

File No. CI 20-01-29284

THE QUEEN'S BENCH
Winnipeg Centre

APPLICATION UNDER: *The Constitutional Questions Act, C.C.S.M., c. 180*

AND UNDER: The Court of Queen's Bench Rules, M.R. 553/88

IN THE MATTER OF: *The Public Health Act, C.C.S.M. c. P210*

B E T W E E N:

**GATEWAY BIBLE BAPTIST CHURCH, PEMBINA VALLEY BAPTIST CHURCH,
REDEEMING GRACE BIBLE CHURCH, THOMAS REMPEL, GRACE COVENANT
CHURCH, SLAVIC BAPTIST CHURCH, CHRISTIAN CHURCH OF MORDEN, BIBLE
BAPTIST CHURCH, TOBIAS TISSEN, ROSS MACKAY**

Applicants,

- and -

**HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF MANITOBA,
DR. BRENT ROUSSIN in his capacity as CHIEF PUBLIC HEALTH OFFICER OF
MANITOBA, and DR. JAZZ ATWAL in his capacity as ACTING DEPUTY CHIEF
OFFICER OF HEALTH MANITOBA**

Respondents.

AFFIDAVIT OF JARED MANLEY PETER BULLARD
AFFIRMED: March 5, 2021.

DEPARTMENT OF JUSTICE
Constitutional Law Branch



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Respondents.

AFFIDAVIT OF JARED MANLEY PETER BULLARD

I, JARED MANLEY PETER BULLARD, of the rural municipality of Headingley, in the
Province of Manitoba, **AFFIRM AND SAY AS FOLLOWS:**

1. I have personal knowledge of the facts and matters hereinafter deposed to by me, except
where stated to be based upon information and belief, in which case I believe them to be true.

2. I am an Associate Professor and Section Head of Infectious Diseases in the Departments of Pediatrics & Child Health and Medical Microbiology at the University of Manitoba. I am a licensed physician and have Fellowships with the Royal College of Physicians and Surgeons of Canada in Pediatrics, Medical Microbiology and Infectious Diseases. I am currently the Associate Medical Director of Cadham Provincial Laboratory (CPL), a position I have held since 2011. CPL is one of the laboratories that performs reverse transcription polymerase chain reaction (RT-PCR) testing for the presence of the SARS-CoV-2 novel coronavirus, which is responsible for the COVID-19 pandemic. Attached as **Exhibit "A"** to my affidavit is a copy of my curriculum vitae (CV).

3. I currently serve on several teams and committees established to respond to the COVID-19 pandemic, including:

- COVID-19 Pandemic Pediatric Incident Command Team – I am the Pediatric Infectious Disease representative on the team.
- SARS-CoV-2/COVID-19 Response Committee. I provide laboratory leadership for the pandemic response and testing operations.
- COVID-19 Public Health Operations Committee. I serve as the laboratory and clinical representative on this provincial committee, which consults and provides recommendations on the public health response to the COVID-19 pandemic.
- Respiratory Virus Public Health Working Group. I am the laboratory and clinical representative on this provincial working group, providing guidance on respiratory viruses, including influenza and SARS-CoV-2.
- Canadian Public Health Laboratory Network CanCOGeN Sequencing Group. I am the provincial co-representative for genetic sequencing of Canadian SARS-CoV-2 isolates on this national committee.
- COVID 19 Vaccine: Vaccine Priority Populations Group and the Clinical/Medical Oversight Group.

4. I have considerable experience and expertise in the design and optimization of RT-PCR diagnostic technology. Among other training, I have received training at the National Microbiology Laboratory to examine state of the art molecular diagnostics in HIV and measles, mumps and rubella including RT-PCR testing. My Bachelor of Science in Medicine, HIV

Immunology also had a focus on RT-PCR testing for HIV diagnostics. During the current pandemic, to date CPL has performed over 230,000 RT-PCR diagnostic tests to identify SARS-CoV-2, which I have assisted in supervising.

5. As outlined in my CV, I have assisted in the preparation of educational materials on various topics related to Covid-19 including the spread of the disease and protecting the public, clinical description and epidemiology, diagnostics and surveillance, therapeutics, infection prevention and control, and public health interventions.

6. My CV lists my peer reviewed journal articles, publications, research collaborations, lectures and presentations on SARS-CoV-2, including on the topic of laboratory diagnostics and the RT-PCR test. I have also peer reviewed a number of manuscripts written by other researchers. A sample of these include:

- “Comparison of Commercial Assays and Laboratory Developed Tests for Detection of SARS-CoV-2” (September 10, 2020, *J. Viral Methods*, co-author)
- “Diagnostic Testing for SARS-CoV-2” (June 3, 2020, *CMAJ*, co-author)
- “Predicting Infectious Severe Acute Respiratory Syndrome Coronavirus 2 From Diagnostic Samples” (May 22, 2020, *Clinical Infectious Diseases*. Lead investigator and author).
- “Positive or Not? Laboratory Testing for Covid-19” (October 2020, Symposium presentation).
- “Clinical Presentation of COVID-19 Infections” (April 2020, National presentation to the College of Family Physicians of Canada)
- Covid-19 Seminar Series: Pediatric Cases, Laboratory Diagnostics and Critical Care” (June 2020, International presentation to the Pacific Island Health Officers’ Association)
- Diagnostic yield of repeat testing for SARS-CoV-2: Experience from a large health system in Los Angeles. (Manuscript peer reviewer for *International Journal of Infectious Disease*; August 2020)
- Development and validation of reserves transcriptase-PCR assays for the testing of SARS-CoV-2 (Manuscript peer review for *Journal of the Association of Medical Microbiology and Infectious Diseases*; August 2020)

