Diagnostic Sampling
Collection, Packaging, Shipping Overview

SAMPLE COLLECTION

Before You Begin
- Test specifications from laboratory
  - Samples needed, any special media
  - Temperature
- Gather all supplies
  - Pre-label specimen containers
- Gather PPE
  - Coveralls, footwear, gloves
  - Respirators, face shields

Labeling
- Pencil, waterproof ink
  - Clear, legible
- Ability to trace sample
  - Animal, group, or premise identification
  - Sample type
    - Swab location
    - Tissue or organ
    - Date

Sample Types
- Whole blood or serum
  - Blood tube type
- Swabs
  - Culture
  - PCR
- Skin samples
- Tissues
  - Formalin
  - Refrigerated

Sample Collection & Handling
- From individual animals, not groups
- Prevent sample degradation
  - Selective or transport media
  - Ice packs or dry ice
  - Formalin
    - At least 1:10 ratio of sample:formalin
Sample Collection & Handling

- Prevent contamination
  - PPE
    - Disposable gloves
  - Disposable equipment
    - Needles, syringes, blades
  - Biosecurity
    - Disinfection

SAMPLE PACKAGING

Prior to Shipping

- Samples must be packaged to withstand:
  - Shocks and vibrations
  - Pressure changes
  - Other conditions encountered during transport
    - Weather
    - Temperature
    - Rough handling

Packaging Basics

- Prevent breakage
  - Pad and protect from rough handling
- Prevent spills/leaks
  - Double waterproof barriers
  - Absorbent material
- Temperature
- Labeling
  - Potentially hazardous materials

Preventing Breakage and Spills

- Plastic versus glass containers
- Pad primary sample container(s)
- Primary watertight barrier
- Absorbent material
- Secondary watertight material
- Rigid outer material (box)
- Do not pack formalin in same box with non-formalin samples

Packaging
Temperature Requirements

- Whole blood: on ice
- Serum: ice or dry ice
- Swabs
  - Culture: ice
  - PCR: ambient
- Tissue samples
  - Fresh: ice or dry ice
  - Formalin fixed: ambient
- Maintain the cold chain

Ice, Dry Ice, and Formalin

- Ice
  - Arrival within 24 hours
  - Ice packs only
  - Protect samples from direct contact
- Dry ice
  - "Dry ice" label on box
  - Category A shipments
- Submission form in separate plastic bag

Sample Shipping

- DOT hazardous material definition:
  - Any material that is capable of causing risk to health, safety, and property during transportation
  - Includes infectious substances
  - Regulated by DOT Hazardous Materials Regulations (HMR)
    - Section 49 Code of Federal Regulations

Sample Shipping

- Shipping category
  - Category A: Infectious substances,
    - Affecting animals only: UN 2900
      - African swine fever virus, Foot and mouth disease virus
    - Affecting humans: UN 2814
      - Bacillus anthracis, Brucella melitensis
    - Declaration of dangerous goods
  - Category B: Biological Material
    - UN 3373

UN Package Certification Mark

- Example of UN package certification mark
Packaging: Category B Infectious Substances

Packaging: Category A Infectious Substances

Quantity Limitations

<table>
<thead>
<tr>
<th>Category</th>
<th>Passenger aircraft/rail</th>
<th>Cargo aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category A Infectious substances, affecting humans (UN 2814) or animals (UN 2900)</td>
<td>50 ml or 50 g</td>
<td>4 L or 4 kg</td>
</tr>
<tr>
<td>Category B</td>
<td>4 L or 4 kg</td>
<td>4 kg</td>
</tr>
</tbody>
</table>

USDA-APHIS NVSL

NVSL-Ames
- USDA-APHIS-NVSL
- 1920 Dayton Avenue
- Ames, IA 50010
- 515-337-7266

NVSL-FADDL-NY Plum Island
- USDA-APHIS-FADDL
- 40550 Route 25
- Orient, NY 11957
- 631-323-3256

USDA-APHIS approved laboratories
- USDA-APHIS-NVSL
- USDA-APHIS-FADDL

Diagnostic Sample Prioritization

Priority 1: High Suspicion
- Highly likely a FAD or EDI
- Call before submitting

Priority 2: Intermediate Suspicion
- Possible

Priority 3: Low Suspicion
- Unlikely

Priority A: Animals in commerce being held pending results
- Call before submitting

Carriers

- Not all carriers will ship biological materials
  - Carriers must have security plan when shipping certain agents
    - Subpart I of Part 172 of the HMR
    - Chose carrier that allows tracking
    - Ensure proper equipment/vehicles
- Prompt and reliable delivery is key
  - Security
  - Sample viability
Resources

- USDA-APHIS National Veterinary Services Laboratories
  - USDA-APHIS VS Memorandum No. 580.4: Procedures for the Investigation of Potential Foreign Animal Disease/Emerging Disease Incidents (FAD/EDI)
downloads/VS_Memo580_4.pdf
- Department of Transportation
    - http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title49/49cfr172_main_02.tpl
  - Transporting Infectious Substances Safely

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