



# BSE Case Study: Public Health and the Public Good

Maura N. Ricketts MD MHSc FRCPC  
Executive Director, Office of Community Medicine  
First Nations and Inuit Health Branch  
Health Canada

# What is Public Health?

## Public Health:

- the science and art of promoting health, preventing disease, prolonging life and improving the quality of life through the organized efforts of society.

(John Last, 2001)

# What does PH do regarding vCJD?

	<b>Public Health Functions</b>				
<b>Core Program Areas</b>	Population Health Assessment	Public Health Surveillance	Disease and Injury Prevention	Health Promotion	Health Protection
Communicable Disease Prevention and Control	X	X	X		X
Prevention of Chronic Diseases and Injuries					
Health Development thru Lifecycle				X	
Environmental Health	X	X	X	X	X
Emergency Preparedness					

# What about vCJD?

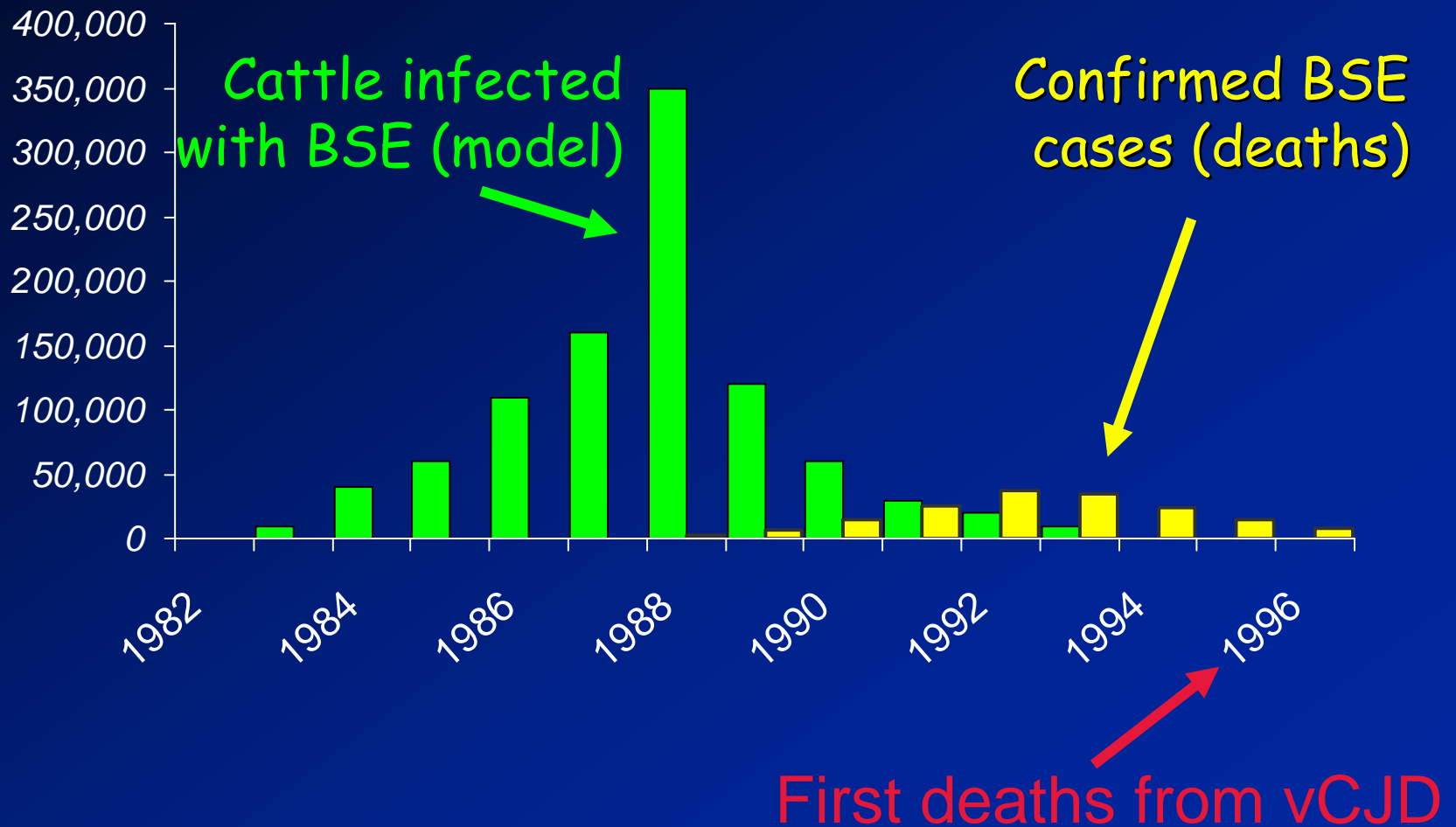
- How do people get vCJD?
- Is there any immunity? Treatment?
- Are there people at higher risk?
- Is there a test that can tell people they already are infected? will get the disease?
- Are there ways to stop people from getting BSE? from getting sick?
- Do people die or recover?

