Trends in Pig Health
VIV Master Class Vietnam

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Trends in Pig Health

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Outline

• Current trends in Animal Health Care
  – Immunization

• Future Trends in Animal Health Care
  – Immunization
Colistin resistance found in Chinese pigs and poultry

A new form of antimicrobial resistance has been discovered in Chinese poultry and pigs, which is called a threat to the ‘last line of antibiotics’.

This was reported in a recent article in the scientific medical journal *The Lancet* Infectious Diseases. Bacteria have been shown to be resistant to the antibiotic colistin.

Direct link between resistance in animals and humans

In the research, a direct link has been established between the usage of the antibiotic in animal husbandry and the resistance found in slaughtered animals, in food and in humans. This resistance, caused by a new mutation dubbed the MCR-1 gene, would also be capable of spreading.

One step ahead in processing grains to feed.

Efficacy of Sal CURR® on the total feedstuff contamination of feed.
Infection Process

Know thy self, know thy enemy. A thousand battles, a thousand victories. 

Sun Tzu
• It is aiming to connect epidemiological events (infection chain) between the different production phases (production chain)

• It is aiming to utilize a logical chain-thinking to create multi phase intervention strategies (prevention chain)
Production Chain
Infection Chain –
The whole herd/system approach
Mycoplasma Infection Chain™
# Mhp gilt acclimation initiative

<table>
<thead>
<tr>
<th>Respondents (%)</th>
<th>Risk Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>55%</td>
<td>Receive Naïve Gilts into Positive Herds</td>
</tr>
<tr>
<td>41%</td>
<td>Have &gt;50% replacement rate</td>
</tr>
<tr>
<td>60%</td>
<td>Do not acclimate to herd specific strain</td>
</tr>
<tr>
<td>53%</td>
<td>Late (age) gilt acclimation, beyond 20 weeks of age</td>
</tr>
<tr>
<td>20%</td>
<td>Validate exposure and recovery methods</td>
</tr>
</tbody>
</table>
Mhp Gilt acclimation initiative
“50 – 350”

- Exposure: 50 – 80 days of age
- Complete population Infection: 100 days
- Validation (diagnostics): 100 days
- Stop Shedding (Recovery): 300-320
- First Farrow: ~ 350 days of age
Mycoplasma Infection Chain™
# Sow herd stability project

<table>
<thead>
<tr>
<th>Result</th>
<th>Percentage of Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.hyo PCR positive, at any time point</td>
<td>52% (n=11/21)</td>
</tr>
<tr>
<td>1 of 3 positive sampling points</td>
<td>64% (n=7/11)</td>
</tr>
<tr>
<td>2 of 3 positive sampling points</td>
<td>9% (n=1/11)</td>
</tr>
<tr>
<td>All positive sampling points</td>
<td>27% (n=3/11)</td>
</tr>
<tr>
<td>Prevalence ≥10% in at least one sampling</td>
<td>38% (n=8/21)</td>
</tr>
<tr>
<td>Total prevalence of individual pigs (including all farms)</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

- Variability in M.hyo prevalence at weaning within a farm over time and variability between farms was documented in this study.
- Multiple sampling points over time are necessary to assess sow herd stability.
- Over half of the sow herds evaluated in this study showed some evidence of M.hyo instability.
Consequence of vertical transmission:

- Higher the prevalence at weaning higher
- the clinical impact of Mhyo in finishing pigs

![Graph showing correlation between average lung lesion score and prevalence at weaning.](image)

R-squared = 0.5304, P-Value = 0.0009

* Fano et al., 2007
Mycoplasma Infection Chain™

Horizontal Transmission:
- Gilt Source → Gilt Development → Sow Herd

Vertical Transmission:
- Farrowing / Rearing → Wean to Finish

Output Market
The Coughing Pig Project

- 22 Complete Projects
- 7/22 Associated (Antigen and lesion) with M.hyo
  - 6/7 Associated with secondary bacteria
  - 2/7 Associated with IAV
  - 3/7 Associated with PRRSV
- 11/22 Associated with PRRSV
- 8/22 Associated with IAV (SIV)
- 14/22 Associated with Secondary bacteria

