In Collaboration with the University of Manitoba
the Health Sciences Centre Winnipeg presents

THE 30th ANNUAL BUG DAY Abstracts



Health Sciences Centre Winnipeg
A Shared Health facility

Overall Program Objectives:

At the end of this program, participants will be able to:

1. Identify the key pathogens that have been clinically and socially relevant over the past 30 years
2. State how the determinants of health influence a person's risk for infection
3. Explain how to modify risk factors for acquisition of infection

Thursday, October 22, 2026

Join us digitally by registering before Oct 21, 2026
at: **www.hsc.mb.ca/Bugday.html**

Bug Day Agenda

0800 - 0805 **Land Acknowledgment**
Chris Christodoulou, MD, Shared Health

0805 - 0810 **Opening Comments**
Karen Appel, MD, University of Manitoba

0810 - 0815 **Introduction to Bug Day/Grand Rounds**
John Embil, MD, Winnipeg Regional Health Authority

0815 - 0830 **Where We Have Been, and Where We Are Going: A One Health Perspective**
Joss Reimer, MD, Public Health Agency of Canada

0830 - 0845 **In Public Health We Trust!**
Brent Roussin, MD, Manitoba Health

0845 - 0900 **On the Horizon: Emerging Infectious Diseases**
Ziad Memish, MD, Alfaisal University, Saudi Arabia

0900 - 0915 **Questions and Answers**

0915 - 0930 **The Ongoing Threat of *Neisseria meningitidis***
Tim Hilderman, MD, Manitoba Health

0930 - 0945 **Public Health in Action: *Shigella spp* Outbreak Response in an Urban Unhoused Population**
Chris Sikora, MD, Primary and Preventative Health Services, Government of Alberta

0945 - 1000 **Keep Calm and Beat the Pandemic!**
Lanette Siragusa, RN, University of Manitoba

1000 - 1015 **Questions and Answers**

1015 - 1030 **Break**

1030 - 1045 **Human Immunodeficiency Virus in Manitoba: Responding to an Emergency**
Ken Kasper, MD, University of Manitoba

1045 - 1100 **All you Want to Know about Syndemics**
Yoav Keynan, MD, University of Manitoba

1100 - 1115 **Vaccines in a Time of Climate Change, Megacities, and Anti-Science**
Peter Hotez, MD, Baylor College of Medicine

1115 - 1130 **Questions and Answers**

1130 - 1200 **Lunch**

1200 - 1300 **Medical Grand Rounds: Trouble on the Horizon: The Effects of Ultra-Processed Foods on the Gut Microbiome**
Heather Armstrong, PhD, University of Alberta

1300 - 1315 **Canadian Nosocomial Infection Surveillance Program (CNISP): More than 30 Years of Success and Knowledge Translation**
John Conly, MD, University of Calgary

1315 - 1330 **Expanding Canadian Surveillance for Antimicrobial Resistance**
Kelly Choi, MSc, Public Health Agency of Canada

1330 - 1345 **Canadian Surveillance for Symptomatic Urinary Tract Infections in Long-Term Care Facilities in Canada**
Jessica Bartoszko, PhD, Public Health Agency of Canada

1345 - 1400 **Questions and Answers**

1400 - 1415 **Evolving Diagnostics for Creutzfeldt-Jakob Disease: A Thirty-Year Journey**
Stephanie Booth, PhD, National Microbiology Laboratory

1415 - 1430 **Microbiology in Action: Microbiological Emergency Response Team**
Kym Antonation, MPH, National Microbiology Laboratory

1430 - 1445 **Lyme Infection-Associated Chronic Illnesses and Updates on Lyme Disease Etiology in Canada**
Heather Coatsworth, PhD, National Microbiology Laboratory

1445 - 1500 **Questions and Answers**

1500 - 1515 **Break**

1515 - 1530 **Q Fever – The Fog Comes on Little Cat Feet**
Thomas Marie, MD, Dalhousie University

1530 - 1545 **Case Studies in Travel Medicine: Always Expect the Unexpected!**
Philippe Lagacé-Wiens, MD, Shared Health Manitoba

1545 - 1600 **Malaria Vaccines: Life Saving but not for Everyone**
Pierre Plourde, MD, Winnipeg Regional Health Authority

1600 - 1615 **Questions and Answers**

For more information, call (204) 787-4654 or visit
www.hsc.mb.ca/Bugday.html
Visit site to download abstract booklet, brochure, and other important material

University of Manitoba | Rady Faculty of Health Sciences

Where We Have Been, and Where Are We Going: A One Health Perspective

Joss Reimer, MD
Public Health Agency of Canada

Abstract:
One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems. One Health recognizes that humans, animals, plants, and our shared environments are closely linked and inter-dependent.

Our past experiences have demonstrated that major public health challenges—such as infectious diseases, pandemic preparedness, antimicrobial resistance, and climate-related health risks—require collaboration across multiple sectors.

This presentation will describe how the Public Health Agency of Canada (PHAC) is integrating a One Health approach to strengthen Canada's preparedness and resilience against public health threats. One Health initiatives at PHAC include engaging international and domestic partners, supporting interdepartmental governance tables, enhancing integrated surveillance and data sharing, conducting coordinated risk assessments, and developing cross-sectoral approaches to infectious disease prevention and response.

The One Health approach also presents new opportunities for public health and health system partners on how we contextualize and refine our public health responses and communications on infectious diseases within an increasingly complex risk environment. One Health offers us a path forward to reach across and beyond the health sector, to harness collective actions and solutions for current and future public health needs.

Objectives
By attending this session, the attendee will be able to:

1. Describe the One Health approach
2. Highlight the various actions that public health and health system partners can take to integrate One Health into our work
3. State the important role One Health can play in addressing public health threats domestically and globally

Multiple Choice Questions (Select the best answer)

1. Which statement best describes the One Health approach?
   a. A framework used exclusively to respond to infectious disease outbreaks.
   b. A healthcare model focused on improving human health outcomes.
   c. A unified strategy for coordinating healthcare services between provinces and territories.
   d. A collaborative approach that recognizes the interconnectedness of human, animal, plant, and environmental health.