- Comparison of RT-PCR Cycle Threshold Values from Respiratory Specimens in Symptomatic and Asymptomatic Children with SARS-CoV-2 Infections (December 2020, Manuscript peer reviewer for JAMA Pediatrics)
- “Infectious period of SARS-CoV-2 in 17 nursing home residents – Arkansas, June-August 2020” (December 2020, Manuscript peer reviewer for Open Forum of Infectious Diseases)
- “SARS CoV-2 Surveillance and Exposure in the Perioperative Setting with Universal testing and Personal Protective Equipment (PPE) Policies” (October 2020, Manuscript peer reviewer for Clinical Infectious Diseases)
- “Respiratory tract samples collected from patients within a region of Quebec, Canada indicate the absence of early circulation of SARS-CoV-2 Infection” (September 2020, Manuscript peer reviewer for Journal of the Association of Medical Microbiology and Infectious Diseases)
- Prevalence of COVID-19 among children and adolescents while easing lockdown restrictions in Cologne, North Rhine-Westphalia, Germany (August 2020, Manuscript peer reviewer for Archives of Disease in Childhood).
- Development and validation of reverse transcriptase-PCR assays for the testing of SARS-CoV-2 (August 2020, Manuscript peer reviewer for Journal of the Association of Medical Microbiology and Infectious Diseases)
- Diagnostic yields of repeat testing for SARS-CoV-2: Experience from a large health system in Los Angeles (August 2020, Manuscript peer reviewer for International Journal of Infectious Disease).
- “SARS-CoV-2 RT-PCR Cycle Thresholds (Ct) values and Correlation with Symptom onset to Test (STT) in Pediatric Patients in Manitoba during the COVID-19 Pandemic” (2018 to present; Supervisor of Pediatric Resident Research Project)
- “Seasonality of Coronaviruses: Implications for COVID-19” (Accepted for publication in Canadian Communicable Disease Report).

7. I was asked to provide my independent, expert opinion on how RT-PCR testing is used to identify the SARS-CoV-2 virus in respiratory samples and diagnose COVID-19. I discuss the accuracy of RT-PCR molecular testing to identify suspected cases of SARS-CoV-2 in a pandemic and compare it to cell culture. I explain cycle threshold (Ct) values in RT-PCR tests and how Ct values correlate to potential infectiousness of positive cases. Finally, I explain the role of RT-PCR testing and the implication of a positive result for the public health response.

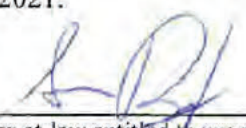
8. I wrote the report jointly with Dr. Paul Van Caesele, a professor in the departments of Medical Microbiology & Infectious Diseases, and Pediatrics & Child Care Health at the University of Manitoba. Dr. Van Caesele is also the Medical Director of CPL, a position he has held since 2000, and the co-chair of the Canadian Public Health Laboratory Network. Dr. Van Caesele's curriculum vitae is attached as **Exhibit "B"** to my affidavit.
9. Attached as **Exhibit "C"** to my affidavit is a copy of our expert report entitled "Principles and practice of molecular testing for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2) during the Coronavirus Disease 2019 (COVID-19) pandemic in Manitoba, Canada".
10. As we explain in more detail in the report, the RT-PCR test is the most accurate test available for identifying cases of SARS-CoV-2. The Ct value associated with the RT-PCR test represents the number of times that the genetic material in the sample must be amplified (doubled) before the particular genetic material of the virus can be positively identified. The Ct value is inversely related to the amount of virus originally present in a sample. In other words, the higher the Ct value, the less virus initially present. Regardless of the particular Ct value, a positive RT-PCR result represents a true positive case of the SARS-CoV-2 virus.
11. Research has shown that there is a progressively lower probability that the virus can grow in a cell culture (a proxy for an individual being infectious) when the SARS-CoV-2 virus is detected at a Ct value of 25 or higher. This means that the higher the Ct value, the less likely the person is infectious at that time. However, cell culture is only a proxy and the possibility that an individual is infectious at the time of the RT-PCR test or will later become infectious cannot be ruled out based on Ct value alone. Further clinical investigation is required.
12. From a public health perspective, it is important to identify and report all positive cases of SARS-CoV-2, regardless of the Ct value. First, while less likely, some individuals might still be infectious even at a higher Ct value. Secondly, a positive test at a higher Ct value (indicating a lower viral load) may result because the individual is only at the early stages of the COVID-19 disease. In other words, the SARS-CoV-2 virus will continue to multiply in that individual and the person will become infectious in the near future. Finally, even if a person who tested positive at a higher Ct value is no longer infectious, that individual did have COVID-19 and was

infectious at an earlier point in time. Public health will rely on the positive RT-PCR test result to perform contact tracing in order to identify other persons who may have been infected and could spread the disease further. The RT-PCR test also provides public health with a picture of the overall disease burden in the community and its possible locations, which can assist in tailoring the public health response.

