New England Secure Milk Supply Project- Update
Committee on Animal Emergency Management
Oct. 1, 2011

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State Veterinarian, Maine
Importance of Milk Movement for FMD Planning

FMD response will require controlling movement of animals and animal products, including traffic to and from farms, but . . .

- Consumers rely on milk moving from farm to table.
- Farms, co-ops, processors, haulers, and vendors rely on milk movement to stay in business.
- Animals rely on farm deliveries for feed and care.
- Environmental quality depends on keeping milk flowing and animals alive.
Population Density

Milk Prices

New England
Maine
Destinations for ME Dairy Farms: Where Milk Goes

In-state: 92%

NH: 5%

MA: 3%

1/2010 Production = 50 million pounds
Suppliers for ME Dairy Plants: Where Milk Comes From

NH 5%
VT 7%
MA 0.4%
In-state 88%

1/2010 Intake = 52 million pounds
Supply for ME Dairy Plants

In-State: 88%
NE State: 12%
Other: 0%
Milk Shipped from NE Dairy Farms

- CT: 40 million pounds
- MA: 20 million pounds
- ME: 60 million pounds
- NH: 30 million pounds
- RI: 5 million pounds
- VT: 180 million pounds
Milk Shipped to NE Dairy Plants

- CT
- MA
- ME
- NH
- RI
- VT

Millions of Pounds
Destination of Milk Produced on New England Farms

- In-State: 55%
- Another NE State: 41%
- Outside NE: 4%

1/2010 Total = 332 million pounds
Source of Milk Supply for New England Dairy Plants

Outside NE 24%

In-State 44%

Another NE State 32%

1/2010 Total = 418 million pounds
Vulnerability to infection and risks for continuity of operations vary with the role of each state in an interdependent, regional production and marketing system.

In all New England states, both markets for farm sales and supplies for processors depend on interstate commerce.
Lessons of Comparing State and Regional Border Controls in FAD Response (2)

Continuity of business for all stakeholders would be much less vulnerable if milk movement restrictions were applied at the border of the region than the border of each state.
With important exceptions, the region is less dependent on inter-regional than interstate transport of raw milk.
Net Markets for Interstate Milk Movement:
Farm Supply Minus Plant Demand in NE States
Lessons of State-by-State Comparison (1)

➤ The six states vary greatly in the amount of milk that is produced and processed in-state.

➤ They also vary greatly in their reliance on routine inter-state milk movement.

- Some states (especially MA) are milk importers; other states (especially VT) are milk exporters.
Topics to Help Focus Discussion

1. Vulnerability assessment for continuity of dairy operations

2. National best practices and response plans
   • Federal Emergency Plans (FAD PReP)
   • Resources for communicating with the public and stakeholders about FMD risk and response
   • Secure Milk Supply (SMS) and Secure Egg Supply (SES) Plans as models for improving preparedness

3. Suggested issues for New England states to pursue
Demand for Milk from ME Dairy Farms

- In-State: 92%
- Other NE State: 8%
Regional Milk Markets: Farm Output and Plant Intake in NE States

[Graph showing milk market data for NE states with bars representing total production and demand.]
Lessons of Focus on Inter-Regional Milk Movement (2)

- Regional raw milk exports constitute a small share of the total market for milk production in New England.
  - 13 of 333 million pounds total in January 2010.
  - Out-of-region plants increased the demand for New England milk by only 4% (peaking at just 5% in VT).

- Regional raw milk imports are a significant but still relatively small share of the total supply for milk processing in New England.
  - Out-of-region farms supplied 24% of all the milk processed in New England plants (peaking at 34% of the supply for CT, 31% for VT and 27% for MA).

- For both supply and demand of raw milk, New York is by far the most important trade partner for New England.
## Vulnerability of Farms Due to Restrictions on Milk Movement

