

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

# THE 25<sup>th</sup> ANNUAL BUG DAY Abstracts

## Overall Program Objectives:

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

1. State the names of the key pathogens that have been clinically and socially relevant over the past 25 years.
2. State how the determinants of health influence a person's risk for infection
3. State how to modify risk factors for the acquisition of infection

**Tuesday, October 19, 2021**



Health  
Sciences  
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A Shared Health facility

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## Bug Day Agenda

0753 - 0755	<b>Greetings from Shared Health</b> Adam Topp, CEO, Shared Health	1145 - 1200	<b>How Science Can Inform Health Policies</b> Zulma Rueda, PhD, University of Manitoba
0755 - 0800	<b>Introduction to Bug Day / Grand Rounds</b> John Embil, MD, Winnipeg Regional Health Authority	1200 - 1215	<b>Questions and Answers</b>
0800 - 0900	<b>Medical Grand Rounds</b> <b>Known or Increased Infection Risk in Organ Donors:</b> <b>Precision of Language in Medicine Matters</b> Karen Doucette, MD, University of Alberta	1215 - 1245	<b>Lunch Break</b>
0900 - 0915	<b>2020-2021: A Unique Year as Seen through the Eyes of the Media</b> John Embil, MD, Winnipeg Regional Health Authority	1245 - 1300	<b>The Bite that Keeps Giving:</b> <b>Arthropod-Borne Illnesses</b> Robbin Lindsay, PhD, Public Health Agency of Canada
0915 - 0930	<b>The COVID-19 Pandemic: An 18 Month Review</b> Brent Roussin, MD, Manitoba Health	1300 - 1315	<b>Lyme Disease: Sorting Out the Details</b> Robert Strang, MD, Public Health, Nova Scotia
0930 - 0945	<b>VCOP: Successful Creation and Implementation of Manitobas First Virtual Hospital Ward</b> Ken Kasper, MD, University of Manitoba	1315 - 1330	<b>Infections and Homelessness:</b> <b>Re-emerging Infections and Barriers to Care</b> Carl Boodman, MD, University of Manitoba
0945 - 1000	<b>Questions and Answers</b>	1330 - 1345	<b>Questions and Answers</b>
1000 - 1015	<b>Break</b>	1345 - 1400	<b>Tuberculosis in Manitoba: A Lookback in Time</b> Martha Ainslie, MD, University of Manitoba
1015 - 1030	<b>Infection Prevention and Control's Top 10 List: Looking Back 25 Years</b> John Conly, MD, University of Calgary	1400 - 1415	<b>Poliomyelitis Eradication: An Ongoing Challenge</b> Greg Hammond, MD, University of Manitoba
1030 - 1045	<b>Infection Prevention and Control: Looking into the Future</b> Chris Sikora, MD, Alberta Health Services	1415 - 1430	<b>Spondylodiscitis: What to Expect and What to Do</b> Michael Goytan, MD, Health Sciences Centre
1045 - 1100	<b>Syphilis in Manitoba: A 25 Year Review</b> Michael Isaac, MD, Manitoba Health	1430 - 1445	<b>Questions and Answers</b>
1100 - 1115	<b>Questions and Answers</b>	1445 - 1500	<b>Break</b>
1115 - 1130	<b>The Silent Syndemic: Drug Use and Serious Infections</b> Yoav Keynan, MD, University of Manitoba	1500 - 1515	<b>Doing the Good, Preventing the Bad and Avoiding the Ugly:</b> <b>Infections in the Immunocompromised Host</b> Karen Doucette, MD, University of Alberta
1130 - 1145	<b>Locked Up: Incarceration and Health</b> Davinder Singh, MD, Manitoba Health	1515 - 1530	<b>Pediatric COVID-19 Vaccination: State of the Art</b> Jared Bullard, MD, University of Manitoba
		1530 - 1545	<b>Life after COVID.</b> <b>What is the New Normal?</b> Pierre Plourde, MD, Winnipeg Regional Health Authority
		1545 - 1600	<b>Questions and Answers</b>

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**Known or Increased Infection Risk in Organ Donors:  
Precision of Language in Medicine Matters**

Karen Doucette, MD

Department of Medicine, Division of Infectious Diseases, University of Alberta

**Abstract:**

Organ transplantation remains the only curative therapy for those with end-stage organ failure. There remains however a significant and persistent gap between the number of organs donated and the number of people waiting for transplantation. One of the many strategies to increase the donor pool that has evolved over recent years is the use of organs from donors with known, or increased risk for, bloodborne pathogens, notably the hepatitis C virus (HCV), but also the human immunodeficiency virus (HIV) and the hepatitis B virus (HBV). Despite higher quality of organs, demonstrated, very low risk of infection and overall improved survival in recipients of organs from increased infection risk donors, these remain under-utilized.

