



fiosa

FOOD INDUSTRY OCCUPATIONAL
SAFETY ASSOCIATION OF BC

Zoonotic Diseases & Occupational Health Make It Safe Conference 2010

Zoonotic Diseases and Occupational Health

Presented by

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Director of Services and Resources
Food Industry Occupational Safety
Association (FIOSA)

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Agenda

- **Introductions: FIOSA and BCCDC**
- **Part 1**
 - Zoonosis as Occupational Disease
- **Part 2**
 - Zoonosis: the BC Perspective
- **Part 3**
 - Controlling Occupational Exposure to Zoonotic Disease

Zoonotic Diseases and Occupational Health

Part 1

Heinrich Beukes

Director of Services & Resources

Food Industry Occupational Safety
Association (FIOSA)

Outline

- FIOSA - who we are and what we do
- The term: Occupational Health and Safety; but what about HEALTH?
- What is an Occupational Disease?
- What is Zoonosis?

Outline

- Zoonosis as an Occupational Disease
- Controlling exposure to Zoonotic disease in the workplace
- Responsibilities of Employers and Workers
- The Exposure Control Plan

FIOSA Mission and Vision

Mission

- To foster commitment among employers to reduce the injury rate in all sectors of the food processing industry

Vision

- Industry leadership in health and safety

What does FIOSA do?

- **Occupational Health and Safety Services**
 - Consulting
 - Needs Assessments (program gap analysis)
 - Training
- **Occupational Health and Safety Resources**
 - Resource books
 - Information pamphlets
 - DVD and manuals
 - Online supporting tools
- **Certifying Partner (COR Program)**
 - Programs standards
 - Auditor selection and training
 - Quality assurance

That Term: Occupational Health and Safety

Occupational health and safety is a discipline with a broad scope involving many specialized fields:

- Promotion and maintenance of the highest degree of physical, mental and social well-being of workers;
- Prevention of adverse effects on health caused by their working conditions;
- Protection of workers in their employment from risks resulting from factors adverse to health;
- Placing and maintenance of workers in an occupational environment adapted to physical and mental needs; and
- Adaptation of work to humans.

That Term: Occupational Health and Safety

Think about your Health and Safety Program!

- How much effort is made around safety?
- How much effort is made around health?
- Why?



What is an Occupational Disease?

Occupational disease: Any illness associated with a particular occupation or industry. Such diseases result from a variety of **biological**, chemical, physical, and psychological factors that are present in the work environment or are otherwise encountered in the course of employment. -

Encyclopædia Britannica

What is a Zoonotic Disease?

Zoonotic disease: A disease communicable from animals to humans under natural conditions. - *Merriam Webster*

Examples:

- Tuberculosis
- Brucellosis
- Campylobacteriosis
- Q-Fever
- Leptospirosis
- Avian Flu, Swine Flu
- Rabies
- Ringworm Disease
- Lyme Disease
- Cat Scratch Fever
- Hanta Virus infection, etc.



Zoonotic Disease as Occupational Disease

If a worker is exposed to zoonotic disease agents in the course of, or as a result of their work, one should consider such exposures as occupational exposures; hence employers have the responsibility to control such exposures.

Zoonotic Disease as Occupational Disease

Typical Industries affected by specific Zoonotic Diseases:

Food Processors:

Listeriosis, Campylobacteriosis, Salmonellosis, Q fever, E-Coli, Brucellosis, Psittacosis, Rabies, Ringworm, Avian/Swine Flu, Bovine Tuberculosis, Swine Streptococcus infections, etc.

Farm and Ranch:

Hantavirus, Campylobacteriosis, E-Coli, Brucellosis, Psittacosis, Rabies, Ringworm, Avian/Swine Flu, Nipah Virus, West Nile Virus, Chlamydiosis, Bovine Tuberculosis, Wool-sorters Disease, Swine Streptococcus infections etc.

Zoonotic Disease as Occupational Disease

Typical Industries affected by specific Zoonotic Diseases:

Veterinarians/Pet Shop workers:

Toxoplasmosis, MRSA, Listeriosis, Salmonellosis, Campylobacteriosis, Q fever, E-Coli, Brucellosis, Psittacosis, Rabies, Ringworm, Avian Flu, Bovine Tuberculosis, Swine Streptococcus infections, Baylisascaris, etc.

Game Rangers/Wildlife workers

Hantavirus, Rabies, Ringworm, Tularemia, Tick-Borne Relapsing fever, Ratbite fever, Plague, Baylisascaris, etc.

Zoonotic Diseases and Occupational Health

Part 2

Marsha Taylor
Epidemiologist,
BC Centre for Disease Control (BCCDC)

Outline

- BCCDC - who we are and what we do
- Public health surveillance
- Diseases of interest in BC
- Exposure and transmission during food processing
- Diseases of interest for food handlers

The British Columbia Centre for Disease Control provides provincial and national leadership in public health through surveillance, detection, prevention, consultation and provides both direct diagnostic and treatment services to people with diseases of public health significance.

Surveillance

- All reportable communicable diseases

Coordination of inter-provincial outbreaks and programs

- Immunizations, inspection services for provincial dairies, outbreak management

Guidelines and policies

- Exclusion guidelines, Rabies

Teaching

- Partners with UBC and SFU

Research

- Clinical, lab and Epi

Work in collaboration with the five regional health authorities and Ministry of Healthy Living and Sport

Divisions at the BCCDC

- Epidemiology Services
- Environmental Health Services
- BCCDC Public Health Lab
- Hepatitis, TB, STI/HIV, Pharmacy, Emergency Management

