Biosafety and Occupational Health: Protecting Employees from Biological Hazards

Eoin O’Grady PhD CRSP
Manager, Occupational Health & Safety and University Biosafety Officer

Brendan Webster RN BN COHN(C)
Occupational Health Nurse

June 14, 2017
Eoin (University Biosafety Officer)
- Introduction to UCalgary
- Review Biohazards at UCalgary
- Control strategies for Biohazards

Brendan (Occupational Health Nurse)
- Occupational Health Programs
- Post Exposure Management
- Tools/Resources for Biosafety – Occupational Health
The University of Calgary - Facts

- 1,800 Faculty Members
- 3,000 Staff
- 32,000 Students
- 115 Buildings
- Over 8.9 M Square Ft of Land
- 14 Faculties
- 85 Research Institutes and Centres
- $325 M in Research Income
Health and Safety Culture in Academia

- “Publish or Perish”
- Research merit
- Teaching excellence
- “CEO” of their business
- Entrepreneurial spirit
Deliver a Solution that Minimizes Burden

- Avoid unnecessary disruption
- Provide easy enrollment
  - On-site services
  - Accessible location
Increased participation
Improved reporting
Better integration
Meet regulatory needs
Legislative Requirements

- Human Pathogens and Toxins
  - Act (2009) and Regulations (2015)

- Canadian Biosafety Handbook (2nd edition, 2016)

Canadian government scientist who smuggled bacteria in carry-on luggage gets prison time

BY ANDREW SEYMOUR

FIRST POSTED: THURSDAY, MARCH 02, 2017 06:32 PM EST | UPDATED: THURSDAY, MARCH 02, 2017 06:36 PM EST

A former federal government scientist and world-renowned expert who attempted to smuggle a potentially harmful bacteria out of the country in his carry-on luggage has been sentenced to two years in prison.

Klaus Nielsen was arrested on Oct. 24, 2012, as he headed to the Ottawa airport en route to China with 17 vials of the brucella bacteria packed in a thermos of ice inside a child’s lunch bag. The bacteria and the contagious disease it causes — brucellosis — mostly affect animals such as cows, goats and sheep.
Best Practices Guidelines for Occupational Health and Safety in the Healthcare Industry

Government of Alberta

Work Safe Alberta

University of Toronto

University of Saskatchewan

UBC

The City of Edmonton
Overview of the Hazards at the University

**Alberta OHS Code**
- Part 2 – Hazard Assessment, Elimination and Control
- Part 4 – Chemical Hazards, Biological Hazards and Harmful Substances
- Part 7 - Emergency Preparedness and Response
- Part 18 - Personal Protective Equipment
- Part 35 - Health Care and Industries with Biological Hazards
Biological Hazards

- blood
- tissues
- body fluids
Biological Hazards

- blood
- tissues
- body fluids
- cell lines
- bacteria
- viruses
- fungi
- vector-borne pathogens
- aquatic animal pathogens
- plant pests
- blood
- tissues
- body fluids
- cell lines
- bacteria
- viruses

- fungi
- prions
- animal pathogens
- aquatic animal pathogens
- vector-borne pathogens
- plant pests
Exposed Groups

- Affected employees:
  - Healthcare workers (390)
  - Campus security (45)
  - Facilities maintenance personnel (324)
- Health care immunization
- Blood and body fluid exposure
- Tetanus exposure risk
- Respiratory protection
- Hearing conservation
Exposed Groups (University-specific)

- Affected employees:
  - Animal care workers (210)
  - Lab personnel BBP (550)
  - HazMat technicians (4)
Exposed Groups (University-specific)

- HIV Research
- *Neisseria meningitidis*
- Orthopoxvirus (Vaccinia viruses)
- Veterinary immunization
- Hepatitis A exposure risk
- Viral Lysates
Risk Group 1
- Baker’s Yeast