**Objectives**

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

1. Critically compare the Canadian Standards for increased infection risk donors to the 2020 updated United States Public Health Service Guideline
2. Describe how the opiate epidemic in North America combined with the development of curative HCV therapy has led to increased use of HCV viremic organ donors and the evolving data leading to paradigm shifts in utilization of HIV and HBV infected donors
3. Integrate knowledge of risk and the importance of language, including precise, inclusive and culturally appropriate care, when discussing organ offers from increased infectious risk donors with potential recipients

**Multiple Choice Questions (Select the best answer)**

1. The risk of becoming infected with the HCV from an organ donor who injected drugs and had negative HCV serology and HCV RNA testing at donation, is similar to the risk of:
  - a. Being struck by lightning in your lifetime
  - b. Death on dialysis annually
  - c. Dying in a motor vehicle accident in your lifetime
  - d. Death related to an elective surgical procedure
2. What is the median age of an HCV infected versus HCV negative organ donor
  - a. 35 versus 41
  - b. 45 versus 53
  - c. 25 versus 47
  - d. 41 versus 45
3. Compared to transplant candidates willing to consider HCV viremic organ offers, those unwilling or unsure were more likely to be concerned about:
  - a. The organ being “diseased”
  - b. Therapy being ineffective
  - c. Stigma
  - d. a and c

## **2020 – 2021: A Unique Year as Seen through the Eyes of the Media**

John Embil, MD

Infection Prevention and Control Unit,  
Health Sciences Centre/Winnipeg Regional Health Authority

### **Abstract**

Never in our lifetimes, would we have anticipated that life would be changed so dramatically as it has over the past 20 months. Society as we knew it, came to a grinding halt, and our healthcare resources were challenged to deliver care in circumstances never imagined. Multiple vaccines became available to the public in record time. This presentation will provide a look back over the past year, considering the various challenges and success that were experienced.

### **Objectives**

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

1. State the challenges that were experienced with COVID-19 over the past 20 months.
2. Be able to protect oneself from COVID-19.
3. Have fun!

### **Multiple Choice Questions (Select the best answer)**

1. When seeking guidance for making informed decisions on infection prevention and control matters, the following are all reliable sources of information except :
  - a. Government of Canada website
  - b. Government of Manitoba website
  - c. Centres for Disease Control and World Health Organization websites
  - d. Internet Blog sites
2. If after the COVID-19 pandemic is declared over, which of the following measures will be of benefit in keeping yourself and others healthy this cough, cold, and flu season?
  - a. Influenza vaccination and COVID-19 vaccination booster if available/recommended
  - b. Hand hygiene
  - c. Covering your cough
  - d. All of the above
3. As a community, what measures must be taken in the future to prevent similar situations to the COVID-19 crisis?
  - a. Early detection of respiratory illnesses and rapid Public Health interventions
  - b. Rapid immunization against the virus
  - c. Hand hygiene
  - d. All of the above

## The COVID-19 Pandemic: An 18 Month Review

Brent Roussin, MD  
Manitoba Health

### Abstract:

The past 18 months have brought unprecedented challenges throughout the world. COVID 19 has had significant effects on the health, health care systems and economies in most countries. Manitoba has dealt with multiple waves and variants placing significant strains on our health care system. A review of the epidemiology reveals disproportionate effects between many groups, which led to strategic changes in the public health response. The *Public Health Act* provides authorities to the Chief Provincial Public Health Officer and the Minister of Health to broadly limit many activities during a public health emergency. These authorities have never before been used to the degree that was necessary during the past 18 months. While necessary, these restrictions also have significant unintended consequences and have to be considered in the light of their constitutionality and public health ethics. Wide spread vaccination has altered the landscape of the pandemic and has started planning on the continuum to dealing with an endemic virus. This fall will bring the return of the usual respiratory viruses which will further increase the demands on the health care system. Moving forward there will need to be significant changes to the way we deal with this virus.

### Objectives

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

1. Review the epidemiology of the pandemic in Manitoba to date.
2. Discuss the meaning and measurement of herd immunity.
3. Discuss principles of public health ethics.

### Self-assessment Questions: (Select the best answer)

1. Which of the following best describes the core principles of public health ethics?
  - a. Harm principle, least restrictive means, reciprocity, transparency
  - b. Beneficence, non-maleficence, respect for autonomy, justice
  - c. Informed consent, confidentiality, autonomy, least restrictive means
2. Which of the following represents a basic formula describing herd immunity?
  - a. Proportion of population required to be immune= Beta x kappa x delta
  - b.  $1-1/R_0$
  - c. Incidence in unvaccinated-incidence in vaccinated/incidence in unvaccinated
3. Which of the following best describes the sensitivity of a test?
  - a. The ability of a test to identify those who have the disease
  - b. The ability of a test to identify those that do not have the disease
  - c. The probability that someone who tests positive will have the disease

**V-COP:**  
**Successful Creation and Implementation of Manitoba's First Virtual Hospital Ward**  
Ken Kasper, MD  
Department of Medicine, University of Manitoba

**Abstract:**

The Virtual COVID Outpatient Program (V-COP) was officially launched at the Health Sciences Centre in December of 2020 to manage mild and moderately ill patients with respiratory infection caused by COVID-19. Its scope has since increased to include all Winnipeg hospitals and Urgent Care sites. The program has played an important role as a "Pressure-release valve" to our overloaded health care system during waves 2 and 3. V-COPs importance lies in its ability to enable early discharges from hospital or by the prevention of hospital admissions by managing patients at home with home oxygen if needed, and daily virtual care. Partnerships with the Paramedics and the Alternate Isolation accommodation (AIA) has been essential for the success of the program to date. During the peak of Wave 3; up to 60 patients were being remotely followed at home with over 40 of these patients on home oxygen, which is the equivalent large hospital wards. As we shift focus to Wave 4 the V-COP programme has been asked to capture a wider geographic scope and broader respiratory virus agenda.