# Public Health Assessment

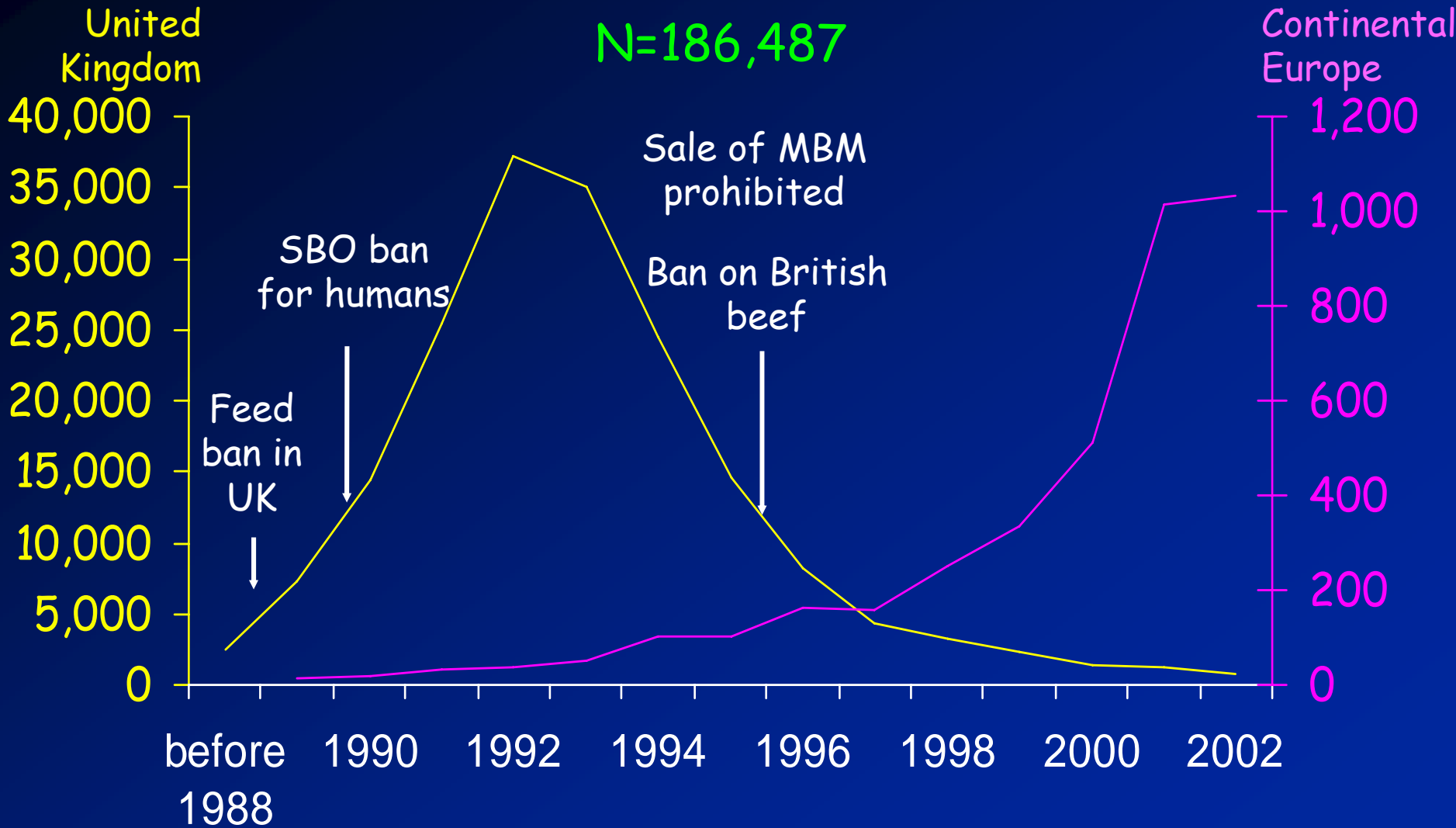
- Principle source of exposure for humans is food, just like for other animals
  - Risk must be very low because there are very few cases despite very large amounts of exposure
  - Most infectivity in SBO, MRM
- Human to human is a possible secondary route
  - Risk must be VERY low because almost no cases at all, but involves hospitals and medical practice.
- No test to detect agent in food or living animals
  - Can't screen so can't create fool-proof barriers in food chain
  - Must avoid exposure to *source* of infection
- Disease leads to death
  - Highly dreaded disease component, high public outrage
- BSE and vCJD - same agent
  - No BSE means no vCJD