2. Why is a One Health approach increasingly important for public health threats?
   a. It ensures that all public health threats can be predicted before they occur.
   b. It can help address the full spectrum of disease control from prevention to detection, preparedness, response and management.
   c. It guarantees the prevention of all emerging infectious diseases.
   d. It replaces traditional public health approaches with a single standardized model.

3. Which of the following best reflects how PHAC is integrating One Health principles into its work?
   a. Expanding collaboration, data and information-sharing across disciplines to better anticipate and respond to complex public health challenges.
   b. Ensuring public health activities are limited to areas where direct impacts on human health have already been confirmed.
   c. Reducing the need for inter-agency coordination by centralizing decision-making.
   d. Focusing collaboration mainly on large outbreaks, rather than ongoing monitoring and surveillance.

In Public Health We Trust!

Brent Roussin, MD
Manitoba Health

Abstract

Public health has quietly transformed human life expectancy, reduced childhood mortality, controlled infectious diseases, improved food and water safety, and shaped healthier communities through organized population-level action. Yet despite many of the greatest achievements in modern medicine being rooted in public health, trust in public health institutions has faced increasing challenges in recent years. This presentation will explore the foundations of public health practice, highlight major historical and modern advances that have improved population health, and examine factors that may have contributed to declining public trust, including societal change, the rise of social media, and the COVID-19 pandemic. The session will also discuss why organized public health systems remain essential to protecting communities and responding to emerging health threats.

Objectives

By attending this session, the attendee will be able to:

1. State the key principles of public health to keep populations healthy
2. State the most meaningful advances in public health that keep populations healthy
3. State why it is important to have organized public health measures

Multiple Choice Questions

1. Which of the following public health interventions is most strongly associated with the reduction in all-cause mortality observed during the 20th century?
   a. Expansion of tertiary cardiac surgery programs
   b. Improvements in sanitation, clean water, and vaccination programs
   c. Increased use of advanced diagnostic imaging
   d. Development of targeted biologic therapies

2. Which of the following best reflects the core ethical justification for organized public health measures?
   a. Maximizing individual autonomy in all circumstances
   b. Ensuring equal access to specialist physician services
   c. Reducing preventable harm and protecting population health
   d. Prioritizing treatment of rare diseases over common diseases

3. Which of the following statements regarding public trust and health communication is best supported by current evidence?
   a. Public trust in health institutions remained stable throughout the COVID-19 pandemic across most countries
   b. Exposure to misinformation is associated with lower vaccine confidence and lower uptake of public health recommendations
   c. Health misinformation has no measurable effect on population-level health behaviors
   d. Public trust in physicians and public health officials is unrelated to health outcomes

On the Horizon: Emerging Infectious Diseases

Ziad Memish, MD
Alfaisal University, Saudi Arabia

Abstract:
Emerging infectious diseases continue to pose complex and evolving challenges to global health systems, economies, and societies. These diseases may arise from newly identified pathogens, the re-emergence of previously controlled infections, or the rapid spread of known agents into new regions. Contributing factors include environmental change, increased global travel and trade, urbanization, and shifting interactions between humans and animals. Advances in surveillance and diagnostic technologies have improved detection, yet significant uncertainties remain regarding transmission dynamics, risk factors, and effective mitigation strategies.

This presentation will explore key themes related to emerging infections, including patterns of emergence, drivers of spread, and approaches to preparedness and response. It will highlight selected examples to illustrate broader principles, while allowing flexibility to focus on specific pathogens or regions as relevant. Attention will also be given to interdisciplinary collaboration, public health infrastructure, and the role of policy in shaping outcomes.

Given the rapidly changing nature of this field, emphasis will be placed on adaptable frameworks and critical thinking rather than fixed conclusions. This approach supports ongoing discussion and enables the content to be tailored to current developments or audience interests.

Objectives
By attending this session, the attendee will be able to:

1. Describe the key factors that contribute to the emergence and spread of infectious diseases.
2. Recognize general patterns and challenges in detecting, monitoring, and responding to emerging health threats.
3. Apply broad principles of preparedness and response to a range of infectious disease scenarios.

Multiple Choice Questions (Select the best answer)

1. Which combination of factors most strongly contributes to zoonotic spillover events in emerging infectious diseases?
   a. Reduced biodiversity and decreased human mobility
   b. Increased human encroachment into wildlife habitats and intensified livestock production
   c. Improved sanitation and widespread vaccination
   d. Limited international trade and stable ecosystems

2. Which limitation most significantly affects early detection of emerging infectious diseases in surveillance systems?
   a. Overabundance of standardized global data
   b. Excessive laboratory capacity in low-resource settings
   c. Underreporting and delays in data sharing across regions
   d. Lack of any technological diagnostic tools

3. In the context of emerging infectious diseases, what is the primary advantage of a “One Health” approach?
   a. It focuses exclusively on human clinical care
   b. It separates environmental and animal health from public health
   c. It integrates human, animal, and environmental health disciplines for coordinated response
   d. It prioritizes pharmaceutical interventions over prevention?

The Ongoing Threat of *Neisseria meningitidis*

Tim Hilderman, MD
Manitoba Health

Abstract:
Epidemics of meningococcal meningitis have been described since the early 1800s. Although the case fatality rate has fallen dramatically from the pre-antibiotic era of 70-85%, it remains stubbornly high at a formidable 10-15%. Manitoba has recently experienced a significant increase in cases and as such has made substantial changes to its meningococcal vaccine program in attempt to reverse this trend. This session will highlight the changing epidemiology of this 'dreaded disease' in Manitoba while exploring what can and is being done to combat it.