<table>
<thead>
<tr>
<th>Place</th>
<th>Farm Vulnerability</th>
<th>Minimum Loss If State Borders Closed</th>
<th>Minimum Loss If Region Border Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Production</td>
<td>Pounds Per Month</td>
<td>Pounds Per Day</td>
</tr>
<tr>
<td>CT</td>
<td>27,874,584</td>
<td>10,508,901</td>
<td>338,997</td>
</tr>
<tr>
<td>MA</td>
<td>19,962,869</td>
<td>5,375,046</td>
<td>173,389</td>
</tr>
<tr>
<td>ME</td>
<td>49,792,758</td>
<td>3,806,496</td>
<td>122,790</td>
</tr>
<tr>
<td>NH</td>
<td>25,339,431</td>
<td>14,394,721</td>
<td>464,346</td>
</tr>
<tr>
<td>RI</td>
<td>1,565,845</td>
<td>1,163,636</td>
<td>37,537</td>
</tr>
<tr>
<td>VT</td>
<td>207,988,465</td>
<td>113,395,540</td>
<td>3,657,921</td>
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<tr>
<td>Region</td>
<td>332,523,952</td>
<td>148,644,340</td>
<td>4,794,979</td>
</tr>
</tbody>
</table>
Farm Sales Loss If Milk Movements Are Stopped at State vs. Region Levels

- **Minimum Loss with State Stop**
  - CT: 40%
  - MA: 40%
  - ME: 40%
  - NH: 45%
  - RI: 45%
  - VT: 40%
  - Region: 4%

- **Minimum Loss with Region Stop**
  - CT: 4%
  - MA: 4%
  - ME: 4%
  - NH: 4%
  - RI: 4%
  - VT: 4%
  - Region: 4%
## Vulnerability of Dairy Plants Due to Restrictions on Milk Movement

<table>
<thead>
<tr>
<th>Place</th>
<th>Plant Vulnerability (1/2010)</th>
<th>Minimum Loss If State Borders Closed</th>
<th>Minimum Loss If Region Border Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Intake</td>
<td>Pounds Per Month</td>
<td>Pounds Per Day</td>
</tr>
<tr>
<td>CT</td>
<td>37,885,320</td>
<td>20,519,637</td>
<td>661,924</td>
</tr>
<tr>
<td>MA</td>
<td>160,395,926</td>
<td>145,808,103</td>
<td>4,703,487</td>
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<tr>
<td>ME</td>
<td>52,411,125</td>
<td>6,424,863</td>
<td>207,254</td>
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<tr>
<td>NH</td>
<td>28,185,877</td>
<td>17,241,167</td>
<td>556,167</td>
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<tr>
<td>RI</td>
<td>1,950,965</td>
<td>1,548,756</td>
<td>49,960</td>
</tr>
<tr>
<td>VT</td>
<td>136,901,096</td>
<td>42,308,171</td>
<td>1,364,780</td>
</tr>
<tr>
<td>Region</td>
<td>417,730,309</td>
<td>233,850,697</td>
<td>7,543,571</td>
</tr>
</tbody>
</table>
Dairy Plant Supply Loss If Milk Movements Are Stopped at State vs. Region Levels

- **Minimum Loss With State Stop**
  - CT: 30%
  - MA: 56%
  - ME: 24%
  - NH: 24%
  - RI: 56%
  - VT: 24%
  - Region: 24%

- **Minimum Loss with Region Stop**
  - CT: 40%
  - MA: 70%
  - ME: 80%
  - NH: 80%
  - RI: 90%
  - VT: 90%
  - Region: 90%
Minimum Market Loss and Waste Generated Per Day on New England Dairy Farms With State vs. Regional Stops of Milk Movement

<table>
<thead>
<tr>
<th>Millions of Pounds of Milk</th>
<th>With State Stops</th>
<th>With Region Stops</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8 Million Pounds</td>
<td></td>
<td>0.4 Million Pounds</td>
</tr>
</tbody>
</table>

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Minimum Supply Loss Per Day for New England Dairy Plants With State vs. Regional Stops of Milk Movement

With State Stops: 7.5 Million Pounds

With Region Stops: 3.2 Million Pounds
Lessons of Comparing State and Regional Border Controls in FAD Response (1)

- Effects of restrictions on milk movement, as in an FMD response, would be severe for all stakeholders but also vary greatly among states and sectors of the dairy industry in New England.

- If milk movement were stopped at state borders rather than allowed to move within the region, environmental challenges and market-share losses would be particularly heavy for New England dairy farms.

- Stopping milk movement at the region level would be more immediately challenging for New England dairy processors (especially in CT, VT, and MA) than farmers, but they are interdependent.
Planning for Dairy Continuity in the Context of FMD response

Vulnerability to FMD and Dairy Continuity is far more than a matter of moving milk.