# BSE Estimates

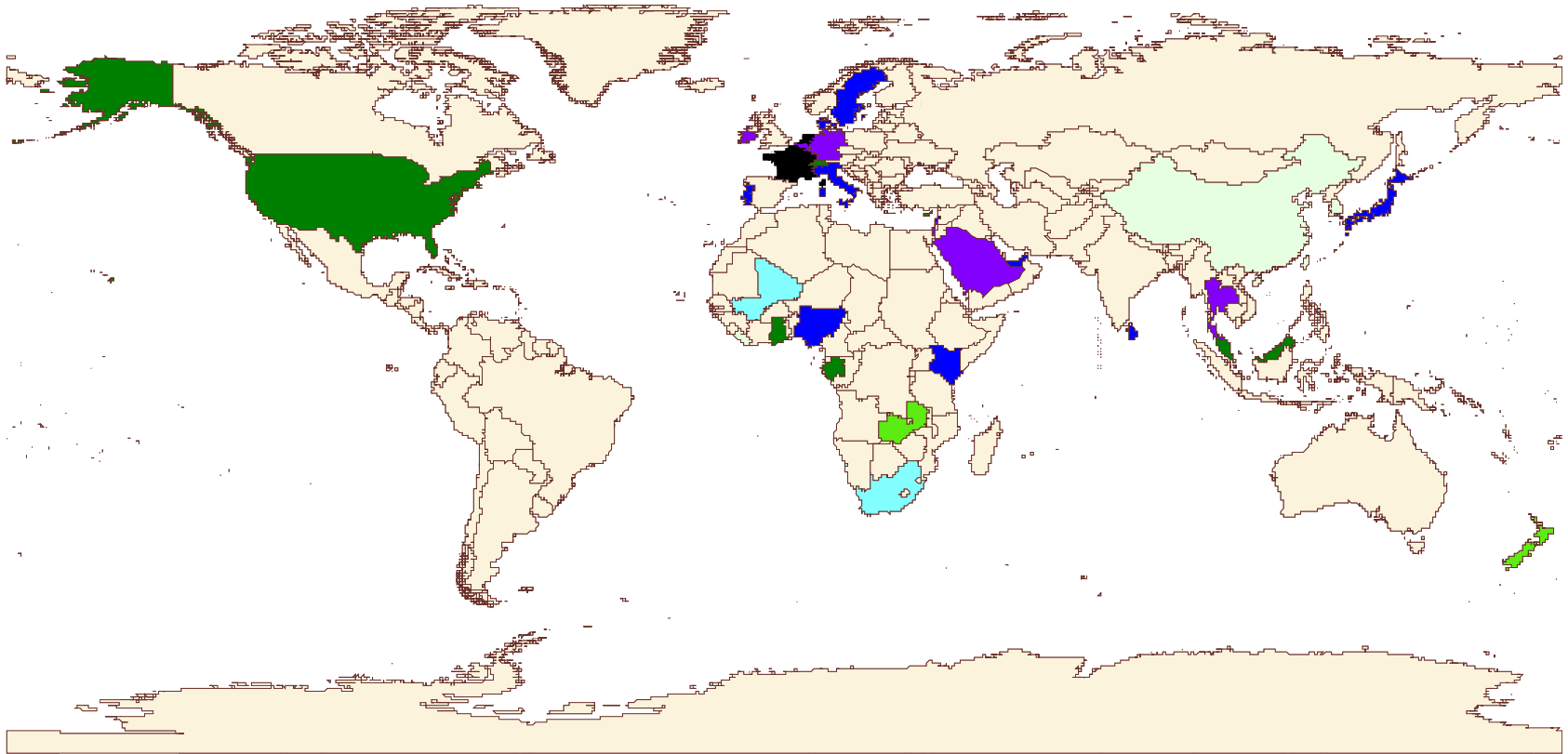
## Infections and Cases (n=1,000,000)



