Using a One Health approach to assess and reduce parasitic foodborne diseases such as trichinellosis in Southern Laos

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Outline

1. Introduction
2. Objectives
3. Material and methods
4. Results
5. Conclusions

Introduction - Why to care about Food borne diseases

With 33 million DALYs FBD are of a similar burden in order of magnitude as the "big three" infectious diseases HIV/AIDS, malaria and tuberculosis.
Main burden caused by bacteria but parasitic FBD also important (FERG 2015)

"Top Ten" list of food-borne parasites of greatest global concern

1. *Taenia solium*: In pork
7. *Trichinella spiralis*: In pork
8. *Opisthorchiidae*: In freshwater fish

http://www.fao.org/news/story/en/item/237323/icode/

Disease burden data for PFBD (DALY) lacking:

- Some information for O.V. in the region, but very little or no formation for trichinellosis

FERG: http://www.who.int/foodsafety/publications/foodborne_disease/fergreport/en/

Situation in Laos

- Major PFBD are endemic but widely neglected

Parasites	Human %	Animal %
Trichinellosis	4-59	2.1-14.4
Taeniasis/cysticercoses	0.5-46.7	0.6-4.6
Opisthorchis viverrini	10.9-84.6	

Sonevilay et al. 2017 (ComAcross)

Factors contributing to the risk of zoonotic infection

- Co-habitation/close proximity with livestock common
- Consumption habit of unsafe products (raw or undercooked pork, raw pig's blood or fermented pork)
- Health and veterinary services are lacking; resulting in limited access & diagnostic capabilities

Holt et al. 2016:
file:///C:/ILRI%20SAFE/A4NH/WB/FERG.pdf

Objectives

1. **Assess PFBD distribution (Trichinellosis)**
2. **Define potential risk factors** linked to parasitic foodborne diseases (PFBD, including Trichinelloses)
3. To develop **recommendations/interventions for** PFBD reduction and initiate a **cross-sectoral collaboration platform**

Material and methods

Part of a larger One Health project

"Laos long term case study on PFBD"

Overall One Health framework

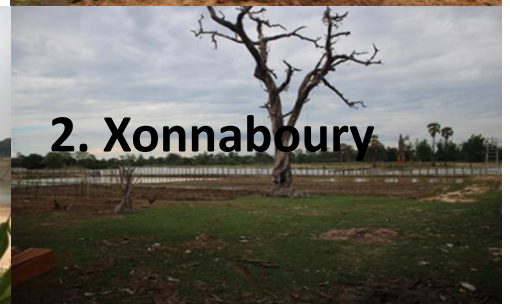
- Identification of a common One Health issues (PFBD)
- Systematic literature review on PFBD
- PRA/PE
- **Survey in household with pigs***
- Cross-sectoral dissemination platform

*Main focus of todays presentation

Material and methods: Study area for household survey

Savannakhet province

3 districts, involved in previous PRA/SNA and presence of native pigs



Material and methods

1. Serological survey in pigs

Expected sample size: 405 pigs in total, across 9 villages

- expected prevalence 9.3%, error margin: +/-5%, Intra village correlation: 0.15
- 45 (pigs)/village
- Each household (HH) = up to 3 pigs, 15 HH/village

Exclusion of: Large scale farms, pigs < 2 months of age & pigs > 60kg, breeding stock

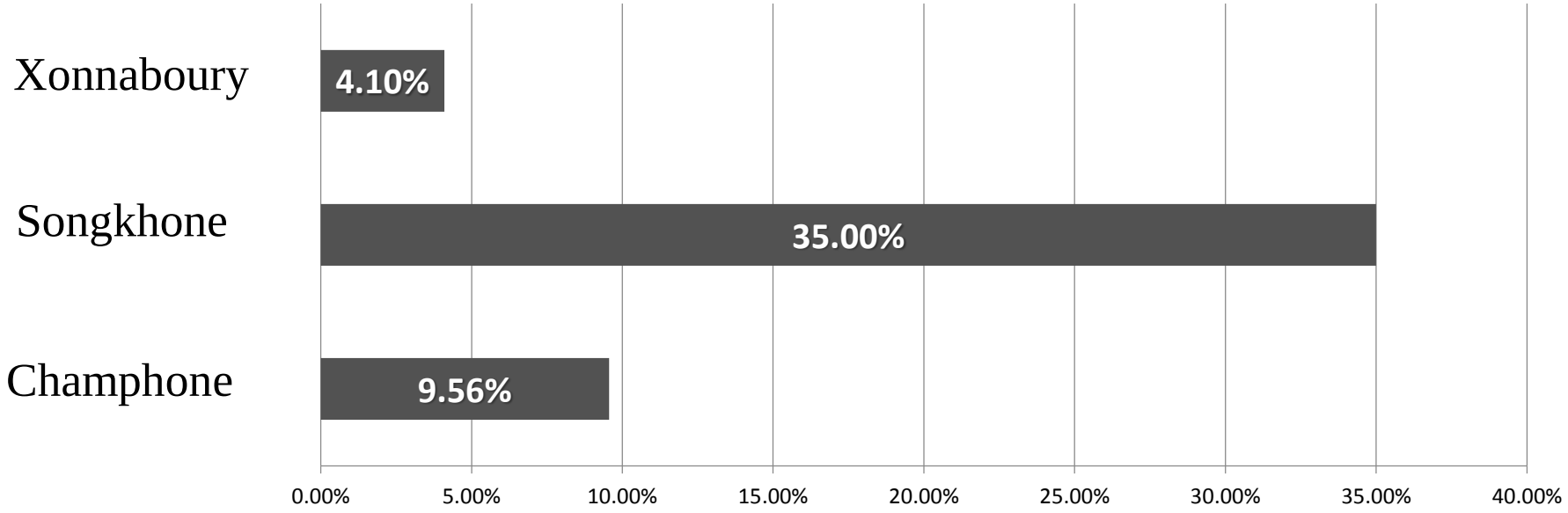
2. Household questionneire, checklist and likert scale