**Objectives:**

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

1. State the role of that V-COP played in waves 2 and 3
2. State the potential role for V-COP for wave 4
3. State the potential benefits and limitations to virtual home monitoring

**Multiple Choice Questions (select the best answer)**

1. How many estimated Hospital days has V-COP saved during waves 2 and 3?
  - a. 300 hospital days
  - b. 500 hospital days
  - c. 1000 hospital days
  - d. Over 2000 hospital days and counting
2. V-COP not only keeps individual COVID patients out of hospital but has other important System benefits, which include which of the following:
  - a. Decreased the overall use Personal protective Equipment (PPE) needed
  - b. Preventing Cross and nosocomial transmission and its complications
  - c. Allowing increased availability for higher acuity patients in the system
  - d. All of the above
3. EPIC is an important partner with V-COP in Winnipeg. What does EPIC acronym stand for in this context?
  - a. Epidemic Police in Community
  - b. Employed Paramedics in Care
  - c. Emergency Paramedics in Community
  - d. None of the above.

**Infection Prevention and Control's Top 10 List: Looking Back 25 Years**  
John Conly, MD  
Department of Medicine, Section of Infectious Diseases, University of Calgary

**Abstract:**

Looking back on the last 25 years of infection prevention and control has been nothing short of a wild rollercoaster ride. Health-care associated infections (HAIs) in both patients and healthcare workers continue to be a challenge that require ongoing attention. It is difficult to choose a "Top 10" but there are many suitable candidate topics and/or issues that come to mind. Some of these issues have existed for some years and some have emerged more recently so it is difficult to place them in any type of chronologic order. The list chosen includes the following: 1) the rise of zoonotic viral infections - from coronaviruses (SARS-CoV-1, MERS, SARS-CoV-2) to Ebola and other viral hemorrhagic fevers; 2) influenza virus – H1N1 and avian strains; 3) antimicrobial resistant organisms – methicillin resistant *Staphylococcus aureus* (MRSA), vancomycin resistant enterococcus (VRE), producers of extended spectrum beta-lactamases (ESBL) and other enzymes such as AMP-C and carbapenemase-producing organisms (CPOs); 4) *Clostridioides difficile*; 5) bundles and checklists; 6) antimicrobial stewardship; 7) hand and hospital hygiene; 8) physical plant design in healthcare settings; 9) vaccinations; and 10) innovations in infection prevention and control interventions. Despite previous and emerging challenges, there are numerous infection prevention and control interventions that are available and are constantly being refined plus evolving interventions which can be utilized in hospitals and other healthcare settings to prevent the spread of HAIs.

**Objectives:**

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

1. Recognize at least 10 major infection prevention and control practice issues that have occurred over the past 25 years
2. Discuss the impact these 10 major issues have had on hospitalized patients, long term care, congregate settings including prisons, special populations and on the community at large
3. Understand the importance of fundamental infection prevention and control skills

**Multiple Choice Questions (select the best answer)**

1. Over the last 25 years the fundamental importance of sound infection prevention and control practices for all health workers has been most exemplified by which of the following:
  - a. COVID-19
  - b. Hepatitis B and C
  - c. Ebola
  - d. a and c
  - e. a, b and c
2. The cornerstone of IPC practice that has been re-emphasized in the last 25 years has been which of the following:
  - a. point-of-care risk assessment for each patient encounter
  - b. the use of N95 respirators for all encounters with patients infected with any respiratory virus
  - c. hand hygiene
  - d. the principles of asepsis
  - e. all of the above
3. Adherence to and precision of execution for personal protective equipment use by health care workers has markedly improved over the last 25 years due to which of the following:
  - a. required educational programs for all health care workers in training
  - b. recognition of illnesses such as Ebola, SARS-CoV-1, MERS and SARS-CoV-2
  - c. the use of simulation exercises by health care workers
  - d. a and c
  - e. none of the above

## **Infection Prevention and Control: Looking into the Future**

Chris Sikora, MD  
Alberta Health Services

### **Abstract:**

Our collective ability to track, respond-to and prevent disease has grown over the past several decades, and will continue to evolve. The COVID-19 pandemic has shone a spotlight on the critical work of Infection Prevention and Control (IPC) across the spectrum of health delivery settings. While it is truly impossible to predict what the future will hold, our collective successes should drive an expansion of interest areas for IPC. These areas of interest may include:

1. Practices within community/public spaces,
2. Emerging technology for personal protective equipment (PPE) disinfection or tracking,
3. A focus on the importance of animal/wildlife health as it is linked to human health, and
4. A strengthened need for city, region, provincial, federal and international coordination.

### **Objectives:**

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

1. State areas of major success in IPC over 2020 and 2021
2. State potential opportunities for IPC in the next several years
3. List possible future risks to community health, that are linked to IPC

### **Multiple Choice Questions (select the best answer)**

1. During 2020 and 2021, community-based IPC measures was associated with a Canada-wide near-elimination of which one of the following:
  - a. Human Immunodeficiency Virus
  - b. Hepatitis C Virus
  - c. Influenza-A
  - d. Human Papilloma Virus
2. Which of the following are effective mechanisms of protecting against influenza
  - a. Immunization
  - b. Handwashing
  - c. Wearing a face mask/covering
  - d. All of the above
3. When considering possible activities for IPC, organizations should consider
  - a. Local capacity/ability
  - b. Cost/benefit of interventions
  - c. National/international standards
  - d. Local epidemiology of illness
  - e. All of the above

**Syphilis in Manitoba: A 25 Year Review**  
Michael Isaac, MD  
Manitoba Health, Seniors and Active Living

**Abstract**

A surprising renaissance of sexually transmitted infections is occurring in North America, and Manitoba is currently experiencing unprecedented rates of several diseases despite multiple, longstanding public health efforts to prevent, treat, and trace sexually transmitted and blood borne infections (STBBIs). Syphilis, and most notably congenital syphilis, rates have increased dramatically in Manitoba over the past several years. This presentation will explore trends in syphilis rates nationally and provincially, drivers of the current epidemiology and interventions for addressing the high rates of illness.