Reportable Diseases in BC

LIST OF REPORTABLE COMMUNICABLE DISEASES IN BC July 2009

Schedule A: Reportable by all sources, including Laboratories

Acquired Immune Deficiency Syndrome
 Anthrax
 Botulism
 Brucellosis
 Chancroid
 Cholera
 Congenital Infections:
 Toxoplasmosis
 Rubella
 Cytomegalovirus
 Herpes Simplex
 Varicella-Zoster
 Hepatitis B Virus
 Listeriosis and any other congenital infection
 Creutzfeldt-Jacob Disease
 Cryptococcal infection
 Cryptosporidiosis
 Cyclospora infection
 Diffuse Lamellar Keratitis
 Diphtheria:
 Cases
 Carriers
 Encephalitis:
 Post-infectious
 Subacute sclerosing panencephalitis
 Vaccine-related
 Viral
 Foodborne illness:
 All causes
 Gastroenteritis epidemic:
 Bacterial
 Parasitic
 Viral
 Genital Chlamydia Infection
 Giardiasis
 Gonorrhoea – all sites
 Group A Streptococcal Disease, Invasive
 H5 and H7 strains of the Influenza virus
Haemophilus influenzae Disease,
 All Invasive, by Type
 Hantavirus Pulmonary Syndrome
 Hemolytic Uremic Syndrome (HUS)
 Hemorrhagic Viral Fevers
 Hepatitis Viral:
 Hepatitis A
 Hepatitis B
 Hepatitis C
 Hepatitis E
 Other Viral Hepatitis
 Human Immunodeficiency Virus Infection
 Leprosy
 Lyme Disease
 Measles
 Meningitis: All causes
 (i) Bacterial:
 Haemophilus
 Pneumococcal
 Other
 (ii) Viral

Meningococcal Disease, All Invasive
 including "Primary Meningococcal
 Pneumonia" and "Primary Meningococcal
 Conjunctivitis"
 Mumps
 Neonatal Group B Streptococcal Infection
 Paralytic Shellfish Poisoning (PSP)
 Pertussis (Whooping Cough)
 Plague
 Poliomyelitis
 Rabies
 Reye Syndrome
 Rubella
 Severe Acute Respiratory Syndrome (SARS)
 Smallpox
Streptococcus pneumoniae Infection, Invasive
 Syphilis
 Tetanus
 Transfusion Transmitted Infection
 Tuberculosis
 Tularemia
 Typhoid Fever and Paratyphoid Fever
 Waterborne illness
 All causes
 West Nile Virus Infection
 Yellow Fever

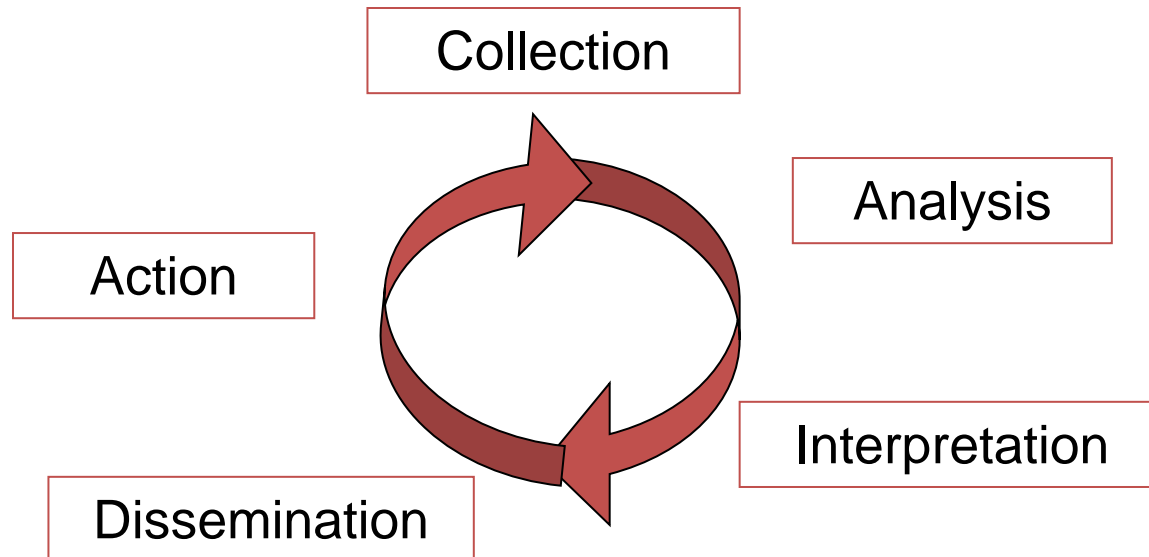
Schedule B: Reportable by Laboratories only

All specific bacterial and viral stool pathogens:
 (i) Bacterial:
 Campylobacter
 Salmonella
 Shigella
 Yersinia
 (ii) Viral
 Amoebiasis
Borrelia burgdorferi infection
 Cerebrospinal Fluid Micro-organisms
 Chlamydial Diseases, including Psittacosis
 Creutzfeldt-Jacob Disease
 Cryptococcal Infection
 Herpes Genitalis
 Human Immunodeficiency Virus Infection
 Influenza virus, including the H5 and H7 strains
 Legionellosis
 Leptospirosis
 Listeriosis
 Malaria
 Q Fever
 Rickettsial Diseases
 Severe Acute Respiratory Syndrome (SARS)
 Smallpox
 Tularemia
 West Nile Virus Infection

As per Health Act Communicable Disease Regulation B.C. Reg. 4/83 O.C. 6/83
 includes amendments up to B.C. Reg. 70/2008, April 10, 2008
http://www.qp.gov.bc.ca/statreg/H/Health4_83.htm

