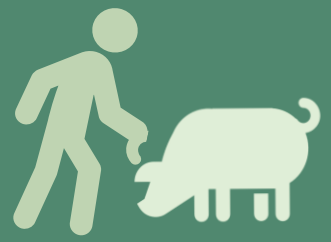
Donation of ALB for case management

- New donation of albendazole from GSK for the treatment of human echinococcosis.
- Forms to request donation available at WHO website



New donation!

https://apps.who.int/neglected_diseases/ntddata/forms/echino/WHO_Request_ECHINO_v1.xlsm



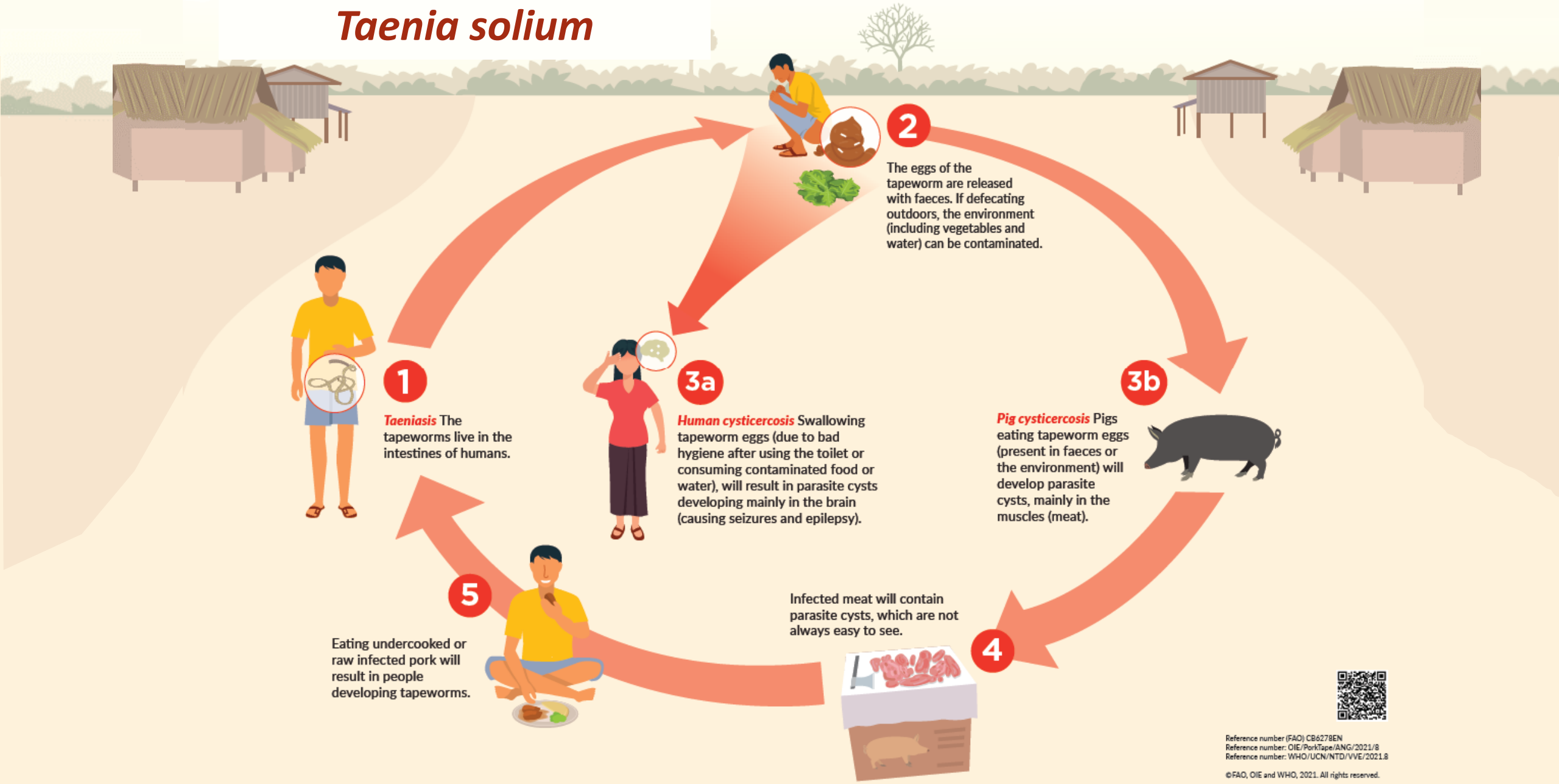
Taenia solium

Transmission cycle of *Taenia solium*

Food and Agriculture Organization of the United Nations

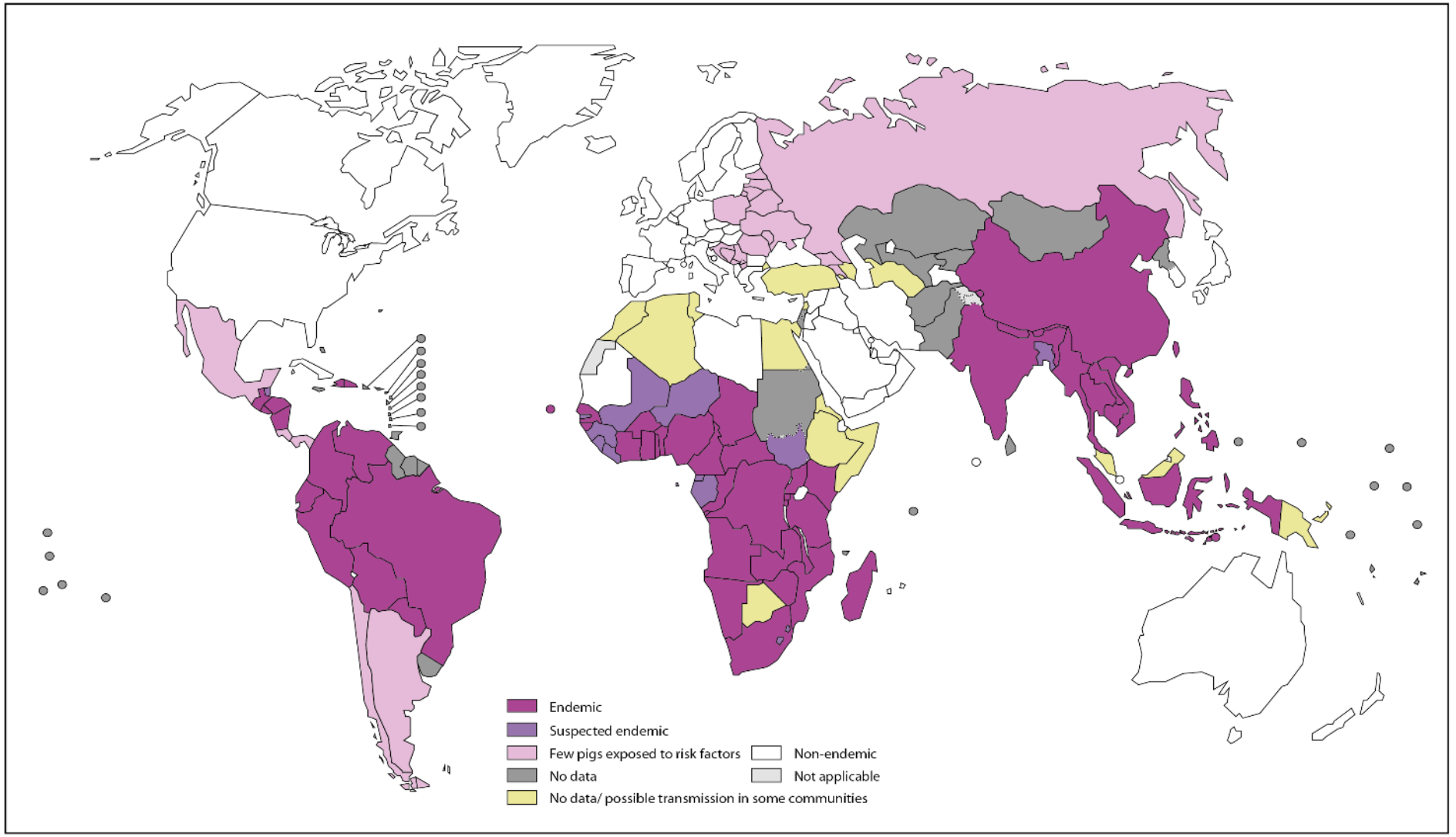
WORLD ORGANISATION FOR ANIMAL HEALTH

World Health Organization



Reference number (FAO) CB6278EN
Reference number: OIE/PorkTape/ANG/2021/8
Reference number: WHO/UCN/NTD/VVE/2021.8

T. solium endemicity – Global map 2022



Endemic:
51 countries

Suspected endemic:
14 countries

Few pigs exposed to risk factors:
21 countries

No data/possible transmission in some communities:
14 countries

No data:
59 countries

Data Source: World Health Organization
Map Production: Control of Neglected Tropical Diseases (NTD)
World Health Organization