Risk Group 2
- Salmonella

Risk Group 3
- Human Immunodeficiency Virus

Risk Group 4
- Ebola
Controls for Biological Hazards

- **Engineering Controls**
  - Remove or isolate the hazard

- **Administrative Controls**
  - Change the way people work

- **PPE**
  - Protect the worker with Personal Protective Equipment
Controls for Biological Hazards

**Engineering**
- Biosafety Cabinets (BSCs)
- Safety-engineered medical sharps
- Decontamination
- Filtered pipette tips
- Immunization Program
- Transport containers
- Waste containers
- Specific Pathogen-Free

**Administrative**
- Biosafety training
- Laboratory Signage
- Emergency response procedures

**PPE**
- Respiratory protection
- Eye/Face protection
- Gloves
Occupational Health Programs

- Immunization
- Health status specific consultations
  - E.g. Immunocompromised
  - E.g. Pregnancy
- Pathogen specific monitoring & prevention
  - E.g. Zoonosis
- Respiratory protection
- Ability management
Essentials for Program Success

- Identifying a need
- Resources required; subject matter expertise
- Getting the right stakeholders (multiple levels)
- Project charter
Program Stakeholders

- Biosafety Committee
- Senior Leaders
- Managers and Supervisors
- Employees and Unions
- Environmental Health and Safety
- Staff Wellness
- Legal
Project Charter

Project Name:
University of Calgary Immunization Program Working Group

The Challenge/why you need it:
The need for a University Immunization Program Working Group, Biosafety Standards and Guidelines, and the development of the Canadian Immunization Formulary.

Biography:
Program Sponsor: [Signature] Nov. 14, 2013
Program Owner: [Signature] Nov. 15, 2013
Program Manager: [Signature] Nov. 15, 2013
Representative (Veterinary Medicine): B. Pellegrin Jan 13, 2014
Representative (Nursing): Michelle Harven Jan 10, 2014
Representative (Biosafety Committee): Jan 15, 2014
Representative (Medicine, Clinical): Jan 14, 2014
Representative (Medicine, Research): [Signature] Jan 9, 2013
Representative (Facilities Management): [Signature] Jan 9, 2013
Representative (SU Wellness Centre): [Signature] Jan 14, 2014

Data:
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<th>Risk Group</th>
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</table>
Hazard Assessment Review & Risk Considerations:

- Pathogenicity/virulence
- Host range and susceptibility
- Communicability
- Infectious dose
- Control review
Tools and Resources

- Public Health Agency of Canada (PHAC)
  - Canadian Biosafety Standard (CBS) 2nd edition
    - Chapter 7 – Medical surveillance program
    - Pathogen safety data sheets (PSDS)
- Communicable Diseases Unit (AHS)
- Peer organizations
- Internal subject matter experts
- Literature searches
Immunization Resources

- Canadian Immunization Guide (PHAC)
- Alberta Health Services Immunization Program Standards Manual

Immunization of Vaccines

Updated: August 2013

- Introduction
- Health Care Workers
  - Table 1: Recommendations
- Laboratory Workers
  - Table 2: Recommendations
- Child Care Workers and Daycare
  - Table 3: Recommendations
- Workers with Occupations
- Humanitarian Relief and Refugees
- Emergency Services Workers
- Workers in Institutions for the Physically Challenged
- Workers who Provide Social Services
- Workers who Provide Education
- Workers in Shelters for Women
- Physicians
- Nurse Practitioners
- Pharmacists
- Fetus

Immunization Program Standards Manual

The AHS Immunization Program Standards Manual is written by the AHS Immunization Program and approved by the AHS Medical Officers of Health. It is based on Alberta Health (AHS) Immunization Policies for the use of provincially funded vaccines. The AHS Immunization policies may differ slightly from the recommendations made by the National Advisory Committee on Immunization (NACI) as policy decisions are based on Alberta specific factors.

Revisions to these standards are ongoing. It is the responsibility of the user to ensure that they are consulting the most up-to-date version of each standard.

A printed copy of this document should be considered valid only on the date printed. The electronic version should always be considered the current procedure.

AHS staff: For further information please visit the immunization program standards manual section on the internal AHS website.