- International trade and regulatory environments.
- National markets and interstate commerce.
- Regionally, FMD-susceptible animals are hugely concentrated on but hardly limited to milking parlors on commercial operations.
FMD-Susceptible Animals in New England

- **Cows** currently milked for regulated markets:
  215,000 head on 1,700 farms (of 2,500 farms with milk cows)

- **Cloven-hoofed Livestock** (all ages, both male and female):
  593,000 head, including:
  - 488,000 cattle
  - 27,000 swine
  - 51,000 sheep
  - 27,000 goats

- **Wildlife:**
  660,000 white-tailed deer
Planning for Dairy Continuity in the Context of FMD response

Other authorities and priorities will be higher.

• Nearly all strategies for moving milk entail assessing risks and allocating resources that are subject to incident command and more comprehensive, competing priorities.
Number of Dairy Operations by Herd Size in New England and in the U.S., 2007

Number of Milk Cows in the U.S. by Herd Size, 2007
Federal FMD Response Plans

- Assembled on-line as FAD PReP
  *(Foreign Animal Disease Preparedness and Response Plan)*

  [fadprep.lmi.org](http://fadprep.lmi.org)

- Strengths:
  - Up-to-date, especially for HPAI and FMD getting there.
  - Components easily accessed and navigated.
  - Clear, practical options for meeting performance standards (more than ideals and less than mandates).
Suggested Uses of FAD PReP

- Anticipate federal response (What “they” will do).
- Learn federal expectations of state and local stakeholders (What we’ll have to do).
- Find definitive, approved references, components, or models for state and local plans.
The Red Book

fadprep.lmi.org

Disease Response Plans

FOOT-AND-MOUTH DISEASE RESPONSE PLAN
THE RED BOOK

FAD PReP
Foreign Animal Disease Preparedness & Response Plan

National Center for Animal Health Emergency Management

United States Department of Agriculture • Animal and Plant Health Inspection Service • Veterinary Services

DRAFT NOVEMBER 2010
Aims of FMD Response

“At the start of any FMD outbreak, the desired outcome is to reestablish FMD-free status.” (5.4)

Goals (5.1.1):

1. Detect, control, and contain FMD in animals as quickly as possible.
2. Eradicate FMD using strategies that seek to stabilize animal agriculture, the food supply, and the economy.
3. Provide science- and risk-based approaches and systems to facilitate continuity of business for non-infected animals and non-contaminated animal products.

Strategic Principles (5.1.2.1):

1. Prevent contact between FMD virus and susceptible animals.
2. Stop the production of FMD virus in infected or exposed animals.
3. Increase the disease resistance of susceptible animals to the FMD virus or reduce the shedding of FMD virus in infected or exposed animals.
More Strategy Options

“Possible Strategies” (5.1.2):

- **Stamping-out policy.**
  Slaughter of all clinically affected and in-contact susceptible animals.

- **Stamping-out policy modified with emergency vaccination to slaughter.**
  Slaughter of all clinically affected and in-contact susceptible animals and vaccination of at-risk animals, with subsequent slaughter of vaccinated animals.

- **Stamping-out policy modified with emergency vaccination to live.**
  Slaughter of all clinically affected and in-contact susceptible animals and vaccination of at-risk animals, without subsequent slaughter of vaccinated animals.

- **Vaccination to live policy without stamping-out.**
  Vaccination used without slaughter of infected animals or subsequent slaughter of vaccinated animals.
Recommendation for Using Federal Plans

➢ Review plans in FAD PReP for compatibility with state FAD and FMD response plans.
  • If acceptable, use *The Red Book* for operations in state FMD plan (akin *Pasteurized Milk Ordinance*, “PMO”).
  • Prepare for transfer of select response authorities.

➢ Concentrate state planning on:
  • Preparation for first 48 hours, prior to federalizing response (e.g., lines of authority, roles in ICS, and responsibility for staffing state response).
  • Likely key state roles in incident response (e.g., surveillance, local logistics, and business continuity).
Anticipate Public Concern
Risk Communication Resources

- **Foot-and-Mouth Disease Message Map**
  - Message Map Briefing Book

- **Recommendations from the U.S. Dairy Industry, on-line, e.g.:**
  - Dairy Response Center (Dairy Management Inc, 2011)
  - Crisis Preparedness Toolkit (DMI, 2009).

