Implementing, Auditing & Certifying Veterinary Biosecurity Programs in Aquaculture Operations

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Animal Production & Protection: Challenges, Risks, and Best Practices
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Objectives

A brief overview of new approaches to implementing biosecurity programs that are:

- Internationally acceptable, standardized approaches (OIE Code/Manual consistent)

- Can be applied to:
  - Any infectious & contagious disease
  - Any type of operation (aquaculture & livestock ... ... from the farm to nation)
Veterinary Biosecurity

To be effective & meet specific end points – biosecurity is more than ...........
good hygienic practices, quarantine, etc.
Needs / Endpoints

- Standardized, scientifically sound & justifiable
- Encompass disease prevention, control & eradication
- Meets regulatory requirements (State/National/OIE)
- Promotes business continuity
  - Fits routine production systems
  - Economical, practical, efficient & effective
  - Producer, veterinary & government incentives/rewards
    (government / industry collaboration & cost-sharing)
Much an outcome of numerous international collaborators over ~10 years

2009 International Aquaculture Biosecurity Conference
Trondheim Norway

www.IABConference.org

OIE Collaborating Centers

International Veterinary Biosecurity Consortium
Relevant OIE Code & Manual Sections

- Farmed fish, amphibian, mollusc & crustacean diseases
- Risk analysis
- Disease prevention & control recommendations
- Disease diagnosis, surveillance & notification
- Trade, importation, exportation & health certification
Motivation

Producers
- Protect investments
- Maximize production
- Value-added certified product

Governments
- Meet regulations
- Protect industries
- Increase production & trade

International
- Prevent disease spread
- Protect domestic industries
- Meet international trade requirements
The Focal Point & Ultimate Objective of Biosecurity

To ensure that an epidemiological unit is not diseased/infected … … and remains that way.

Prevention! … Control! … Eradication!
Epidemiologic Unit—a defined population of animals, separated to some degree from other populations, in which infectious and contagious diseases can be transmitted.

- Establishment
- Compartment
- Zone
- Region
- Country
Biosecurity Components

Procedures & processes for prevention, control & eradication of infectious & contagious diseases?

- Identify disease Hazards & Risks (risk analysis)
- Identify Critical Control Points (for disease entry / escape)
- Mitigating Actions for all Critical Control Points (risk management)
- Develop Contingency Plans
- Determine Disease Status / Freedom
- Monitor progress & Audit implementation
- Certify Biosecurity Levels / Disease Freedom
Integrating Biosecurity Components

Any Epidemiologic Unit (EU)

- Establishment
- Compartment
- Zone
- Region
- Country

<table>
<thead>
<tr>
<th>Questions a Farmer Might Ask</th>
<th>Formal Biosecurity Process/Step</th>
<th>Documentation &amp; Records</th>
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<td>Which diseases are serious potential hazards?</td>
<td>1. Hazard Identification &amp; Prioritization</td>
<td>Prioritized Disease List</td>
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<td>Where can these hazardous diseases get in?</td>
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<td>What can be done to prevent disease entry or escape?</td>
<td>4. Mitigation, Management &amp; Remediation of CCP Risks</td>
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<td>Gov’t Endorsed Certificate of Veterinary Inspection (CVI)</td>
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Applying the Concepts

Capture site-specific elements in a written Biosecurity Plan & maintain records
For Illustration Purposes: An Epidemiological Unit

- Located in the Midwest
- 300,000 lbs. ($1.5M) annual production
- Integrated production - sells live fish, larvae & fillets (interstate & international)
- Imports breeding stock
- Uses deep well groundwater
- ~500 visitors / year
- 50 employees

e.g. Tilapia Farm

Has no biosecurity plan in place – a lot at risk in a disease outbreak
Identify Disease Hazards & Risks

Questions a Farmer Might Ask

Which diseases are serious potential hazards?

Is my farm at risk? How much risk? Operational impact of disease?

Formal Biosecurity Process/Step

1. Hazard Identification & Prioritization

2. Risk-Impact Assessment

Documentation & Records

Prioritized Disease List

Evaluation of Disease Impacts
Process: Disease Hazards & Risks

- Which important diseases are present or can potentially affect the farm (Epi-Unit)?