Objectives:
By attending this session, the attendee will be able to:

1. Describe the recent changes in *Neisseria menin*gitidis epidemiology in Manitoba
2. State how *Neisseria meningitidis* is transmitted
3. State how *Neisseria meningitidis* infection can be prevented

Multiple Choice Questions (Select the best answer)

1. Which statement best describes current trends in *N. meningitidis* infection in MB?
   a. The incidence is decreasing
   b. The incidence is increasing and Serogroup W-135 is contributing to this rise
   c. No change from historical pattern
   d. None of the above

2. Which statement best describes the most common mechanism of transmission of *N. meningitidis* infection?
   a. Respiratory droplets
   b. Direct contact with secretions from the nasopharynx
   c. Fomite transmission
   d. Both a and b

3. Which of the following interventions are effective in preventing *N. meningitidis* infections
   a. Post Exposure chemoprophylaxis with ciprofloxacin
   b. Post Exposure Immuno-prophylaxis with vaccine
   c. MenACYW-135 vaccine
   d. All of the above

Public Health in Action: *Shigella spp* Outbreak Response in an Urban Unhoused Population

Chris Sikora, MD
Primary and Preventative Health Services
Government of Alberta

Abstract:
Shigellosis is an acute enteric infection caused by *Shigella* species, transmitted primarily via fecal–oral mechanisms. It is notable for its extremely low infectious dose. Recent outbreaks have shown a disproportionate impact on people experiencing homelessness, a population uniquely vulnerable due to challenging living environments, limited access to sanitation & hygiene, and higher prevalence of comorbidities.

Outbreaks in Edmonton, caused by *S. flexneri*, have demonstrated hospitalization rates approaching approximately 2/3. A Public health response has integrated clinical, laboratory, environmental, municipal, and social interventions, including: rapid case identification, medical/health support, targeted antibiotic therapy, enhanced hygiene infrastructure, and coordinated outreach to shelters and encampments. Although the overall risk to the general population remains low, the persistent burden among unsheltered individuals highlights systemic inequities and the need for sustained, community-based prevention strategies. This presentation will examine the 2022-25 Edmonton outbreak including: epidemiology, clinical features, and evidence-informed approaches taken within the City to mitigate shigellosis in homeless populations.

Objectives:
By attending this session, the attendee will be able to:

1. State why Shigella spp is an important pathogen in human populations
2. State why Shigella spp spreads rapidly
3. State the measures that can be taken to arrest transmission of Shigella spp

Multiple Choice Questions (Select the best answer)

1. The primary organism driving the 2022-25 Edmonton Shigella outbreak is:
   a. *Shigella Flexneri*
   b. *Shigella sonnei*
   c. *S. dysenteriae*
   d. *S. boydii*

2. The hospitalization rate, of houseless individuals in the Edmonton 2022-25 Shigella outbreak is:
   a. 25%
   b. 5%
   c. 67%
   d. 90%

3. Management of a shigella outbreak in an underhoused population requires coordinated:
   a. Diagnostic support
   b. Treatment support
   c. Housing/hygiene support
   d. All of the above

Keep Calm and Beat the Pandemic!

Lanette Siragusa, RN
University of Manitoba

Abstract:
During the COVID-19 pandemic, integrated healthcare teams made a significant impact in reducing patient risk by dismantling silos and coordinating rapid safety protocols across the province. Going forward, these multidisciplinary frameworks serve as the standard for preventing infections through communication and collective accountability. This session will review opportunities to improved patient safety and thrive together as integrated teams.

Objectives:
By attending this session, the attendee will be able to:

1. State why the COVID-19 pandemic was such a significant event in our lives in 2020
2. State how integrated teams became essential to “beat the pandemic”
3. State what measures you can take to contribute to a team of IPC champions and improve patient care outcomes.

Multiple Choice Questions (Select the best answer)

1. Which factor is most important for effective infection prevention within an interprofessional healthcare team?
   a. Having one designated person responsible for infection control
   b. Clear communication and shared accountability among team members
   c. Relying on annual infection control training only
   d. Following practices based on personal experience

2. One of the most important lessons from the COVID-19 pandemic was the need for \
   a. Reduced communication between departments
   b. Rapid information sharing and collaboration across disciplines
   c. Independent decision making by each profession
   d. Limiting infection control education

3. The COVID-19 pandemic reinforced the importance of which principle when responding to emerging infectious diseases?
   a. Waiting for complete information before taking action
   b. Maintaining flexibility and adapting practices as evidence evolves
   c. Avoiding changes to existing protocols
   d. Limiting collaboration to healthcare professionals

Human Immunodeficiency Virus in Manitoba: Responding to an Emergency

Ken Kasper, MD
University of Manitoba

Abstract:
Between 2018 and 2024, Manitoba saw a 310% increase in the number of people newly diagnosed with the Human Immunodeficiency virus (HIV) and numbers continue to rise. Documented epidemiological trends in Manitoba demonstrate a very different picture compared to Canada overall, with rates over three times the national average in 2024. In 2024, 52% of people newly diagnosed in Manitoba were female; injection drug use and heterosexual sex were identified as the most common modes of HIV acquisition. Indigenous Peoples in Manitoba continue to be disproportionately impacted due to the ongoing impacts of colonization, structural racism, and intergenerational trauma. Most people diagnosed with HIV presented to care with other health conditions, namely sexually transmitted and blood-borne infections (STBBIs), and mental health concerns. Overlapping syndemics of houselessness and multi-substance use result in complex care needs and challenges with connection to care and adherence to treatment. Against the backdrop of the Provincial Public Health Emergency declared in May 2025, the Manitoba HIV Program continues to partner with stakeholders to strengthen resources and expand pathways to care, advancing comprehensive, equitable and holistic services for people living with HIV in Manitoba.

Objectives
By attending this session, the attendee will be able to:

1. State the current situation of HIV in Manitoba and how it differs from Canadian trends.
2. State the actions the Manitoba HIV Program will lead in response to the HIV crisis.
3. State the role primary care providers will play in enhancing access to care for people living with HIV in Manitoba.