Surveillance

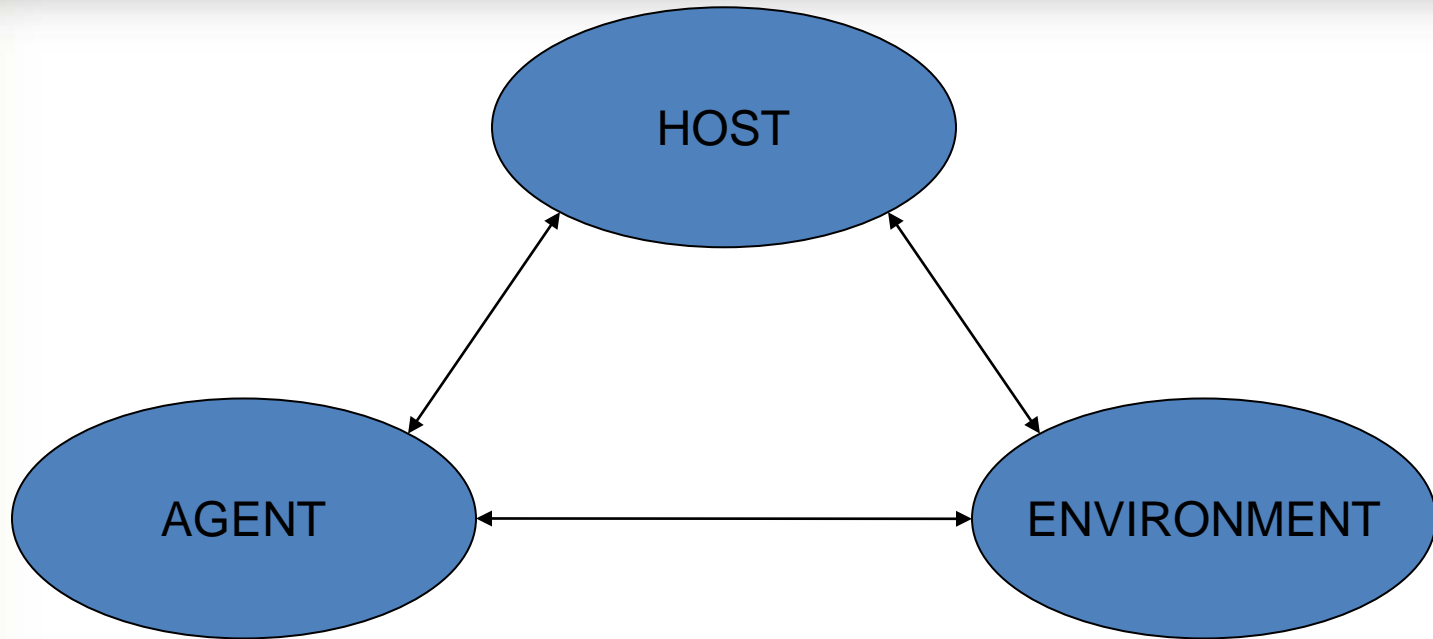
Collection, analysis, interpretation and dissemination of data that leads to action to prevent and control disease.



How do we conduct surveillance?

- Public health reporting
 - Reported to the HA
 - Entered into communicable disease reporting system
 - Case follow-up conducted as required
- Analyze for trends (person, place and time)
- Report
 - <http://www.bccdc.ca>

Epidemiologic Triad



Transmission types:

Person to person

Food borne

Environmental

Animal to person

Waterborne

Airborne

Vector borne

Campylobacter and Salmonella

Campylobacteriosis

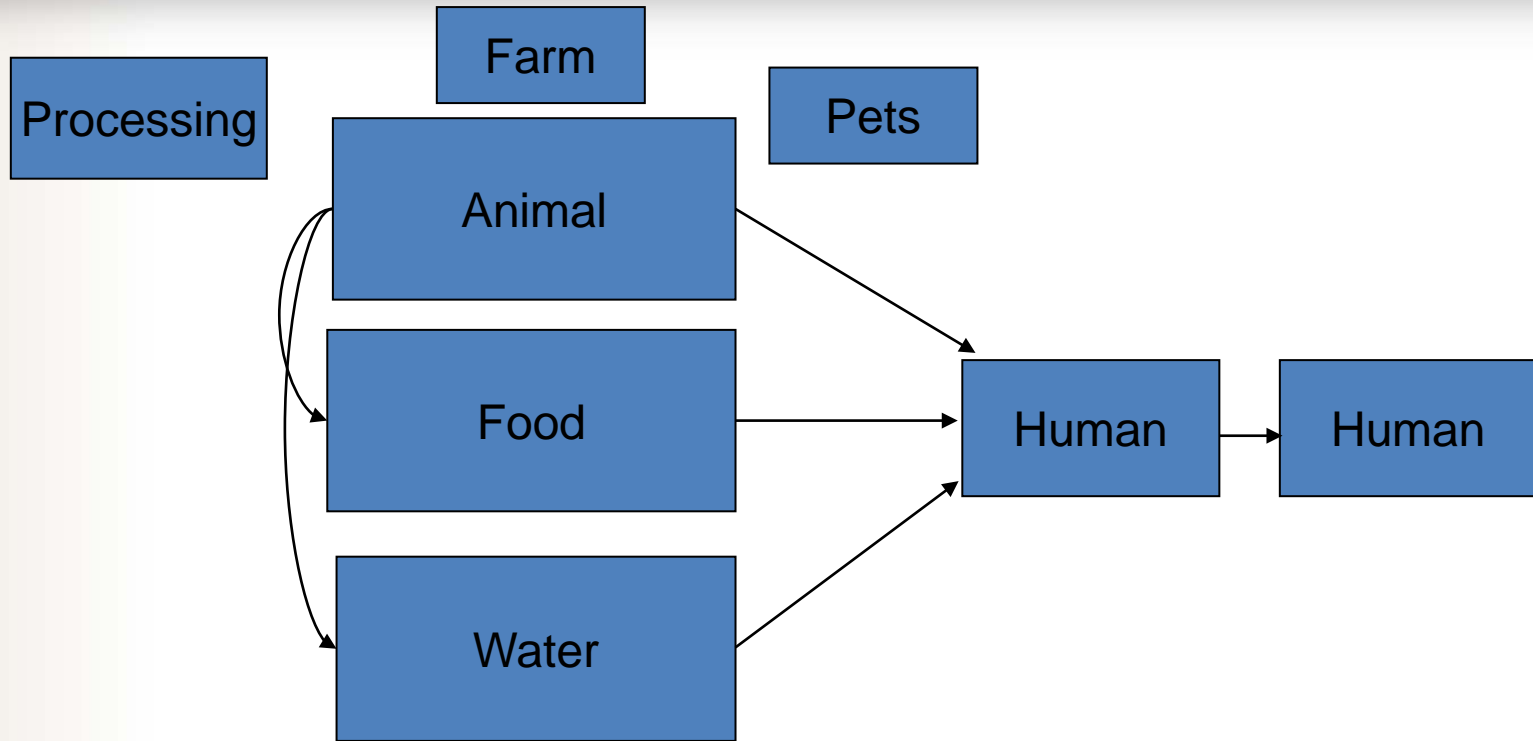
- 1750 cases in 2009
- Enteric symptoms
- Transmission: animal-human, food-human; water-human; person to person
- Exposures: poultry products, raw milk, untreated water, animal contact
- Incubation: 2-5 days (range of 1-10 days)
- Treatment: rest and rehydration
- Prevention: Proper food preparation, hygiene, storage