**Objectives**

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

1. Review historical rates of STBBIs in Manitoba, and discuss clinical and public health efforts over time to respond to these rates.
2. Highlight the changing dynamics of STBBI risk factors and underlying determinants in Manitoba
3. Clinical considerations when diagnosing and managing STBBIs

**Multiple Choice Questions (Select the best answer)**

1. The highest rates of infectious syphilis in Manitoba occurred during which year:
  - a. Post world war 2 era - 1945
  - b. Free love 1960s - 1965
  - c. Psychedelic 1970s - 1974
  - d. The naughty naughts - 2005
  - e. Pre-COVID - 2019
2. A 29 year old pregnant female in your practice was diagnosed and treated for primary syphilis early during the first trimester. How often during pregnancy should syphilis serologic testing occur:
  - a. Never, she will be immune due to previous infection
  - b. First prenatal visit only
  - c. Three times - first prenatal visit, 28 weeks, and at delivery
  - d. Monthly, including at delivery
  - e. Only if symptomatic for syphilis
3. First line therapy for a non-pregnant adult with infectious syphilis is:
  - a. Penicillin V
  - b. Penicillin G
  - c. Doxycycline
  - d. Ceftriaxone
  - e. Azithromycin



## The Silent Syndemic: Drug Use and Serious Infections

Yoav Keynan, MD

Department of Medicine, Section of Infectious Diseases, 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. The following statement refers to HIV new infections 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.

## **Locked Up! Incarceration and Health**

Davinder Singh, MD

Department of Community Health Sciences, University of Manitoba

### **Abstract**

Indigenous People (First Nations, Metis, and Inuit) are the most over-incarcerated group in the criminal justice system in Manitoba. While Indigenous People make up less than a fifth of those that live in Manitoba, they represent over three quarters of those incarcerated in the province. This over-incarceration has significant negative health effects on those who are sent to jail and prison, their families, their communities, and society. This needs to be recognized as a public health crisis, with roots in colonialism and institutional racism. Governments have made pledges to close the gaps in Indigenous health as part of the effort of reconciliation. However, if we do not address the public health crisis of over-incarceration, we will not succeed in closing these gaps.

### **Objectives:**

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

1. Compare Indigenous and Non-Indigenous rates of Incarceration in Manitoba
2. Describe the immediate and long-term health effects of incarceration
3. Identify next steps to address the over-incarceration of Indigenous People in Manitoba

### **Multiple Choice Questions (Select the best answer)**

1. Indigenous adults are how much more likely to be incarcerated than non-Indigenous adults in Manitoba?
  - a. 7 times
  - b. 13 times
  - c. 18 times
  - d. 25 times
2. After release from incarceration, the risk of death in the first two weeks is increased compared to the community average. Which cause of death has the largest increased risk during these two weeks?
  - a. Suicide
  - b. Overdose
  - c. Hepatitis
  - d. Myocardial Infarction
3. Indigenous males lose how many times as many years of life to incarceration than to heart disease and stroke?
  - a. 20 times
  - b. 40 times
  - c. 50 times
  - d. 75 times

## How Science Can Inform Health Policies

Zulma Rueda, PhD

Department of Medical Microbiology and Infectious Diseases, University of Manitoba

### Abstract:

Covid-19 pandemic has been a severe crisis for any society. People have witnessed mistrust in governments, healthcare authorities and policies, misinformation spread widely, lack of sharing public data, transparency and lack of clear communication from scientists, politicians, and healthcare workers has amplified the gap in evidence. Common questions are: What is the risk of Covid-19 infection if I'm vaccinated? What is the risk of Covid-19 disease for the unvaccinated or partly vaccinated? What are the risks and benefits of the vaccines? What is the effectiveness of non-pharmaceutical measures to prevent Covid-19 transmission? Recent research has shown that if communication is transparent, it will uphold trust, even if the governmental measures are not popular. In addition to create trust, it has been reported that three key points are needed to control a pandemic:

1. Create a collective, multisectoral consortia, with clear leadership and roles, including community partnerships,
2. Define common goals to avoid polarization, and
3. Buffer the burden of restrictions across populations.

With a couple of examples, this presentation will explore the importance of science communication for policy making, public engagement, and most importantly, to overcome public health challenges.

### Objectives:

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

1. State key aspects of science informing policy making
2. List barriers to implementing effective public health policy
3. Identify domains of evidence-base public health policy

### Multiple Choice Questions (select the best answer)

1. You are the chief public officer and you are trying to control an epidemic, which actors would you involve:
  - a. Politicians form the major political parties
  - b. Politicians, and healthcare workers
  - c. Policy makers, scientist from all disciplines, community leaders, civil society stakeholders, national and international counterparts
  - d. You take the decisions based on your readings
2. You need to give a press conference, which key elements would you take into account:
  - a. Show up to date data about the situation in your province, give a few bullets about the main best available evidence, communicate the uncertainties, and provide advice in a transparent and accountable manner
  - b. Dress well, take questions from people from the newspapers you read, and be clear
  - c. Provide a scientific presentation about the disease that you are trying to handle
  - d. Do not have the press conference because you are afraid of an outbreak
3. The key recommendations to provide science advice to policy makers during Covid-19 pandemic are:
  - a. Hire the most renowned scientist to perform a systematic review that summarizes the evidence
  - b. Hire communicational specialist that create effective educational materials
  - c. Create a committee with the most respected scientific experts to convince the prime minister about the best decisions
  - d. Effective and trustworthy science advice process, build capacity to provide advice, to enhance international cooperation, exchange information and promote mutual understanding and trust

