The occurrence of porcine *Toxoplasma gondii* infections in smallholder production systems in Uganda

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Background – pig production in Uganda

- Dynamic and rapidly growing sector
- Popular among smallholders
- High per capita consumption
- 70% consumed in urban areas
- Lack of data on (zoonotic) pig diseases
Background – *Toxoplasma gondii*

Adapted from textbook of veterinary parasitology by Eckert J, et al. (2008).

Soil, runoff water, vegetables

Congenital immuno-compromised recrudescence of infection
Objectives

- To determine the seroprevalence of *T. gondii* in pigs in Uganda

- To identify risk factors for infection in pigs
Methods

- Part of a multi-pathogen assessment (Dione et al.)
- Cross-sectional survey
  April-July 2013
- >1,200 HH randomly selected
- Serum 1 pig / farm
- Structured questionnaire on management & biosecurity practices
Methods

Serology

• PrioCHECK® Toxoplasma Ab porcine ELISA (Prionics, CH-Schlieren)
  Se=98.9%/ Sp=92.7% (Basso et al., 2013)

• FLI inhouse ELISA TgSAG1 p30
  Se=92.8%/ Sp=98.3% (Pardini et al., 2012)

Statistics

• Kappa statistics
• Descriptive
• Risk factors: multivariate stepwise regression
Results – seroprevalence

Overall
28.6 % (95% CI: 25.8-31.6%)

- (Village) herd prevalence = 100.0%
- Significant differences across districts (p=0.01)
- Substantial agreement between commercial and inhouse ELISA: Cohen‘s kappa = 0.7697

Masaka
98/294 (33.3%)

Kamuli
49/302 (16.2%)

Mukono
120/337 (35.6%)
Results – risk factors

- Univariate analysis
  - 39 variables on pig farm management and self-reported biosecurity practices
  - 9 variables $p < 0.05$
    pig age, farm setting, feeding on crop residues, drinking water source, cats on the farm, location where pigs are slaughtered, foot bath present, terminal cleaning, prompt disposal of dead animals

- Multivariate analysis: 15 variables $p < 0.15$ included, controlled for pig age
Discussion & outlook

- Similar findings in Ugandan goats (Bisson et al., 2000)

- Further research needed to estimate risk to consumers:
  - Genotype, tissue cyst burden
  - Source of infection for pigs?
  - In-depth research on management practices and their impact on porcine infection, e.g. disposal of dead animals, or foot bath
  - Other sources of infection for humans? (soil, water, leafy vegetables)

- Need for sensitization of raw pork handlers and vulnerable population (pregnant women during antenatal care; HIV and cancer patients)
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Thank you for your attention!

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