Salmonellosis

- 952 cases in 2009
- Enteric symptoms
 - Typhoid/Paratyphoid fever
- Transmission: animal-human, food-human; water-human; person to person
- Exposures: chicken, eggs, pets/pet treats, fresh produce, peanut butter...
- Incubation: 12-36 hours (range of 6-72 hours)
- Treatment: rest and rehydration. Antibiotics for severe cases
- Prevention: Proper food preparation, hygiene, storage

Transmission



Brucellosis & Q Fever



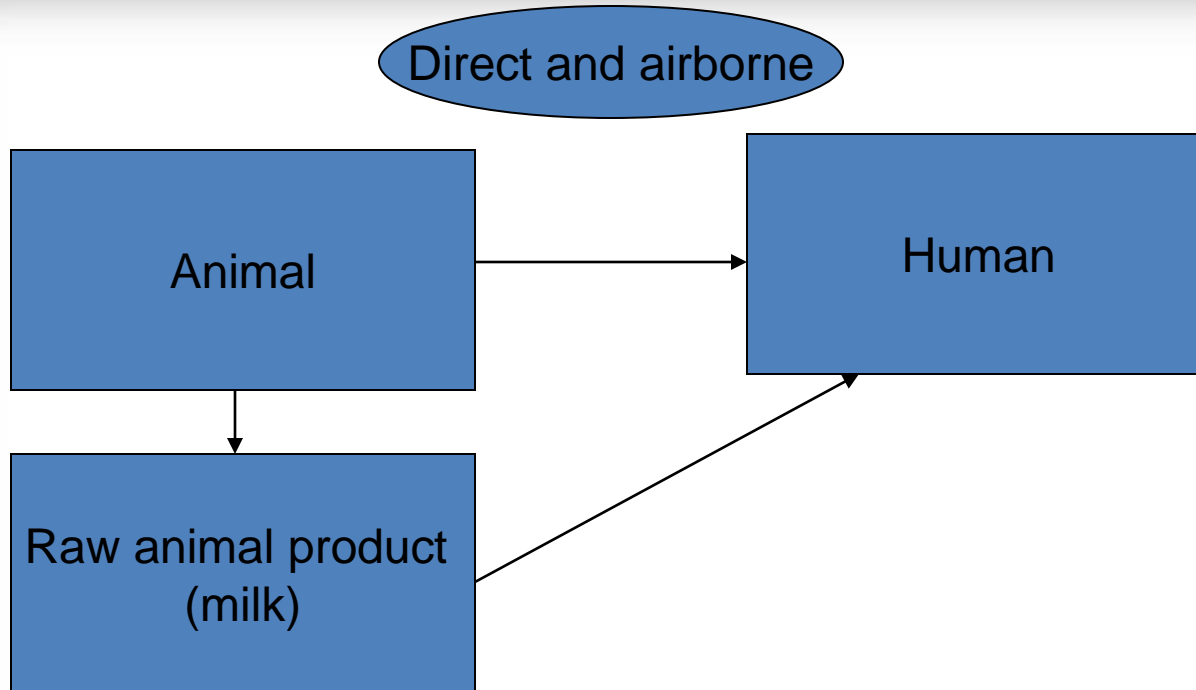
Brucellosis

- 0 cases reported in 2009, 5 cases since 1999 (travel out of country)
- Symptoms: fever, night sweats, fatigue, anorexia, weight loss, headache, and joint pain
- Transmission: animal-human (airborne or direct contact); food-human
- Exposures: Contact with tissue, blood, urine, discharge, fetus (processing, slaughterhouses, vets, farm, hunting); raw dairy products, animal contact (cattle, swine, goats, sheep)
- Incubation: 1-2 months, highly variable
- Treatment: antibiotic treatment, environmental cleaning
- Prevention: Pasteurization, education, personal protection and hygiene

Q Fever

- 1 case reported in 2009, 7 cases since 2000
- Symptoms: fever, muscle pain, malaise, headache. Asymptomatic infections may also occur.
- Transmission: animal-human (airborne or direct contact), food-human
- Exposures: Placental tissues and excrement, contaminated materials (bedding, fertilizer), raw dairy, animal contact (cattle, swine, goats, sheep)
- Incubation: 2-3 weeks
- Treatment: antibiotic treatment, environmental cleaning
- Prevention: Pasteurization, education, personal protection and hygiene

Transmission



Lyme Disease & West Nile Virus

Lyme Disease

- 10 cases reported in 2009
- Signs and symptoms: Erythema migrans rash, fever, headache, fatigue, malaise
- Transmission: tickborne (*Ixodes pacificus*)
- Exposures: long grass areas (lower mainland and coastal regions, limited in the Interior)
- Incubation: 7-10 days
- Treatment: Antibiotics
- Prevention:
 - Walk on cleared trails;
 - Wear a hat, long sleeves and pants and light coloured clothing;
 - Tuck pant legs into socks or boots;
 - Use an insect repellent containing DEET on clothing and exposed skin

