OCCURRENCE OF *SALMONELLA* SPP. IN FLIES AND FOODSTUFF FROM PORK BUTCHERIES IN KAMPALA, UGANDA
Pork joints in Kampala, Nov 2014
Pork joint from the inside, Kampala Nov 2014
Introduction

• Flies feed on food and breed in feces and other organic material
  • Known vector for *Salmonella* spp.
  • Half of diarrheal diseases associated with contaminated food and water
    • Salmonellosis major cause of human bacterial gastroenteritis

• Pork consumption in Uganda rapidly increasing
  • Good hygienic practices remain lacking

Objective

 Occurrence of *Salmonella* spp. in pork butcheries
Materials and Methods

- 77 pork butcheries out of 179 mapped in a previous survey in Kampala
- Swab sampling from June–October 2014
  - House flies' midguts
  - Raw and roasted pork
  - Tomatoes, cabbage and onions
  - Butchers’ hand, equipment and water
- Send to Central Diagnostic Laboratory, Covab Makerere University in Kampala
  - Cultural isolation of *Salmonella* spp. (ISO 6579:2002)
Results

• Among 693 samples, 64 (9%) tested positive for *Salmonella* Enteritidis

<table>
<thead>
<tr>
<th>Sample</th>
<th>Samples tested</th>
<th>Positives</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw pork</td>
<td>77</td>
<td>25</td>
<td>32%</td>
</tr>
<tr>
<td>House flies (midgut)</td>
<td>77</td>
<td>19</td>
<td>25%</td>
</tr>
<tr>
<td>Water</td>
<td>77</td>
<td>7</td>
<td>9%</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>77</td>
<td>6</td>
<td>8%</td>
</tr>
<tr>
<td>Cabbage</td>
<td>77</td>
<td>4</td>
<td>5%</td>
</tr>
<tr>
<td>Onions</td>
<td>77</td>
<td>2</td>
<td>3%</td>
</tr>
<tr>
<td>Roasted pork</td>
<td>77</td>
<td>1*</td>
<td>1%</td>
</tr>
</tbody>
</table>

* S. Gallinarum

• All 154 samples from either butchers’ hands or their equipment were negative for *Salmonella* spp.
Conclusions and discussion

• Results in line with previous research on *Salmonella* spp. in food
  • However real sources remain unclear (stable, abattoir, transport or other sources)

• Flies in pork butcheries harbor *Salmonella* Enteritidis
  • Potential to effectively contaminate food?
  • Role within flies' microbial community

• Good hygienic practices are of prime importance for food safety
  • Technical competence, local infrastructure, safe disposal of waste
  • How to prioritize?
Outlook

- Sequencing of *Salmonella* spp. samples
  - Situation of antimicrobial drug-resistance
- Awareness raising about food safety
- Fly control with insecticide-treated nets
  - Willingness-to-pay for fly control

Examples of implementation of Insecticide-treated nets to reduce flies
Acknowledgements