



Ontario Animal Health Surveillance Network

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Animal Health Surveillance Is Important

- **Province of Ontario, within the country of Canada**

Animals and animal products are important to the economy

- **contribute \$10 Billion annually to the provincial economy**

- **Animal diseases have negative impact on:**

- **the economy**
- **public health (zoonotic diseases affecting animals and people)**
- **animal welfare**
- **the environment**

- **Surveillance provides information to help manage risks**



Ontario Animal Health Surveillance Network

- **Ontario Ministry of Agriculture Food & Rural Affairs (OMAFRA) and the Animal Health Laboratory (AHL) University of Guelph provide core funding and staff to the OAHSN, links to CAHSN (see OMAFRA or AHL web site for more info)**



- **Vision:**

Healthy animals contributing to a healthy Ontario.

- **Mission:**

Advance animal health and welfare and related public, economic and environmental health.

- **Activities:**

collection, collation, analyses, interpretation of animal-health-data and dissemination of information to those who need it.

- **Outcomes:**

Support for timely well-informed decisions to manage animal-health-related-risks.



Ontario Animal Health Surveillance Network

More specific surveillance Objectives:



- **Rapid detection of serious diseases**



- **Understanding the animal population-at-risk**
animal type, numbers, location, movements etc



- **Evidence of Disease Freedom**
- **Frequency and distribution of diseases and hazards**
- **Information to prioritize research and risk management**

Ontario Animal Health Surveillance Network



Diseases in Scope:

- diseases affecting farmed animals
- disease in any animals that can affect people
- diseases that can move between farm, wild, companion or zoo animals



Diseases NOT in Scope:

- diseases affecting only people, wild, companion or zoo animals
- the human component of zoonoses

Skilled People, Laboratories, Legal Authority

People:

- approx. 3300 licensed veterinarians in Ontario
- OMAFRA specialists in: cattle, swine, sheep, goats, horses, poultry epidemiology, biosecurity, meat safety

Laboratories:

- AHL: 2 labs, certified AAVLD, SCC, ISO specialist in: pathology, virology, microbiology, immunology

Legal Authority:

- mandatory licensing, inspection, records of: veterinarians, abattoirs, markets, dead-stock-operators
- Federal Health of Animals Act (32 reportable diseases)
- Considering provincial legislation for more authority



Sources of Surveillance Information

AH Laboratory:



- direct electronic link into lab database to monitor and count submissions and test results for alarming trends (but not names)
- Work with AHL on specific surveillance projects (eg. AI, WNV, EEE, CWD, scrapie etc)



Abattoirs:



- FSDSS data base – OVC Grad Student project on cluster analyses
- eg. CWD, scrapie, lesions in swine

Livestock, Markets and Sales Yards:

- scrapie surveillance with CFIA
- some network analysis

Sources of Surveillance Information



Veterinary Practice Farm-Call Data:

- trial projects collecting farm-call data from swine and mixed veterinary practices
- Alberta Agriculture and CAHSN joint project



Wild Life:

- CCWHC dead wild bird surveillance for Avian Influenza



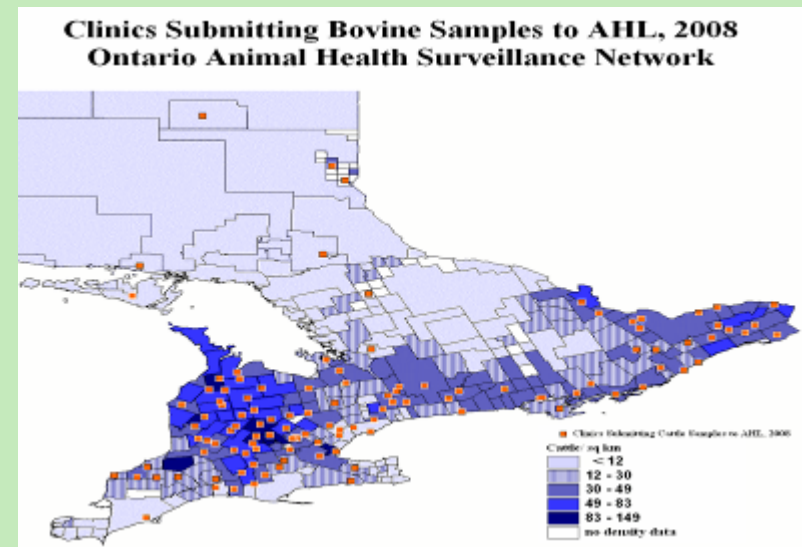
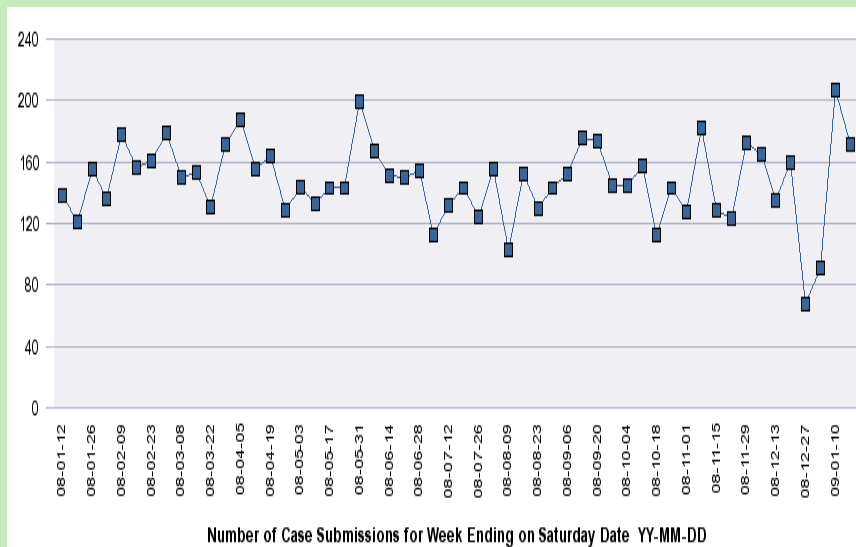
Scientific Literature and Internet

- emerging diseases world wide the might threaten Ontario

OAHSN: Sources of Surveillance Information

AH Laboratory:

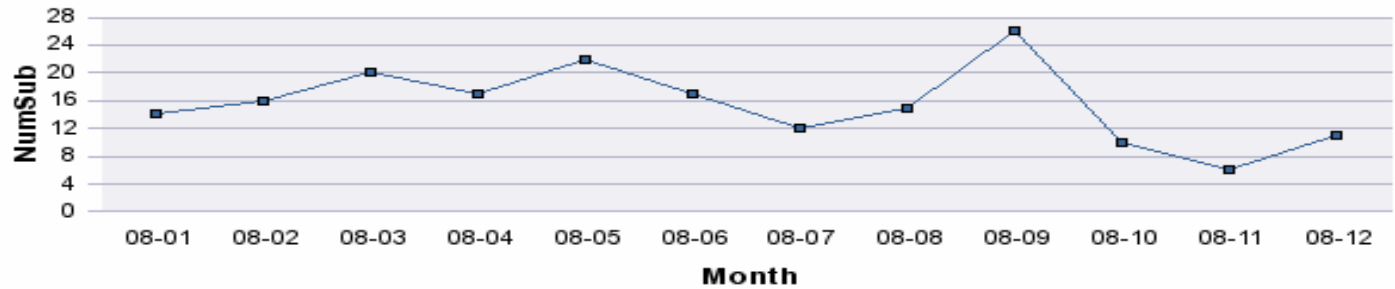
direct electronic link into lab database to monitor and count submissions and test results for alarming trends e.g. Weekly bovine submissions and geographic coverage