13. I acknowledge that in preparing this report and providing expert evidence, legal counsel for the Government explained that my role is to assist the court to determine the matters in issue. I further acknowledge that it is my duty to provide evidence that is fair, objective and non-partisan and to opine only on matters that are within my area of expertise. This duty prevails over any obligation that I may owe to any party on whose behalf I am engaged.

14. I make this affidavit bona fide.

AFFIRMED before me in the City)
 of Winnipeg, in the Province)
 of Manitoba, this 5th day of)
 March, 2021.)


 A Barrister-at-law entitled to practice)
 in and for the Province of Manitoba)


JARED MANLEY PETER BULLARD

This is Exhibit " A " referred to
in the Affidavit of Jared Manley
Peter Bullard Affirmed before
me this 5th day of March A.D. 2021

A Barrister-at-Law entitled to practice
in and for the Province of Manitoba

Dr. Jared Bullard MD, FRCPC

Section Head, Pediatric Infectious Diseases

Associate Professor, Pediatrics & Child Health and Medical Microbiology & Infectious Diseases

Associate Medical Director, Cadham Provincial Laboratory

Curriculum Vitae



**University
of Manitoba**

January 2021

CURRICULUM VITAE

Jared Manley Peter Bullard, MD FRCPC

Business Address:



Citizenship:

Canada/Bahamas

Positions Held:

Assistant Medical Director – Cadham Provincial Laboratory (CPL), July 2010-November 2011
 Associate Medical Director – Cadham Provincial Laboratory (CPL), November 2011- present
 Section Head – Pediatric Infectious Diseases, University of Manitoba, April 2020 - present

Appointments:

Section Head – Pediatric Infectious Diseases, University of Manitoba, April 2020 - present
 Associate Professor – Promoted March 31, 2017 in the Departments of Pediatrics & Child Health and Medical Microbiology & Infectious Diseases, University of Manitoba, 2017 – present
 Assistant Professor – Departments of Pediatrics & Child Health and Medical Microbiology, University of Manitoba, 2010 – 2017
 Infectious Disease Consultant – Winnipeg Regional Health Authority, 2009 – present
 Medical Consultant to Cadham Provincial Laboratory – temporary assistant to the Medical Director, August 2009.
 Medical Consultant at Children’s Hospital, January-October 2008

Education Completed:

2010	Royal College of Physicians and Surgeons of Canada (FRCPC) Medical Microbiology, University of Manitoba, Faculty of Medicine
2007 to 2010	Fellowship training in Medical Microbiology Completed training in June 2009 at the University of Manitoba, Department of Pediatric Infectious Diseases.
2009	Royal College of Physicians and Surgeons of Canada (FRCPC) Infectious Diseases, University of Manitoba, Faculty of Medicine
2007 to 2009	Fellowship training in Pediatric Infectious Diseases Completed training in June 2009 at the University of Manitoba, Department of Pediatric Infectious Diseases
2008	Royal College of Physicians and Surgeons of Canada (FRCPC) Pediatrics
2004 to 2008	Postgraduate Medical Training in Pediatrics Completed training in June 2008 at the University of Manitoba, Department of Pediatrics
2005	Licentiate of the Medical Council of Canada (LMCC) Part 2
2004	Licentiate of the Medical Council of Canada (LMCC) Part 1
2000 to 2004	Doctorate of Medicine, M.D. Faculty of Medicine, University of Manitoba, 2004

2000 to 2002	Bachelor of Science in Medicine, BSc (Medicine), HIV Immunology University of Manitoba, Department of Medical Microbiology, Faculty of Medicine
1995 to 1999	Bachelor of Science, BSc (4 year with highest distinction), Biochemistry University of Winnipeg, Department of Biochemistry

Training and Informal Education

2020	Health Canada Division 5 – Drugs for Clinical Trials Involving Human Subjects Stage 1 Record ID 3637609
2020	Canadian Good Clinical Practice (GCP) – Investigators 1-Basic Record ID 36397608
2017	Transportation of Dangerous Goods (TDG) Canadian Certification (Certificate 7434)
2016	CMA Physician Leadership Institute Engaging Others
2016	Emergency Spill Response Team Manitoba Member Certified (MB-023-12) by the Public Health Agency of Canada (PHAC)
2015	Manitoba Health Organization & Staff Development (OSD) <ul style="list-style-type: none"> • Conflict Resolution • Media Relations Training
2015	CMA Physician Leadership Institute Physician as a Coach
2013	CMA Physician Leadership Institute Self-awareness and Effective Leadership
2013	Transportation of Dangerous Goods (TDG) Canadian Certification (Certificate 5732)
2011	WRHA Organization & Staff Development (OSD) <ul style="list-style-type: none"> • Managing the Generational Differences at Work • Progressive Discipline
2010	The College of American Pathologists (CAP) Initial Team Member Training with Post-Test

Professional Associations and Memberships

2019	International Union against Sexually Transmitted Infections – Canada (IUSTI-Canada)
2015	American Society of Microbiology (ASM), Member
2010	HIV Medicine Association (HIVMA), Member
2008	Royal College of Physicians and Surgeons of Canada (FRCPC), Fellow (Pediatrics, Infectious Diseases, Medical Microbiology)
2007	Infectious Diseases Society of America (IDSA), Member
2007	Association of Medical Microbiology and Infectious Diseases Canada (AMMI), Member
2004	Canadian Pediatric Society (CPS), Fellow (Global Child & Youth Health, Hospital Pediatrics)
2000	Canadian Medical Association (CMA), Member

