The Prevalence and Antibiotic Susceptibilities of Potential Human Pathogens in Nasal Secretions of a Chicagoland Equine Population

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The purpose of this study was to determine the prevalence of drug resistant staphylococci in the nasal cavities and secretions of a horse population in the greater Chicagoland area in order to gauge the risk for human/horse zoonotic exchange.
Our Study

- Staphylococcal species are common in the nasal passages of horses & humans
- Several cause opportunistic infections in humans & horses
- Prevalence of drug resistant staphylococci
- Risk of exchange
- Nasal secretions of 73 local horses sampled and tested to determine presence & resistance.
Methods and Tests

- Samples streaked onto selective & differential media

- Yellow Colony = Mannitol positive Staphylococcal Species

- Coagulase test for virulence performed

- Antibiotic zones of inhibition were measured for resistance.
Zones of Inhibition
Results

- **Penicillin**: greatest resistance
  - 43.5%

- **Erythromycin**: second highest resistance
  - 17.7% and an additional 16.1% for intermediate resistance

- **Three isolates were cefoxitin resistant.**
  - One isolate of these considered methicillin-resistant
Antibiotic Susceptibilities

- Tetracycline
- Penicillin
- Cefoxitin
- Erythromycin
- Clindamycin

- Susceptible
- Intermediate
- Resistant
All antibiotics had at least 3 isolates that showed resistance

<table>
<thead>
<tr>
<th>ANTIBIOTIC</th>
<th>Susceptible</th>
<th>Intermediate</th>
<th>Resistant</th>
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</thead>
<tbody>
<tr>
<td>Clindamycin</td>
<td>53</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>41</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Cefoxitin</td>
<td>59</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Penicillin</td>
<td>35</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>58</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
24.2% Resistant/Intermediate to two or more Antibiotics

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>% Isolates Resistant</th>
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</thead>
<tbody>
<tr>
<td>P + E</td>
<td>8.1</td>
</tr>
<tr>
<td>P + C</td>
<td>3.2</td>
</tr>
<tr>
<td>P + E + C</td>
<td>3.2</td>
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<tr>
<td>P + Fox</td>
<td>1.6</td>
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</tbody>
</table>
Conclusions

- Chicagoland area horses carry and/or are colonized by antibiotic-resistant strains of *Staphylococci*
- Horses may, indeed, act as vectors of pathogenic, antibiotic-resistant species of *staphylococci* to humans
- It is the obligation of veterinary and medical professionals to temper the use of antibiotics to prevent the rise in antibiotic resistance.
- Horses may very well act as conduits of *Community Acquired Antibiotic Resistant Pathogenic Staphylococci* in humans
THANK YOU!!

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- Rachel Lohmann
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