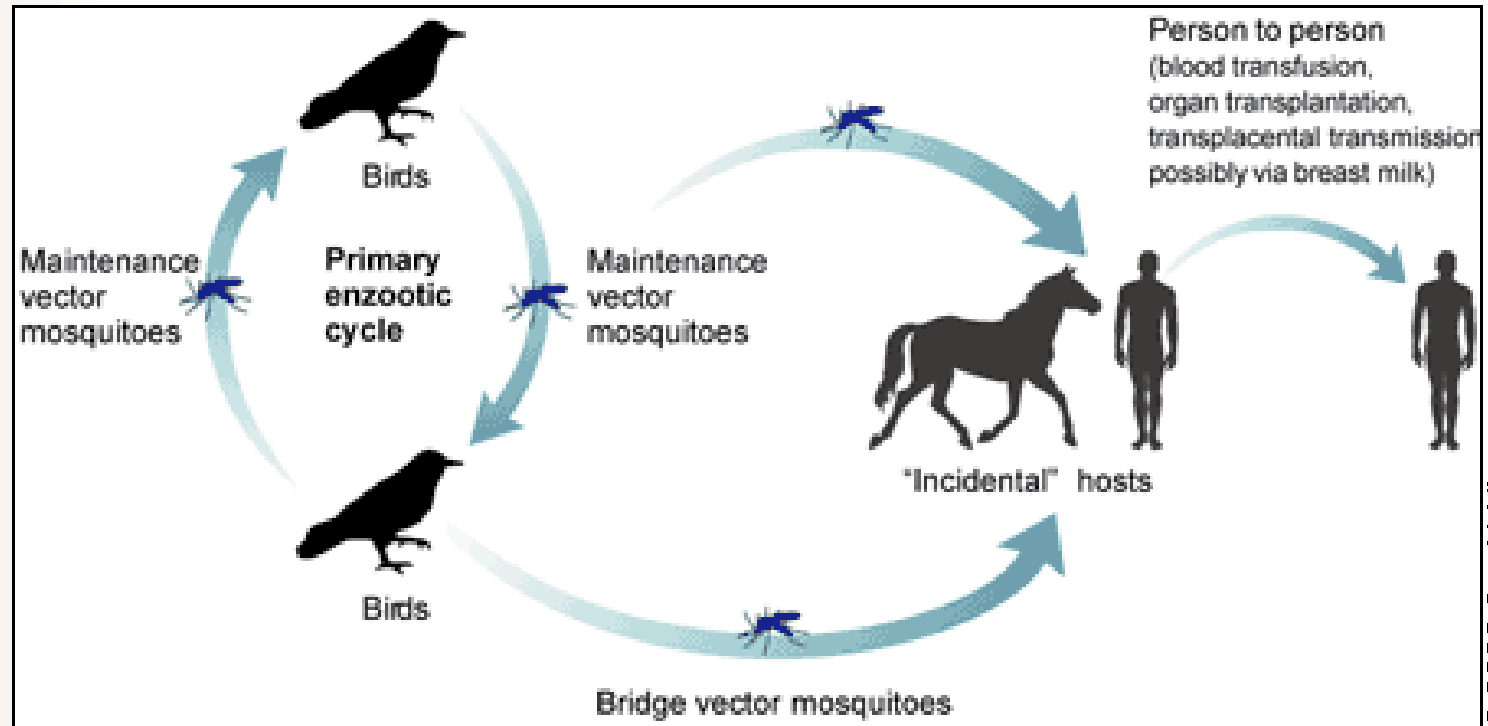


West Nile Virus

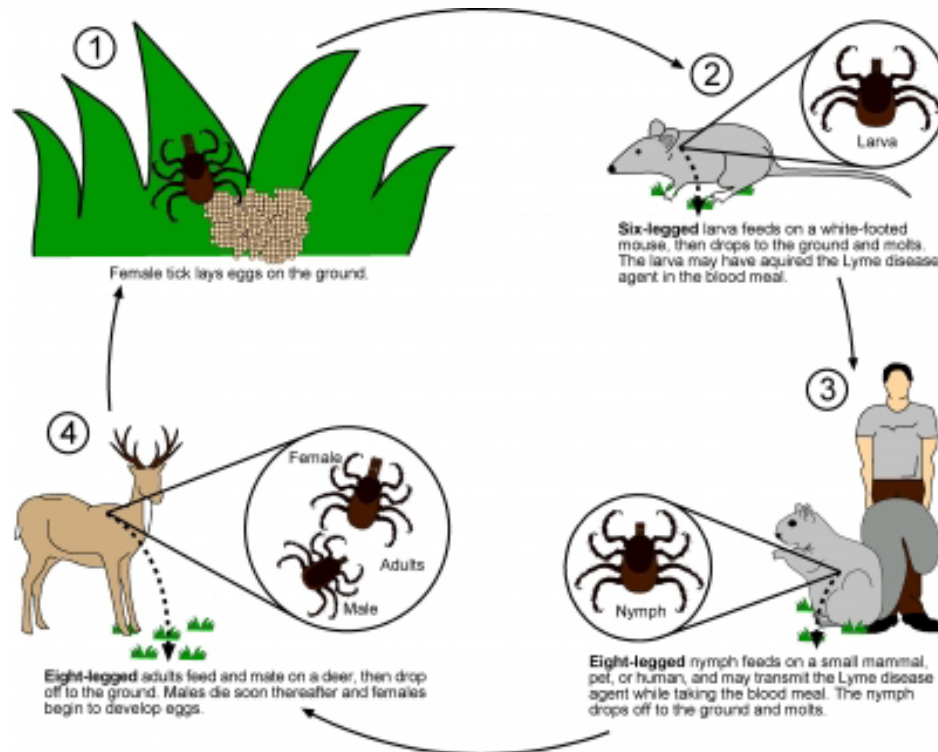
- 3 cases reported in 2009 (2 locally acquired)
- Signs and symptoms:
 - Non-neurologic: Fever, headaches, malaise, myalgia, arthralgia
 - Neurologic: Encephalitis
- Transmission: Mosquitoes (*C. tarsalis*, *C. pipiens*)
- Exposures: Exposure to mosquitoes carrying the virus.
 - Summer months
 - Dusk
- Incubation: 2 weeks
- Prevention:
 - Wear a hat, long sleeves and pants and light coloured clothing;
 - Use an insect repellent containing DEET on clothing and exposed skin
 - Remove potential breeding areas
 - Larvaciding