- What might be the impacts on the farm?
  - Decreased production, increased costs
  - Negative product demand & price
  - Regulatory restrictions

- Create prioritized disease list based on severity of potential impact
## Process: Identified Hazards & Risk Levels

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<tr>
<th>Disease Hazardous</th>
<th>Risk Level</th>
<th>Impact</th>
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<tr>
<td>VHS</td>
<td>High</td>
<td>High (Endemic - OIE/Nat’l/State regulated / lethal)</td>
</tr>
<tr>
<td>Streptococcus iniae</td>
<td>High</td>
<td>Moderate (Ubiquitous / Unregulated / high morbidity/mortality)</td>
</tr>
<tr>
<td>Columnaris Disease</td>
<td>Low</td>
<td>Moderate (State regulated / high morbidity)</td>
</tr>
<tr>
<td>EUS</td>
<td>Low</td>
<td>High (Exotic - OIE/Nat’l/State regulated / lethal)</td>
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> Biosecurity Plan tailored to selected disease hazards
Determine & Mitigate Critical Points where can disease can enter or leave

Where can these hazardous diseases get in?

1. Identify Correctable CCPs
2. Implement CCP Corrective Actions

What can be done to prevent disease entry or escape?

3. Critical Control Point (CCP) Evaluation
4. Mitigation, Management & Remediation of CCP Risks
Process: Determine Critical Points

- Animals
- Water
- Personnel
- Fomites
- Vectors
- Feed

Document in Biosecurity Plan
Process: Mitigating Critical Points

What actions will rectify critical points where disease can enter or leave?

- Animals;
- Water;
- Personnel;
- Fomites;
- Vectors;
- Feed
Developing Contingency Plans (what if ...?)

What should I do if disease gets in?

5. Contingency Planning

- Communicating / reporting disease outbreak
- Isolating (quarantine) epidemiologic unit parts
- Re-evaluating & correcting Critical Control Points
- Implement recovery - depopulation / treatment / vaccination (business continuity ...)

Isolation, Treatment Depopulation Plans
Veterinary Diagnostics, Surveillance & Monitoring

Are any of these diseases on the farm?

6. Clinical Evaluation & Diagnostic Testing

How do I continue to monitor disease absence/presence?

7. Ongoing Disease Surveillance & Monitoring

Farm, Lab & Vet Records Results
Process: Clinical & Lab Diagnostics

Is the disease present or absent?

- Appropriate veterinary clinical evaluation & sampling of all populations
- DX lab confirmation
- Full epidemiological evaluation & diagnostic interpretation
Process: Ongoing Surveillance & Monitoring

Periodic disease presence / absence evaluation

- Changing conditions
- Fixed time intervals
- Appropriate veterinary clinical evaluation & sampling of all populations
- DX lab confirmation
- Full epidemiological evaluation & diagnostic interpretation

Document in Biosecurity Plan
National Animal Health Laboratory Network

Parallel program developing for aquatic diseases
(National Aquatic Animal Pathogen Testing Network)

AquaVetMed.Info
Search Directories of
Aquatic Veterinarians and Disease Diagnostic Laboratories

These directories assist veterinarians, veterinary-allied professionals, aquatic animal owners, aquaculture industries, governments, and the general public.

Approved Laboratories
- Newcastle Disease (ND)/Avian Influenza (AI)
- Sarcocystis/Cryptosporidiosis (SXA)
- *Bovine Spongiform Encephalopathy (BSE)
- Classical Swine Fever (CSF)*Foot and Mouth Disease (FMD)
- Vascular Stomatitis (VS)
- National Veterinary Services Laboratories

www.AquaVetMed.info

National Animal Health Laboratory Network (NAHLN)

www.aphis.usda.gov/animal_health/nahln/
Auditing & Certification

How do I get third-party recognition of disease freedom?

8. Veterinarian Auditing & Certification

9. Veterinary Authority (Gov’t) Verification & Endorsement

Certificate of Veterinary Inspection (CVI)

Gov’t Endorsed Certificate of Veterinary Inspection (CVI)
Process: Audit / Certify

Audits
Periodic site visits to verify:
- Processes are in place
- Examine documentation
- Assist correcting deficiencies
- Look for clinical disease

Certification
Issue certificate to validate:
- Processes are in place
- Level of biosecurity
- Disease status of operation

Document in Biosecurity Plan
Examples: Certifying Biosecurity

A progressive process based on Audits

- **ABC Level I** – Committed to developing site-specific plan; decision – deciding disease hazards/risks
- **ABC Level II** – Risk analysis, CCP evaluation & mitigation evaluation complete, diagnostics started
- **ABC Level III** – CCP/risk management & contingency plan in place; diagnostics complete
- **ABC Level IV** – Full audit complete; disease-free/SPF
- **ABC Level V** – Government Agency endorsement

*Document in Biosecurity Plan*
Questions a Farmer Might Ask  

- Which diseases are serious potential hazards?
  - **BIOSECURITY LEVEL I**
  - Is my farm at risk?
    - How much risk?
  - Operational impact of disease?