World Health Organization

https://apps.who.int/iris/bitstream/handle/10665/358419/WER9726-eng-fre.pdf?sequence=1&isAllowed=y

Taenia solium mapping at sub-national level

1. Integration of data with other programs (schistosomiasis, STH)
2. Mapping Tool available from WHO. Includes a Risk classification Tool.
   - Mapping ongoing in Namibia and Madagascar. Preparations done in Cameroon and Tanzania.
3. Additional support could be provided by ESPEN

Taenia solium active transmission risk area mapping: 2021

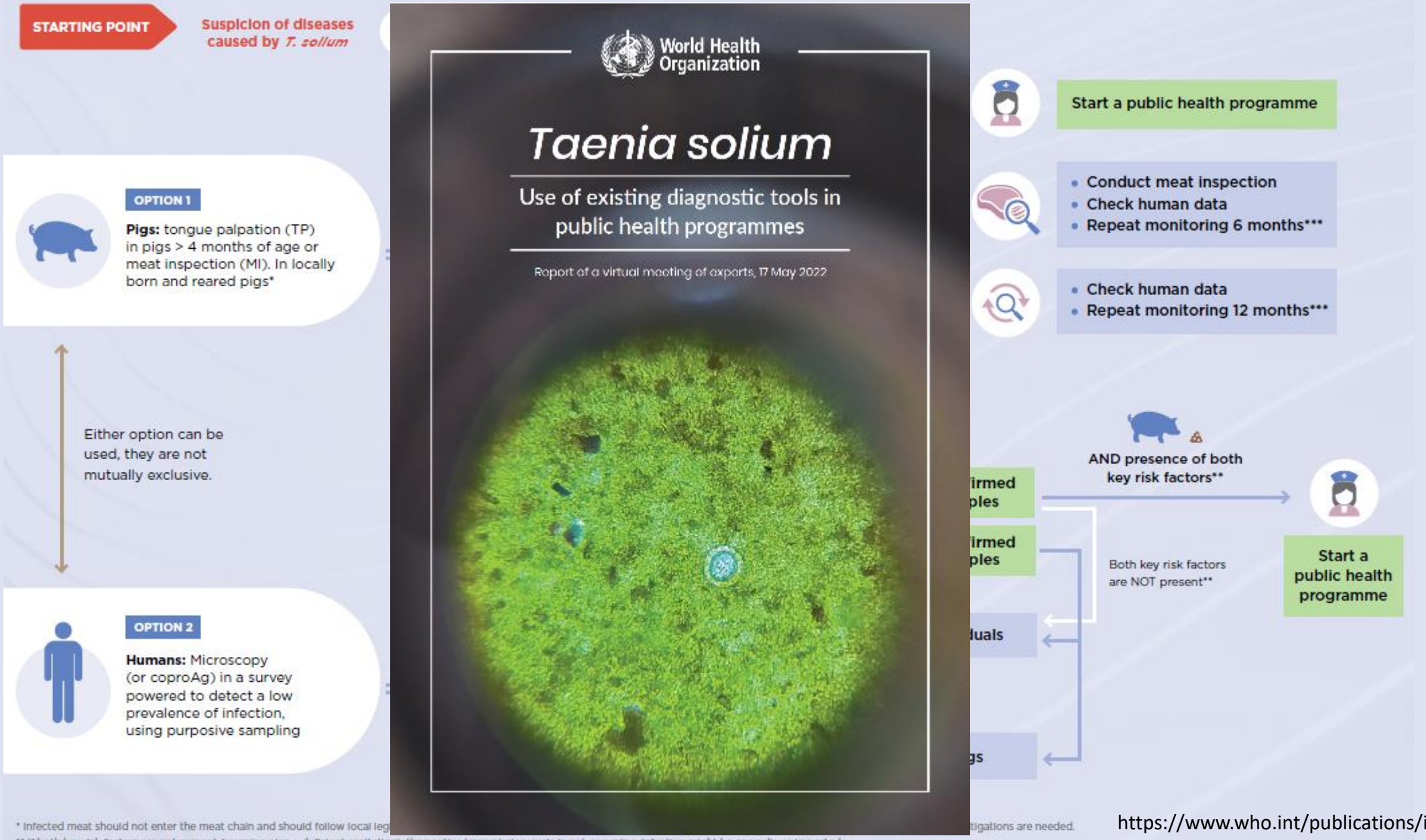
COUNTRY/REGION Country A **Filled by:** M D R **Date:** 09 03 21

1 Define risk level / Clear risk level — 2 Sort by risk / Sort alphabetically — Save in EXCEL

Name of administrative level 1 (State, Province, Region)	Name of administrative level 2 (District, Municipality, Village)	Disease				Risk factors		Risk level	Comments
		Porcine cysticercosis	Taeniasis by *T. solium*	Taeniasis	Neuro-cysticercosis	Open defecation	Backyard pigs common		
Province A	District A1	Yes				Yes		1	Porcine cysticercosis confirmed by local veterinarian
Province A	District A2				Yes	Yes		5	
Province A	District A3			Yes			Yes	2	
Province B	District B1		Yes		Yes	Yes		1	
Province B	District B2				Yes			NS	
Province C	District C1	Yes					No	6	
Province D	District D1			Yes			No	6	
Province D	District D2			Yes		Unknown	Yes	2	
Province D	District D3				Unknown	Yes	Yes	4	
Province E	District E1			Yes	Yes			3	

1	High risk: evidence or high likelihood of active transmission
2	High risk: evidence or high likelihood of active transmission
3	Moderate risk: indication or potential active transmission
4	Moderate risk: indication or potential active transmission
5	Lower risk: active transmission may or may not be present
6	Lower risk: active transmission may or may not be present
NS	Not sufficient information to classify risk

Suggested flow to trigger a *T. solium* public health intervention



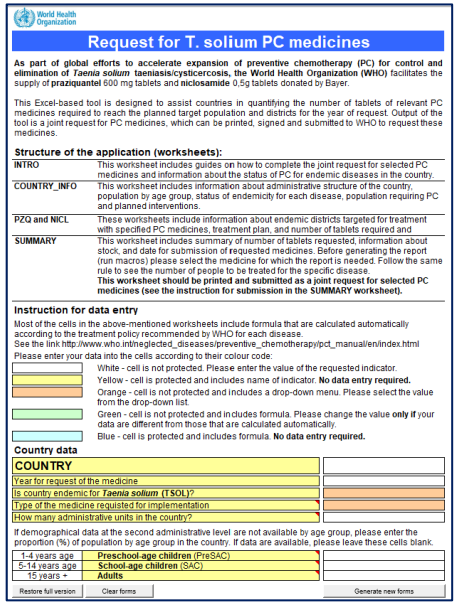
https://www.who.int/publications/i/item/9789240060722

Preventive chemotherapy for taeniasis

- Bayer donation of praziquantel and niclosamide, available through WHO.
- MDA conducted in 2023 in Madagascar and Zambia.

Donation available

Drug	Dose	Calculation of number of tablets
Niclosamide 	Single dose • Adults: 2g • Child ≥10 years (~35 Kg): 2g • Child 5-9 years (<35 kg): 1g	500 mg tablets: • Adults: 4 tablets • Child 10 years and above: 4 tablets • Child 5-9 years: 2 tablets Yomesan tablets need to be **properly chewed** and then washed down with some water
Praziquantel 	Single dose All: 10mg/kg *[The dose of praziquantel for schistosomiasis, opisthorchiasis and clonorchiasis is 40mg/kg]*	600 mg tablets: 1 tablet per individual (adult or child)



Request for T. solium PC medicines

As part of global efforts to accelerate expansion of preventive chemotherapy (PC) for control and elimination of *Taenia solium* taeniasis/cysticercosis, the World Health Organization (WHO) facilitates the supply of **praziquantel** 600 mg tablets and **niclosamide** 0,5g tablets donated by Bayer.

This Excel-based tool is designed to assist countries in quantifying the number of tablets of relevant PC medicines required to reach the planned target population and districts for the year of request. Output of the tool is a joint request for PC medicines, which can be printed, signed and submitted to WHO to request these medicines.

Structure of the application (worksheets):

INTRO	This worksheet includes guides on how to complete the joint request for selected PC medicines and information about the status of PC for endemic diseases in the country.
COUNTRY_INFO	This worksheet includes information about administrative structure of the country, population by age group, status of endemicity for each disease, population requiring PC and planned interventions.
PZQ and NICL	These worksheets include information about endemic districts targeted for treatment with specified PC medicines, treatment plan, and number of tablets required and
SUMMARY	This worksheet includes summary of number of tablets requested, information about stock, and date for submission of requested medicines. Before generating the report (run macros) please select the medicine for which the report is needed. Follow the same rule to see the number of people to be treated for the specific disease. **This worksheet should be printed and submitted as a joint request for selected PC medicines (see the instruction for submission in the SUMMARY worksheet).**

Instruction for data entry

Most of the cells in the above-mentioned worksheets include formula that are calculated automatically according to the treatment policy recommended by WHO for each disease.
See the link http://www.who.int/neglected_diseases/preventive_chemotherapy/pct_manual/en/index.html
Please enter your data into the cells according to their colour code:

- White - cell is not protected. Please enter the value of the requested indicator.
- Yellow - cell is protected and includes name of indicator. **No data entry required.**
- Orange - cell is not protected and includes a drop-down menu. Please select the value from the drop-down list.
- Green - cell is not protected and includes formula. Please change the value **only if** your data are different from those that are calculated automatically.
- Blue - cell is protected and includes formula. **No data entry required.**

Country data

COUNTRY	
Year for request of the medicine	
Is country endemic for *Taenia solium* (T.SOL)?	
Type of the medicine requisted for implementation	
How many administrative units in the country?	