West Nile Virus Transmission



Lyme Disease Transmission





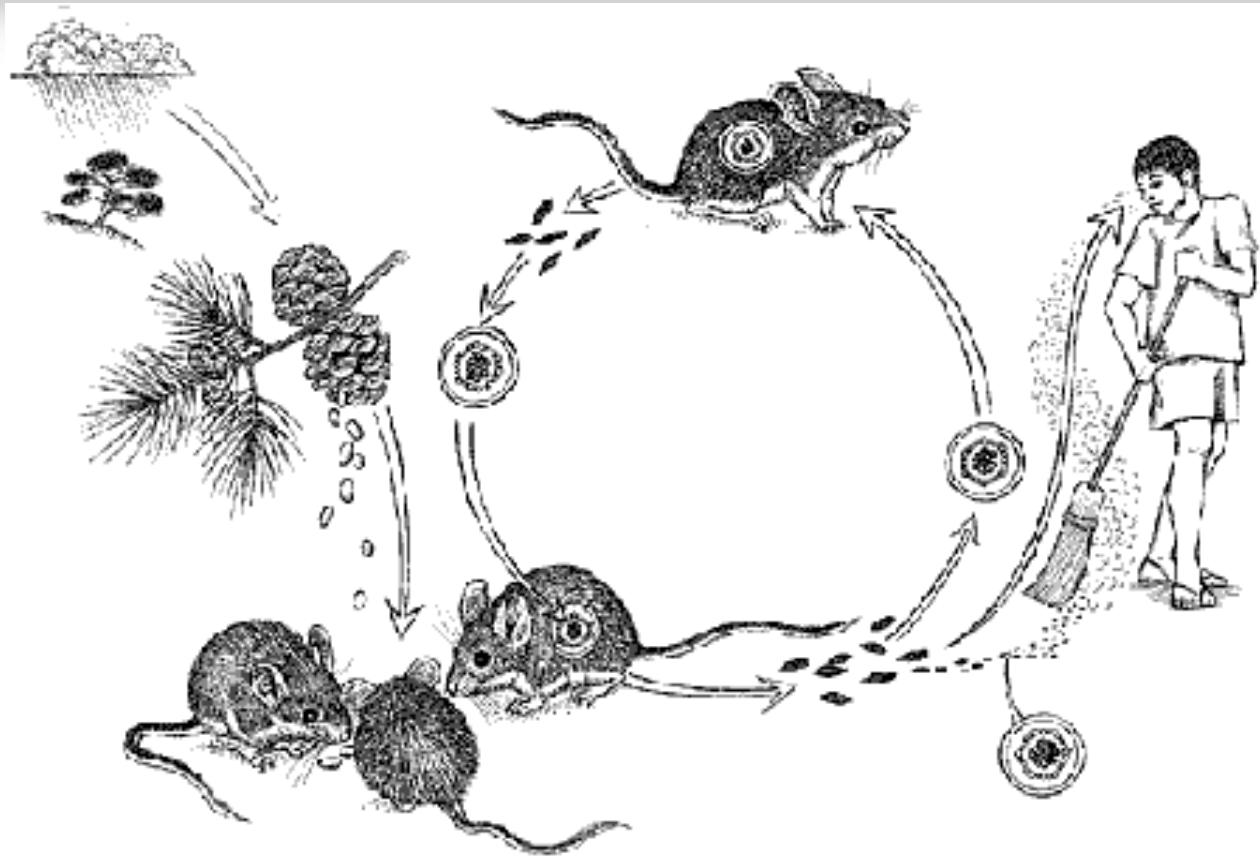
Rabies

- 167 exposures reported in 2009, no infections.
 - Human cases reported in 1983 and 2003
- Signs and symptoms: Fever, anxiety, and malaise. Tingling at the site of the animal bite. Neurological signs ranging from hyperactivity to paralysis.
- Transmission: Bite or scratch in the skin or contact with intact mucous membranes (by rabid wild or domestic animals)
- Exposures: Bats are the only known reservoir in BC.
 - In other parts of Canada, bats, skunks, raccoons, foxes and coyotes have been found to be infected.
 - In the developing world dogs are a major source of infection
- Incubation: 3-8 weeks (range of days to years). Depends on amount and strain of virus, severity and location of wound
- Treatment: Rabies Post Exposure Prophylaxis. Based on clinical assessment

Hantavirus Pulmonary Syndrome

- 0 cases reported in 2009
 - 11 cases reported since 1994, 10 locally acquired
- Signs and symptoms: Fatigue, fever, muscle aches, headaches, chills, dizziness, coughing, shortness of breath
- Transmission: animal to human (wild mice-deer mouse)
- Exposures: Rodents shed the virus in their urine, droppings and saliva when this is stirred up it becomes aerosolized.
- Incubation: 2-4 weeks (may be months)
- Prevention:
 - Rodent-proofing
 - Remove droppings in a manner to not disturb them or wear protection