Multiple Choice Questions (Select the best answer)

1. How much higher is the rate of HIV in Manitoba compared to the rate of HIV in Canada?
   a. Almost twice as high
   b. Over three times higher
   c. The rates of HIV between Manitoba and Canada are the same
   d. Four times higher

2. What is the most common comorbidity affecting people in Manitoba who are diagnosed with HIV?
   a. STBBIs
   b. Mental health
   c. Cardiovascular disease
   d. Tuberculosis

3. What role can primary care providers play in improving HIV-related outcomes in Manitoba?
   a. Offer pre-exposure prophylaxis (PrEP) to eligible patients
   b. Normalize HIV testing and recommend testing as part of routine care
   c. Referral to the Manitoba HIV Program for patients who test positive for HIV
   d. Conduct baseline medical assessment for patients newly diagnosed with HIV
   e. Encourage and support HIV treatment adherence and ongoing monitoring in collaboration with the Manitoba HIV Program
   f. All of the above

All You Need to Know about Syndemics

Yoav Keynan, MD
University of Manitoba

Abstract:
Syndemics are defined as linked health problems involving two or more conditions that interact synergistically resulting in increased disease burden. Over the last few years, an increase in sexually transmitted infections has been seen in Manitoba, and multiplicity of sexually transmitted and blood borne infections (STBBI) occurring together is on the rise. Bloodstream infections and osteoarticular infections have similarly increased. The constellation of emergence of STBBI and bloodstream infections is disproportionately affecting individuals facing structural disadvantages and substance use. The presentation will explore trends in co-infection and some of the related social determinants of health.

Objectives:
By attending this session, the attendee will be able to:

1. State the epidemiology of syndemic conditions in Manitoba
2. State the barriers to addressing the cooccurring conditions
3. Highlight the gaps in care and trends in the human immunodeficiency virus (HIV) infection cascade of care in the face of the syndemic

Multiple Choice Questions (select the best answer)

1. Syndemic is defined as:
   a. Occurrence of several health conditions that act synergistically to increase burden of disease
   b. Refers to congenital syphilis occurring together with human papilloma virus
   c. Is generally the result of combination of two antimicrobial agents to treat severe infections
   d. Refers only to medical conditions that occur together

2. Which of the following statements refers to new infections with HIV in Manitoba?
   a. The rates have decreased over the past 5 years
   b. The likelihood of HIV infection concurrently with another STBBI has increased over the last few years
   c. The 90-90-90 cascade of care for HIV infected individuals remains unchanged despite syndemics
   d. The rate of hepatitis C virus coinfection in persons living with HIV in Manitoba remains stable

3. Infectious endocarditis among persons who inject drugs can be characterized by:
   a. Relatively responsive to short course of therapy.
   b. *Staphylococcus aureus* is the most common infecting organism
   c. can be safely managed with oral cephalexin
   d. Frequently caused by aspergillus and other fungal pathogens.

Vaccines in a Time of Climate Change, Megacities, and Anti-Science

Peter Hotez, MD
Baylor College of Medicine

Objectives

By attending this session, the attendee will be able to:

1. Report on the role of climate change and urbanization to promote the rise of catastrophic respiratory pandemics and vector borne illnesses.
2. Summarize efforts at our Texas Children's Hospital Center for Vaccine Development to develop new recombinant protein COVID vaccines used India and Indonesia where they are known as CORBEVAX and INDOVAC, respectively. In addition to a new human hookworm vaccine.
3. Summarize the origins of rising antivaccine sentiments and its recent shifts; to create awareness on approaches to countering antivaccine activities.

Multiple Choice Questions (Select the best answer)

1. The major SOURCES of antiscience aggression in the US include the following elements
   a. Political extremism
   b. Disinformation dozen
   c. Foreign governments
   d. Social media
   e. All of the above

2. A vaccine for human hookworm vaccine is designed to:
   a. Reduce the bioburden of parasitic worms in the gut
   b. To prevent moderate and heavy hookworm infections
   c. To prevent hookworm anemia in children
   d. To prevent hookworm anemia in pregnancy
   e. All of the above

3. Major social determinants for promoting disease emergence include all of the following except:
   a. War
   b. Political collapse
   c. Climate change
   d. Urbanization
   e. Antiscience

Medical Grand Rounds

Trouble on the Horizon: The Effects of Ultra-Processed Foods on the Gut Microbiome

Heather Armstrong, PhD
University of Alberta

Abstract:
The gut microbiome plays a key role in almost all physiological processes, and microbiome changes are common in a broad variety of disease settings. Diet has the greatest impact on shaping the gut microbiota as a modifiable risk factor and changes in gut microbiome linked to urbanization and immigration are most significantly associated with ultra-processed food (UPF) exposure over other dietary factors. UPFs are defined as industrial formulations made from food-derived substances and lab-synthesized ingredients using complex processes techniques resulting in molecules with little to no resemblance to their original whole-food source. The molecules considered UPFs include: (1) Emulsifiers and Thickeners; (2) Sweeteners and Flavor Enhancers; (3) Preservatives and Colorants; (4) Modified Oils; (5) Processed Proteins and Carbohydrates; (6) Processing Contaminants; and (7) Packaging Chemicals. Higher consumption of UPFs has been linked to a broad variety of health concerns. However, associations between UPFs and health outcomes cannot be corrected by adjustment for diet quality, suggesting reduction of specific UPFs is necessary, but which UPFs and in who remains unclear. Recent research has showed the impact of specific UPFs depends on personalized host and microbiome factors, suggesting that biomarkers could be identified to ascertain clear clinical risk and UPF exposure guidelines.

Objectives

By attending this session, the attendee will be able to:

1. Define what the term “ultra processed food” really means and how we apply this broadly to different food molecules
2. State the applications of UPFs and risk of exposure
3. Clearly communicate the concerns around UPFs and their impacts on microbiome and host health

Multiple Choice Questions (Select the best answer)

1. According to the NOVA classification system, which of the following best describes an UPF?
   a. Foods cooked at home using natural ingredients.
   b. Ingredients like olive oil, salt, or sugar used in cooking.
   c. Industrial formulations typically consisting of five or more ingredients, including additives
   d. Canned vegetables with only water and salt added.