If demographical data at the second administrative level are not available by age group, please enter the proportion (%) of population by age group in the country. If data are available, please leave these cells blank.

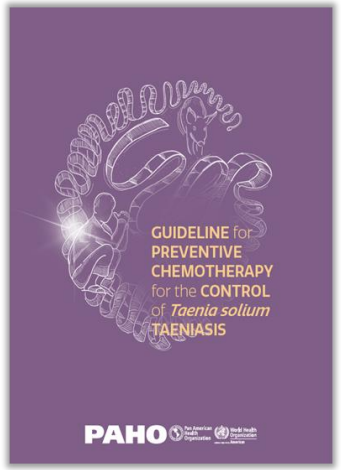
1-4 years age	**Preschool-age children** (PreSAC)	
5-14 years age	**School-age children** (SAC)	
15 years +	**Adults**	

Restore full version | Clear forms | Generate new forms

Taeniasis: https://www.who.int/activities/supporting-countries-in-their-cysticercosis-control-efforts

Prevention, identification and management of neurological adverse events in relation to PC

- Neurological adverse events related to the use of praziquantel during preventive chemotherapy. Rare but extremely important.
- Should be **relevant to ALL programs using praziquantel** in *T. solium* endemic areas.
- Companion documents to PC taeniasis guideline published to facilitate training and awareness:
  1. Symptoms and signs compatible with NCC
  2. Early identification and management of neurological AE



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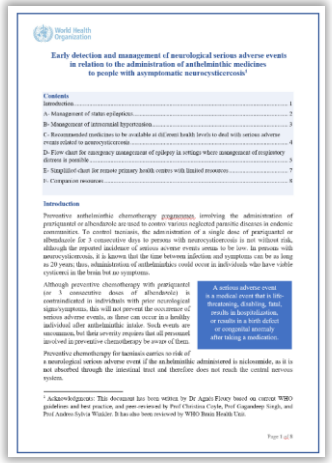
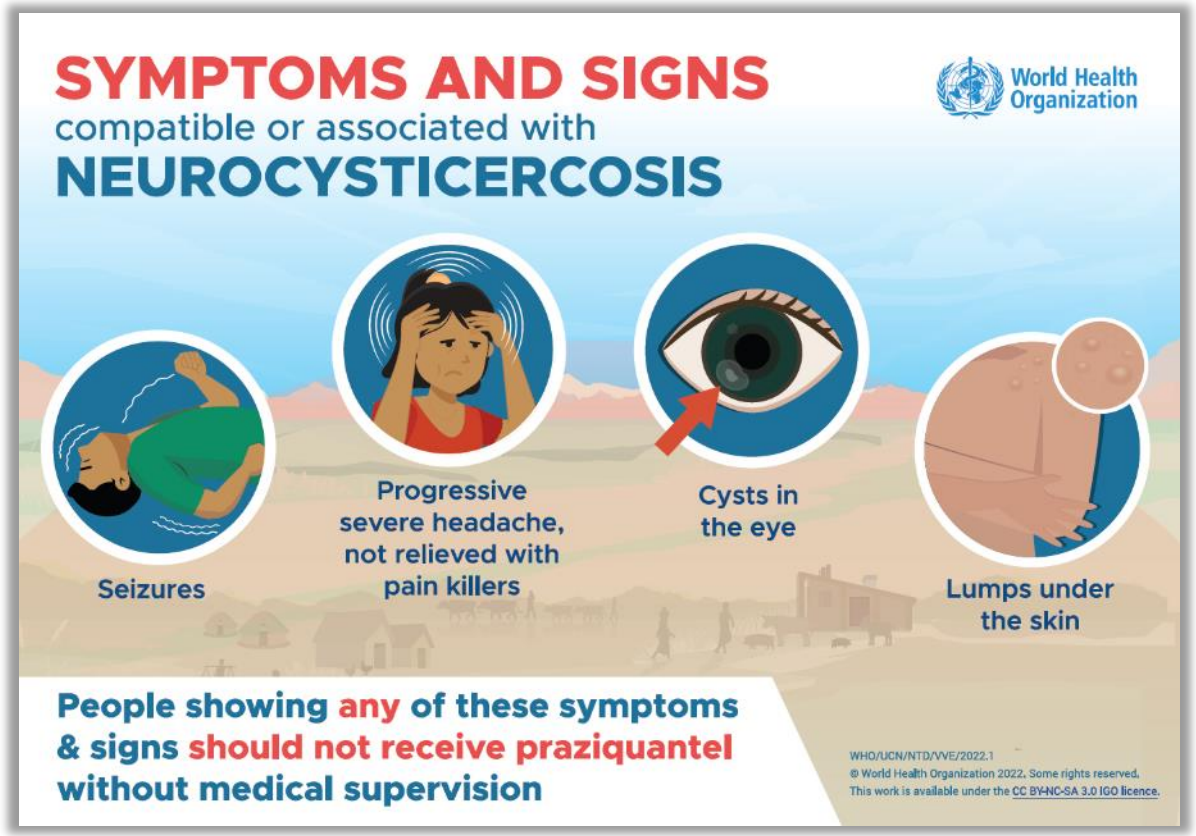


https://www.who.int/publications/i/item/9789240068131

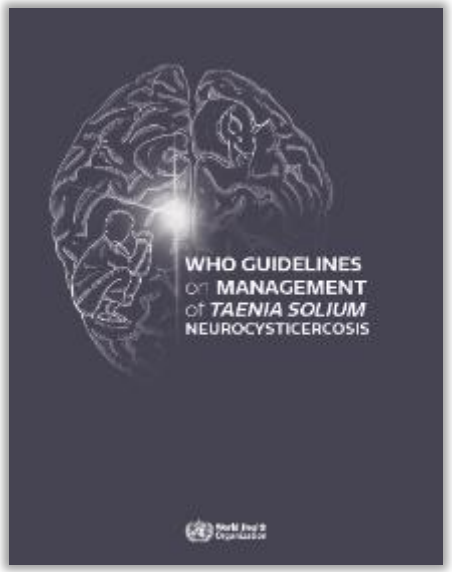
Prevention, identification and management of neurological adverse events in relation to PC

Posters available in 11 languages including English, French, Kiswahili, Malagasy, Portuguese.



Case management of neurocysticercosis

- New companion document for the NCC Guidelines: **Considerations for the use of anthelminthic therapy for the treatment of neurocysticercosis**.
- Importance of disseminating information to endemic areas. Mismanagement with anthelmintics can kill people!
- Webinars by Dr Agnes Fleury (English, French. Portuguese recordings)



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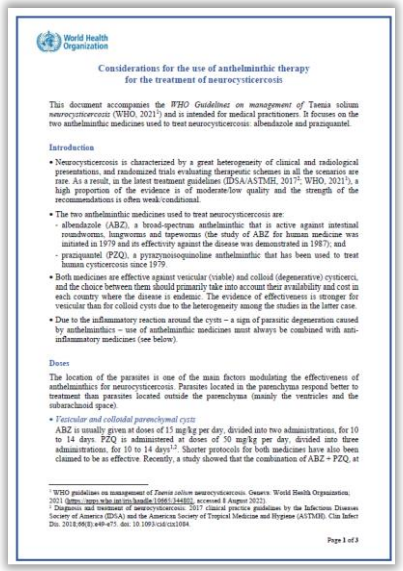


Considerations for the use of anthelminthic therapy for the treatment of neurocysticercosis

This document accompanies the *WHO Guidelines on management of* Taenia solium *neurocysticercosis* (WHO, 2021[1]) and is intended for medical practitioners. It focuses on the two anthelminthic medicines used to treat neurocysticercosis: albendazole and praziquantel.