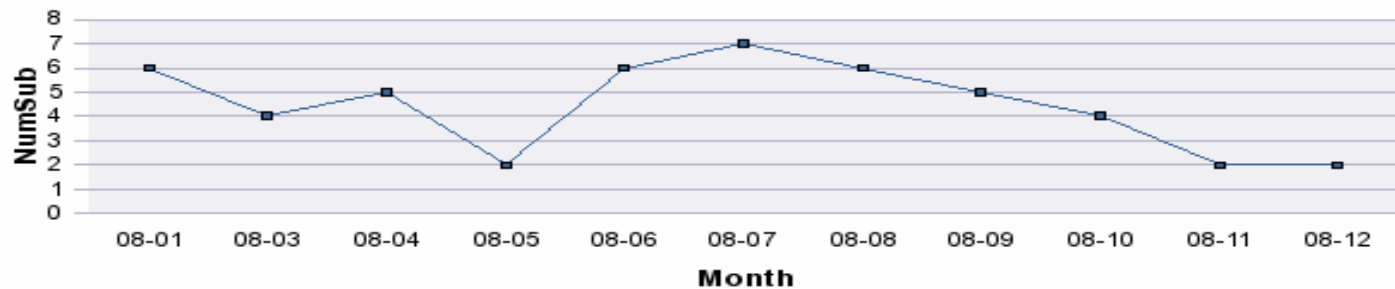
Number of Submissions Per Month With Salmonella Isolated