2. What is the primary effect of a high-UPF diet on the gut microbiome?
   a. Increased diversity of microbiota species
   b. A decrease in microbial diversity and beneficial bacteria
   c. No significant change in the microbiome composition
   d. An increase in *Akkermansia muciniphila* levels

3. Based on studies published between 2021 and present, approximately how much of the daily calorie intake for adults in the developed world comes from UPFs?
   a. 21%
   b. 37%
   c. 53%
   d. 78%

Canadian Nosocomial Infection Surveillance Program (CNISP):
More than 30 Years of Success and Knowledge Translation

John Conly MD
University of Calgary

Abstract:
Active systematic surveillance of infections in both public health and in hospitals is considered a cornerstone for the prevention and control of infectious diseases and allows early detection of trends and how interventions may be assessed for success. According to its website on Canada.ca, the Canadian Nosocomial Infection Surveillance Program (CNISP) represents "a national collaboration between the Public Health Agency of Canada (PHAC), the National Microbiology Laboratory (NML), the Association of Medical Microbiology and Infectious Disease (AMMI) Canada, and hospitals across Canada which conducts prospective surveillance of healthcare-associated infections (HAIs) and antimicrobial resistant organisms (AROs) to inform evidence-based policies and control measures against antimicrobial resistance (AMR). In addition to monitoring HAIs and AROs, CNISP also collects and analyzes data on antimicrobial use, infection prevention and control practices, laboratory practices, and viral respiratory illnesses including COVID-19."[1] Infection control professionals and infectious diseases pharmacists also actively participate in the various surveillance activities as well. The original CNISP was actually established within the Bureau of Infection Control within the Laboratory Centre for Disease Control (LCDC) in June 1984 but it was recognized that a broader and more comprehensive mandate was required from a meeting held in late 1993[2] which had followed an ad hoc meeting of a small group of infectious diseases physicians from western and eastern Canada who met in a hotel in New Orleans in October 1993, called together by Dr Lindsay Nicolle upon a request of the Canadian Infectious Diseases Society(CIDS) Executive Council to explore the idea of a collaboration with Infection Control within LCDC to build a sentinel group of participating hospital sites. This latter meeting led to the formation of a Terms of Reference and the formal recognition of the Canadian Hospital Epidemiology Committee (CHEC) within CIDS. What began formally in 1994[3,4] as a small jointly organized sentinel network of only 18 hospitals has significantly expanded over 3 decades into a comprehensive network of 110 hospitals which conduct a vast array of surveillance activities across 10 provinces and 1 territory. The Program launched the Simplified Dataset (SDS), which adds to acute care sites outside of the CNISP network to contribute aggregate data to CNISP's rates and currently covers 51% of all the acute-care beds in Canada.[1] With its numerous technical reports and over 260 peer-reviewed publications, contributing to knowledge translation in the area of hospital-acquired infections and antimicrobial resistance, CNISP has garnered international attention.[5]

Objectives
By attending this session, the attendee will be able to:

1. State the Canadian Nosocomial Infection Surveillance Program does and recognize its importance
2. Describe 5 disease entities for which CNISP is undertaking surveillance
3. Describe why ongoing active surveillance of hospital-acquired infection is necessary

Multiple Choice Questions (Select the best answer)

1. Which of he following surveillance activities are being undertaken by the CNISP network?
   a. MRSA and VRE infections
   b. Cerebrospinal shunt infections
   c. *C. difficil*e infections
   d. a and c
   e. All of the above

2. Which viral respiratory infections undergo surveillance within CNISP currently?
    a. Influenza
    b. RSV
    c. SARS-CoV-2
    d. a and c
    e. All of the above

3. The CNISP Network contributes an important section within the Canadian Antimicrobial Resistance Surveillance System report
    a. True
    b. False

References

1. Overview: The Canadian Nosocomial Infection Surveillance Program (CNISP) — Canada.ca Public health Agency of Canada. Accessed Apr 22 2026
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3. Paton S. Nosocomial infection program. Can J Infect Dis. 1995 Mar;6(2):73-5. https://doi.org/10.1155/1995/347240
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Expanding Canadian Surveillance for Antimicrobial Resistance

Kelly Choi, MSc
Public Health Agency of Canada

Abstract

Antimicrobial resistant (AMR) pathogens represent a critical challenge in healthcare systems, as they significantly increase patient mortality and hospital costs by limiting efficacy of treatments for common infections. National benchmark rates are essential for monitoring AMR in Canada, as they provide policy makers with the accurate, representative data necessary to design effective infection prevention and control (IPAC) strategies and allocate resources appropriately. The Canadian Nosocomial Infection Surveillance Program (CNISP) plays a pivotal role in establishing these benchmarks by serving as the central engine for national data collection and standardization.

Prior to 2022, CNISP had approximately 40% bed coverage across Canada through a network of approximately 100 sentinel hospitals. To expand this coverage and establish more robust national benchmarks, the Simplified Dataset (SDS) allows hospitals outside of the CNISP network to contribute aggregate data to CNISP's rates. This project is currently being piloted with *Clostridioides difficile* infections (CDI), with plans to expand to other HAIs and AROs. The SDS collects the annual aggregated number of CDI cases from admitted patients, along with denominator data (annual patient admissions and patient days), from each participating hospital. A several recruitment strategies were implemented, tailor to the specific needs and data availability for individual provinces and territories. To date, CNISP has nearly doubled its reach to capturing infections from approximately 80% of all acute care beds across Canada.

Objectives

By attending this session, the attendee will be able to:

1. State why antimicrobial resistant pathogens are important in healthcare systems
2. State the strategies to expand Canadian Surveillance for antimicrobial resistant pathogens
3. Summarize the status of the CNISP bed coverage before and after launching the Simplified Dataset Surveillance (SDS)

Multiple Choice Questions (Select the best answer)

1. Which of the following is not one of the potential benefits of the SDS program for AMR surveillance in Canada?
   a. To provide SDS hospitals with visual analytics for AMR data
   b. To allow hospitals with limited resources to participate in CNISP
   c. To improve the accuracy of national AMR benchmark rates
   d. To collect patient-level clinical and molecular data

2. What is the name of the program launched in 2022 to recruit additional hospitals and improve the accuracy of national AMR benchmark rates?
   a. Samling Data Strategy
   b. Simplified Dataset
   c. Surveillance Data System
   d. None of the above

3. Approximately what is the current national bed coverage of the Canadian Nosocomial Infection Surveillance Program (CNISP) following the launch of the Simplified Dataset (SDS) program?
   a. Up to 10%
   b. Up to 40%
   c. Up to 60%
   d. Up to 80%

Canadian Surveillance for Symptomatic Urinary Tract Infections in Long-Term Care Facilities in Canada

Jessica Bartoszko, PhD
Public Health Agency of Canada

Abstract

Urinary tract infections (UTIs) are common among residents of long-term care facilities and are associated with increased morbidity, mortality, and inappropriate antibiotic use, particularly for asymptomatic bacteriuria. To support infection prevention and control and antimicrobial stewardship in this setting, the Public Health Agency of Canada, through the Canadian Nosocomial Infection Surveillance Program (CNISP), launched a two-phase pilot to assess the feasibility of sentinel surveillance for symptomatic catheter-associated and non-catheter-associated UTIs using standardized case definitions. Phase one involved active surveillance in a single long-term care facility, supported by standardized data collection and centralized validation. Phase two is expanding this work to 10 facilities across Canada to further evaluate implementation, validation, and scalability. Pilot progress, lessons learned, and implications for infection prevention and antibiotic stewardship will be presented.