Introduction

- Neurocysticercosis is characterized by a great heterogeneity of clinical and radiological presentations, and randomized trials evaluating therapeutic schemes in all the scenarios are rare. As a result, in the latest treatment guidelines (IDSA/ASTMH, 2017[2]; WHO, 2021[1]), a high proportion of the evidence is of moderate-low quality and the strength of the recommendations is often weak/conditional.
- The two anthelminthic medicines used to treat neurocysticercosis are:
  - albendazole (ABZ), a broad-spectrum anthelminthic that is active against intestinal roundworms, hungworms and tapeworms (the study of ABZ for human medicine was initiated in 1979 and its effectivity against the disease was demonstrated in 1987); and
  - praziquantel (PZQ), a pyrazinoisoquinoline anthelminthic that has been used to treat human cysticercosis since 1979.
- Both medicines are effective against vesicular (viable) and colloid (degenerative) cysticerci, and the choice between them should primarily take into account their availability and cost in each country where the disease is endemic. The evidence of effectiveness is stronger for vesicular than for colloid cysts due to the heterogeneity among the studies in the latter case.
- Due to the inflammatory reaction around the cysts – a sign of parasitic degeneration caused by anthelmintics – use of anthelminthic medicines must always be combined with anti-inflammatory medicines (see below).

Doses

The location of the parasites is one of the main factors modulating the effectiveness of anthelminthics for neurocysticercosis. Parasites located in the parenchyma respond better to treatment than parasites located outside the parenchyma (mainly the ventricles and the subarachnoid space).

- *Vesicular and colloidal parenchymal cysts*

ABZ is usually given at doses of 15 mg/kg per day, divided into two administrations, for 10 to 14 days. PZQ is administered at doses of 50 mg/kg per day, divided into three administrations, for 10 to 14 days[1,2]. Shorter protocols for both medicines have also been claimed to be as effective. Recently, a study showed that the combination of ABZ + PZQ, at

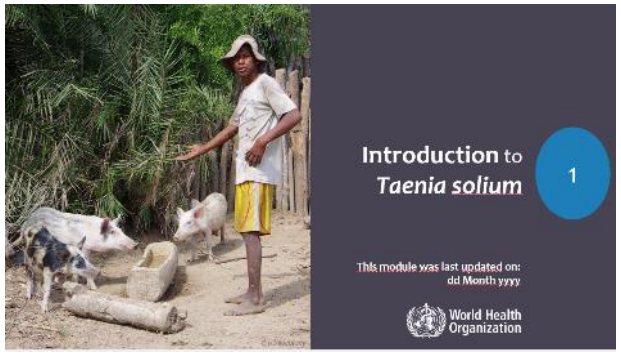
[1] WHO guidelines on management of *Taenia solium* neurocysticercosis. Geneva: World Health Organization; 2021 (https://apps.who.int/iris/handle/10665/344402, accessed 8 August 2022).
[2] Diagnosis and treatment of neurocysticercosis: 2017 clinical practice guidelines by the Infectious Diseases Society of America (IDSA) and the American Society of Tropical Medicine and Hygiene (ASTMH). Clin Infect Dis. 2018;66(8):e49–e75. doi: 10.1093/cid/cix1084.

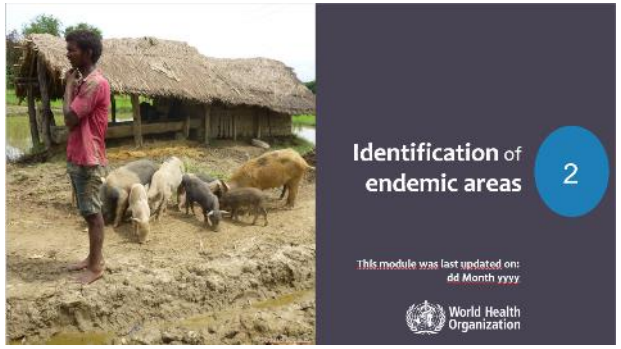
Page 1 of 3

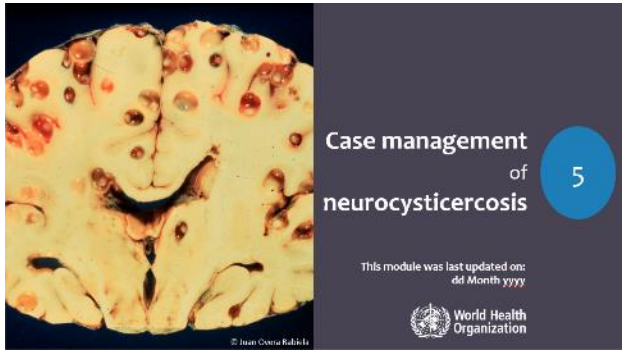
https://www.who.int/publications/i/item/9789240068155

OpenWHO new course

Just launched!







Developed with inputs from RO, other WHO departments and external partners.

https://openwho.org/courses/taenia-solium-control-and-management

One Health: increasing impact and sustainability

- One Health helps to prevent NTDs at the source.
- One Health strengthens systems and increases capacity of the workforce.

- Benefits of integration at different levels such as surveillance and control implementation.
  - *Examples within sectors*
    - Kato-Katz used by schistosomiasis, STH, FBT and Taeniasis programs
    - Schistosomiasis and taeniasis use MDA with praziquantel
    - Rabies and echinococcosis interventions in dogs
  - *Examples across sectors*
    - Community engagement with children and dog owners for rabies.
    - Taeniasis One Health program in Madagascar

World Health Organization

Additional information please contact

Bernadette Abela (WHO HQ): abelab@who.int

Meritxell Donadeu (WHO consultant): meritxell.donadeu@gmail.com

ANNUAL MEETING OF NATIONAL NTD PROGRAMME MANAGERS IN THE WHO AFRICA REGION
29 Nov – 1 Dec 2023

PROGRESS IN THE IMPLEMENTATION OF ONE HEALTH APPROACH FOR RABIES CONTROL IN BURKINA FASO

Madi SAVADOGO, DVM, PhD (Public Health & Epidemiology)
Coordinator General for Rabies Free Burkina Faso
BURKINA FASO

Background

- Rabies remains endemic in Burkina Faso
- ~70% of biting dogs are positive to rabies
- Higher number of bite cases recorded each year (>10,000)
- Low access to vaccination services (animal & human)
- **Strong efforts required to save lives**

Background

- **Development of research to support advocacy and inform policies**

- **Animal rabies**: Veterinary schools, Ministry of Livestock, Veterinary lab
- **Human rabies**: Faculty of Medicine, Hospitals, Rabies Treatment Centres

- **Multisectoral and stakeholder engagement building rabies community**

- 2017: Joint External Evaluation & One Health Zoonotic disease prioritization
- 2019: Establishment of the National One Health Coordination Platform (NOHCP)

  WRD → National One Health Technical and Scientific Conference

Background

Since 2014
Some forthcoming founding members started situational research on the epidemiology and the control of animal and human rabies in Burkina Faso

Since 2019
Establishment of the National One Health Coordination platform to strengthen multisectoral collaboration

2017
Rabies was jointly selected by MoH, MoL, and MoEW among the top five priority zoonotic diseases for the country

20 September 2020
Launch of the United Against Rabies platform by WHO, WOAH, FAO

28 September 2020
Founders organized a one-day One Health Workshop during which participants agreed to establish the association named Rabies Free Burkina Faso

May 2021
Rabies Free Burkina Faso was officially registered and recognized by national authorities to operation as a civil society organization

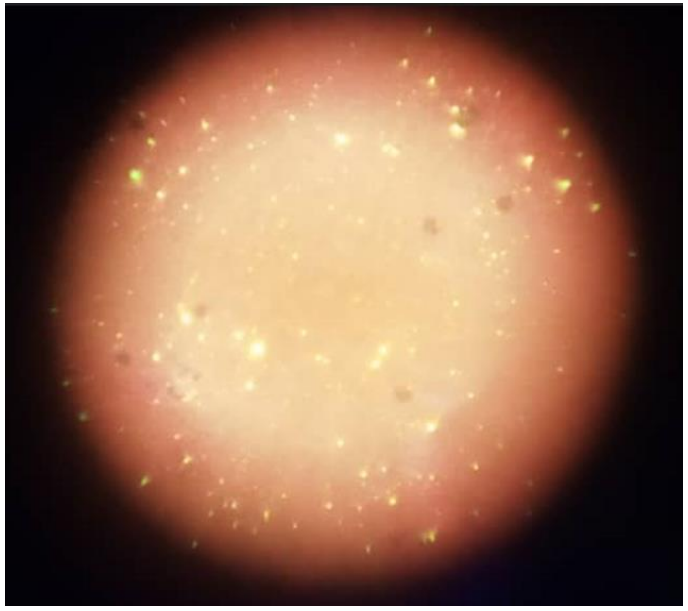
August to September 2021
Introduction of Rabies Free Burkina Faso and its objectives to the national authorities and stakeholders involved in the animal and human rabies control

Strategy of intervention

- Rabies control is too complex to be managed through fragmented approaches
- The initiative is built on the key OH principles: multi- & trans-disciplinarity
- Multi-disciplinary team for joint actions

1. Controlling rabies in animal

Short vaccination campaigns in the vulnerable communities (dog, cat, monkey)



Search of rabid cases in animals (joint investigation, vet observation, laboratory)

Strategy of intervention

- Rabies control is too complex to be managed through fragmented approaches
- The initiative is built on the key OH principles: multi- & trans-disciplinarity
- Multi-disciplinary team for joint actions

2. Preventing rabies in human

Promoting appropriate management of bite people: access to PEP, Vet observation, Lab confirmation, advocacy for more available et accessible PEP services

Strategy of intervention

- Rabies control is too complex to be managed through fragmented approaches
- The initiative is built on the key OH principles: multi- & trans-disciplinarity
- Multi-disciplinary team for joint actions

3. Education and awareness raising

Rabies community and OH capacity building (pre-service & in-service): training sessions, on-site visits, conference & webinars, workshops, etc.

