“Framing the Issues”
A Canadian Perspective

Zoonoses Symposium

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Alberta

- 49th to 60th Parallel
- 255,287 sq miles
- 3.3 million people
- Capitol: Edmonton
Outline

- Exposure-Pathogens
- Complexity
- Drivers
- Jurisdiction
- Challenges
- Alberta examples
Exposure-Pathogen-Disease

• **Foodborne**
  – Salmonella, Shigella, Campy, E.coli, Clostridias, Listeria, Toxo, Yersinia, Trichinella

• **Environment**
  – Salmonella, Shigella, Campy, Giardia, Anthrax, lepto, toxoplasma

• **Other**
  – Influenzas, Anthrax, Brucella, Echinococcus, Q fever, Rabies, Ascaris, Psittacosis, Histoplasmosa, TB, MSRA
We’ve Had Our Outbreak’s

• **Foodborne**
  – Listeria in RTE meats 2008

• **Environment**
  – Walkerton E coli O157:H7 2000

• **Other**
  – Pandemic H1N1 2009
Burden of Disease

• Foodborne
  – Est: 11 million cases in Canada per year
  – BSE

• Environment
  – Maybe large but: → ?

• Other
  – Small: → ?
Burden of Disease

- **Foodborne**
  - Est: 11 million cases in Canada per year
  - [Source](http://www.inspection.gc.ca/english/fssa/concen/cause/perfrine.shtml)

- **Environment**
  - Maybe large but: → ?

- **Other**
  - Small: → ?

Source Attribution is Critical

Decision making

Prioritizing resources
Livestock Production
Domestic slaughter
Versus
Export
2008 data

From the Canadian meat council: http://www.cmccvc.com/english/industry_statistic_e.asp#Anchor15

Pigs
- Domestic Slaughter: 2.3 million head
- Export: 23.8 million head

Cattle
- Domestic Slaughter: 3.4 million head
- Export: 1.5 million head

Poultry
- Domestic Slaughter: 682.9 million head
- Export: 0

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Alberta Government of Alberta
Meat Production
Import Versus Export
2008 data

From the Canadian meat council: http://www.cmc-cvc.com/english/industry_statistic_e.asp#Anchor15

**Pork**
- Import: 136,206 Tonnes
- Export: 1,094,545 Tonnes

**Beef**
- Import: 149,000 Tonnes
- Export: 392,859 Tonnes

**Poultry**
- Import: 201,000 Tonnes
- Export: 116,000 Tonnes
Meat Consumption
Import Versus Consumption
2008 data

From the Canadian meat council: http://www.cmc-cvc.com/english/industry_statistic_e.asp#Anchor15

**Pork**
- **Import**: 136,206 Tonnes
- **Consumption**: 787,726 Tonnes

**Beef**
- **Import**: 149,000 Tonnes
- **Consumption**: 983,066 Tonnes

**Poultry**
- **Import**: 201,000 Tonnes
- **Consumption**: 1,275,908 Tonnes
Food Production is Very Complex

- Some industries are export dependent
- Some are focused on domestic markets
- Imports are not trivial
- Supply chains are very complex

Passive Animal Disease Surveillance in Canada
A Benchmark, Proceedings of a CAHNet Workshop held December 6, 1998
Ottawa, Ontario Prepared by: Christine Power, DVM, MSc
Alberta Cattle Movements 2007

- 644,962 shipments per year
- 1,767 shipments per day
- 7,424,196 cattle shipped per year
- 20,314 cattle shipped per day

July: 5,452 premises, 29,678 shipments, 374,455 cattle
Supply chain modeling

Agent Based Modeling
System Dynamics
Social Network Models
Discrete Event Models
Drivers

• Reduce burden of disease in people
  – Produce safe food

• Security of the food supply
  – Food borne pathogens disrupt supply of safe food

• Economic viability of the industry
  – Access to markets
  – Pathogen risk reduction to meet trading partners standard
  – Consumer confidence
Drivers

• Reduce burden of disease in people
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Source Attribution is Critical

Decision making

Prioritizing resources
Surveillance

• Measure the burden of disease and how it changes
  – Focus pathogen reduction activities
  – Valid attribute identification
  – Document the risk or health (trade)
  – Complete supply chain and human illness

• Early pathogen introduction ID
  – Mitigate the harm
    • Human illness
    • Loss to industry (markets animals)
AVSN: Alberta Veterinary Surveillance Network Infrastructure* for:

- Systematic continuous observation of AB livestock and poultry, and collection and analysis of data from many varied sources for:
  - Rapid detection (or identification) and timely, appropriate response to important livestock, poultry, food safety and public health events

And

- Production and communication of valid information and knowledge about the health and disease status of AB livestock and poultry and safety of their products

*People, Processes and Technology
Federal

• The Public Health Agency of Canada conducts outbreak surveillance and epidemiology and provides advice to protect people’s health.

• Health Canada develops food safety standards and policies to help minimize the risk of foodborne illnesses.

• The Canadian Food Inspection Agency carries out inspection of the food industry to ensure that it meets its food safety responsibilities.

Provincial

• Animal Health
  – Provincial scope varies across Canada
  – Provincially: by Ag Ministries
  – Federal: by the CFIA

• Food safety/meat inspection
  – Provincial scope varies across Canada
  – Provincial plants: Ag and Health ministries and CFIA
  – Federal plants: CFIA

• Public Health
  – Provincial scope varies cross Canada

[Government of Alberta]
FPT Initiatives

- National Animal Health and Welfare Strategy
- National Strategy for Safe Food
  - Agri-Subcommittee on Food Safety
  - Pathogen Reduction in Meat and Poultry Working Group
- Canadian Animal Health Surveillance Network
- Canadian Network for Public Health Intelligence
- Alberta livestock and meat strategy
Challenges:

• Knowledge creation and communication
  – Rapid outbreak identification
  – Burden of disease: priority setting
  – Disease attribution
  – Supply chain/distribution system

• Policy development
  – Evidence based
  – Communicate complex ideas to decision makers
  – Participatory: all stakeholders
  – Jurisdiction
Challenges:

• Response
  – Participatory: all stakeholders
  – Regulatory/governance

• Recovery
  – Participatory: all stakeholders
  – Compensation

• Cross domain collaboration at all levels

• Governance
  – Who decides who will make the decisions
Thank You