## **The Bite that Keeps Giving: Arthropod-Borne Illnesses**

Robbin Lindsay, PhD  
Public Health Agency of Canada

### **Abstract:**

Although arthropod populations in Canada can be very large and biting pressure from arthropods can be tremendous, from a historical perspective, Canadians have experienced relatively few large-scale outbreaks of arthropod-borne infections. From the early 1930s until the early 1980s several mosquito-borne viruses including western equine encephalitis and St. Louis encephalitis virus were the dominant arthropod-borne illnesses in Canada. Tick-borne infections were limited to sporadic cases of Rocky Mountain spotted fever, relapsing fever and tularemia. At the start of the 21st century, the landscape of arthropod-borne infections changed with the emergence of mosquito-transmitted West Nile virus and tick-associated Lyme disease. This presentation will provide an overview of blood-feeding behaviour in arthropods; the factors that lead to the emergence of West Nile virus and Lyme Disease in Canada and the presentation will also highlight where gaps continue to exist in our knowledge and tools to manage these important arthropod-borne infections.

### **Objectives:**

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

1. The different strategies and challenges arthropods face when they attempt to acquire blood meals from hosts
2. The evolution of arthropod-borne diseases in Canada including the drivers of emergence of new arthropod-borne diseases in Canada and which arthropod-borne diseases may threaten public health in the future.
3. The knowledge gaps that need to be addressed to further reduce the burden of arthropod-borne diseases in this country.

### **Multiple Choice Questions (select the best answer)**

1. Which of the following mosquito-borne infections are zoonotic pathogens??
  - a. Western equine encephalitis
  - b. Eastern equine encephalitis
  - c. West Nile virus
  - d. All of the above
2. Which of the following are not responsible for emergence of arthropod-borne illness in Canada?
  - a. Genetic susceptibility to infection
  - b. Inclusion of novel pathogens
  - c. Range expansion of known vector species
  - d. Climate change
3. Which of the following represent the largest gap(s) in arthropod-borne disease prevention? ?
  - a. Topical repellents with novel modes of repellency
  - b. Clothing impregnated with compounds that repel and kill arthropods
  - c. Effective vaccines against vector-borne pathogens
  - d. All of the above

## **Lyme Disease: Sorting Out the Details**

Robert Strang, MD  
Public Health, Nova Scotia

### **Abstract:**

Alternative views on the diagnosis and treatment of Lyme disease are actively promoted online to the public and through targeted and aggressive advocacy to elected officials. While empathetic and collaborative, multi-disciplinary treatment approaches are necessary to effectively support patients with chronic symptoms attributed to Lyme disease, deliberate strategies to communicate scientifically valid information to the general public and elected officials are needed as part of a comprehensive tick-borne disease strategy.

### **Objectives:**

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

- 1 State the key information areas targeted by those promoting alternative views on the diagnosis and treatment of Lyme disease
- 2 Find key sources of valid information to counter these alternative views
- 3 List strategies to build and maintain support for evidence-based approaches to the diagnosis and treatment of Lyme disease

### **Multiple Choice Questions (select the best answers)**

1. In what stages of Lyme disease is serologic testing accurate and therefore appropriate
  - a. Early localized, early disseminated, and late Lyme disease
  - b. Early localized Lyme disease
  - c. Early disseminated Lyme disease
  - d. Late Lyme disease
2. What organizations in Canada provide evidence-based information on the diagnosis and treatment of Lyme disease?
  - a. CanLyme
  - b. Association of Medical Microbiology and Infectious Diseases (AMMI) Canada
  - c. Public Health Agency of Canada (PHAC)
  - d. Provincial/territorial public health
3. What strategies should be used to develop support for evidence-based approaches to the diagnosis and treatment of Lyme disease
  - a. Continuing education for primary care providers
  - b. Public education and awareness
  - c. Providing evidence on evidence-based approaches and mis-information strategies to elected officials
  - d. All of the above

## Infections and Homelessness: Re-emerging Infections and Barriers to Care

Carl Boodman, MD

Department of Medicine, Section of Infectious Diseases, University of Manitoba

### Abstract:

People who experience homelessness (PWEH) withstand some of the greatest health inequities in high-income societies. In Canada, life expectancy of PWEH is as low as 42 and 52 years, for men and women, respectively. PWEH are at elevated risk of life-threatening infections that require prolonged intravenous antimicrobial treatment. Osteomyelitis, bacteremia and endocarditis are examples of such deep-seated infections. The combination of uncontrolled chronic diseases, such as diabetes, peripheral vascular disease and lymphedema, as well as inadequate access to resources necessary to maintain personal hygiene make lower limb cellulitis, trench foot and subsequent osteomyelitis common among PWEH. The association between injection drug use and homelessness contributes to elevated incidence of bacteremia and endocarditis in the homeless population. While tuberculosis, infection with the Human Immunodeficiency Virus and sexually transmitted infections disproportionately affect people without access to suitable housing, these conditions are specifically addressed in different Bug Day sessions this year. *Bartonella quintana*, which is rarely considered microorganism is the etiologic agent of trench fever, is transmitted by body lice and is an emerging cause of endocarditis among PWEH in Winnipeg as well as in rural Manitoba.

