NRL activities Netherlands 2009-2010

- Parasitic foodborne zoonoses and outbreaks in 2009
- Organisation Proficiency tests
  - 2009: March and September 2009
  - 2010: April 2010
- Accreditation prolongation 2009 Magnetic Stirrer method
- Training of technicians from routine Trichinella labs
- Visit to Ukraine and Ukraine to NRL-P (Twinning)
- Investigation of consumption fish

Parasitic foodborne zoonoses in animals and humans and outbreaks in 2009

- Giardia
- Cryptosporidium: Not reported
- Toxoplasma:
  - Human: Congenital Toxoplasmosis
  - Sheep: 27% seropositive
- Sarcocystis: unknown
- Opisthorchis: not reported
- Fasciola hepatica: 1 patient
- Echinococcus:
  - Humans: first human alveolar echinococcosis patient
  - Foxes: 0/40
- Trichinella:
  - Humans: 1 patient hospitalized, unknown source
  - Animals: not detected in foxes, wildboar, pigs and horses

Results Trichinella ringtrials for routine labs

Trichinella ringtrials for routine labs

Average recovery rate of participating labs

Average recovery per ringtrial: decreasing difference between minimal and maximal values

\[ R^2 = 0.6745 \]
Trichinella ringtrials for routine labs

conclusions

- Labs improve with successive proficiency testings
- Constant need for education (Re-test OK)
- High personnel turn-over is a problem in some labs
- 1-day training of new SL employees with examination

Dutch human patient August 2009

- July 2009:
  - Patient general illness, oedema and muscle pain
  - Hospital end of August intensive care
  - Diagnosis Trichinella: clinical, serology, biopsie eosinofilia

Question:
How did this patient get ill?
Source tracing: no source found
Is it possible the patient obtained the infection in the Netherlands?

Based upon work carried out in ModVet Net: Takumi et al., 2010 in press

Meat inspection in Europe: artificial digestion

- Carcass control:
  - A pool of 100 diaphragm weighing 1 gram each from 100 pigs
  - Detection probability assumed (sensitivity >40%, specificity 100%)
    - 100% detection when 1 larvae per 1 gram or more are contained in the pool
    - 40% detection when 1 larvae per 1 gram or less

Is it possible that infected pigs are missed during meat inspection?

- A rat ingested 2 parasites in the environment
- A pig ingests 100 gram of rat muscle tissue
- Pig meat is tested by digestion
- A human being consumes 100 gram of pork meat
- The pork meat is not cooked

Scenario analysis larvae per gram in rats

- Based on
  - experimental infection in rats
  - Model describing lpg
- 10,000 simulations
  - 1944 rats infected
  - 8056 rats not infected
Larvae per gram in pigs

- Based on
  - experimental infection in pigs
  - Model describes lpg
- 10,000 simulations
  - 891 pigs infected
  - 9109 pigs not infected

Estimated doses per 100g contaminated pork meat

- Meat is tested by digestion
- 10,000 simulations
  - Test failed 153 times

Risk of human trichinellosis

Dose response in humans:

Scenario:
35 human trichinellosis per 10,000
- runs of the scenario (0.35%)

Conclusion:
Digestion does not always protect against Trichinellosis
Is this an acceptable risk?