Estimating the Global Burden of
*Taenia solium* Cysticercosis/Taeniosis

Hélène Carabin\(^1\), Linda Cowan\(^1\),
Theodore Nash\(^2\) and
A. Lee Willingham\(^3\)

\(^1\)College of Public Health, University of Oklahoma Health
Sciences Center, Oklahoma City, Oklahoma, USA

\(^2\)Laboratory of Parasitic Diseases, National Institute of Allergic
and Infectious Diseases, National Institutes of Health
Bethesda, Maryland, USA

\(^3\)WHO/FAO Collaborating Center for Parasitic Zoonoses
The Royal Veterinary and Agricultural University
Frederiksberg, Denmark
Distribution of *Taenia solium* cysticercosis

- Endemic in pig raising/pork consuming areas
- Associated with poverty
  - inadequate sanitation
  - lack of proper slaughtering facilities, meat inspection & control
  - poor pig husbandry practices
- Spread by people/pig movement
  - immigration
  - overseas domestic workers
  - international travel
  - marketing and transport of pigs
TAENIA SOLIUM LIFE CYCLE

Egg → Cysticercus → Adult Worm in Small Intestine → Pig → Egg
Larval *Taenia solium* cysts in pig muscles - major cause of pig carcass condemnation
Larval *Taenia solium* cysts on pig’s tongue
Neurocysticercosis - the most common preventable cause of epilepsy!
WHO initiative on Assessing the Global Burden of Cysticercosis

Objectives:

- To estimate comprehensively the societal cost in selected developing/developed countries
- To construct country-specific decision analysis “trees”
  - reflect the variation in the prevalence
  - Reflect the variation in the probability of diagnosis and treatment
- To describe the international variability in the monetary burden of cysticercosis
Gathering and organising information for the assessment

- Literature review
  - Published/unpublished/grey literature
  - Identify a range of possible values for the epidemiological and economical parameters
- Submission of data from local collaborators
  - Epidemiological data
  - Agricultural data
  - Economical data
- Decision tree analyses
  - Organise the information in a “tree” for easier understanding of the process
Decision Analyses

- Systematic, quantitative approach for assessing relative value of one or more decision options
- Framework for health economics analyses
- Useful for complex and/or uncertain clinical situations or policies (e.g. zoonoses)
  - Detection, treatment and hospitalization costs
  - Agricultural and economic costs
    - loss of productivity
Cysticercosis → consequences

- Stigmatisation
- Incapacitation
- Decreased work productivity
- Reduction in farmers’ household income
- Removal of an important protein source
- Reduction in trade
- Public health costs
  - diagnose, treat, monitor epilepsy cases
  - associated accidents (burns, drownings, etc)
Decision tree for estimating the monetary burden of NCC in Eastern Cape Province, South Africa

Legend:  
- circle indicates a chance node  
- triangle indicates an end node  
- number at the end of each branch indicates the probability of that event to occur
Estimated monetary burden (in 2004 US$) for the agricultural sector, the health sector and society as a whole and 95% credible intervals of *Taenia solium* cysticercosis in Eastern Cape Province, South Africa using three methods to account for working time lost.
Major Findings from ECP, South Africa

- Factors with largest influence because of epilepsy having the largest impacts
  - Prevalence of epilepsy
  - Proportion of patients with epilepsy seeking care
  - Proportion of work time lost

- Agricultural costs relatively low
  - Most people report pigs for home consumption
  - 76% reported seeing cysts in the meat
  - 80% did not know what these cysts were
Participants in Bellagio Conference “Implementing a Global Programme for Combating Cysticercosis” 19-21 September, 2006
Regional projections of total demand and consumption of pork

<table>
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<tr>
<th>Region</th>
<th>1993</th>
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<tbody>
<tr>
<td>Developed Region</td>
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<td>41</td>
</tr>
<tr>
<td>Developing Region</td>
<td>39</td>
<td>81</td>
</tr>
</tbody>
</table>

1 million tonnes