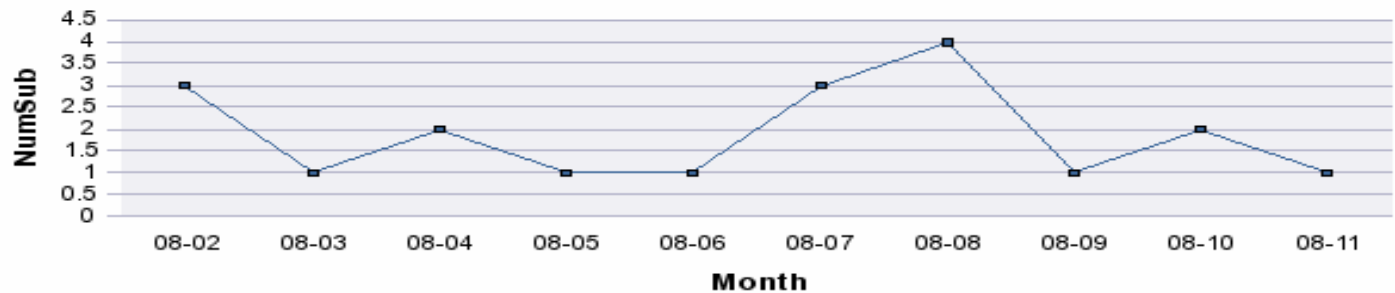
Chicken



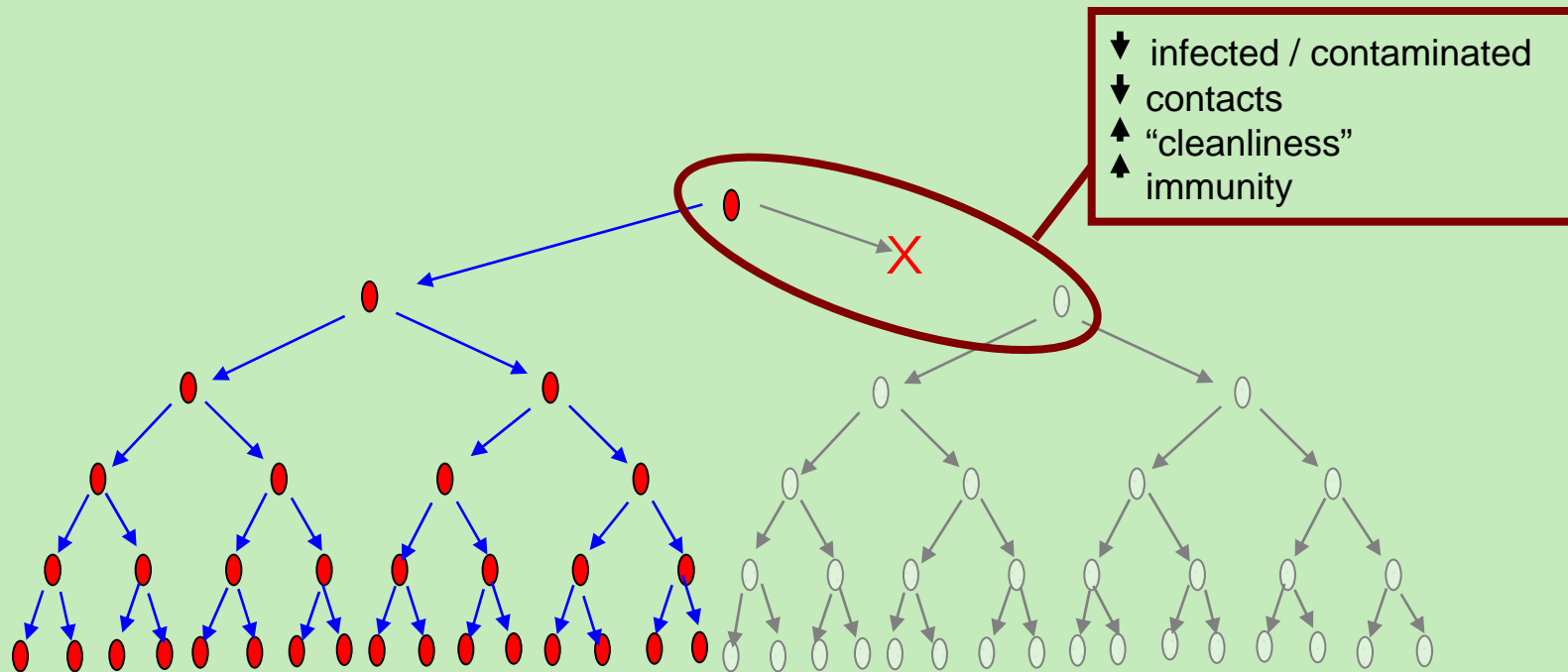
Bovine



Swine



Disease spread is inherently exponential, so little things matter



- When an individual prevents spread (washing hands, staying home when sick etc.) they protect not only their immediate co-workers etc., but also prevent subsequent spread from those people, and so on.
- Individuals must take responsibility for their personal disease reproductive ratio “R” i.e. the number of new cases they cause from themselves as an existing case
- In the above example, for simple illustration, R is mostly 2 new cases produced per existing case, except the first case that had an R of 1
- “R” is not just important mathematically in disease modeling, it is important personally

Summary of Factors Influencing R (new cases / existing case)

McNab & Dube, 2007 Vet Italiana 43:317-326



R new per existing e.g. 2 nwcs/cs =	=	duration available as "infectious" 5 da/cs	X	contact frequency 5 cnt/da	X	transmission probability 0.2 trns/cnt	X	susceptible proportion 0.4 susp/trns
get as low as possible	By	removing "infectious"		decreasing "contact"		increasing "cleanliness"		increasing "resistance"
OK	But	remove who what		allow who, what where		with what where, who how		select who, vaccinate with what
Increase precision		distinguishing true status surveillance		system flow ID tracing security		ongoing hard work		knowledge genetics vaccine

Ask not what "authorities" can do for you, do now what only you can do for society

Comments on Working Across Disciplines



- **Challenging**
- **Frustrating**
- **Rewarding**
- **Essential**

Yet to meet anyone in animal or public health who didn't care

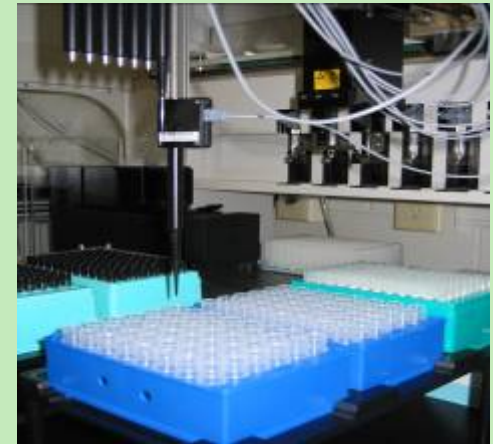


Thank you

Questions ?

