Protecting Your Investment: Smart Handling of Veterinary Drugs

Saskatchewan Pork Industry Symposium
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Why is this important?

Prudent Use

• Protecting animal health & welfare
• Protecting human health

Food Safety

• Drug withdrawal times
• Broken needles
Why is this important?

Protect Your Investment

• Vaccines only work if handled properly
• Do no harm: proper technique is important!

Two Big Questions…

• How are you storing your investment?
• How are you using your investment?
Not all drugs are the same!

Storing Your Investment
Guess the dollar amount

1600 head
Farrow - Finish

How much should you order??
Swine Barn Refrigerators\textsuperscript{1}

60 Inspections

- 43% Failed

Temperature Control

- 20% Too Cold
- 10% Too Warm
- 22% Did Not Have a Thermometer!
- 17% Had Cold Medicine NOT in the Fridge
- 18% Needed to be Defrosted

\textsuperscript{1} Carr.J. Medicine Controls-Who controls the refrigerator?ISU Swine Diseases Conference 2001
Why is TEMPERATURE so IMPORTANT?

Good Vaccination Practice: It all starts with a good vaccine storage temperature

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• 126 fridges
• <15% had thermometers
• 30% had temperature outside recommended range
Why is TEMPERATURE so IMPORTANT?

Vaccines are FRAGILE

Too Warm

Too Cold

Why Shouldn’t Vaccines Freeze?

• The adjuvant separates from the antigen
  • Vaccine efficacy is dramatically reduced

• Freezing may increase adverse reactions

• Sterile abscesses more likely

http://www.thebeefsite.com/articles/897/frozen-vaccines/
# Vaccine Storage

<table>
<thead>
<tr>
<th><strong>DO</strong></th>
<th><strong>DON’T</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Have a visible temperature display/ALARM</td>
<td>• Store vaccine in the doors</td>
</tr>
<tr>
<td>• Place water bottles in the bottom of the fridge</td>
<td>• Fill it more than 50% full</td>
</tr>
<tr>
<td>• Space the packages/boxes out evenly</td>
<td>• Place vaccines on the bottom shelf</td>
</tr>
<tr>
<td>• Take bottles out of boxes</td>
<td>• Place product against the back or sides of the fridge</td>
</tr>
<tr>
<td></td>
<td>• Use a mini fridge</td>
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</table>

Swine Barn Refrigerators

60 Inspections

• 43% Failed

What else is IMPORTANT?

• Medicine placement
• Cleanliness
  • Not a storage place for syringes or human food!
• Poor Maintenance
• Door Closure Policy
• Expired Drugs
• Drugs Not Secure

Protecting pig health
Protecting human health
Protecting your investment

What’s In Your Fridge?
What’s In Your Fridge??

Location, location, location
What’s In Your Fridge??

- Organization
- Cleanliness
What’s In Your Fridge??

- Overstocked
- No Thermometer
- Medicine Storage
  - In the door
  - Still in boxes
What’s In Your Fridge??

What SHOULD be in your fridge??
Keep Pork Products Out of the Barn!
Just another day at the airport…
Does your staff travel?

440 pests

4,379 items
Keep Your Equipment Clean
Train Staff in Good Technique

Using Your Investment Wisely
Are you making your pigs sick?

Nice straight clean edge; will create faster healing without infection

Infected tail after docking
Clean Tools: Syringe Management

- Syringe put away dirty/wet
- No disinfectant used

Spots of Contamination inside syringe barrel
Syringe Management

Storing wet = mold, rust and bacterial growth

Storing dry, apart, and covered = best control
SHP Syringe Sanitation Trial

- 23 farms (400-7000 sow farms)
- Multiple syringes/slap-shots
  - Vaccine
  - Iron
  - Antibiotics
  - Hormones

Procedure

- Using sterile water, collected “solution” into a sterile red top tube
- Quantitative culture (aerobic and anaerobic)
  - “CFU/ml”
Prep - Sterile Water/Alcohol Wipe
Prep – Empty Red Top/Alcohol Wipe
Prep - Sterile Syringe/Red Top
Prep – Sterile Water into Red Top
Prep - Red Top with Sterile Water
Sampling – Alcohol Red Top
Sampling – Mount Red/Sterile Water Top on Syringe
Sampling – Sterile Needle/Red Top
Results

18/23 (78%) farms grew bacteria

59/119 (50%) samples grew bacteria
What bacteria were cultured?

- Water
- Dust
- Manure
Results

• What was cultured??
  • Coliforms spp (E.coli)
  • *Pseudomonas* spp
  • Yeast
  • *Burkholderia* sp.
  • alpha-hemolytic *Streptococcus* spp
  • *Streptococcus suis*

• How much?
  • >1000 cfu/ml
  • >10,000 cfu/ml
  • >100,000 cfu/ml
How much bacteria?

cfu/ml - # of Samples

# of Samples

100 1000 10000 100000
0 5 10 15 20 25
This is what you are injecting into your pigs!
Take Home Message: Wash – Dry – Disinfect!