Strategy of intervention

- Rabies control is too complex to be managed through fragmented approaches
- The initiative is built on the key OH principles: multi- & trans-disciplinarity
- Multi-disciplinary team for joint actions

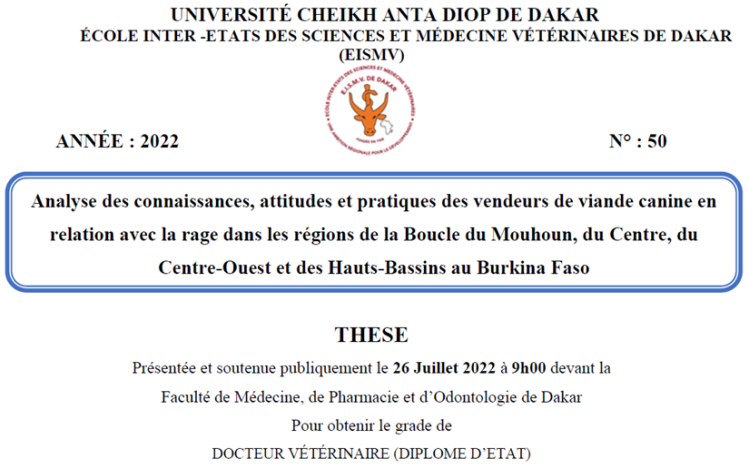
3. Education and awareness raising

Community engagement, media and social media, exhibition & communication during local or national events

Strategy of intervention

- Rabies control is too complex to be managed through fragmented approaches
- The initiative is built on the key OH principles: multi- & trans-disciplinarity
- Multi-disciplinary team for joint actions

4. Research for evidence-based policy



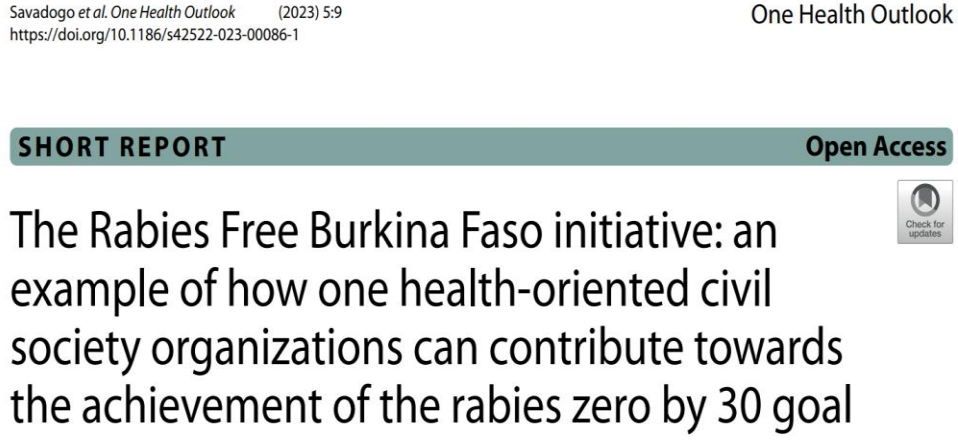
UNIVERSITÉ CHEIKH ANTA DIOP DE DAKAR
ÉCOLE INTER -ETATS DES SCIENCES ET MÉDECINE VÉTÉRINAIRES DE DAKAR
(EISMV)

ANNÉE : 2022 N° : 50

Analyse des connaissances, attitudes et pratiques des vendeurs de viande canine en relation avec la rage dans les régions de la Boucle du Mouhoun, du Centre, du Centre-Ouest et des Hauts-Bassins au Burkina Faso

THESE

Présentée et soutenue publiquement le **26 Juillet 2022** à **9h00** devant la
Faculté de Médecine, de Pharmacie et d'Odontologie de Dakar
Pour obtenir le grade de
DOCTEUR VÉTÉRINAIRE (DIPLOME D'ETAT)



Savadogo *et al. One Health Outlook* (2023) 5:9
https://doi.org/10.1186/s42522-023-00086-1

One Health Outlook

SHORT REPORT Open Access

The Rabies Free Burkina Faso initiative: an example of how one health-oriented civil society organizations can contribute towards the achievement of the rabies zero by 30 goal

Read more: https://link.springer.com/article/10.1186/s42522-023-00086-1

Promoting data collection and use for improved rabies control (Thesis, publication, policy briefs, strategies)

Conclusion

- Civil society organizations as a strong component for the promotion of multisectoral collaboration & coordination (professional & community levels)
- Media and mobile technologies as innovative channels for stakeholder education and engagement
- Think big, Start small & and then Scall up → One Health-based rabies NSP developed (**in 2022**) & resources mobilization ongoing (**e.g. Pandemic Fund**)

Thank you for your attention

More information about Rabies Free Burkina Faso ? Contact Dr Madi SAVADOGO
Via Email: savadogo.madi@yahoo.fr

ONE HEALTH: Preventing epilepsy in people in Madagascar by vaccinating pigs

Dr Jose A NELY
Chief of NTD Services, MoH Madagascar

Endemicity of *T. solium* in Madagascar

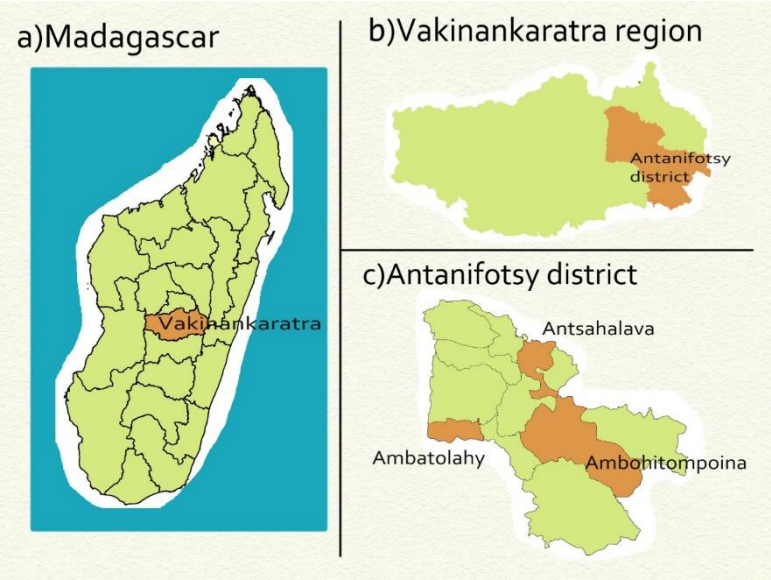
Humans

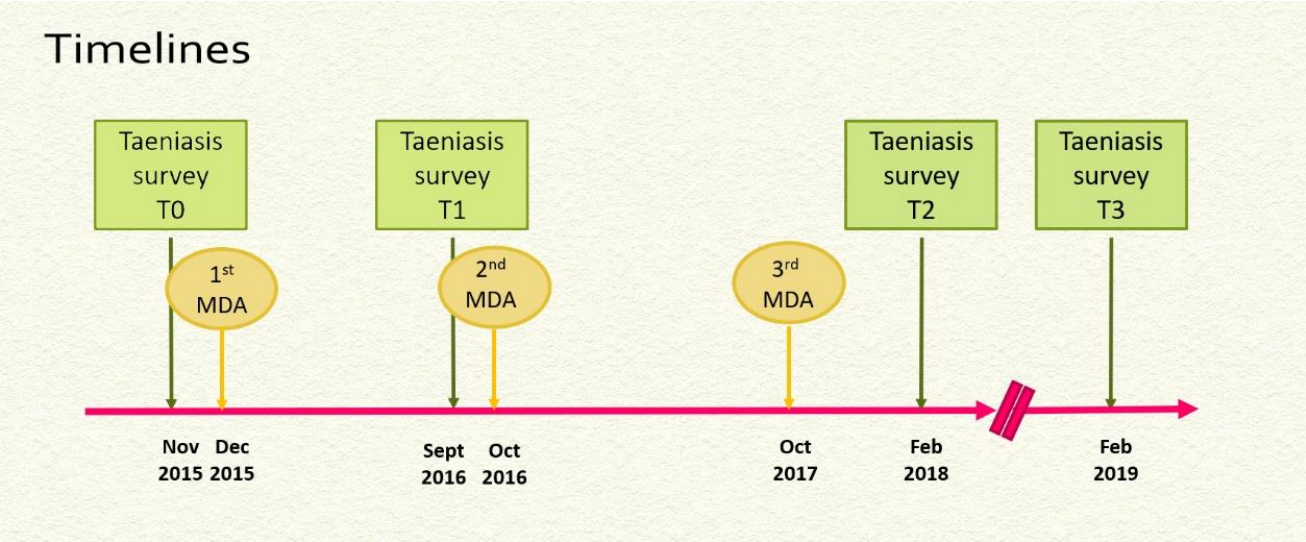
- Seropositivity against NCC is high in Madagascar.
  - A survey at Antsirabe Hospital in 2013 show seropositivity 14,7%.
- Kato Katz survey 2015 – 2016 (epidemiological studies for schistosomiasis and STH) showed 54 districts with taeniasis out of 114.