- Where can these hazardous diseases get in?
  - **BIOSECURITY LEVEL II**
  - What can be done to prevent disease entry or escape?

- What should I do if disease gets in?
  - **BIOSECURITY LEVEL III**
  - Are any of these diseases on the farm?

Formal Biosecurity Process/Steps

1. Hazard Identification & Prioritization
   - Prioritized Disease List

2. Risk-Impact Assessment
   - Evaluation of Disease Impacts

3. Critical Control Point (CCP) Evaluation
   - Identify Correctable CCPs

4. Mitigation, Management & Remediation of CCP Risks
   - Implement CCP Corrective Actions

5. Contingency Planning
   - Isolation, Treatment Depopulation Plans

6. Clinical Evaluation & Diagnostic Testing
   - Farm, Lab & Vet Records Results
Questions a Farmer Might Ask

How do I continue to monitor disease absence/presence?

**BIOSECURITY LEVEL IV**

How do I get third-party recognition of disease freedom?

**BIOSECURITY LEVEL V**

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Formal Biosecurity Process/Steps

7. Ongoing Disease Surveillance & Monitoring

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8. Veterinarian Auditing & Certification

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9. Veterinary Authority (Gov’t) Verification & Endorsement

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Documentation & Records

- Farm, Lab & Vet Records Results
- Certificate of Veterinary Inspection (CVI)
- Gov’t Endorsed Certificate of Veterinary Inspection (CVI)
Motivation, Implementation & Next Steps
Veterinary Biosecurity Certificates

- Need to be tailored specifically for biosecurity
Benefits - Expedited Movement / Trade of Certified Operations

Accredited Veterinarian

Health, Disease & Diagnostic Requirements

On-Line (e-CVI)

Diagnostic Lab

Source

Hardcopy CVI

Authority

Hatcheries

Farms

Processors

e-Information Flow

Material Flow

Requirements
Workforce – Resources & Needs

- Licensed/accredited veterinarians
- Vet Techs & Paraveterinary field service personnel
- Diagnostic laboratory system
- Standardized process & infrastructure
  - Education
  - Compliance registry
  - Competency credentialing
- Governmental (regulatory) personnel & infrastructure
Workforce:
National Veterinary Accreditation Programs

✓ Supplanting government regulatory activities workforce
✓ Supports OIE Evaluation of Performance of Veterinary Services (PVS Tool).
NVAP Training Programs

- Web-based & classroom
- Publications & manuals
- Veterinary school curriculum
- Other language translation

www.cfsph.iastate.edu/
1. Priority diseases
2. Biosecurity
3. Health/disease regulations & certification
**Biosecurity Implementation: Who does what?**

<table>
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<th>Personnel</th>
<th>Activities</th>
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<tr>
<td>Operation owner &amp; employees</td>
<td><strong>Written</strong> operation-specific Biosecurity Plan &amp; records</td>
</tr>
<tr>
<td>Licensed/registered / accredited veterinarians</td>
<td><strong>Veterinary</strong> evaluation, diagnostic interpretation, auditing, ABC certificates</td>
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<tr>
<td>Para-veterinary professionals – vet techs, nurses, fisheries biologists</td>
<td><strong>Diagnostic</strong> lab tests, general assistance</td>
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**Workforce** – Training & credentialing needed for all individual involved in activities
Training, Competency & Implementation Recognition

- **Veterinarian & Producer Training Workshops**
  - theory & process
  - table-top exercises & scenario modeling
  - on-farm exercise

- **Competency & Implementation Certification**
  - Veterinarians & trainers completing V-ABC workshops
  - Farms actively implementing V-ABC programs
Training Programs

International Veterinary Aquaculture
Biosecurity Consortium Initiatives

- State/Local/Organization Meetings/Workshops (2011+)
- ISA Biosecurity Workshop, Puerto Montt, Chile (Apr. 2011)
- IVABC Conference/Workshop, Trondheim, Norway (Aug. 2011)
- WVA Aquaculture Biosecurity Workshop, Cape Town, S. Africa (Oct. 2011)
Thank you for your attention