- Do not leave water in syringes – Dry Them!
- Super Germaphene works well!!
  - WDD
- Alcohol works well!!
  - WDD
- Grew bacteria with Excede 100 in syringe!!
- After WDD, keep in air tight container
- Towels need to be changed daily
Clean Tools: Syringe Management

Dry and clean prevents growth of bacteria

Tupperware with sealed lids and clean paper towels make good storage containers
Is there a better option?

- Pressure cooker  
  → Efficacy?
Trial Design

Control sample
\[\downarrow\]
Bacterial culture
\[\downarrow\]

Replica A-F
Pressure cooker program: Fish/Vegetable, Steam
2 min, 109°C, 50 kPa
\[\downarrow\]
Bacterial culture
## Results

<table>
<thead>
<tr>
<th>#</th>
<th>Specimen</th>
<th>Animal</th>
<th>Organism</th>
<th>Level</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Swab environmental</td>
<td>Control</td>
<td>Acinetobacter sp.</td>
<td>&gt; 10 000 cfu/mL</td>
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<tr>
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<td>Control</td>
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<tr>
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<td>Pseudomonas fluorescens</td>
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<tr>
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<td>Control</td>
<td>Carnobacterium sp.</td>
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<tr>
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<td>Control</td>
<td>Micrococcus sp.</td>
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<td>Syringe Blue A</td>
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<td>3</td>
<td>Swab environmental</td>
<td>Syringe Grey A</td>
<td>No bacterial growth</td>
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<tr>
<td>4</td>
<td>Swab environmental</td>
<td>Syringe Blue B</td>
<td>No bacterial growth</td>
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<td></td>
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<td>Swab environmental</td>
<td>Syringe Grey B</td>
<td>No bacterial growth</td>
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<td>6</td>
<td>Swab environmental</td>
<td>Syringe Blue C</td>
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<td>7</td>
<td>Swab environmental</td>
<td>Syringe Grey C</td>
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<td>8</td>
<td>Swab environmental</td>
<td>Syringe Blue D</td>
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<td>9</td>
<td>Swab environmental</td>
<td>Syringe Grey D</td>
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<td>10</td>
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<td>Syringe Blue E</td>
<td>No bacterial growth</td>
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<tr>
<td>11</td>
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<td>Syringe Grey E</td>
<td>No bacterial growth</td>
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<td>12</td>
<td>Swab environmental</td>
<td>Syringe Blue F</td>
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<td>13</td>
<td>Swab environmental</td>
<td>Syringe Grey F</td>
<td>No bacterial growth</td>
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<tr>
<td>14</td>
<td>Swab environmental</td>
<td>May 3 - instapot water overnight</td>
<td>No bacterial growth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Take Home Message

• Easy
• Fast
• Effective

It worked!
But......

- Old Syringes – did not melt.....
- New Syringes – melted.....
Next Steps

Syringes and accessories are autoclavable fully assembled 121°C / 250°F (without protection sleeve).
Sharp Tools: Smart Needle Use

How many injections per needle?
Using Your Investment Wisely: The Importance of Good Technique

![Diagram showing different injection techniques: Intramuscular, Subcutaneous, Intravenous, Intradermal.]

*Epidermis, Dermis, Subcutaneous tissue, Muscle.*

Intramuscular injection
Intramuscular injection
The Importance of Good Technique: Proper Placement

https://www.studyblue.com/notes/n/little-pig-handling/deck/15351678
Intramuscular injection
Sow Hip Injections

- Front of hip bone
- Injection area
- About 2 inches
- Spinal column
Sow Hip Injections

Target area for hip injection
Smart Handling of Veterinary Drugs Protects Human Health:
Take Your Responsibility Seriously

Don’t Forget Human Safety!
Injection Technique: Training & Time
Do You Vaccinate Your Pigs for Flu?

<table>
<thead>
<tr>
<th>Animal</th>
<th>Influenza Virus Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogs</td>
<td>Canine Influenza Virus</td>
</tr>
<tr>
<td>Horses</td>
<td>Equine Influenza Virus</td>
</tr>
<tr>
<td>Humans</td>
<td>Human Influenza Virus</td>
</tr>
<tr>
<td>Birds</td>
<td>Avian Influenza Virus</td>
</tr>
<tr>
<td>Pigs</td>
<td>Swine Influenza Virus</td>
</tr>
</tbody>
</table>
Pigs as 'Flu Factories'

Seasonal Flu

Avian Flu Virus

Mixing Vessel

Swine Flu

Novel Pandemic Virus?
Pandemic Swine Influenza 2009

Pandemic (H1N1) 2009,
Number of laboratory confirmed cases as reported to WHO

Status as of 06 July 2009
09:00 GMT

Cumulative deaths
- 1 - 10
- 11 - 50
- 51 - 100
- 101 and more

Cumulative cases
- 1 - 10
- 11 - 50
- 51 - 500
- 501 and more

Total: 94512 cases
429 deaths

Chinese Taipei has reported 61 confirmed cases of pandemic (H1N1) 2009 with 0 deaths. Cases from Chinese Taipei are included in the cumulative totals.
What to Expect When You Get Your Flu Shot

• Your body will react!
  • It’s working hard to build an immune response
• You might still get the flu…
  • BUT it likely be less severe

But mostly --
• Your loved ones and pigs will have a lower risk of getting the flu
Prudent Use of Antimicrobials Help Prevent Antimicrobial Resistance
Questions?