### Objectives:

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

1. Describe severe bacterial infections that disproportionately affect people without access to suitable housing.
2. Describe barriers to adequate antimicrobial treatment of those without access to suitable housing.
3. Describe the transmission, clinical manifestations and treatment of trench fever and *B. quintana* endocarditis.

### Multiple Choice Questions (select the best answer)

1. What the average life-expectancy of someone who is homeless in Canada?
  - a. 70-80s
  - b. 20-30s
  - c. 40-50s
  - d. 60-70s
2. How is trench fever transmitted?
  - a. Talking to a person who is homeless
  - b. Walking next to a person who is homeless
  - c. Bacteria, present in the feces of body lice that live for months on people's clothing, enter the bloodstream through small abrasions in the skin
  - d. Mosquitoes
3. What is the most severe manifestation of trench fever?
  - a. Hepatitis
  - b. Renal failure
  - c. Endocarditis
  - d. Osteomyelitis

## **Tuberculosis In Manitoba: A Lookback in Time**

Martha Ainslie, MD

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### **Abstract:**

The last 20 years have seen significant advances in the diagnosis and management of tuberculosis (TB) in Manitoba. We now have 'point of care' tools that allow the diagnosis of smear positive pulmonary TB within 4 hours. Molecular diagnostic technologies are being employed to look for genes that encode for drug resistance allowing the clinician to rapidly start effective treatments in patients with drug resistance TB. The diagnosis of latent TB is now possible using Interferon-Gamma Release Assays (IGRA) in selected patients. Advances have been made in the treatment of latent and active TB. There are new shorter and safer alternatives to isoniazid (INH) for the treatment of latent TB. The last 20 years have seen the introduction of several new antibiotics for management of drug resistant TB. Changes in policy have allowed us to decrease the duration of isolation and to deliver treatments safely in the home environment. However, despite these advances, the incidence of active tuberculosis remains unacceptably high in Manitoba. Manitoba will need to address poverty, homelessness and social inequality in order to reach the World Health Organization (WHO) goal to end TB.

### **Objectives:**

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

1. State the role of IGRA in the diagnosis of latent TB and PCR technologies for the diagnosis of active TB.
2. List newer treatment alternatives to INH for latent TB
3. List newer treatment options for drug resistant TB

### **Multiple Choice Questions (select the best answer)**

1. In the early 1900s, how did the death rate from tuberculosis in residential schools compared to the national average for children ages 5-14?
  - a. 5 x higher than national average
  - b. 10 x higher than national average
  - c. 15 x higher than national average
  - d. 20 x higher than national average
2. IGRA is the preferred over a tuberculin skin test (TST) for testing for latent TB in which of the following scenarios:
  - a. 20-year-old who is a contact of a patient with smear positive pulmonary TB.
  - b. Baseline testing for a health care worker who will be working on a medicine ward
  - c. 55-year-old potential kidney donor who received a BCG prior to starting primary school.
  - d. A 45-year-old who requires a biologic for rheumatoid arthritis
3. Which of the following treatment regimens for latent TB has the shortest duration?
  - a. INH
  - b. Rifampin
  - c. Rifapentine and INH
  - d. Rifampin and pyrazinamide (PZA)

# **Poliomyelitis Eradication: An Ongoing Challenge but Global Example of Overcoming Inequity in Immunization Programs**

Greg Hammond, MD

Department of Medicine, Section of Infectious Diseases, University of Manitoba

## **Abstract**

Poliomyelitis is an infectious inflammation of the spinal cord or brain, recognized since antiquity. It causes flaccid paralysis of limbs, typically in young children. Outbreaks occurred in summer and caused societal disruption and fear, as well as illness, paralysis, disability and death. With the discovery of the causative agents, poliomyelitis viruses, Types 1, 2 and 3, great advances were made in the mid 20<sup>th</sup> century through production of vaccines. Their use in routine childhood immunization programs in developed countries resulted in enormous advances in the prevention and control of polio. However, global inequity in immunization programs left endemic polio in many countries. Rotary International sponsored a pilot program of polio eradication in the Philippines in 1979 that was successful. In 1985, Rotary International set a goal of Polio Eradication for the world. This objective was adopted by the World Health Organization (WHO) in 1988. The WHO - led initiative was the Global Polio Eradication Initiative (GPEI), a broad partnership that initially faced an annual rate of 350,000 cases of paralytic poliomyelitis. Significant milestones were polio eradication in India in 2012 and Africa (wild polio – free) in 2020. There has been a 99.9% reduction of wild polio cases. Wild polio 2 and 3 have been eliminated. There remain only 2 countries with endemic wild polio virus Type 1 infections, Pakistan and Afghanistan. Unfortunately, geopolitical issues and conflict interfere with the delivery of vaccine programs, thus delaying achievement of polio eradication goals. Low immunization rates in some countries have contributed to the spread of circulating mutant strains which evolved from live vaccine viruses, so new more genetically stable vaccine strains have been developed. WHO describes polio eradication as one of the largest public health initiatives in history. A new GPEI plan, “Polio Eradication Strategy 2022-2026: Delivering on a Promise”, requires ongoing support.

## **Objectives**

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

1. State why and how polio is a target for eradication.
2. Describe the benefits and challenges of polio eradication.
3. State why ongoing assessment of the polio immunization program is important.