Pigs

- High endemicity to porcine cysticercosis has been identified in Madagascar.

Previous work in Madagascar: MDA with praziquantel for 3 consecutive years





Time	N	KK+ CA-	KK+ CA+	KK- CA+	Total Kato-Katz or copro-antigen positive	% positive
T0	960	12	7	28	47	4.90%
T2	976	1	1	4	6*	0.61%
T3	960	1	9	30	40	4.17%

Ramiandrasoa et al, 2020. "PLOS NTD"

IDRC · CRDI
International Development Research Centre
Centre de recherches pour le développement international

Canada

VALIDATION OF SCALABLE AND SUSTAINABLE MODELS FOR *TAENIA SOLIUM* CONTROL BASED ON VACCINATION OF PIGS

A project funded by the IDRC Livestock Vaccine Innovation Fund

MSANP

MINISTERE DE L'AGRICULTURE ET DE L'ELEVAGE

MESUPRES
Ministère de l'Enseignement Supérieur et de la Recherche Scientifique

FOFIFA

COMMISSION DE L'OCÉAN INDIEN

RÉSEAU SEGA ONE HEALTH

World Health Organization

INAND

THE UNIVERSITY OF MELBOURNE

PROJECT ACTIVITIES

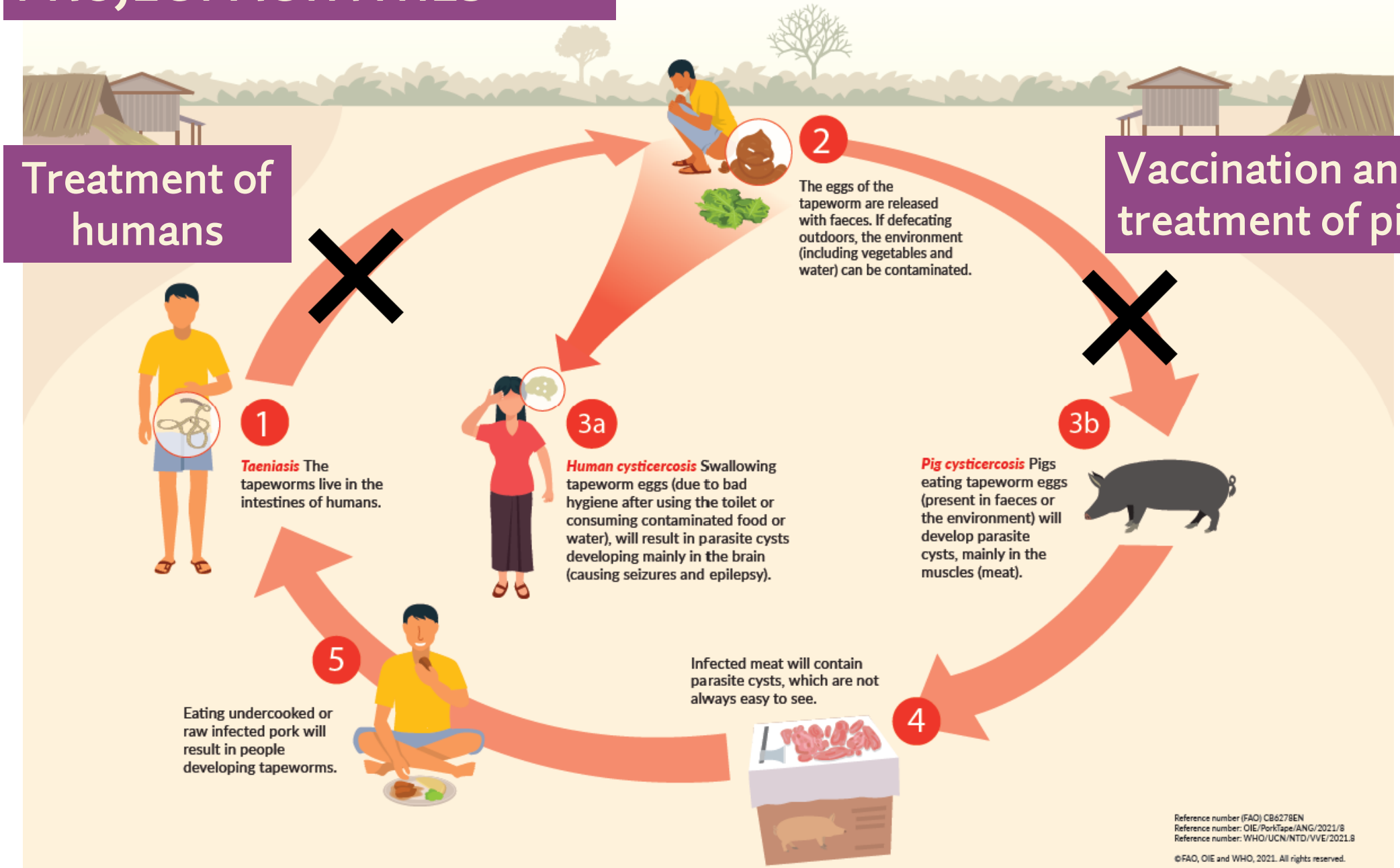
Food and Agriculture Organization of the United Nations

WORLD ORGANISATION FOR ANIMAL HEALTH

World Health Organization

Treatment of humans

Vaccination and treatment of pigs



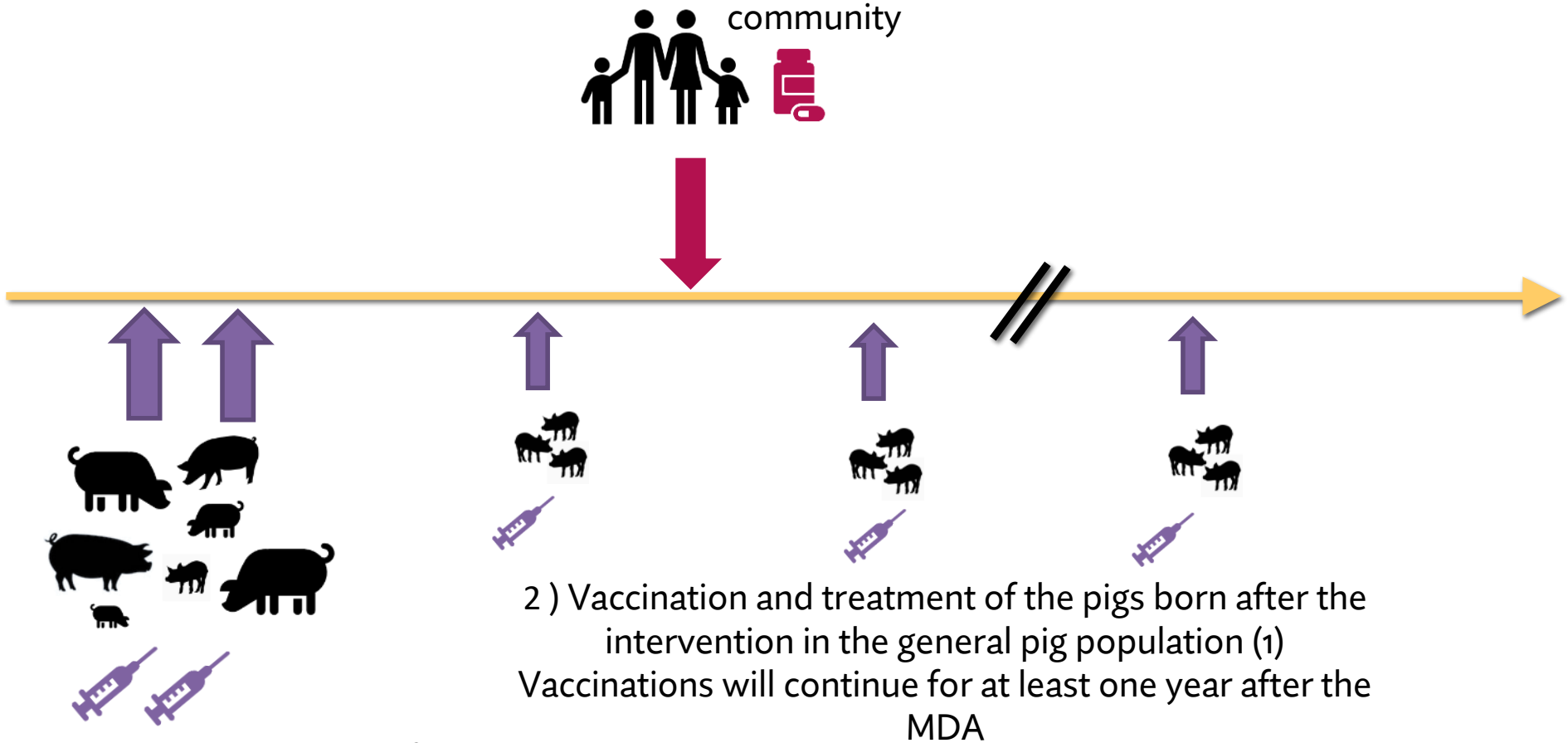
Reference number (FAO) CB6278EN
Reference number: OIE/PorkTape/ANG/2021/8
Reference number: WHO/UCN/NTD/VVE/2021.8

What is different from other projects?