In 30 % of the respiratory cases Mhp was clinically involved
Mycoplasma Infection Chain™

Coughing Pig Project
- confirm M. hyo is a problem downstream

M. hyo SHS Project
- determine if vertical transmission is present

M. hyo Gilt Acclimation Initiative
- determine risk factors for (in)stability
PRRSV Infection Chain™
PRRSV Prevention Chain

• Gilt Development Units
  – Replacement gilts acclimated w/ 2 doses of MLV (30 days apart) and completed @ least 28 days prior to entry to breeding herd

• Breeding Herds
  – Load-Close-Homogenize
  – Replacement gilts acclimated w/ 2 doses of MLV (30 days apart) and completed @ least 28 days prior to entry to breeding herd
  – Mass vaccinate breeding herds 2x-30 days apart
  – Maintenance w/ Qtrly mass vaccination

• Growing Pigs
  – Initiate w/ mass vaccination of growing pig flow 2x-30 days apart
  – Maintenance w/ vaccination of piglets at weaning or post-entry to nursery
Systematic/Holistic Approach
Its more than just vaccines: The 5 Step Process

• **Step 1** – Identify Desired Goals
• **Step 2** – Determine Current Status
• **Step 3** – Understand Current Constraints
• **Step 4** – Develop Solutions Options
• **Step 5** – Implement & Monitor Desired Solutions

Large Scale, Long Term PRRS Control Projects

https://www.prrs.com/en
PIG STOP

PRRS control requires a holistic approach and complete Solution package:
- Ingelvac PRRS MLV and the knowledge of the Boehringer Ingelheim PRRS Solution team allows a holistic approach to successful PRRS control.
- We have access to the key tools to make it possible:

- Team expertise
- Biosecurity-PADRAP
- Vision ARC
- Pig flow management
- Sow stabilization
- Diagnostic approach
- Ingelvac PRRS MLV
How?
5 STEP Process

Beyond the bottle
Prevention – Partial Approach

- Gilt Source
- Gilt Development
- Sow Herd
- Farrowing Piglets
- Wean to Finish
- Output Market
Prevention – Partial Approach

Whole herd infection pressure
Only Sow herd immunization
No accomplishment of Minimizing exposure in Wean to Finish population

HT: Horizontal Transmission
VT: Vertical transmission

HT: Horizontal Transmission
VT: Vertical transmission

Gilt Source
Gilt Development
Sow Herd
Farrowing Piglets Rearing
Wean to Finish
Output Market
Infection/Prevention Chain – Whole herd approach

HORIZONTAL TRANSMISSION

Gilt Source → Gilt Development → Sow Herd
Minimize Exposure & Maximize Immunity

VERTICAL TRANSMISSION

Vertical Transmission Management

Farrowing → Wean to finish → Output Market
Minimize Exposure & Maximize Immunity

INFECTION CHAIN
- Horizontal Transmission
- Vertical Transmission

The Whole Herd Approach (System)

PREVENTION CHAIN
- Minimize Exposure
- Maximize immunity
- Vertical Transmission Management
Holistic Control Strategies

- **Management**
  - AI/AO
  - Test/Remove
  - Depop/repop
  - Herd Closure
  - Gilt Acclimatisation

- **Bio-security**

- **Vaccination** (immunological tools)
Take Home Message

• The swine industry has progressed and will continue to progress in terms of both approaches and specific measures to maintain and improve pig health
• The trend now is Holistic approach (both multi-factorial and in looking at herd health) and preventive medicine
Acknowledgement

- Dr. Eduardo Fano- Boehringer Ingelheim Vetmedica, USA
- Dr. Oliver Duran, Boehringer Ingelheim GmbH, Germany
Pig Production and processing
VIV Master Class Vietnam

Thank You