Hantavirus Transmission



Other Diseases of Interest

- Leptospirosis
- Hepatitis
- Influenza
- Tularemia

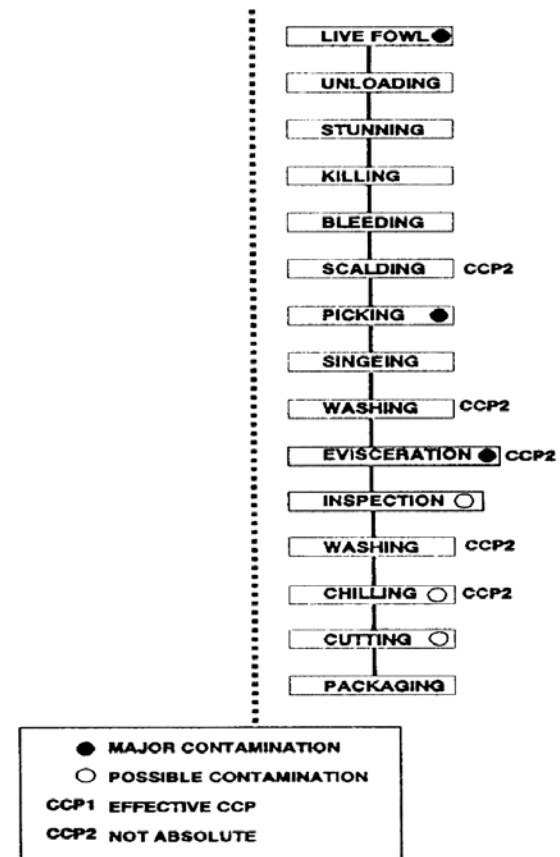
Summary of Symptoms

- **Campylobacter and Salmonella**
 - Diarrhea, nausea, vomiting, headache, abdominal pain, fever
- **Brucellosis**
 - Fever, night sweats, fatigue, anorexia, weight loss, headache, and joint pain
- **Q fever**
 - Fever, muscle pain, malaise, headache, sweats
- **WN Virus**
 - Non-neurologic: Fever, headaches, malaise, myalgia, arthralgia
 - Neurologic: Encephalitis
- **Lyme disease**
 - Erythema migrans rash, fever, headache, fatigue, malaise
- **Rabies**
 - Fever, anxiety, and malaise, tingling, neurological symptoms
- **Hantavirus pulmonary syndrome**
 - Fatigue, fever, muscle aches, headaches, chills, dizziness, coughing, shortness of breath

Have you been exposed
in an occupational setting?

Steps in Food Processing

- Receiving
- Preparing / Sorting
- Processing
- Cleaning and Maintenance
- Packaging
- Storage
- Shipping



Where can you be exposed in food processing?

- Contact with live animals, bedding, urine and faeces
- Contact during slaughter
- Contact during evisceration
- Contact during further processing (cutting, boning)
- Contact with the environment
 - Surfaces
 - Wash water

Why are food handlers important in disease transmission?

- **Direct contact with food**
 - Food is a common source of enteric illness
 - Person to person spread is possible
- **Contact with multiple people in a short period of time**
 - Increased probability of transmitting disease to more people

Examples of outbreak related to food handling

ORIGINAL ARTICLES

IMAJ • VOL 12 • FEBRUARY 2009

***Salmonella enterica* Outbreak in a Banqueting Hall in Jerusalem: the Unseen Hand of the Epidemiological Triangle?**

Evaluation of Methods for Subtyping *Campylobacter jejuni* during an Outbreak Involving a Food Handler

Clostridium perfringens in London, July 2009: two weddings and an outbreak

Occurrence of Norovirus Infections Unrelated to Norovirus Outbreaks in an Asymptomatic Food Handler Population[▽]

An outbreak of hepatitis A in Southern Italy: the case for vaccinating food handlers

A community outbreak of travel-acquired Hepatitis A transmitted by an infected food handler

Controlling Occupational Exposure to Zoonotic Diseases

Part 3

Heinrich Beukes
Director of Services and Resources
FIOSA Food Industry Occupational Safety
Association (FIOSA)

Controlling Occupational Exposure to Zoonotic Diseases

WORK SAFE BC

- Employers are required by law to ensure that work is being conducted safely, and to protect their workers from all work-related hazards, **including exposure to infectious diseases.**
- **Section 115 of the Workers Compensation Act** specifies that employers are not only responsible for their own workers, but also for any other workers who may be present at their workplace.

Controlling Occupational Exposure to Zoonotic Diseases

Employer Responsibilities

- Identify infectious diseases that are, or may be, in the workplace.
- Develop and implement an **Exposure Control Plan**.
- Inform workers about how they may be exposed to Zoonotic diseases and the health hazards.
- Educate, train, and supervise workers on safe work procedures

Controlling Occupational Exposure to Zoonotic Diseases

Employer Responsibilities

- Offer vaccinations as recommended in the BC Centre for Disease Control's Communicable Disease Control Manual
- Provide resources to control exposure, for example gloves, sanitizers, respirators etc.
- Tell workers to seek medical attention when required

Controlling Exposure to Zoonotic Diseases

Worker Responsibilities

- Attend education and training sessions.
- Follow safe work procedures, including hand washing and wearing PPE, if applicable.
- Seek immediate first aid and medical attention after an suspected occupational exposure.

Controlling Occupational Exposure to Zoonotic Diseases

Worker Responsibilities

- Report exposure incidents to supervisors or managers.
- Refuse work that they have reasonable cause to believe will put themselves or others at risk of exposure, and report to their supervisor without delay.
- Keep a record of vaccinations, and ensure vaccinations are up to date.

Exposure Control Plan

What is an Exposure Control Plan?

