Implications and implementation of day-old chick vaccination –

FAO technical meeting
Beijing, 3 December 2013

Sophie von Dobschuetz
On behalf of the meeting participants
Meeting background and objectives

- Technical discussions with expertise from the field
- 20 participants from 4 continents
- Assess live-recombinant vaccines used at hatchery-level
- Review existing trials and create common understanding on the state of AI hatchery vaccination
- Share country experiences
- Discuss added value, challenges, concerns
# Comparison of trials

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<thead>
<tr>
<th></th>
<th>Field/Lab</th>
<th>MDAs</th>
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<tbody>
<tr>
<td></td>
<td>Field</td>
<td>Lab</td>
<td>w/ MDA</td>
<td>w/o MDA</td>
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<tr>
<td><strong>HVT-AI</strong></td>
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<tr>
<td>Chicken Layers</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Chicken Broilers</td>
<td>2</td>
<td>8</td>
<td>6</td>
<td>4</td>
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<td>Ducks</td>
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<td>Lab</td>
<td>w/ MDA</td>
<td>w/o MDA</td>
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<tr>
<td>Chicken Layers</td>
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<td>7</td>
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<tr>
<td>Chicken Broilers</td>
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<td>Ducks</td>
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<td>Chicken (not spec)</td>
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Comparison of trials ctd.

<table>
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<tr>
<th>Chicken trials w/o MDA</th>
<th>Nb of challenges</th>
<th>Protection</th>
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<tr>
<td>HVT-Al - one dose at D1</td>
<td>8</td>
<td>80-100</td>
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<tr>
<td>FP at D1 without booster</td>
<td>14</td>
<td>90-100</td>
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<tr>
<td>FP at D1 with booster</td>
<td>8</td>
<td>80-100</td>
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HVT appears to induce protection in poultry, with one recent layer trial showing very promising results for duration of protection.

Additional studies in this sector are needed.
Strengths for hatchery vaccination

• rFPV, rNDV and rHVT
  – work as primary vaccines on SPF birds (no MDA or active immunity against H5-insert or vector)
  – prevent mortality, reduce shedding and increase resistance to infection
  – produce more uniform titers in vaccinates vs field vaccination

• Hatchery vaccination means better biosecurity during administration
Field relevance

• HI serological titers are important correlates of protection, but we need more understanding on cellular induced immunity

• MDA interference, against vector as well as insert (for HVT-AI assessment trials ongoing in Egypt)

• Interaction with some of the other vaccines used at hatchery level
Need for more trials

• Comparison between hatchery and classical vaccination at field level

• When is a booster needed after use of 1d recombinant, and which booster vaccine? (does HVT-AI require a booster?)

• Future potential for assessing field effectiveness: use of randomly selected birds from the field in lab trials to reflect the range of field factors that interfere with vaccine effectiveness?

Note: one vaccination program does not fit all; i.e. need field relevant data as to application in comprehensive strategy
Need for more trials ctd.

• Impact of reduction in shedding
  – Impact of shedders after challenge on dissemination of virus (% and quantity); virus circulation/transmission in vaccinated populations
  – Impact of challenge strain/clade on shedding
  – Take into account shedding evaluation methodology (VI vs RRT-PCR)
  – How do the shedding data from lab translate to field situation?

• Trials on the role of hatchery vaccination in layers; duration of immunity, booster?
Hatchery vaccination in broilers

• Need for booster in broilers may not be acceptable to farmers

• The decision on broiler vaccination depends on risk of virus introduction into this type of production system

• For HVT-AI (H5N1), adding another vaccine at hatchery level may work for layers, but difficult for broilers

• Vector vaccines could provide some immunity for flocks of small scale producers
Hatchery vaccination in ducks

• The use of vector vaccines and hatchery vaccination for ducks remains work in progress
  – Do current recombinants work in ducks at 1 day of age? Or do we need a duck specific recombinant?
  DEV-AI in hatchery
  – Is hatchery vaccination feasible?
  – Which vector and dose?

• More lab and field trials are needed before any conclusions can be drawn
General aspects – hatchery vacc.

- Hatchery vaccination is no stand-alone control measure
- There are still knowledge gaps on vector vaccines that make it impossible to provide firm recommendations on their use at this stage
- Coordination of trials between countries is needed; guidance
- Hatchery supply chain analysis helps determine whether smaller scale producers can be covered
- Concerns about GMO-technology may inhibit vaccine licensing and use in some countries
General aspects – vaccination

• No vaccine will overcome immunosuppressive diseases (IBDV, CAV, mycotoxins, etc.)

• It is not recommended to vaccinate with killed vaccine at 1-7 days; efficacy is poor

• Ensure producer participation in vaccination programs and address their concerns

• Cost feasibility studies