Professional and Academic Affiliations

Hospital/Laboratory:

2020	COVID-19 Pandemic Pediatric Incident Command Team Section Head Pediatric ID representative
2020	SARS-CoV-2/COVID-19 Response Committee Laboratory leadership addressing the response to the SARS-CoV-2/COVID-19 pandemic and testing operations
2019	Shared Health Clinical Practice Change Diagnostic Testing Recommendations for Investigation of Urinary Tract Infections (UTI)
2014 to present	Manitoba Health FOCUS Facilitator Representative for Cadham Provincial Laboratory to facilitate use of the PEAK communication tool for Departmental/Divisional Alignment Meetings
2014 to 2017	Workplace Wellness Working Group (WWWG) CPL representative to the Manitoba Health WWWG
2013 to present	Cadham Provincial Laboratory Management Committee (LMC)
2012 to 2016	Winnipeg Children's Hospital First Febrile UTI Working Group Infectious Disease consultant providing advice regarding treatment and diagnostics for UTIs
2012 to present	Cadham Provincial Laboratory Quality Assurance (QA) Committee
2011 to present	Cadham Provincial Laboratory Risk Management Committee Chair
2010 to present	Cadham Provincial Laboratory Workplace Health and Safety Committee Employer co-chair

Provincial:

2021 to present	COVID-19 Vaccine: Vaccine Priority Populations Group
2020 to present	COVID-19 Vaccine: Clinical/Medical Oversight Group
2020 to present	Respiratory Virus Public Health Working Group Laboratory and clinical representative providing guidance on respiratory viruses including influenza and SARS-CoV-2.
2020 to present	COVID-19 Public Health Operations Committee Laboratory and clinical representative on the Manitoba committee providing recommendations and consultation to the public health response for the SARS-CoV-2/COVID-19 pandemic.
2019 to present	Provincial Sexually Transmitted and Blood-borne Infections Outbreak Response Committee (SORC) Member on Testing Sub-Committee and co-chair on Treatment Sub-Committee
2018 to present	Collective Impact Network – HIV/STI Testing and Linkage Working Group
2017 to present	Provincial STBBI Outbreak Management Steering Committee
2015	City of Winnipeg Boil Water Advisory Investigation Committee Laboratory representative and author of CPL report investigating the boil water advisor in Winnipeg, Manitoba in January 2015.
2014 to present	Adverse Events Following Immunization (AEFI) Causality Assessment Consultant for cases of potential AEFI events
2014 to present	Manitoba Perinatal Screening Committee Interdisciplinary team evaluating the provincial newborn screening program
2013 to 2015	Communicable Disease Control, Manitoba Health Reportable Diseases Working Group Revision of the Manitoba Reportable Diseases list to harmonize with National list
2013 to 2017	Manitoba Health Grant Evaluations Committee

	Review and advise on grant applications for funding by Manitoba Health based on core objectives
2013 to present	Public Health Laboratory Committee Chair of the group reviewing important information and data provided by the Public Health team including Cadham Provincial Laboratory
2013 to present	Maternal Serum Screening Committee Interdisciplinary team evaluating the provincial MSS program
2013 to present	HIV Prevention of Mother to Child Transmission (PMTCT) Committee Chair of the group responsible for regular review and implementation of the HIV PMTCT protocol at the Women's Hospital, health Sciences Centre and ultimately on a provincial level.
2012 to present	HIV Point of Care Testing (POCT) Committee Chair of the group responsible for discussing issues and administration of sites currently offering HIV POCT in Manitoba and selection of new sites
2012 to 2017	Communicable Disease Control, Manitoba Health Antibiotic Resistant Organisms (AROs) Revision Committee Review and discussion of Infection Prevention and Control guidance documents
2011 to present	Manitoba HIV Program Pediatric and Laboratory consultant and liaison
2010 to 2012	Manitoba STBBI Strategy Steering Committee Working group of Manitoba Health, Healthy Living and Public Health updating the 1996 Manitoba HIV Strategy Co-chair of the Treatment Pillar

University:

2020 to present	Department of Medical Microbiology & Infectious Diseases Clinical Studies Fund Executive Member as Head of Pediatric Infectious Diseases
2019 to present	Biosafety & Wellness Coordinator For Infectious Diseases, Medical Microbiology, Clinical Microbiology and Pediatric Hematology/Oncology trainees
2016 to 2018	Pediatric Residents' Educational Case Review (ECR) Primary Staff Supervisor and Advisor
2016 to present	Academic Appeals Committee
2015 to 2016	Undergraduate Medical Education Consolidation Committee Medical Microbiology representative
2013 to present	Public Health and Preventative Medicine Residency Training Program Committee Responsible for reviewing individual PHPM resident's progress and discussing ways to help them achieve their academic and professional goals
2011 to 2012	Curriculum Renewal Task Group 7: Health Systems Revision of undergraduate medical education courses regarding systems in Health
2011 to present	Children's Hospital Research Institute of Manitoba (CHRIM) Scientist Member
2010 to 2011	Undergraduate Medical Education (UGME) Curriculum Review and Renewal Planning Committee Responsible for revision of UGME course material in the areas of diagnostics and medical microbiology
2010 to present	Pediatric Infectious Disease Resident Program Committee Responsible for reviewing individual Pediatric Infectious Diseases resident's progress and discussing ways to help them achieve their academic and professional goals
2010 to present	Medical Microbiology Resident Program Committee Responsible for reviewing individual Medical microbiology resident's progress and discussing ways to help them achieve their academic and professional goals