An exposure control plan is a **document** that **describes** how workers will be **protected** from **infectious diseases** in the workplace. It includes information on the **nature** of the hazards and the risks associated with exposure, as well as **controls** such as safe work procedures that the employer will use to protect workers

Exposure Control Plan

Elements of an Exposure Control Plan:

- Policy Statement
- Assigned roles and responsibilities
- Hazard ID and prioritization by risk
- Control Mechanisms
- Record Keeping
- Program Evaluation



Exposure Control Plan

Policy Statement (sample)

Xxxxxxxx is **committed** to providing a safe and healthy workplace for all of our staff. A combination of measures will be used to achieve this objective, including the **most effective control technologies** available. Our work **procedures** will protect not only **our workers**, but also any **other workers** who enter our workplace. All employees **must follow** the procedures described in this plan to prevent or reduce exposure to infectious diseases.”

Exposure Control Plan

Assigned Roles and Responsibilities (sample)

Management:

- Ensure that the resources (for example, safe work procedures, worker training, and PPE) required to implement and maintain the exposure control plan are readily available.
- Select, implement, and document the appropriate site-specific control measures.
- Ensure that supervisors and workers are educated and trained.

cont...

Exposure Control Plan

Assigned Roles and Responsibilities (Sample)

Management:

- Ensure that workers use appropriate PPE (for example, gloves, gowns, eye protection, and respirators).
- Maintain records of training and inspections.
- Ensure that a copy of the exposure control plan is available to workers.
- Conduct a periodic review of the plan's effectiveness.

Exposure Control Plan

Assigned Roles and Responsibilities (Sample)

Supervisors:

- Ensure that workers are adequately instructed on the controls for the hazards at the location.
- Ensure that workers use appropriate PPE.
- If workers require respirators, ensure that they have been fit tested and the results are recorded.
- Directing work in a manner that eliminates or minimizes the risk of exposure.

Exposure Control Plan

Assigned Roles and Responsibilities (Sample)

Workers:

- Know the hazards of the workplace.
- Follow established safe work procedures as directed by the employer or supervisor.
- Use any required PPE as instructed.
- Report any unsafe conditions or acts to the supervisor.
- Know how and when to report exposure incidents.

Exposure Control Plan

Hazard Identification and Control

Risk identification and assessment begins with an understanding of the nature of infectious diseases and how they are transmitted. When identifying and assessing risks, consider both:

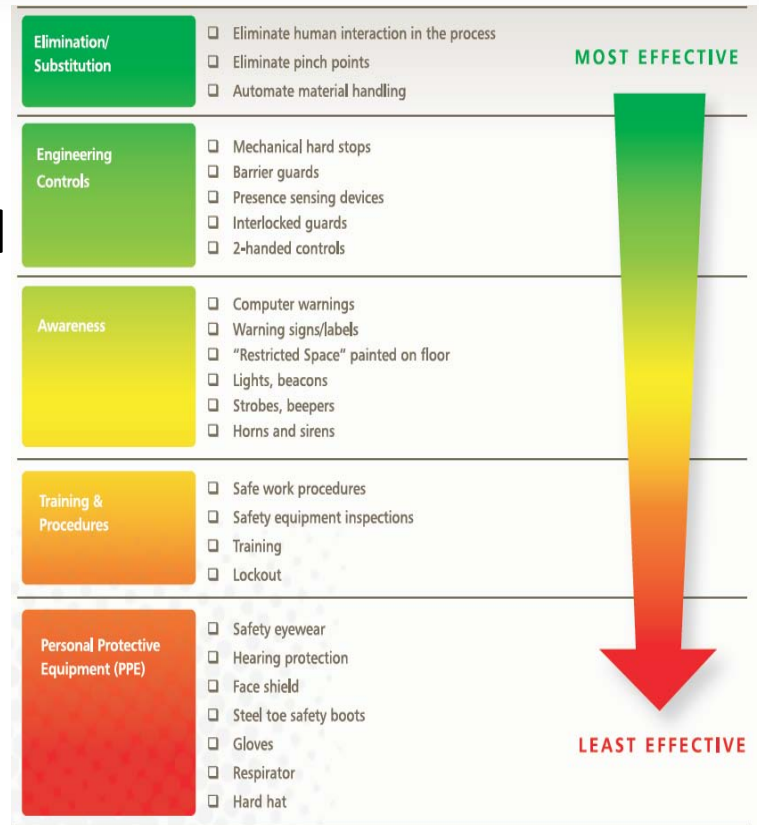
- Routes of transmission
- Work procedures (potentially resulting in exposure)
- Risk (= frequency x severity)

Exposure Control Plan

Hazard Identification and Control

Consider the Hierarchy of Control when developing controls:

1. Elimination
2. Engineering
3. Administrative
4. Personal Protective Equipment



Exposure Control Plan

Hazard Identification and Control

- Worker education and training
- Written safe work procedures
- Routine Practices and specific infection control practices based on the causal agent: Contact, Droplet or Airborne
- PPE – gloves, eye protection, respirators, waterproof clothing etc.

Exposure Control Plan

Record Keeping

- Policy (signed, current and dated)
- Written safe work procedures
- Infection control procedures
- Worker Training records
- JHSC Meeting minutes
- Incident reports
- Incident investigation reports



cont...

Exposure Control Plan

Record Keeping

- Exposure reports
- PPE issued, discarded and training/fit testing
- Maintenance records
- First Aid records
- Non-compliance disciplinary procedures and records
- Immunization records

Exposure Control Plan

Program Evaluation

- Formalized evaluation
- Effectiveness measured – established frequency?
- Goals being set and achieved
- Trends identified
- New legislation and technology systematic review
- Required Changes implemented
- Follow-up

Resources

WorkSafeBC Publications:

- Controlling Exposure: Protecting workers from Infectious disease
- A Hantavirus Exposure Control Plan for Employers and Workers
- Blood and Body Fluid Control Plan for Everyone
- Exposure Control Plan for infectious disease for Occupational First Aid.

Resources

Web sites:

- Food Industry Occupational Safety Association
www.fiosa.ca
- BC Centre for Disease Control
www.bccdc.ca
- WorkSafeBC
www.worksafebc.com