WHAT DO WE DO WITH THE NUMBERS?

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No requirements on size (number of cattle fed out/year)

No requirements on record system types

Types of Systems

- Sales data
- On farm management software
- Data from an intermediary management group
Capturing Use Data

**What we would like...**
- Coupled to cause
- Accurate
- Granular
- Current
- Easy
- Enables benchmarking

**We would really rather not...**
- Not coupled to cause
- Approximate
- Aggregate
- Historical
- Resource intensive
- Unable to benchmark
Capturing Use Data

- Coupled to cause
  - Accurate
  - Granular
  - Current
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- Not coupled to cause
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  - Historical
  - Resource intensive
  - Unable to benchmark

Reality...
What would you like to know?

- Amount used....
- Duration used....
- Number of animals exposed....

Coupled to cause
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OPTIMIZATION OF DISEASE PREVENTION

- Best way to optimize disease treatment....
  - Not having to use the antimicrobial in the first place
1. Disease Diagnosis

2. Non-Antibiotic Alternative?

3. Choose appropriate drug

4. How can we prevent this disease?

5. Do we still need this drug?

STOP

No...

Enter

Yes...

STOP

If not....

YES?
## DRUG MEASUREMENT OPTIONS

<table>
<thead>
<tr>
<th>Drug (mg or mol)</th>
<th>Days Therapy (# daily doses)</th>
<th>Animals Treated (# Regimens or #CD)</th>
<th>Drug Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number At Risk</td>
<td>Live Weight</td>
<td>Calendar Day/Year</td>
<td></td>
</tr>
<tr>
<td>Number Treated</td>
<td>Meat or Milk (kg)</td>
<td>Production Cycles</td>
<td></td>
</tr>
</tbody>
</table>
DESCRIBE REGIMENS

- Drug Product
- Amount
- Administrations
- Interval
- Route
<table>
<thead>
<tr>
<th>Drug Product</th>
<th>Amount per Administrations</th>
<th>Number of Administrations</th>
<th>Interval of Administrations</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulathromycin</td>
<td>800 mg</td>
<td>One</td>
<td>0 hours</td>
<td>SQ</td>
</tr>
<tr>
<td>Ceftiofur HCL</td>
<td>700 mg</td>
<td>Three</td>
<td>4 hours</td>
<td>SQ</td>
</tr>
<tr>
<td>Ceftiofur HCL</td>
<td>700 mg</td>
<td>Two</td>
<td>72 hours</td>
<td>SQ</td>
</tr>
</tbody>
</table>

Total: 800 Mg
<table>
<thead>
<tr>
<th>Drug Product</th>
<th>Amount per Administrations</th>
<th>Number of Administrations</th>
<th>Interval of Administrations</th>
<th>Route</th>
</tr>
</thead>
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<td>SQ</td>
</tr>
<tr>
<td>Ceftiofur HCL</td>
<td>700 mg</td>
<td>Three</td>
<td>24 hours</td>
<td>SQ</td>
</tr>
<tr>
<td>Ceftiofur HCL</td>
<td>700 mg</td>
<td>Two</td>
<td>12 hours</td>
<td>SQ</td>
</tr>
</tbody>
</table>

Total: 2100 Mg
<table>
<thead>
<tr>
<th>Drug Product</th>
<th>Amount per Administrations</th>
<th>Number of Administrations</th>
<th>Interval of Administrations</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
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<td>800 mg</td>
<td>One</td>
<td>0 hours</td>
<td>SQ</td>
</tr>
<tr>
<td>Ceftiofur HCL</td>
<td>700 mg</td>
<td>Three</td>
<td>24 hours</td>
<td>SQ</td>
</tr>
<tr>
<td>Ceftiofur HCL</td>
<td>700 mg</td>
<td>Two</td>
<td>72 hours</td>
<td>SQ</td>
</tr>
</tbody>
</table>

Total: 1400 Mg
What does “Total mg” mean?
SELECTION PRESSURE

- Drug
  - Substance, class, number of molecules
- Amount
  - Dose (high vs low)
  - Total dose given (multiple low doses, a few high doses)
- Interval
  - Total time
  - Number of exposures
- Route
  - Oral, injectable, dermal
“If you think you understand antimicrobial resistance, it has not been adequately explained to you.”
What would you like to know?

Amount used....

Duration used....

Number of animals exposed....

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OTHER CONCERNS

- What question is being asked?
  - Resistance development
    - Animals and humans
  - Improving management, nutrition, genetics, education, etc
  - Decrease need for antimicrobial use
Antimicrobial use monitoring without considering animal health is nonsensical.

If truly concerned about animal health, these are tied together.