- Implementing partners:
  - Veterinary Services
  - Ministry of Health
  - FOFIFA
  - With support from WHO and IOC
- Implemented as a public health program, monitored as a research project
- Minimum inputs
- Synergies with schistosomiasis project

PROJECT PLAN

3) Mass drug administration (MDA) in the entire community

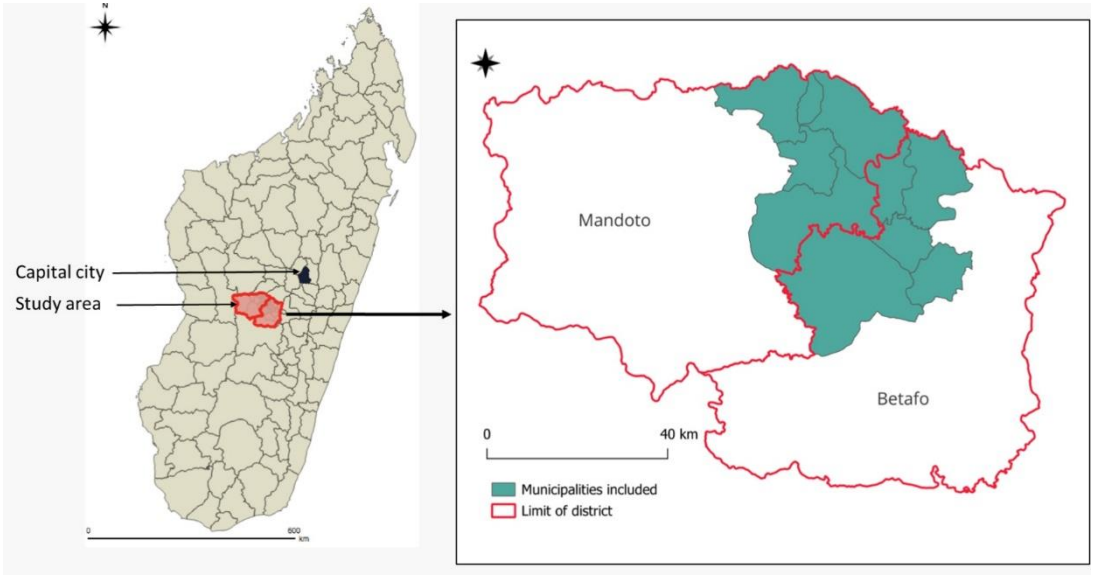


1) Vaccination and treatment of the entire pig population

2) Vaccination and treatment of the pigs born after the intervention in the general pig population (1)
Vaccinations will continue for at least one year after the MDA

Scope of the project

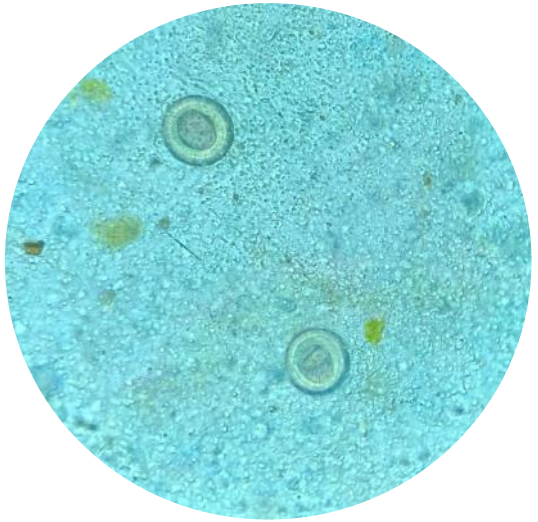
- Duration: April 2021 – December 2023.
- Location: **9** communes of Mandoto and Betafo (84 fokontany)
- Human population: Approximately 233 000 (**190 000** eligible population)
- Pig population: Approximately 27 000



Project implementation

Evaluation human taeniasis

Microscopy (Kato-Katz), 960 samples.



Main activity on the human side - MDA

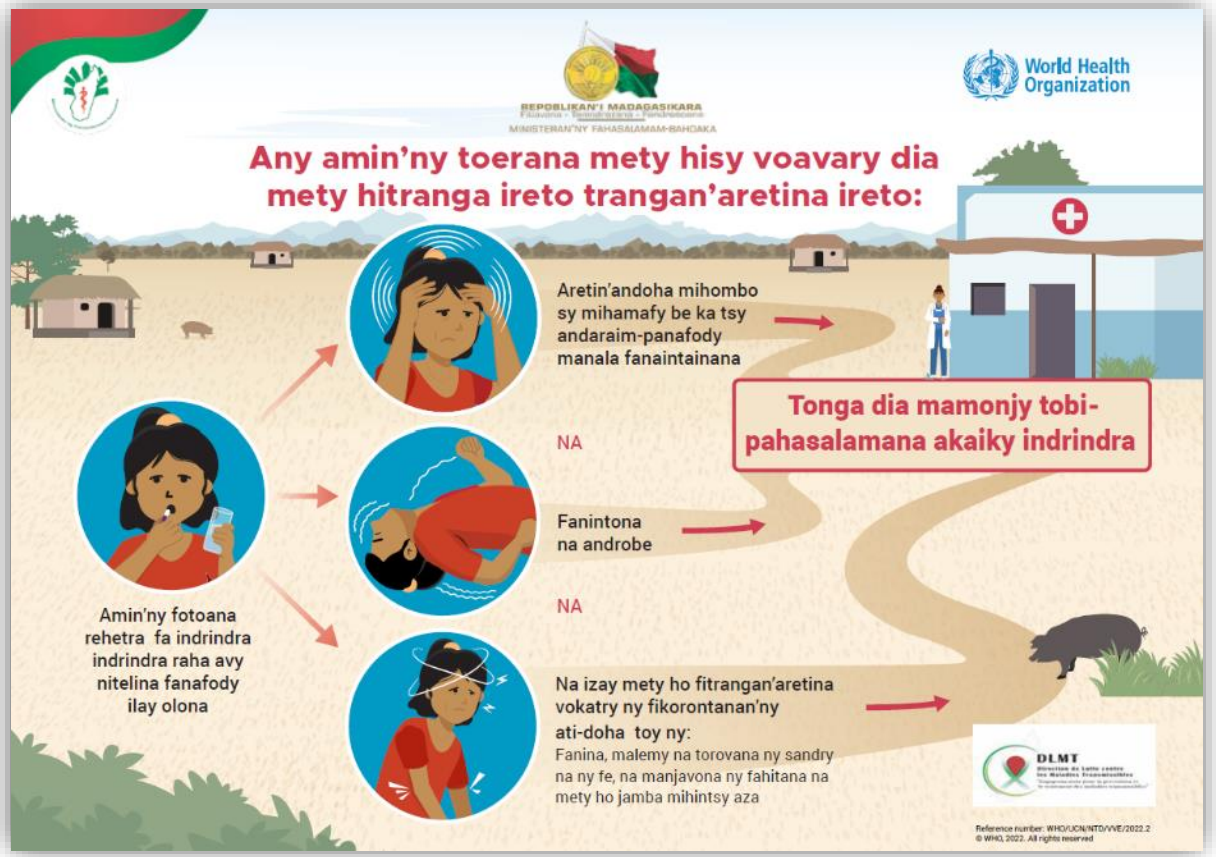
1. Training at all levels of the health system in the implementation of MDA. Over 340 Community Agents.
2. Meetings with key opinion leaders

Prevention of serious adverse events

Death in a nearby district during another MDA program, MoH stopped all MDA programs.

Additional measures:

- First time a praziquantel MDA program made efforts to identify people with symptoms and signs compatible with NCC, niclosamide offered as an option.
- Develop specific training and awareness material in conjunction with the project neurologist, WHO and MoH. Additional training and awareness material:
    - Identifying people with symptoms and signs compatible with NCC to prevent neurological adverse events.
    - Early identification and management of adverse events
- Provision of medicines to deal with neurological AE
- Awareness and sensitization campaigns



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https://www.who.int/publications/m/item/WHO-UCN-NTD-VVE-2022.1
https://www.who.int/publications/m/item/WHO-UCN-NTD-VVE-2022.2

Additional awareness and sensitisation – August 2022

A total of **117,216** people were treated in August 2022.