- **Aids in risk communication, using and developing message maps:**
  - Best Practices in Effective Risk Communication, plus on-line training and messaging template (National Center for Food Protection and Defense, University of Minnesota, 2008-2010).
### Example: FMD Message Map

**Message Map**

**Scenario:** Foot-and-Mouth-Disease (FMD)

**Stakeholder:** Media Event/State Official

**Question:** What can you tell us about the situation?

<table>
<thead>
<tr>
<th>Key Message 1</th>
<th>Key Message 2</th>
<th>Key Message 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The disease is currently being contained and investigated by state response teams.</td>
<td>State and Federal agricultural officials are taking protective measures.</td>
<td>FMD is not considered a public health threat.</td>
</tr>
</tbody>
</table>

**Support Point 1.1**

State animal health officials have quarantined the area and submitted samples for diagnosis.

**Support Point 1.2**

Tracking and trace-backs have been initiated to determine the source and extent of disease spread.

**Support Point 1.3**

The emergency operations center is staffed and an incident management team has been deployed to the site.

**Support Point 2.1**

State animal health officials are conducting surveillance.

**Support Point 2.2**

We are notifying veterinarians in the state to raise awareness.

**Support Point 2.3**

Working with industry to raise awareness and encourage vigilance.

**Support Point 3.1**

Disease in humans is extremely rare and requires close contact with infected animals.

**Support Point 3.2**

Only affects cloven-hoofed animals, including cattle, swine, sheep, goat and deer.

**Support Point 3.3**

There have been no reported cases due to consumption of infected meat or meat products.
Secure Milk Supply (SMS) Plan

Aim: National performance standards for safely moving milk from farm to processor during an FMD outbreak.

- Leadership from ISU, UMN, UC Davis, and USDA-APHIS plus National Steering Committee and Work Groups.
- In first year, agreement in principles and draft plans.

Model: Preparedness and Response Plans for HPAI

- Secure Egg Supply (SES)
- Egg Movement Control (EMC) Plan
- Federal and State Transport (FAST) Egg Plans
Regional Precedent

Dairy Summit and COBP in RI, 2009

CONTINUITY OF BUSINESS PLAN FOR NEW ENGLAND DAIRIES DURING FMD RESPONSE

Prepared by Richard P. Horwitz for the Division of Agriculture Rhode Island Department of Environmental Management 2009

Background of This Draft

Introduction
Summary
Purpose
Strategy

Protocols
Activation
Farm Biosecurity
Cleaning and Disinfecting Vehicles
Farm Surveillance and Testing
Milk Collection
Plant Biosecurity
Processing of Dairy Products

Appendix 1: Notification Messages
Notification for Producers
Notification for Haulers
Notification for Processors

Appendix 2: Disinfectants

Appendix 3: Processing Dairy Products

Appendix 4: Testing Raw Milk for FMDV

Appendix 5: Filters for Tanker Truck Vents

Appendix 6: Rhode Island Dairies and Their Markets

Bibliography
Analogy: HPAI is to Eggs as FMD is to Milk

“A federal and state transport plan for movement of eggs and egg products from commercial egg production premises in a high-pathogenicity avian influenza control area”

Darrell W. Trampel, DVM, PhD, DACVP; Jonathan T. Zack, DVM; Timothy L. Clouse, MA; Danelle A. Bickett-Weddle, DVM, MPH, PhD, DACVP; Gayle B. Brown, DVM, PhD; Venkatsesh S. Rao, MBA; H. Scott Hurd, DVM, PhD; Glenn I. Garris, PhD; James A. Roth, DVM, PhD, DACVM


*JAVMA* 235:12 (December 15, 2009), pp. 1412-19
Secure Egg Supply (SES) Plan

[Diagram showing the flow of information from "fadprep.lmi.org" to "Continuity of Business" and further to Secure Milk and Egg Supply Information]

To access the Secure Milk Supply Information Click here.
To access the Secure Egg Supply Information Click here.
Shared Assumptions

- The goal is to return to disease-free status.

- Continuity of business should be considered in selecting strategies for emergency readiness and response.

- With proper steps (risk assessment, surveillance, biosecurity, oversight, etc.), safe* movement of products may be permitted from uninfected farms to market, even during an FAD outbreak.