Objectives

By attending this session, the attendee will be able to:

1. State why UTIs in long-term care facilities are a problem
2. State why surveillance for symptomatic UTIs in long-term care facilities in Canada is important
3. Summarize the status and scope of CNISP surveillance activities for symptomatic UTIs in long-term care facilities in Canada

Multiple Choice Questions (Select the best answer)

1. Approximately what percentage of antibiotics are unnecessary when considering UTIs in long-term care?
   a. Up to 10%
   b. Up to 30%
   c. Up to 70%
   d. Up to 90%

2. What professional organization is the CNISP surveillance definition for UTIs aligned with?
   a. Centers for Disease Control and Prevention
   b. Infection Prevention and Control Canada
   c. European Centre for Disease Prevention and Control
   d. Association of Medical Microbiology and Infectious Disease Canada

3. What are the potential benefits of conducting surveillance for UTIs in long-term care facilities?
   a. Reducing overdiagnosis by differentiating true infection from asymptomatic bacteriuria
   b. Reducing overtreatment with unnecessary antibiotics and resistance pressure
   c. Identifying practices gaps and opportunities for quality improvement
   d. All of the above

Evolving Diagnostics for Creutzfeldt-Jakob Disease: A Thirty-Year Journey

Stephanie Booth, PhD
National Microbiology Laboratory

Abstract:
The emergence of bovine spongiform encephalopathy (BSE) in the early 1990s, and the subsequent identification of variant Creutzfeldt-Jakob disease (vCJD), reshaped global awareness of prion disorders and catalyzed major advances in diagnostic science. At that time, CJD diagnosis relied heavily on clinical features and post-mortem confirmation, with limited tools to distinguish sporadic disease from emerging prion threats. The public-health urgency surrounding BSE accelerated investment in surveillance systems, harmonized diagnostic criteria, and the development of early laboratory markers such as cerebrospinal fluid 14-3-3 protein and total tau. The introduction of MRI diffusion-weighted imaging provided a crucial non-invasive biomarker, improving diagnostic confidence during a period of heightened concern.

In the decades since the BSE crisis, the landscape has shifted from reactive risk management to precision diagnostics. Real-time quaking-induced conversion (RT-QuIC) has transformed clinical practice by enabling highly specific detection of misfolded prion protein, reducing diagnostic uncertainty and supporting earlier recognition of sporadic CJD. Today's challenges differ markedly from those of the BSE era: rather than distinguishing vCJD from other prion diseases, the focus has turned to ultra-early detection, subtype differentiation, and equitable access to specialized testing. This thirty-year journey highlights how a global crisis accelerated innovation that continues to shape modern prion diagnostics.

Objectives
By attending this session, the attendee will be able to:

1. State the causes of CJD and how it differs fundamentally from other infectious agents.
2. Explain how historical events—particularly the BSE/vCJD era—shaped surveillance systems and diagnostic innovation.
3. State the principles and clinical impact of QuIC assays as a highly specific prion detection method.

Multiple Choice Questions (Select the best answer)

1. Which features of CJD can be used in its diagnosis:
   a. The presence of misfolded proteins capable of self-propagation
   b. Electroencephalogram (EEG) periodic sharp or wave complexes
   c. Characteristic Vacuolation and prion protein staining by neuropathy
   d. High signal in caudate or caudate/putamen on MRI brain scan or at least two cortical regions (temporal, parietal, occipital) either on diffusion-weighted imaging (DWI) or fluid attenuated inversion recovery (FLAIR)
   e. All of the above

2. Which issue complicates international comparison of CJD incidence rates?
   a. CJD incidence is identical across all populations
   b. All countries have mandatory autopsy confirmation
   c. Variation in diagnostic criteria, testing availability, and reporting practices
   d. Prion diseases are routinely screened for in healthy individuals

3. Which challenge remains a limitation in current CJD diagnosis and prognosis?
   a. Inability to detect prions in CSF
   b. Difficult diagnosing early-stage disease
   c. Poor global surveillance systems
   d. Absence of specific laboratory-based tests

Microbiology in Action: Microbiological Emergency Response Team

Kym Antonation, MPH
National Microbiology Laboratory

Abstract:
The Bioforensics Assay Development and Diagnostic (BADD) section within the division of High Consequence Pathogens, National Microbiology Laboratory, continually works towards strengthening Canada's emergency preparedness, outbreak response capacity, and national biosecurity posture through multiple activity streams driven by mandate from the Emergency Management Act, the Federal Emergency Response Plan and others. This section provides a multipronged approach to biological security through accredited diagnostic and reference services for risk group 3 agents and toxins; the Canadian Laboratory Response Network (CLRN); the Microbiological Emergency Response Team (MERT) with high containment mobile laboratories that function to support domestic biological security response(s) as part of the RCMP led National CBRNE team; and applied research activities in microbial forensics. MERT is an internationally recognized asset that can provide rapid, scalable, biological response capabilities anywhere in the world, supporting a wide spectrum of events – most recently the G7 Leaders Summit in Kananaskis, deployments to remote or isolated regions, or small scale events involving repatriation efforts, to name a few.