- Farm management, PFBD knowledge and perception

3. *Trichinella* antibodies were tested using the Priocheck *Trichinella* Ab ELISA®

Serological Results

- 418 samples from 181 households were collected in 19 villages across the 3 districts
- Overall for *Trichinella* in pigs **17.7%** (74/418)
- Songkone has significant higher serological prevalence



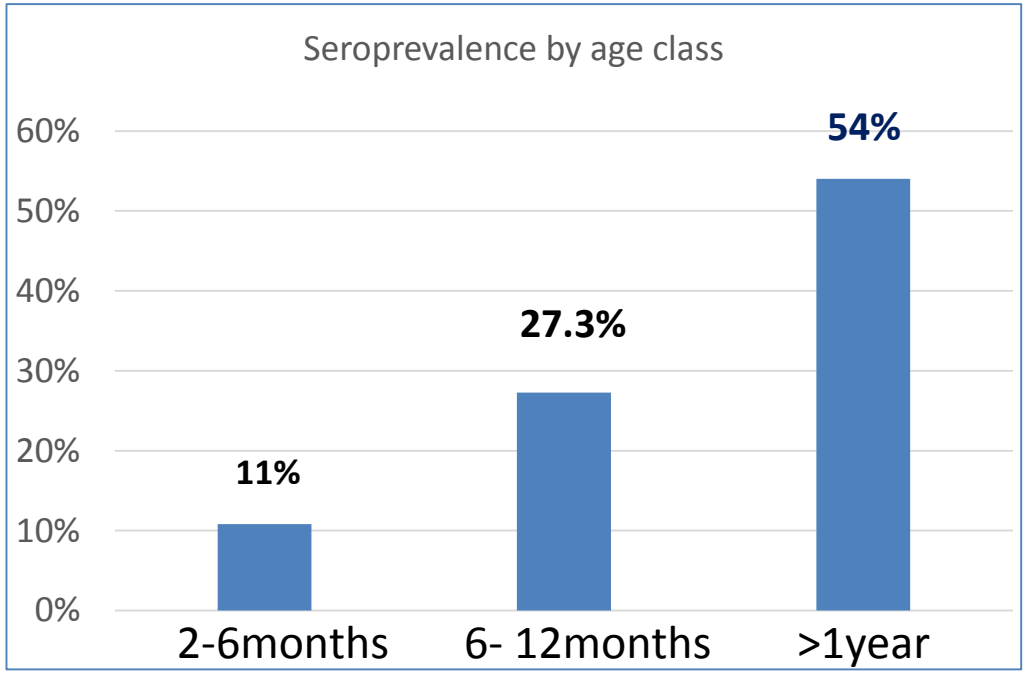
Seropositivity and age

The highest prevalence was found in pigs >1year:

1. 2-6months = 11% (35/324) ($p<0.05$) compared to 2 & 3

2. >6- 12months= 27.3% (12/44).

3. >1year= **54%** (27/50).



Seropositivity and housing

Free range: 27.9% (19/68)

Tethered: 13.9% (16/116)

Pen: 16.7% (39/234)

Selected results from the questionnaire

Zoonotic knowledge: 14.4%, 26 of 181 people heard about zoonotic diseases, but further details were usually not known

Associated diseases stated by repondents (out of 26):