# BSE Reports in UK and Europe, by Year



# Total Exports of MBM 1986 - 1990 (the GBR period)



**Legend:**  
(in tonnes)

No data



0 - < 5



5 - < 10



10 - < 20



20 - < 100



100 - < 1.000



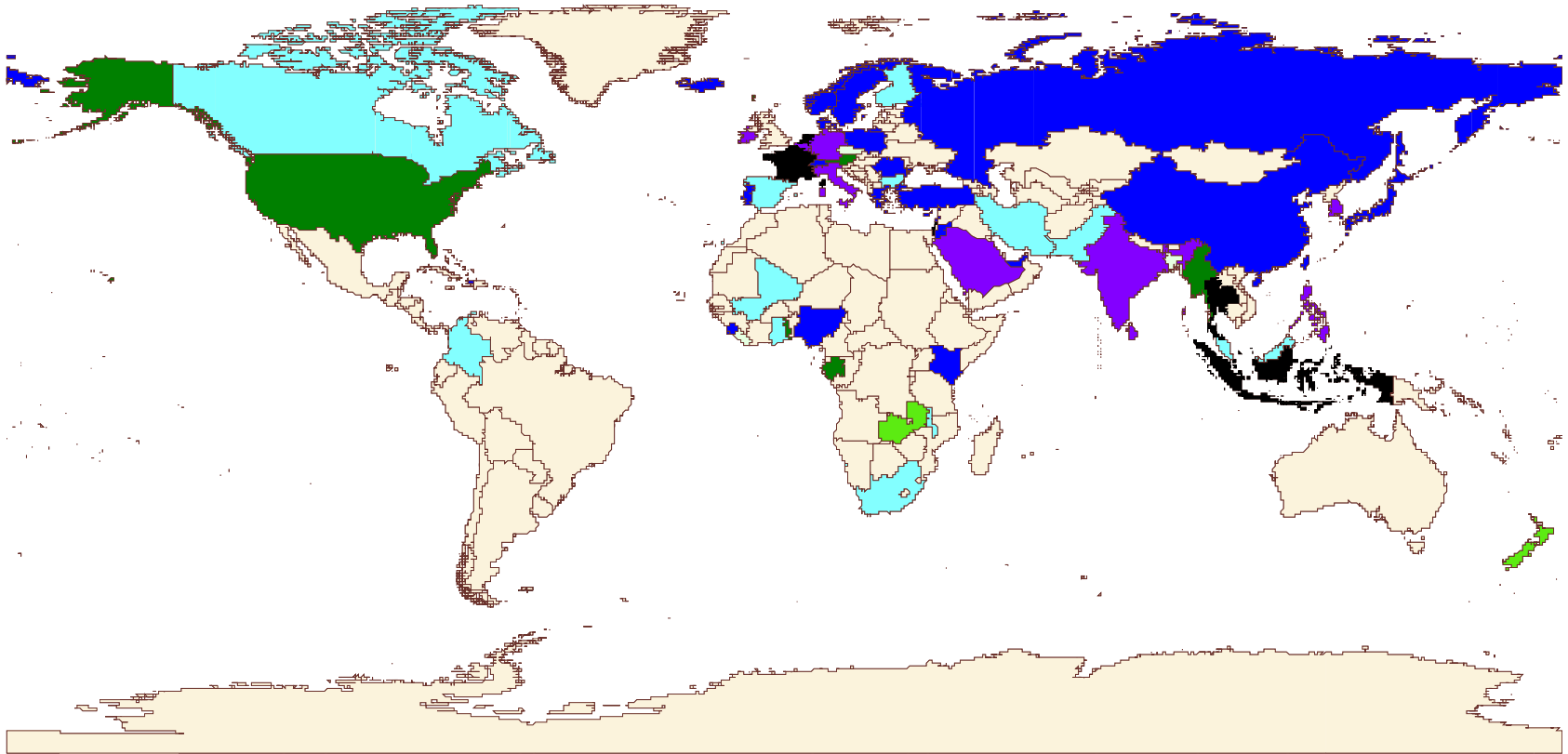
1.000 - < 10.000



> 10.000



# Total Exports of MBM 1986 -1995



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> 10.000



# Health Protection: Outbreak management

- ✓ Outbreak detection
- ✓ Epidemic investigation
- ✓ Establishment of case definition
- ✓ Establish etiology
- ✓ Confirm cases
  - ✓ Find cases
  - ✓ Define scope of problem
  - ✓ Descriptive epidemiology
  - ✓ Generate and test hypothesis

Source: Renewal of PH in Canada,

Report of the National Advisory Oommittee on PH, Oct 2003

# Health Protection: Outbreak management

- ✓ Report Findings to peer review
- ✓ Communications
- ✗ Control of epidemic through PH measures  
... cont'd

# Health Protection: Outbreak management

- ☒ Control of epidemic through PH measures
  - ☒ Control/reduce exposure
    - ☒ measures taken by animal health authorities
  - ☒ Prevent exposure
  - ☒ Prevent ongoing transmission among humans
    - ☒ Infection control, transplantation, blood safety etc
  - ☒ Eliminate or eradicate infection source

# What problems can be anticipated?

- Cases must be identified
  - Clinical knowledge
  - Awareness, interest and participation of neurologists, neuropathologists ... collaborative networking
- Diagnostic capacity
  - Specific laboratory capacity, including EKG, CSF, MRI
  - Neuropathology (high autopsy rates)