- Coverage 62.5%
- 1 neurological adverse event, well managed and good outcome

Animal side

Evaluation porcine cysticercosis

Four or five dissection teams. 104 randomly selected slaughter-age pigs necropsied.

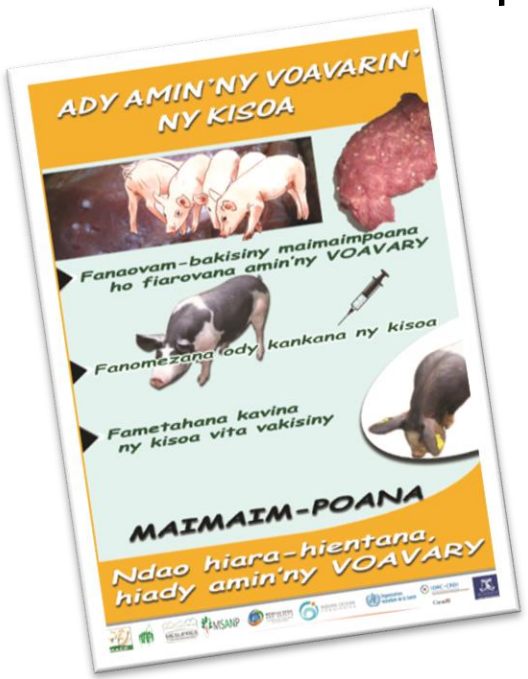
Main activities on the animal side

- Training of vaccinators. Vaccinations started October 2021. Started with 35 teams, comprising approx. 130 people.

Over **107,500** pig vaccinations up to end of October 2023

Pig vaccination coverage

- Vaccination coverage increased slowly
  - COVID and anti-vaccine attitudes
  - Misinformation, rumors
  - Logistics
  - Data collection
- Awareness and sensitization campaigns



Period	Total
Oct - Nov 21	19,135
Dec-21	9,918
Jan-22	1,354
Feb-22	1,451
Mar-22	2,693
Apr-22	2,413
May-22	2,687
Jun-22	2,819
Jul-22	2,712
Aug-22	2,357
Sep-22	2,891
Oct-22	2,922
Nov-22	2,807
Dec-22	2,973
Jan-23	3,098
Feb-23	3,411
Mar-23	3,946
Apr-23	3,936
May-23	4,281
Jun-23	5,954
Jul-23	7,135
Aug-23	5,842
Sep-23	5,126
TOTAL	101,861

Results

Results- pigs

- 104 randomly selected slaughter-age pigs were selected for the final evaluation to compare with baseline. Includes 70 vaccinated and 34 non-vaccinated pigs (to reflect vaccination coverage, approx. 65%).

% viable cysts

Baseline 2021	Final evaluation 2023
31% (32/104)	8% (8/104) All positive were not vaccinated

Results - humans

- 117,216 people treated to eliminate tapeworms (64% coverage)

Baseline 2022	Final evaluation 2023
1.25% (12/960)	0.63% (6/960)

Comparison KK, PCR, coproantigen

Parasitology

cambridge.org/par

Research Article

Cite this article: Lightowlers MW *et al* (2023). Comparison of Kato–Katz, PCR and coproantigen for the diagnosis of *Taenia solium* taeniasis. *Parasitology* 1–7. https://doi.org/10.1017/S0031182023000690

Received: 13 June 2023
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Accepted: 17 July 2023

Keywords:
coproantigen; coprology; diagnosis; eggs; Kato–Katz; PCR; *Taenia solium*; taeniasis

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CAMBRIDGE UNIVERSITY PRESS

Comparison of Kato–Katz, PCR and coproantigen for the diagnosis of *Taenia solium* taeniasis

Marshall W. Lightowlers[1], Diana Edithe Andria Mananjara[2], Mihajamanana Rakotoarinoro[2], Valisoa C. Rakotoarison[2], Modestine Raliniaina[2], Harentsoaniaina Rasamoelina-Andriamanivo[3], Charles G. Gauci[1], Abdul Jabbar[1], Kabemba E. Mwape[4], Meritxell Donadeu[1,5], Noromanana Sylvia Ramiandrasoa[6] and Jose Alphonse Nely[7]

[1]Department of Biosciences, Melbourne Veterinary School, University of Melbourne, Werribee, Victoria 3030, Australia; [2]National Center for Applied Research on Rural Development (FOFIFA), Antananarivo 101, Madagascar; [3]Indian Ocean Commission/SEGA-One Health Network, Ebène, Mauritius; [4]Department of Clinical Studies, School of Veterinary Medicine, University of Zambia, Lusaka 10101, Zambia; [5]Initiative for Neglected Animal Diseases (INAND), Pretoria, South Africa; [6]Consultant, Antananarivo 102, Madagascar and [7]Ministry of Health of Madagascar, Tananarive 101, Madagascar

Abstract

Four methods were compared for the diagnosis of human taeniasis caused by *Taenia solium*. Fecal samples from persons living in a *T. solium* endemic region of Madagascar were examined for taeniid eggs by the Kato–Katz method. Subsequently, samples positive (*n* = 16) and negative (*n* = 200) for *T. solium* eggs were examined by (i) amplification of the fragment of small subunit of the mitochondrial ribosomal RNA (*rrnS*) gene using conventional polymerase chain reaction (PCR) and (ii) a nested PCR of a fragment of the *T. solium Tso31* gene. Additionally, 12 egg-positive and all egg-negative samples were tested for coproantigen detection. A further 9 egg-positive fecal samples were examined using both PCRs. Of the 12 egg-positive samples tested by PCRs and coproantigen methods, 9 (75%) were positive by *rrnS* PCR, 3 (25%) using *Tso31*-nested PCR and 9 (75%) by coproantigen testing. None of the 200 egg-negative fecal samples was positive in either *rrnS* or *Tso31*-nested PCR. Twenty of the 25 egg-positive samples (80%) were positive in *rrnS* PCR, and DNA sequencing of PCR amplicons was obtained from 18 samples, all confirmed to be *T. solium*. Twelve of the 25 egg-positive samples (48%) were positive in the *Tso31*-nested PCR, all of which were also positive by *rrnS* PCR. It is suggested that species-specific diagnosis of *T. solium* taeniasis may be achieved by either coprological examination to detect eggs or coproantigen testing, followed by *rrnS* PCR and DNA sequencing to confirm the tapeworm species in egg-positive or coproantigen-positive samples.

Introduction

Taenia solium is the aetiological agent of neurocysticercosis in humans, one of a number of neglected tropical diseases recognized by the World Health Organization (2015). The parasite is transmitted in a cycle between humans, who harbour the adult tapeworm in the small intestine (taeniasis), and pigs where the larval stage (cysticercus) develops in the muscles and brain after ingesting feces or other items contaminated with *T. solium* eggs. Humans may also develop cysticercosis by ingesting eggs from the feces of a person harbouring the *T. solium* tapeworm. Infection in the brain and other nervous tissue of humans by *T. solium* cysts (neurocysticercosis) is a serious cause of morbidity in areas having poor sanitation and free-roaming pigs (Garcia *et al.*, 2020).

Efforts to prevent the transmission of *T. solium* and thereby reduce the incidence of neurocysticercosis rely on the treatment of patients with taeniasis, vaccination and medication of pigs, and improvements in sanitation and pig-rearing practices (Lightowlers, 2013).

Diagnostic tests for taeniasis are undertaken to determine the risk for transmission of cysticercosis in humans, identify endemic areas and to determine the outcomes of control programmes. *Taenia solium* taeniasis can be diagnosed by detection in the feces of eggs, tapeworm segments, parasite antigens or *T. solium* DNA in the feces (Praet *et al.*, 2013), or by serology with recombinant antigens (Levine *et al.*, 2007).

Human taeniasis is caused by 3 *Taenia* spp., including *T. solium*, *T. saginata* and *T. asiatica*. However, only *T. solium* causes neurocysticercosis and warrants a public health intervention. *Taenia saginata*, in particular, is widely distributed in areas where *T. solium* is prevalent; hence, diagnostic tests for *T. solium* taeniasis must differentiate *T. solium* from infection with other *Taenia* species. Egg morphology does not allow differentiation among *Taenia* species. Similarly, the coproantigen tests that have been described and well validated are unable to differentiate between *Taenia* spp. Recombinant antigens required to undertake species-specific

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- The positive samples plus 200 random negative samples were sent to Zambia (copro-Ag) and Melbourne (PCR). Results:
  - All KK positive confirmed as *T. solium* by PCR and sequencing
  - No significant differences observed between 3 tests

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Comparison of Kato-Katz, PCR and coproantigen for the diagnosis of *Taenia solium* taeniasis

Conclusions

1. Project has been very successful in reducing the prevalence of *T. solium*
2. But the gains need to be maintained to ensure sustained control in the area – probably additional 1 or 2 years depending on the coverage. Next round MDA to be conducted next week.

Next steps: Identify additional resources to sustain and expand the program: (53/114 districts endemic). Potential to eradicate disease from the country.

Questions?