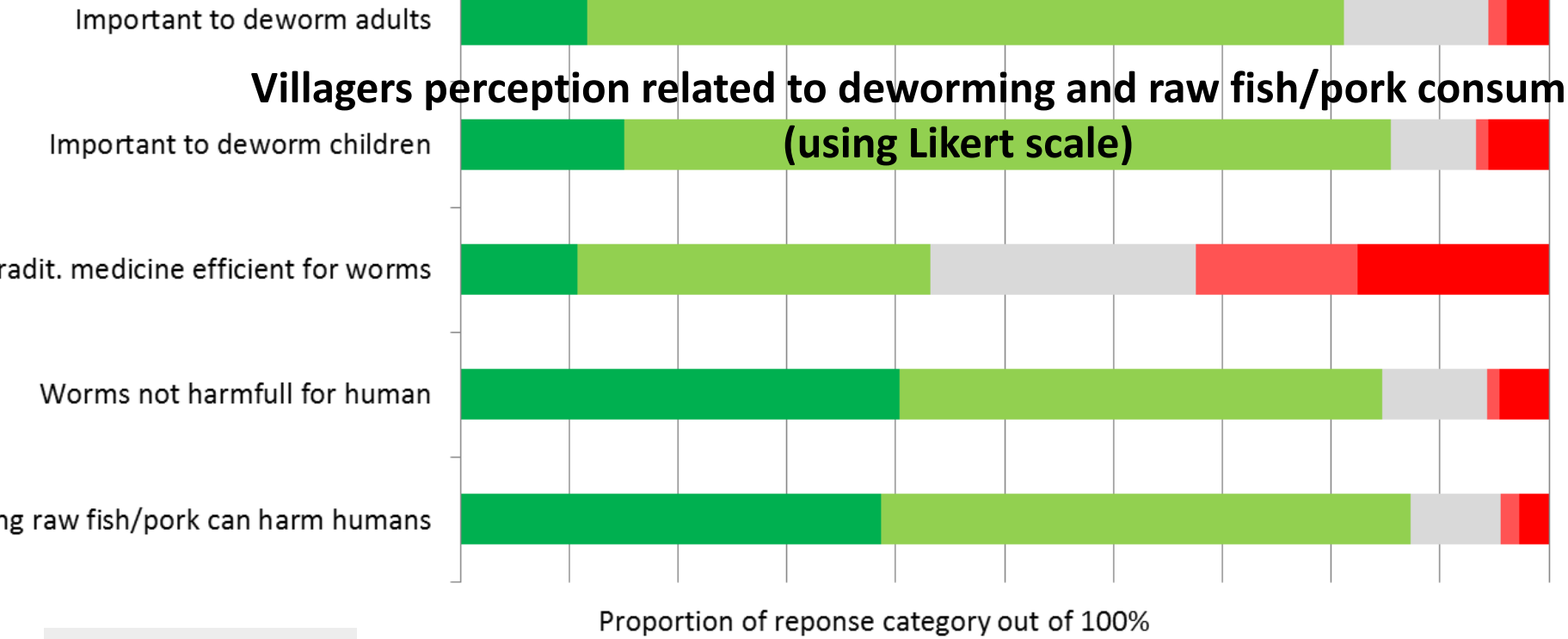
- Bird flu (4/26), Liver fluke/liver disease (3/26), Rabies (1/26), Denghi (1/26)

Use of dewormer in pigs: 6.1% (11/181 farmers)

Reason for not using:

- Don‘t know about is (72.4%)
- No need as pigs look healthy (18.1%)

Villagers perception related to deworming and raw fish/pork consumption (using Likert scale)

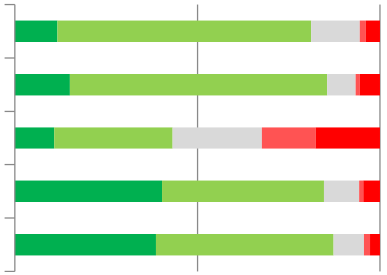


Misperception

Perceived correctly, (but still practice)

Synthesis of results (ongoing)

	PRA	Questionnaire	
		Interview question	Likert scale
Knowledge on PFBD	- Very limited knowledge on cause and prevention - Worms are common for vilagers but not known as health issue	- Very limited knowledge on cause and prevention - Only 1.5% of respondent clearly link raw pork consumption to PFBD	- Perception that eating raw pork and fish can harm humans - Perception that worms are not harmful for humans



Steering committee

Interventions

Linking research finding/results to intervention practice through cross-sectoral participation process

Assessment

TWG

Intervention activities

(through cross-sectoral participation platform and practice)

Overall aim: better prevention & control of PFBD

Operating at various levels (central, province and local) in a **strong participatory** process

- PH, Vets, Communication, Education, Defense, Teachers, Local authorities, Villagers …

Activities:

- Jointly organized **sample & diagnoses/examination of PFBD** (local partners who have been trained will be engaged)
- **Good knowledge & practice dissemination**
  - Media: poster, comic book, radio spot (e.g. for village speaker system), and folk song. Single event or repeated. Initiated by project and later co-follow up
- **Evaluation** of the above prevention and control of the PFBD

Conclusions

- **Trichinellosis** confirmed as a **PH hazard** in the study area
- **Significant variations** by district, farm management and age of pigs
- Risk for consumer to be further determined
- **General low knowledge** on zoonoses of actors and groups
- Some **misperceptions** observed
- Intervention activities about to start through a **cross-sectoral participation platform and practice**


Thank you very much!
Farm: Morning sampling: 5:30 to 9am
Evening sampling: 4 to 7pm
COM ACROSS