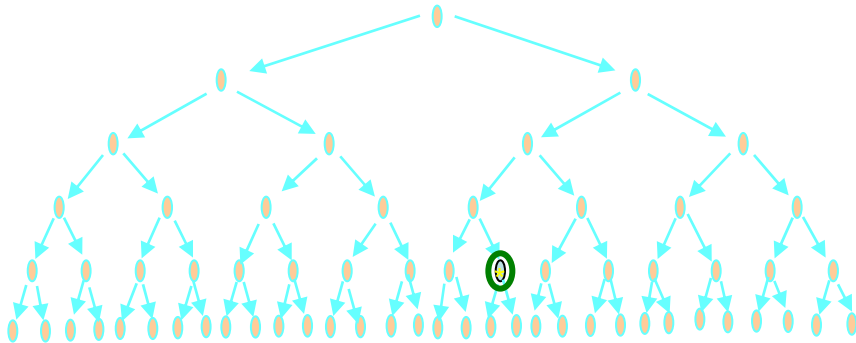
Example of Enhancing and Demonstrating Response : AI PCR Lab Surge Capacity Project

- joint project OMAFRA / AHL / CFIA (nearly completed, CFIA field test Apr'09)
- using 2D bar coded, vial scanner, robotics to greatly increase daily AI PCR capacity



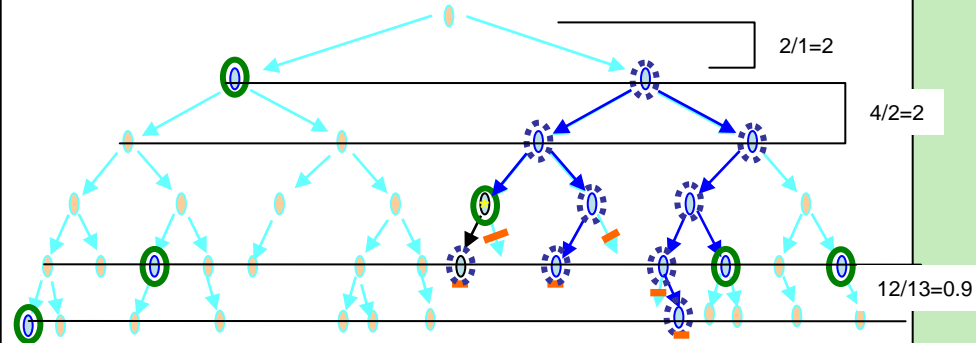
PREVENTION, Detection, response

1) @ 2 new/case, poor detctn & rspns



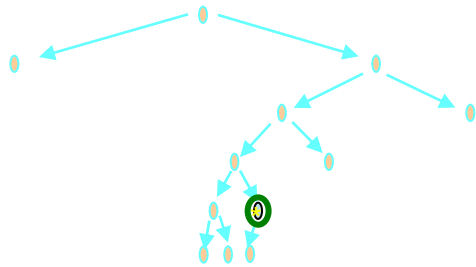
aware of 1, but 62 more (and spreading)

2) @ 2 new/case, reasonable detctn & rspns



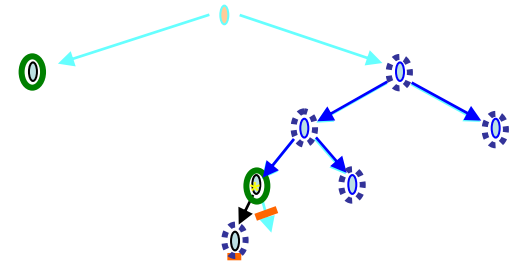
aware of 15, but 25 more (some spreading)

3) @ 1.2 new/case, poor detctn & rspns



aware of 1, but 11 more (some spreading)

4) @ 1.2 new/case, reasonable detctn & rspns



aware of 7, but 1 more (little or no spreading)

See McNab & Dubé for explanation