Objectives:
By attending this session, the attendee will be able to:

1. Recognize the federal biological response structure within Canada and application to mobile laboratory deployment
2. Observe mobile laboratory capabilities within Canada and how they relate internationally
3. Gain insight into the relationship between law enforcement and public health

Multiple Choice Questions (Select the best answer):

1. Which of the following is a mobile capability of MERT, within the Public Health Agency of Canada
   a. Lab in a box
   b. Containment Level 3 Trailer
   c. Mobile Command Centre
   d. All of the above

2. What legislation outlines the legal framework for emergency management in Canada?
   a. The Biological Emergencies Act
   b. The Emergency Management Act
   c. The Federal Response Act
   d. The Help Me Act

3. What legislation outlines the legal framework for emergency management in Canada?
   a. The Biological Emergencies Act
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   d. The Help Me Act

Lyme Infection-Associated Chronic Illnesses and Updates on Lyme Disease Etiology in Canada

Heather Coatsworth, PhD
National Microbiology Laboratory

Abstract

Due to climatic changes, the blacklegged tick, *Ixodes scapularis*, has significantly expanded it's range since the first detection of endemic populations were noted in Southern Ontario in the early 1990's. Endemic populations of *I. scapularis* and *Ixodes pacificus* (Western blacklegged tick) are now present across most of South-Central Canada. Alongside this expansion, Canada has seen a marked increase in the number of cases of Lyme disease: 144 cases in 2009 to 5,239 in 2024, with projected cases ranging from 120,000 to >500,000 by 2050.

Acute signs of infection include rash (erythema migrans), fever, chills, and headache. While most individuals recover naturally or via antibiotic therapy, 10-20% of individuals develop Lyme infection-associated chronic illnesses (Lyme IACI – which includes post-treatment Lyme disease syndrome), largely associated with chronic fatigue, cognitive dysfunction, and reoccurring joint pain. The underlying etiology of these long-term, lingering symptoms is still not well understood. In addition, the diagnosis and treatment of Lyme IACI patients is difficult due to the limitations of current gold-standard serological testing, and lack of validated treatment regimens. This presentation will include updated information on Lyme IACI, including research findings.

Objectives

By attending this session, the attendee will be able to:

1. Describe the signs and symptoms of Lyme infection-associated chronic illnesses
2. Explain how climatic changes have affected the epidemiology of Lyme disease in Canada
3. State the current state of understanding on Lyme IACI etiology

Multiple Choice Questions: (Select the best answer)

1. What are the reservoirs of the causative agent of Lyme disease?
   a. Mice, Squirrels, Deer
   b. Mice, Birds, Deer
   c. Mice, Squirrels, Birds

2. What is the causative agent of Lyme disease in Canada?
   a. *Borrelia burgdorferi* sensu strico
   b. *Borrelia burgdorferi* sensu lato
   c. *Borrelia hermsii*
   d. *Borrelia miyamotoi*

3. What stage of *Borrelia* is hypothesized to contribute to Lyme IACI symptomatology?
   a. Polyploid exponential growth phase
   b. Polyploid stationary phase
   c. Viable but non culturable phase
   d. Haploid stationary phase

Q Fever – The Fog Comes on Little Cat Feet

Thomas Marie, MD
Dalhousie University

Abstract:
Q (Query) fever is an illness that results from infection with the microorganism *Coxiella burnetti*. The wide spectrum of clinical manifestations that are associated with this infection are commonly grouped into acute and chronic Q fever based on the host's antibody response to phase 1 and phase 2 *C. burnetii* antigens.

Coxiella burnetii, an obligate intracellular microorganism, is a pleomorphic coccobacillus with a gram-negative cell wall. The acid pH of the phagolysosome is necessary for development of C. burnetii since the low pH activates its metabolic enzymes. This has important therapeutic implications as alkalinization of the phagolysosome with hydroxychloroquine is important in the treatment of Q fever endocarditis.

Q fever is a zoonosis. The most common animal reservoirs are cattle, sheep and goats. Parturient cats are an important reservoir in Maritime Canada. Inhalation of contaminated aerosols is the usual method for transmission of infection to humans.

The manifestations of acute Q fever vary geographically – in some area's pneumonia is most common while in others it is granulomatous hepatitis. Other manifestations include fever; myocarditis; pericarditis.

Chronic Q fever also has a spectrum of manifestations, most commonly endocarditis. Q fever should always be considered when dealing with culture negative endocarditis.

Acute Q fever can be treated with doxycycline; The treated of chronic Q fever is complex and needs to be prolonged – often for two years or more. Combination therapy with hydroxyquinoline and doxycycline is most commonly used.

Objectives:
By attending this session, the attendee will be able to:
1. State the manifestations of acute Q fever.
2. State how the diagnosis of chronic Q fever is made.
3. State how the manifestations of acute Q fever vary geographically in Canada.

Multiple Choice Questions (Select the best answer)
1. All of the following are manifestations of acute Q fever except:
   a. Pneumonia
   b. Hepatitis
   c. Endocarditis
   d. Fever

2. The diagnosis of chronic Q fever is made in the appropriate clinical setting when:
   a. The phase 1 antibody titre is considerably higher than the phase 2 antibody titre
   b. Fever persists for more than 2 weeks
   c. *Coxiella burnettii* is demonstrated in a cardiac vegetation
   d. A vegetation is seen on echocardiography

3. The most common manifestation of acute Q fever in maritime Canada is granulomatous hepatitis while in Alberta it is pneumonia.
   a. True
   b. False

Case Studies in Travel Medicine: Always Expect the Unexpected!

Philippe Lagacé-Wiens, MD
Shared Health

Abstract:
Skin disorders account for a substantial proportion of illnesses in returned travelers and immigrants, ranging from benign self-limited conditions to manifestations of serious systemic infections. Accurate diagnosis often depends on careful integration of travel history, environmental exposures, lesion morphology, and targeted laboratory investigations. This case-based presentation reviews the practical approach to tropical dermatology through a series of real-world clinical scenarios encountered in travel and tropical medicine practice. Emphasis is placed on recognizing characteristic clinical features, understanding relevant epidemiology and exposure risks, and selecting appropriate diagnostic and therapeutic strategies. Particular attention is given to conditions with important public health or patient safety implications, such as chronic strongyloidiasis, which may persist for decades and can result in life-threatening hyperinfection syndrome following immunosuppression. The session highlights the enduring value of history-taking and physical examination while demonstrating the role of laboratory testing when diagnosis is uncertain or management carries significant risks.