2010 to present	Medical Microbiology Council Voting member as Associate Professor
2009 to 2016	Infectious Diseases/Medical Microbiology Half-Day Committee Review and modification of the existing half-day to ensure preparation for the Royal College exam for these sub-specialties and helping trainees to remain up to date.
2009 to 2013	Pediatric sub-committee for the resident Academic Half-day Optimizing the current pediatric half-day to ensure its compliance with the Royal College of Physicians and Surgeons of Canada objectives
2009 to 2010	Medical Microbiology/Infectious Diseases Fellow Representative Medical Microbiology Council, Faculty of Medicine, University of Manitoba
2008 to 2011	Pediatric Resident OSCE Committee Designing and implementing OSCE stations to prepare residents for the Royal College examination in Pediatrics
2008 to 2009	Chief Resident of Infectious Diseases and Medical Microbiology University of Manitoba

National Committees:

2020 to present	Canadian Public Health Laboratory Network (CPHLN) CanCOGeN Sequencing Group Provincial co-representative for genetic sequencing of Canadian SARS-CoV-2 isolates
2019 to present	National Advisory Committee on Sexually Transmitted and Blood-borne Infections Clinical and laboratory provincial representative and Chair of Syphilis sub-group
2019 to present	Canadian Public Health Laboratory Network (CPHLN) Syphilis Diagnostics Working Group Provincial representative and co-chair for diagnosis of congenital syphilis
2018 to present	Canadian Association of HIV Clinical Laboratory Specialists (CAHCLS) Provincial representative
2017 to present	Royal College of Physicians of Surgeons of Canada Infectious Diseases Certification Examiner
2017	Royal College of Physicians of Surgeons of Canada Infectious Diseases Certification Examination Quality Reviewer
2016 to present	Royal College of Physicians of Surgeons of Canada Medical Microbiology Certification Examination Examiner
2016 to 2017	The Canadian Public Health Laboratory Network Gold Standards of Laboratory Tests (GSLT) Working Group Provincial Representative
2015 to 2018	The Canadian Public Health Laboratory Network Antimicrobial Resistance Working Group Provincial Representative
2014 to 2015	Canadian Public Health Laboratory Network (CPHLN) Ebola Working Group Provincial diagnostic laboratory representative
2010 to present	Canadian Pediatric AIDS Research Group (CPARG) Manitoba co-member of CPARG
September 2009	Facilitator at the Severe H1N1 Disease: Preventing Cases, Reducing Mortality Responsible for summarizing key points and recommendations from the breakout session dedicated to Public Health, Primary Practice and Special Populations

International Committees:

2019 to present	Clinical Infectious Diseases (CID) Editorial Advisory Board One of six Canadian board members for the CID journal, assisting in peer review of submitted manuscripts and direction of the journal
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Academic Awards and Achievements

2020	Pediatric Chairs of Canada 2020 COVID Leadership Award Awarded to the Pediatric Incident Command Team
2019	Manitoba Medical Student Association Teaching Awards 2017/18 Nominee for the Class of 2021: Teaching in a Small Group Setting Award
2017	Manitoba Medical Student Association Teaching Awards 2015/2016 Nominee for the Class of 2017 (Med III): Attending – Mentorship and Class of 2018 (Med II): Best Teaching in Small Group Setting awards
2016	Department of Medical Microbiology & Infectious Diseases Clinical Educator Award 2016 Selected by residents in the Infectious Diseases and Medical Microbiology programs for excellence in teaching
2016	2015 Pediatrics Faculty Development Fund Awarded \$500 for attending CMA Physician Leadership Course, University of Manitoba
2016	Manitoba Medical Student Association Teaching Awards 2014/2015 Nominee for the Med II Pre-clerkship awards in both Innovation and Inspiration categories
2008	Children's Hospital Foundation Local Research Competition Best presentation in the Fellow category
2006	Professional Association of Residents and Interns of Manitoba Resident of the month December 2006 Voted on by the PARIM committee based on nominations from its members from their positive interactions with the nominated resident
2006	Manitoba Medical Students Association Resident Award for Teaching Excellence Voted on by medical students in their graduating year from over 350 residents
2004	Dr. Harold Popham Scholarship Highest academic standing going into post-graduate studies in the field of Pediatrics
2002	Nicholson Prize BSc (medicine) Project with Most Scientific Merit
2002	Merck, Sharp & Dome Scholarship Best Basic Sciences BSc (medicine) project
2002	National Student Research Forum (NSRF) Award Attended NSRF in Galveston, Texas in April 2003
2002	American Society for Clinical Pathology Award Academic Excellence and Achievement
2001	Morris Neamon Award Excellence in first year of the BSc (medicine) program
1999	Gold Medalist in Biochemistry (4 year) University of Winnipeg
1999	Student Merit Award in Biochemistry Society of Chemical Industry

Professional Activities

Newsletters and Educational Products:

November 2020	<i>College of Family Physicians of Canada (CFPC) COVID-19 eLearning Course for Family Physicians</i> Module 2 COVID-19: Spread of disease and protecting the public Content expert and editor of national resource for CFPC members CME
Spring 2020	<i>The Manitoba COVID-19 Report</i> Conceptualized, and Faculty Lead and Editor for, a collaborative report generated by idle medical and graduate students, residents and infectious diseases/medical microbiology/clinical microbiology fellows with assistance by the Neil John MacLean Health Sciences Library librarian team to review COVID-19 literature and research in the domains of Clinical Description and Epidemiology, Diagnostics & Surveillance, Therapeutics, Infection Prevention & Control, Public Health Interventions and Pediatric Corner. Eight weekly reports were distributed to practitioners in Manitoba, Canada and internationally. https://www.mbcovid19report.com/

Peer Reviewed Journal Articles:

January 2021	<i>Congenital Syphilis Diagnosed Beyond the Neonatal Period in the United States, 2014-2018</i> Manuscript peer reviewer for Pediatrics
December 2020	<i>Comparison of RT-PCR Cycle Threshold Values from Respiratory Specimens in Symptomatic and Asymptomatic Children with SARS-CoV-2 Infections</i> Manuscript peer reviewer for JAMA Pediatrics
December 2020	<i>Infectious period of SARS-CoV-2 in 17 nursing home residents – Arkansas, June-August 2020</i> Manuscript peer reviewer for Open Forum of Infectious Diseases (OFID)
November 2020	<i>Sub-optimal adherence to prenatal screening guidelines of Chlamydia trachomatis and Neisseria gonorrhoeae infection in a Montreal tertiary care hospital: a retrospective cohort study</i> Manuscript peer reviewer for Canadian Communicable Disease Report (CCDR)
November 2020	<i>SARS-CoV-2 antibody status in decedents undergoing forensic postmortem examination in Maryland, May 24 to June 30, 2020</i> Manuscript peer reviewer for Open Forum Infectious Diseases (OFID)
October 2020	<i>SARS CoV-2 Surveillance and Exposure in the Perioperative Setting with Universal testing and Personal Protective Equipment (PPE) Policies</i> Manuscript peer reviewer for Clinical Infectious Diseases
September 2020	<i>Findings among Indigenous participants of the Tracks survey of people who inject drugs in Canada, Phase 4, 2017-2019</i> Manuscript peer reviewer for Canadian Communicable Disease Report (CCDR)
September 2020	<i>Respiratory tract samples collected from patients within a region of Quebec, Canada indicate the absence of early circulation of SARS-CoV-2 infection</i> Manuscript peer reviewer for Journal of the Association of Medical Microbiology and Infectious Diseases (JAMMI).
August 2020	<i>Prevalence of COVID-19 among children and adolescents while easing lockdown restrictions in Cologne, North Rhine-Westphalia, Germany</i> Manuscript peer reviewer for Archives of Disease in Childhood
August 2020	<i>A pilot RCT evaluating InThistoGether, an mHealth HIV Prevention Program for Ugandan Youth</i>

August 2020	Manuscript peer reviewer for Pediatrics <i>Development and validation of reverse transcriptase-PCR assays for the testing of SARS-CoV-2</i>
August 2020	Manuscript peer reviewer for Journal of the Association of Medical Microbiology and Infectious Diseases (JAMMI) <i>Diagnostic yield of repeat testing for SARS-CoV-2: Experience from a large health system in Los Angeles</i>
May 2020	Manuscript peer reviewer for International Journal of Infectious Disease <i>Positive Tracheal SARS-CoV-2 RNA Test After Three Negative SARS-CoV-2 RNA Tests in a Patient with COVID-19</i>
May 2020	Manuscript peer reviewer for Canadian Journal of Anesthesia <i>Surveillance of laboratory exposures to human pathogens and toxins: Canada 2019</i>
December 2019	Manuscript peer reviewer for Canadian Communicable Diseases Report (CCDR) <i>Routine HIV testing in acute care hospitals: Changing practice to curb a local HIV epidemic in Vancouver, BC</i>
June 2019	Manuscript peer reviewer for Preventive Medicine <i>Review of Rates of Hospitalization and Infection-Related Hospitalization Among HIV-Exposed Uninfected Children Compared to HIV-Unexposed Uninfected Children in the United States, 2007–2016</i>
April 2019	Manuscript peer reviewer for Clinical Infectious Diseases <i>Review of Incidence and progression of echocardiographic abnormalities in HIV-infected older children and adolescents taking antiretroviral therapy: A prospective cohort study</i>
November 2018	Manuscript peer reviewer for Clinical Infectious Diseases <i>Review of Substance Use, Demographic, and Socioeconomic Factors are Independently Associated with Post-Partum HIV Care Engagement in the Southern United States, 1999-2016</i>
August 2018	Manuscript peer reviewer for Clinical Infectious Diseases <i>Maternal and Infant Bone Mineral Density One Year after Delivery in a Randomized Controlled Trial of Maternal Tenofovir Disoproxil Fumarate to Prevent Mother-to-Child Transmission of Hepatitis B Virus</i>
July 2017	Manuscript peer reviewer for Clinical Infectious Diseases <i>The Impact of Gestational Age at ART initiation on Adverse Birth Outcomes</i>
May 2017	Manuscript peer reviewer for Clinical Infectious Diseases <i>First record of locally acquired human babesiosis in Canada caused by Babesia duncani: a case report</i>
March 2017	Manuscript peer reviewer for SAGE Open Medical Case Reports <i>Performance of point-of-care birth HIV testing in primary health care clinics: an observational cohort study</i>
July 2016	Manuscript peer reviewer for Clinical Infectious Diseases <i>Failure to suppress HIV in children on antiretroviral treatment in low- and middle-income countries: a meta-analysis</i>
April 2016	Manuscript peer reviewer for Clinical Infectious Diseases <i>Prevalence of locomotor disorders among people living with HIV followed in the Department of Infectious and Tropical Diseases, Abidjan, Côte d'Ivoire</i>
April, June 2016	Manuscript peer reviewer for the Canadian Journal of Infectious Diseases and Medical Microbiology <i>N-terminal pro-B-type Natriuretic Peptide for the Progressive Prediction of Severe Hand, Foot and Mouth Disease</i>
July 2015	Manuscript peer reviewer for BMC Infectious Diseases <i>Incidence, risk factors, and outcomes of opportunistic infections in pediatric renal transplant recipients</i>
May 2015	Manuscript peer reviewer for Pediatric Transplantation <i>Mycoplasma hominis as a Cause of Septic Hip Arthritis in a Neonate: The First Case Report</i>
	Manuscript peer reviewer for the Journal of Medical Microbiology