- Surveillance capacity
  - Centralized collection, analysis and dissemination of information for action
- Public health responsibilities
  - Interventions require collaboration of non-PH authorities

# What problems can be anticipated?

## ➤ Government support

- BSE risk assessment
- Assessment of population exposure to BSE agent
- Commitment to supporting surveillance activities

## ➤ NGO support

- Many interest groups and many different messages

## ➤ Private industry

- Trade based economy is resistant to disclosure
- Competitive markets are affected by changes

# How to manage exposure to BSE when bovine recycling is practiced?

- **Motivate reporting**
- **Control disease spread:**
  - Identify at-risk animals using sensible criteria, and destroy them;
  - Destroy cohort (definition of cohort is important)
  - Feed safety requires identify all sources of x-contamination from slaughter to farmyard
- **Reduce risk from apparently healthy animals:**
  - Remove and destroy SRMs
  - Control feed
- **Test where necessary**
  - does testing every animal lead to improved safety? Or is this risk perception management?

# A Chain is only as Strong as its Weakest Link

- Control the outbreak
- Surveillance
- Remove risk through slaughter
- Reduce risk through targeted interventions
- Elimination through case investigations
- Inspection and inspection infrastructure



**“Eradication of BSE must remain  
the principle public health objective of  
national and international  
animal health control authorities”**