Objectives:
By attending this session, the attendee will be able to:

1. Develop a focused diagnostic approach to skin lesions in returned travelers, incorporating travel history, environmental exposures, lesion morphology, and associated symptoms.
2. Recognize the clinical presentation, diagnosis, and management of common tropical dermatologic conditions, including tungiasis, strongyloidiasis, phytophotodermatitis, cutaneous larva migrans, and scombroid poisoning.
3. Identify tropical dermatologic conditions that require laboratory confirmation or urgent treatment, particularly those associated with significant morbidity in immunocompromised patients.

Multiple Choice Questions (Select the best answer)

1. A patient develops flushing, urticaria, nausea, and dizziness within an hour of eating unrefrigerated mackerel in Haiti. Symptoms improve rapidly with antihistamines. What is the diagnosis?
   a. Ciguatera poisoning
   b. Alpha-gal syndrome
   c. IgE-mediated fish allergy
   d. Scombroid poisoning
   e. Anisakiasis

2. Which treatment is considered first-line for uncomplicated cutaneous larva migrans?
   a. Mebendazole
   b. Topical corticosteroids
   c. Ivermectin
   d. Amphotericin B
   e. Doxycycline

3. Which of the following is a well-recognized risk factor for severe disseminated strongyloidiasis?
   a. Atopic dermatitis
   b. Diabetes mellitus
   c. HTLV-1 infection
   d. Iron deficiency
   e. Hypothyroidism

Malaria Vaccines: Life Saving but not for Everyone

Pierre Plourde, MD FRCPC
Travel Health and Tropical Medicine Services, Winnipeg Regional Health Authority

Abstract
Malaria remains a major global health challenge, disproportionately affecting populations in sub-Saharan Africa, particularly young children and pregnant women. Recent advances in recombinant malaria vaccines represent significant milestones in reducing disease burden and mortality, primarily in children. These vaccines have demonstrated moderate efficacy in preventing hospitalization from severe malaria in high-transmission regions. However, their benefits are not universal. Vaccine efficacy varies by age, transmission intensity, and prior exposure, and protection tends to wane over time, necessitating booster doses. Logistical barriers, including cold chain requirements, cost, and healthcare infrastructure limitations, further restrict equitable access. Social factors, such as vaccine hesitancy and limited public health outreach, may influence uptake. Consequently, while malaria vaccines are lifesaving innovations, they are not a standalone solution nor equally accessible to all populations. They are also not indicated for use in the general traveler since they do not prevent malaria. Monoclonal antibody vaccines have been successfully used in travelers, but IV administration and prohibitive cost are major barriers. A widely available malaria vaccine for travelers remains elusive.

Objectives
By attending this session, the attendee will be able to:
1. Describe how malaria vaccines work
2. Describe how malaria vaccines have been used, and who has benefited the most from malaria vaccines
3. Explain why we still don't have a malaria vaccine for travelers

Multiple Choice Questions (Select the best answer)
1. Which stage of the malaria parasite lifecycle does current malaria vaccines target?
   a. Gametocytes
   b. Hypnozoites
   c. Merozoites
   d. Schizonts
   e. Sporozoites

2. Who has benefited the most from currently used malaria vaccines?
   a. Adults 20-40 years old in sub-Saharan Africa
   b. Adults over 60 years old in sub-Saharan Africa
   c. Children under 3 years old in sub-Saharan Africa
   d. Children 5-10 years old in sub-Saharan Africa
   e. Pregnant adults in sub-Saharan Africa

3. Which of the following is true about a monoclonal antibody malaria vaccine (L9LS) that has been used in adult travelers?
   a. It has a long half-life and can provide 1-2 years of protection against malaria
   b. It has been studied in Phase 3 trials and should be on the market next year
   c. It has to be administered intravenously making it less attractive for travelers
   d. It is 100% protective against malaria
   e. It will cost about $100 per dose

Answers to Multiple Choice Questions

1. **Where We Have Been, and Where Are We Going: A One Health Perspective**
    1. d
    2. b
    3. a

2. **In Public Health We Trust!**
    1. b
    2. c
    3. b

3. **On the Horizon: Emerging Infectious Diseases**
    1. b
    2. c
    3. c

4. **The Ongoing Threat of *Neisseria meningitidis***
    1. b
    2. d
    3. d

5. **Public Health in Action: *Shigella spp* Outbreak Response in an Urban Unhoused Population**
    1. a
    2. c
    3. d

6. **Keep Calm and Beat the Pandemic!**
    1. b
    2 b
    3. b

7. **Human Immunodeficiency Virus in Manitoba: Responding to an Emergency**
    1. b & d
    2. a
    3. f

8. **All You Want to Know about Syndemics**
    1. a
    2. b
    3. b

9. **Vaccines in a Time of Climate Change, Megacities, and Anti-Science**
    1. e
    2. e
    3. c

10. **Medical Grand Rounds**
    Trouble on the Horizon: The Effects of Ultra-Processed Foods on the Gut Microbiome
    1. c
    2. b
    3. c

11. **Canadian Nosocomial Infection Surveillance Program (CNISP): More than 30 Years of Success and Knowledge Translation**
    1. e
    2. e
    3. a

12. **Expanding Canadian Surveillance for Antimicrobial Resistance**
    1. d
    2. b
    3. d

13. **Canadian Surveillance for Symptomatic Urinary Tract Infections in Long-Term Care Facilities in Canada**
    1. c
    2. b
    3. d

14. **Evolving Diagnostics for Creutzfeldt-Jakob Disease: A Thirty-Year Journey**
    1. e
    2. d
    3. b

15. **Microbiology in Action: Microbiological Emergency Response Team**
    1. d
    2. b
    3. a

16. **Lyme Infection-Associated Chronic Illnesses and Updates on Lyme Disease Etiology in Canada**
    1. c
    2. a
    3. c

17. **Q Fever – The Fog Comes on Little Cat Feet**
    1. c
    2. a & c
    3. b

18. **Case Studies in Travel Medicine: Always Expect the Unexpected!**
    1. d
    2. c
    3. c

19. **Malaria Vaccines: Life Saving but not for Everyone**
    1. e
    2. c
    3. c