## **Multiple Choice Questions (Select the best answer)**

1. Which of the following that affect polio eradication is false?
  - a. Polio can survive in the environment
  - b. Immunity to polio vaccine is long lasting
  - c. Polio is found circulating in a wide number of animal species
  - d. Polio vaccines produce robust immunity
  - e. Polio virus infection has no latency from which it can reactivate
  - f. Killed polio vaccine cannot mutate to produce disease
2. Which challenges to polio eradication are true?
  - a. Burnout and donor fatigue
  - b. Vaccine hesitancy
  - c. Conflict that prevents immunization programs
  - d. Missing opportunities to immunize children
  - e. Complacency in managing vaccine programs
  - f. All of the above
3. Which elements of the assessment of the polio eradication program need to continue?
  - a. Surveillance of flaccid paralysis cases
  - b. Monitoring of polio strains in sewage
  - c. Molecular analysis of strains isolated from polio cases
  - d. Assessment of possible outbreaks of polio
  - e. Advocacy of financial donors and partners
  - f. All of the above



## **Spondylodiscitis: What to Expect and What to Do**

Michael Goytan, MD

Department of Surgery, Sections of Orthopedics and Neurosurgery  
University of Manitoba

### **Abstract:**

Spondylodiscitis is unfortunately becoming a relatively common spine infection in Manitoba, the spectrum of disease ranges from incapacitating back pain with neurologic symptoms to an incidental finding on a magnetic resonance imaging scan (MRI). There are several risk factors that can predispose an individual to be at risk for spondylodiscitis, the clinician must have a high degree of suspicion and not just attribute the pain and disability to an “arthritic condition” and look for a more sinister etiology.

A standardized approach to clinical and radiographic diagnosis, management and when surgical intervention is required will be reviewed.

### **Objectives:**

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

1. State the constellation of symptoms and the clinical picture of a spondylodiscitis
2. List the risk factors of the patient for spondylodiscitis which may or may not be modifiable
3. State the applicable imaging, antibiotic therapy and surgical consultation requirements in when spondylodiscitis is considered. Also state the techniques for clinical, serologic and radiographic follow up in spondylodiscitis

### **Multiple Choice Questions (select the best answer)**

1. The intervertebral disc is the “perfect storm” for developing an infection because:
  - a. There are two hypothesis of the pathophysiology of spondylodiscitis – arterial and vascular
  - b. The intervertebral disc space endplates have loop capillaries that provide nutrition to the disc via diffusion, there is no direct blood supply
  - c. The endplates of the intervertebral disc have a reduced pO<sub>2</sub>, reduced blood Q, and decreased pH
  - d. a and c
  - e. b only
  - f. All of the above
2. The indications for antibiotic therapy in spondylodiscitis are:
  - a. Patient is in septic shock
  - b. A bacterial pathogen has not been identified
  - c. Patient has not back pain and is clinically well
  - d. Computed axial tomographic scan guided biopsy of the disc space is negative
3. The indication for surgical referral in spondylodiscitis is/are:
  - a. The patient has unrelenting pain, neurologic deficit and a spinal deformity
  - b. Antibiotic therapy alone has been unable to control the infection and patient is septic
  - c. Not sure how to manage the problem
  - d. a and b
  - e. c only
  - f. All of the above

# **Doing the Good, Preventing the Bad, and Avoiding the Ugly: Infections in the Immunocompromised Host**

Karen Doucette, MD

Department of Medicine, Division of Infectious Diseases, University of Alberta

## **Abstract:**

Due to the need for lifelong immunosuppression, infection remains amongst the most common complications and causes of death following organ transplantation. Prevention strategies, such as vaccination and prophylactic therapies have led to marked reduction in the incidence of some infectious complications, while antiviral therapy for hepatitis B and C has dramatically reduced the need for and improved the outcome of transplantation. Cytomegalovirus (CMV) remains the most common infectious complication after organ transplantation despite current prevention strategies and remains a high priority for additional research to limit and ultimately eliminate its impact on post-transplant morbidity and mortality. Invasive fungal infections, although uncommon, continue to carry a high risk of mortality in immunocompromised hosts highlighting the need for improvements in prevention, early diagnosis and treatment strategies.

## **Objectives:**

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

1. State strategies for prevention of infection following transplantation
2. State the gaps and challenges in CMV prevention and treatment
3. Identify populations at high risk for invasive fungal infections

## **Multiple Choice Questions (select the best answer)**

1. Which of the following vaccines is contraindicated following organ transplant?
  - a. Influenza
  - b. Hepatitis B
  - c. Measles, mumps and rubella
  - d. Recombinant adjuvanted herpes zoster
  - e. Hepatitis A
2. All of the following antivirals may be considered for CMV prevention or treatment EXCEPT:
  - a. Ganciclovir
  - b. Letermovir
  - c. Foscarnet
  - d. Entecavir
  - e. Maribavir
3. Which of the following is NOT considered a factor contributing to net state of immunosuppression and increased risk of invasive fungal infection
  - a. Diabetes
  - b. CMV infection
  - c. Malnutrition/cachexia
  - d. High dose corticosteroids
  - e. Rhinovirus infection (common cold)

## **Pediatric COVID-19 Vaccination: State of the Art**

Jared Bullard, MD

Department of Pediatrics, Section of Pediatric Infectious Diseases, University of Manitoba

### **Abstract:**

During the COVID-19 pandemic, vaccination has become an essential public health strategy. Children, particularly those under the age of 12 years, were the last age groups receiving approval for vaccination in Canada. Parents, teachers and children have considerable anxiety around COVID. This applies to both community/school transmission and side effects of vaccination. The goal of this presentation is to discuss the unique clinical presentations and epidemiology of children with COVID and explain why this helps inform vaccination strategies. Finally, COVID vaccine side effects in children and adolescents will be discussed in the context of risks and benefits.

