Slaughterhouse Zoonoses
Are workers reservoirs of zoonotic disease?
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Background
- Globally slaughterhouse workers are high risk due to contact with animals
- Slaughterhouse workers may act as reservoirs of zoonotic organisms
- No previous studies in Kenya investigating zoonoses in slaughterhouse workers

Objective
Determine the carriage of pathogenic bacteria by slaughterhouse workers

Outcomes
- Prevalence of enteric pathogens and MRSA
- Risk factors associated with carriage

Materials and methods

Study site
45km radius from Busia, Kenya

Study population
175 slaughterhouses
650 slaughterhouse workers

Sampling procedure
Questionnaire
- Risk factors
- Knowledge of zoonoses

Biological samples
Blood, faeces, nasal swab

Sample analysis
Parasitology
- malaria
- intestinal parasites
Microbiology
- Salmonella sp.
- Campylobacter sp.
- Shigella sp.
- S. aureus

Data analysis
Logistic regression - odds ratios for risk factors to zoonotic pathogens

Results—to date

<table>
<thead>
<tr>
<th>Knowledge and practices</th>
<th>Percent n=402</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of zoonoses</td>
<td>32.1</td>
</tr>
<tr>
<td>Know meat carries disease</td>
<td>46.0</td>
</tr>
<tr>
<td>Wear protective clothing</td>
<td>48.3</td>
</tr>
<tr>
<td>Report injuries monthly</td>
<td>26.0</td>
</tr>
<tr>
<td>Eat at the slaughterhouse</td>
<td>15.7</td>
</tr>
<tr>
<td>Slaughter sick animals</td>
<td>19.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organism</th>
<th>Prevalence n=394</th>
<th>95% CI</th>
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</thead>
<tbody>
<tr>
<td>Salmonella sp.</td>
<td>7.8%</td>
<td>5.2-10.5</td>
</tr>
<tr>
<td>Shigella sp.</td>
<td>23.6%</td>
<td>19.4-27.8</td>
</tr>
<tr>
<td>Campylobacter sp.</td>
<td>29.6%</td>
<td>25.1-34.1</td>
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<tr>
<td>MRSA (n=402)</td>
<td>3.7%</td>
<td>1.9-5.6</td>
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</tbody>
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Table 1 Prevalence of enteric pathogens and MRSA in slaughterhouse workers

Key findings
Cleaners are more likely to have MRSA carriage than other slaughterhouse workers
OR = 4.34 95% CI = 1.1, 14.71
Chi-squared = 7.68, 1 d.f., P = 0.006

Workers with campylobacter reported diarrhoea episode in previous 3 months
OR = 1.73 95% CI = 1.01, 2.94
Chi-squared = 4.64, 1 d.f., P = 0.031

Workers with salmonella did not report diarrhoea suggesting asymptomatic carriage
OR = 1.53 CI = 0.59, 3.63
Chi-squared = 1.06, 1 d.f., P = 0.304

Conclusions and Future plans
- Hygiene in slaughterhouses in western Kenya is poor
- Asymptomatic carriage of pathogenic bacteria has been established
- NEXT STEP: Genotyping isolates for relatedness and antibiotic resistance

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