*with low or negligible risk of endangering health of uninfected animals.
Design for FAST Egg - Preparation

1. Secure stakeholder participation.

2. Determine the sources and level of risk of disease transmission attending each site/step in production, handling, and transport of each commodity. (“Pro-active Risk Assessment”)

3. Survey producers and processors about their measures to reduce risks of disease transmission.

4. Verify survey results (self-reports) with regular audits.

5. Maintain a secure database of normal production parameters and biosecurity status for each premises.
1. Establish that each eligible premises of origin is free of disease. (“production parameters are in normal range” +/- rRT-PCR)

2. Verify that traceability information is available.

3. Verify that biosecurity enhancements are in-place to reduce residual risks of transmitting infection.

4. Conduct an epidemiological assessment of the premises, and find low or negligible risk of disease transmission. (acceptable “epi questionnaire” report +/- rRT-PCR)

5. Issue a permit to move product.
SES Timeline for Risk-based Permitting

- Control area established
- Eggs collected
- Eggs collected
- RRT-PCR pools test NEGATIVE
- RRT-PCR pools test NEGATIVE
- RRT-PCR pools test NEGATIVE

**DAY CONTROL AREA ESTABLISHED**

- HPAI diagnosed in area
- Swabs collected and delivered to NAHLN Lab
- Permit for washed and sanitized shell eggs to move off farm (collected on Day 1 or Prior)*
- Swabs collected and delivered to NAHLN Lab
- Permit for washed and sanitized shell eggs to move to table egg market (collected on Day Control Area Established or Prior)
- Swabs collected and delivered to NAHLN Lab
- Permit for washed and sanitized shell eggs to move to table egg market (collected on Day 1 or Prior)

*Permit for moving washed and sanitized eggs off farm can be issued daily for eggs collected on that day or prior as long as RRT-PCR results from that same day remain negative.

Continue Daily as Required
Cases, Zones, and Premises: Classified by Risk

Zones of Response

- Infected Premises
- Infected Zone
- Control Area
- Buffer Zone
- Surveillance Zone
- Free Zone

Map:
- Buffer Zone
- Control Area (Infected Zone + Buffer Zone)
- Infected Premises
- Free Premises
- Free Areas
- Monitored Premises
- Suspect Premises
- At-Risk Premises
- Contact Premises

Scale:
- 1.84 miles (3 km)
- 6.2 miles (10 km)
Question for Risk-Based Permitting

Presumably, no premises in an *Infected Zone* can be permitted to move milk, and *Contact Premises* or *Suspect Premises* are too risky, but what about *Free Premises*?

- Might all *Free Premises* in a *Free Zone* be eligible for permits? Under what conditions?
- Under what conditions might *Free Premises* in a *Buffer Zone* become eligible for permits?
Some Lessons of SES Planning

- Plans to move ag products in a disease outbreak depend on overall readiness to respond to FAD.

- Preparation, especially regular outreach, risk assessment, and surveillance, are essential for FAD response. Industry participation is key.

- Baseline as well as enhanced biosecurity in production, hauling, and processing (e.g., farms, trucks, plants) must be in-place and verified before products can be permitted to move.
But Cows Ain’t Chickens
FMD Ain’t HPAI
Some Important Differences

- FMD is a much larger socio-economic hazard and much smaller (negligible) health hazard for humans than HPAI.

- Depopulation is a much more challenging strategy for FAD control among cattle than poultry, and “waste” (unused milk and cattle carcass) disposal is particularly daunting.

- Dairy farms are generally more numerous, more widely dispersed, and less biosecure than poultry farms, and they would be much more difficult to re-establish.
Initial SMS Assumptions

- Dairy premises with animals that are not known to be infected (based on visual inspection or not currently under investigation for FMD) need to continue to move raw milk to processing.

- Biosecurity protocols will be rapidly implemented and verified to control worst-case scenarios (respond as if there are undetected infected premises).

- Milk will be picked up only under permit from one dairy premises at a time and transported directly to an in-state processing plant.

- Other contingencies (e.g., co-mingled loads, interstate transport) will be handled in future plans.
Can we agree on some goals?

1. Develop more coordinated state FMD response plans (e.g., by embracing *The Red Book* with state-specific supplements on response organization and support of dairy continuity of business planning).

2. Support national SMS and FAST Milk planning.

3. In the meantime, advance regional readiness to move milk safely during an FMD outbreak (e.g., develop a single permitting procedure for in-state as well in-region, interstate transport).
Suggested Strategic Issues to Discuss

1. **Regional administration of a Milk Movement Plan**
   - Additional authority needed or desirable?
   - Liaison with other states, such as New York?

2. **Permitting procedure**
   - Substantive information. What criteria should state officials use to authorize the issuing of permits (e.g., what data on health status and biosecurity of each premises)?

3. **Outreach**
   - How best to pursue the advice and consent of farmers, co-ops, haulers, and processors.
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