### **Objectives:**

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

1. Discuss the epidemiology and clinical manifestations of COVID in children
2. Briefly review goals in vaccinating children compared to adults
3. Review side effects of COVID vaccination including myocarditis

### **Multiple Choice Questions (Select the best answer)**

1. The risk of myocarditis secondary to COVID vaccination in adolescents and young adults is closest to
  - a. 1 in 10
  - b. 1 in 1000
  - c. 1 in 10,000
  - d. 1 in 40,000
2. The risk of myocarditis secondary to COVID infection in adolescents and young adults may be as high as
  - a. 1 in 50
  - b. 1 in 500
  - c. 1 in 1000
  - d. 1 in 10,000
3. Children with COVID are less likely to become seriously ill and less likely to transmit SARS-CoV-2 to others.
  - a. True
  - b. False

## **Life after COVID: What is the New Normal?**

Pierre Plourde, MD

Medical Officer of Health, Winnipeg Regional Health Authority

Professor, University of Manitoba

### **Abstract**

The COVID-19 pandemic was a once in a century event. The direct consequences of COVID-19 included severe illness and hospitalization requiring care in an Intensive Care Unit (ICU), chronic complications, and death. But other COVID fall out effects also had their significant toll on health and well-being, including mental health deterioration, social deprivation, missed school, loss of jobs/income, health care worker burn out, loss of trust in public officials, and increasing political and ideological polarization. Most telling, were the increased disparities resulting from the negative impacts of racism and colonialism on BIPOC populations. So what have we learned and what will the new normal look like? How will we recover from the longest ever declared public health emergency? Lessons learned include – public health measures work – human nature is fearful and impatient – lack of social interaction is damaging – shaming others doesn't work – virtual health care is possible. Are we headed towards the "Roaring 20's" or the "Great Depression" of the 30's? This depends very much on what actions we will be willing to take to reduce the disparities that were so accentuated during this pandemic.

### **Objectives**

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

1. Describe the "fall out" of the COVID-19 pandemic
2. State the lessons learned from the COVID-19 pandemic
3. Contemplate what the post COVID-19 world "new normal" might look like

### **Multiple Choice Questions (Select the best answer)**

1. Which of the following worsened during the COVID-19 pandemic?
  - a. Mental health crises
  - b. Overdoses
  - c. Health disparities
  - d. Weight gain
  - e. All of the above
2. Which of the following is true?
  - a. First Nations persons infected with COVID-19 were 5 times more likely to die than other Manitobans
  - b. First Nations persons infected with COVID-19 were 6 times more likely to be hospitalized than other Manitobans
  - c. North Dakota (which did not stress public health measures and had no lock downs) had higher COVID-19 hospital/ICU admission and death rates than Manitoba
  - d. Some COVID-19 vaccines had high rates of severe adverse reactions
  - e. Persons admitted to ICU with COVID-19 had >50% mortality
3. Which of the following is true of public health emergencies?
  - a. Declaration of a public health emergency is the only way to establish an incident command structure
  - b. Most public health emergencies last less than 60 days
  - c. On average, one public health emergency is declared in Canada on an annual basis
  - d. Only a Medical Officer of Health can declare a public health emergency
  - e. All of the above

## Answers to Multiple Choice Questions

- 1. Known or Increased Infection Risk in Organ Donors: Precision of Language in Medicine Matters**
  1. d
  2. a
  3. c
  
- 2. 2020-2021: A Unique Year as Seen through the Eyes of the Media**
  1. d
  2. d
  3. d
  
- 3. The COVID-19 Pandemic: An 18 Month Review**
  1. b
  2. b
  3. a
  
- 4. V-COP: Successful Creation and Implementation of Manitoba's first virtual hospital Ward**
  1. d
  2. d
  3. c
  
- 5. Infection Prevention and Control's Top 10 List: Looking Back 25 Years**
  1. e
  2. c
  3. e
  
- 6. Infection Prevention and Control: Looking into the Future**
  1. c
  2. d
  3. e
  
- 7. Syphilis in Manitoba: A 25 Year Review**
  1. e
  2. d
  3. b
  
- 8. The Silent Syndemic: Drug Use and Serious Infections**
  1. a
  2. b
  3. b
  
- 9. Locked Up: Incarceration and Health**
  1. c
  2. b
  3. c
  
- 10. How Science Can Inform Health Policies**
  1. c
  2. a
  3. d
  
- 11. The Bite that Keeps Giving: Arthropod-Borne Illness**
  1. d
  2. a
  3. c

**12. Lyme Disease: Sorting out the Details**

1. c and d
2. b and d
3. d

**13. Infections and Homelessness: Re-emerging Infections and Barriers to Care**

1. c
2. c
3. c

**14. Tuberculosis in Manitoba: A Lookback in Time**

1. d
2. c
3. c

**15. Poliomyelitis: Gone in Canada but not Forgotten**

1. c
2. f
3. f

**16. Spondylodiscitis: What to Expect and What to Do**

1. f
2. a
3. f

**17. Doing the Good, Preventing the Bad and Avoiding the Ugly: Infection in the Immunocompromised Host**

1. c
2. d
3. e

**18. Pediatric COVID-19 Vaccination: State of the Art**

1. d
2. a
3. a

**19. Life after COVID. What is the New Normal?**

1. e
2. b
3. b