May 2015	<i>High prevalence of K65R drug resistance mutation in HIV-1 infected infants exposed to maternal therapy of lamivudine, zidovudine and either nevirapine or nelfinavir in breast milk</i> Manuscript peer reviewer for Clinical Infectious Diseases
August 2014	<i>Pregnancy and HIV disease progression: a systematic review and meta-analysis</i> Manuscript peer reviewer for Clinical Infectious Diseases
August 2013	<i>A Multicentre Study of Initiation of Antiretroviral Therapy and Transmitted Drug Resistance in Antiretroviral Naïve Adolescents and Young Adults with HIV in New York City</i> Manuscript peer reviewer for Clinical Infectious Diseases
August 2013	<i>A Multicentre Study of Initiation of Antiretroviral Therapy and Transmitted Drug Resistance in Antiretroviral Naïve Adolescents and Young Adults with HIV in New York City</i> Manuscript peer reviewer for Clinical Infectious Diseases
August 2013	<i>Chikungunya Fever in Canada: Common Presentations and Management Challenges highlighted by Two Reported Cases</i> Manuscript peer reviewer for Canadian Medical Association Journal
September 2012	<i>Polymerase-Chain-Reaction-based Diagnosis of Viral Pulmonary Infections in Immunocompromised Children</i> Manuscript peer reviewer for Pediatric Pulmonology
August 2012	<i>Spinal bone mineral density increases in HIV-infected children treated with long-term combination antiretroviral therapy</i> Manuscript peer reviewer for Clinical Infectious Diseases

Grants Review:

2019	<i>Children's Hospital Research Institute of Research (CHRIM) Basic Science Operational Grant Reviewer</i>
2014	<i>Public Health Agency of Canada (PHAC) GRDI 6 Virology Subcommittee Grant proposal reviewer</i>

Abstract Review:

2014, 2016	Canadian Association of HIV Research (CAHR) Pediatric and Laboratory HIV Abstract Reviewer
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Academic Theses Reviewed:

2013	University of Manitoba Bachelor of Science (Medicine) Thesis Title: ““You’d be surprised how many kids don’t know this stuff. They act like they do, but they don’t”: Designing Healthy Sexuality Initiatives with At-Risk Youth Internal Examiner for Ms. Heather Ashdown
2012	University of Manitoba Bachelor of Science (Medicine) These Title: Understanding the impact of HIV among vulnerable populations in South India. Internal Examiner for Ms. Melina Zylberman
2011	University of Manitoba Bachelor of Science (Medicine) These Title: Supportive care in the management of severe pneumonia in Nigerian children. External Examiner for Ms. Tito Daodu

Chair activities:

2016	Co-chair at the 25th Annual Canadian Association of HIV Research (CAHR) Clinical Care Session, Clinical Sciences Track Winnipeg, MB, Canada May 13, 2016
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Royal College of Physicians and Surgeons of Canada Exam Committees:

2017	Infectious Diseases Certification Exam Committee
2017	Infectious Diseases Certification Exam Quality Reviewer and Committee Member
2016	Medical Microbiology Certification Exam Committee

Teaching and Students Supervised/MentoredGraduate Level Students Supervised:

2012 to 2014	<i>Screening Tests for Congenital Infectious Diseases in Manitoba: Are all Pregnant Women in Manitoba Screened?</i> Co-supervisor of Arwa Faizo, Masters of Science (MSc) Graduated in October 2014
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Graduate Level Courses Taught:

2017, 2019, 2021	<i>Parasitology Course MMIC 7140</i> . Laboratory skills supervisor. University of Manitoba, Winnipeg, MB.
2016, 2018	<i>Clinical Virology MMIC 7210</i> . Guest lecturer, 3 separate lectures (Herpesviruses, Mumps/Measles/Rubella, Introduction to Virology). University of Manitoba, Winnipeg, MB.
2015	<i>Parasitology Course MMIC 7140</i> . Laboratory skills co-supervisor. University of Manitoba, Winnipeg, MB.
2013, 2015, 2017	"Staphylococcus aureus". Guest lecturer. <i>University of Manitoba, Clinical Bacteriology MMIC 7040</i> . Winnipeg, MB.
2011, 2015, 2017	"Enterococci". Guest lecturer. <i>University of Manitoba Clinical Bacteriology MMIC 7040</i> . Winnipeg, MB.