- Principles of Immunology
- Immunization General Principles
- Informed Consent
- Contraindications and Precautions
- Vaccine Administration
- Biological Product Information

Commerical Immunizing Agents Available for Use in Canada
- Rotavirus (Big)
  - Rotavirus Immune Globulin Inactivated (Human) Big Biological Page
  - Rotavirus Immune Globulin Inactivated (Human) Big Information Sheet
- Hepatitis A (Big)
  - Hepatitis A Immune Globulin (Human) Big Biological Page
  - Hepatitis A Immune Globulin (Human) Big Information Sheet
- Influenza (Big)
  - Influenza A (H1N1) Virus-like Particles Biological Page
  - Influenza A (H1N1) Viruslike Particles Information Sheet
  - Influenza B (H3N2) Virus-like Particles Biological Page
  - Influenza B (H3N2) Viruslike Particles Information Sheet
- DTaP, IPV, Hib
  - Diphtheria, Tetanus, Acellular Polio Vaccine Biological Page
  - Diphtheria, Tetanus, Acellular Polio Vaccine Information Sheet
- MMR
  - Measles, Mumps, Rubella Biological Page
  - Measles, Mumps, Rubella Information Sheet
- VPD
  - Varicella, Diphtheria, Tetanus, Acellular Polio Vaccine Biological Page
  - Varicella, Diphtheria, Tetanus, Acellular Polio Vaccine Information Sheet

Additional Immunization Information Websites

- AlbertaImmunization.ca
- Alberta Health
- AHS Immunization Guide
- National Advisory Committee on Immunization
- Immunization Competencies for Health Professionals
- Immunization Canada
- CDC Advisory Committee on Immunization Practices (ACIP)
- Immunization Action Coalition

Alberta Vaccine Inventory (AVI) System

Please provide your feedback to cdm.immunization@ahs.ca

Page 11: Canadian Immunization Guide: Part 2 - Vaccination of Specific Populations
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<th>Exposure Group</th>
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<td>2017/02/23</td>
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33% of needle sticks resulting in bloodborne pathogen exposure in research labs occur during needle disposal. Some examples include:

- attempting to recap needles
- using overfilled containers
- walking to the disposal container
Employee infected while working at Winnipeg disease lab had virtually no safety training: report

TOM BLACKWELL | October 4, 2015 9:10 PM ET
More from Tom Blackwell | @tomblackwellNP
### UCalgary Post-Exposure Protocol

1. Remove any contaminated clothing if possible.

2. Allow the exposure site to bleed freely.

3. Cleanse the site through washing with soap and water (use waterless hand cleaner if soap and water unavailable). A skin antiseptic can be used for skin exposure.

4. For mucous membrane exposure, flush site(s) with water or saline.

5. Immediately proceed to the nearest emergency room or department for assessment by a physician. Ensure WCB documentation is completed by physician.

6. Report to Supervisor/Manager as soon as is practicable.

7. Supervisor/Manager submits a Level 2 incident (minimum) through the Online Accident Reporting System (OARS) within 24 hours of being notified.

8. Supervisor/Manager completes WCB Employer’s Report within 24 hours as per requirements.

9. Employee/Student completes WCB Report as per requirements.

10. Employee/Student contacts Nurse for post-exposure follow up.

The University has an online system to report accidents and incidents. This web-based system is called OARS (Online Accident Reporting System).

**References**

[ucalgary.ca/safety/oars](http://ucalgary.ca/safety/oars)
Future

- Programs expansion
  - Malaria (*Plasmodium falciparum*)
  - Schistosomiasis
  - Leishmaniasis
  - Trypanosomiasis
  - *Borrelia*

- Strengthen drivers to lead biosafety to occupational health
- Streamline enhancements to Post Exposure Protocol
- Travel (international)
Biosafety and Occupational Health Programs...

- protect all workers
- create value for the organization in mitigating risk
- are improved by multilevel stakeholder input
- are successful when shaped to fit the organization
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