Undergraduate Medical Students Supervised:

2018	<i>Surveillance of Echinococcus multilocularis in the periurban and urban area of Winnipeg, Manitoba in coyotes and domestic dogs</i> Primary supervisor of Carmen Tse with Drs. Pierre Plourde and Richard Rusk Med 2 Summer Research Program Awarded the MED II Summer Research Best Scientific Prize 2018 Published in Canadian Communicable Disease Report (CCDR) July 2019
2015	<i>Descriptive Epidemiology of HIV Point-of-Care Testing in Manitoba from 2010 to the Present (June 2015)</i> Primary supervisor of James Johnston with Dr. Joss Reimer Med 2 Summer Research Program Presented at the Association for Medical Microbiology and Infectious Diseases (AMMI) Annual Conference March 2016 Published in Sexually Transmitted Infection October 2017

2012 *Clinical Correlation of EBV and CMV viral loads as predictors of disease and therapeutic monitoring in blood and marrow transplant patients in Manitoba*
Co-investigator with Dr. Donna Wall, Jesse Marantz
BSc (medicine) Project 2012-13
Student unable to complete research due to personal reasons

Undergraduate Students Mentored:

2020 **Med 1 and Med 2 Panel Discussions: Beyond the Bedside**
Invited speaker to discuss medical practice outside of direct clinical care with University of Manitoba Medical Students in their first and second years

2019 **Med 1 and Med 2 Panel Discussions: Beyond the Bedside**
Invited speaker to discuss medical practice outside of direct clinical care with University of Manitoba Medical Students in their first and second years

2018 **Internal Medicine Interest Group: Infectious Diseases Panel Discussion**
Invited by the University of Manitoba Students IMIG to discuss careers in ID

2017 **Public Health Panel Discussion**
Invited by the University of Manitoba Students Public Health Interest Group to discuss and mentor medical students about careers in Public Health (provincial and public health laboratory focus)

2011 to 2018 **"Speed Date a Pediatrician"**
Invited by the University of Manitoba Medical Students Pediatric Interest Group to discuss and mentored medical students about a career in Pediatric Infectious Diseases

2012 to 2015 **Faculty Mentor to University of Manitoba Medical Students**
Providing guidance and advice to medical students on their journey through 4 years of medical school

Undergraduate Student Teaching:

November 2020 WRH232 Perinatal Infections II tutorial: M2 students

November 2020 PAEP 7084: HIV and Infections in the Immune Suppressed

October 2020 Physician Assistant Year 1 Lecture: Practical Diagnostic Microbiology

September 2020 Transition to Clerkship (TTC) Childhood History Taking/Physical Examination Bootcamp: M3 students

November 2019 WRH232 Perinatal Infections II tutorial: M2 students

November 2019 Physician Assistant Year 1 Lecture: Practical Diagnostic Microbiology

November 2019 PAEP 7084: HIV and Infections in the Immune Suppressed

September 2019 BII Tutorial M1: Respiratory Infections in the Immunocompromised

August 2019 BII Tutorial M2: Infections in the Immune Compromised Host

February 2019 Adolescent History Taking: M1 students

November 2018 WRH232 Perinatal Infections II tutorial: M2 students

May 2018 Pediatric Clinical Skill Teaching: M1 students

February 2018 Adolescent History Taking: M1 students

November 2017 Pediatric Observed History and Physical: M3 clerks

May 2017 Pediatric Clinical Skills Teaching: M2 students

May 2017 Integration Case 13 (CM372/376) Adolescent Medicine: M2 students

November 2016 WRH232 Perinatal Infections II tutorial: M2 students

May 2016 Pediatric Clinical Skills Teaching, cardio-respiratory exam: M1 students

April 2016 CM341/342 Integration Case 5 Neonate with Lethargy: M2 students

November 2015 WRH232 Perinatal Infections II tutorial: M2 students

November 2015 Pediatric Observed History and Physical: M3 clerks

September 2015 Pediatric Observed History and Physical: M3 clerks

May 2015 LRTI tutorial: M2 students

February 2015 Pediatric Clinical Skills Teaching: M2 students

January 2015	Pediatric Observed History and Physical: M3 clerks
December 2014	Pediatric Clinical Skills Teaching: M2 students
October 2014	Pediatric Clinical Skills Teaching: M2 students
September 2014	Pediatric Observed History and Physical: M3 clerks
December 2013	Pediatric ID UGME M3 Academic Half-day session
October 2013	SF109 <i>Staphylococcus aureus</i> tutorial: M1 students
October 2013	SF111 <i>Streptococcus</i> spp. tutorial: M1 students
July 2013	Pediatric ID UGME M3 Academic Half-day session
February 2013	Pediatric Observed History and Physical: M3 clerks
September 2012	Pediatric ID UGME M3 Academic Half-day session
October 2011	SF109 <i>Staphylococcus aureus</i> tutorial: M1 students
November 2011	SF111 <i>Streptococcus</i> spp. tutorial: M1 students
July 2011	Pediatric ID UGME M3 Academic Half-day session
April 2011	Pediatric ID UGME M3 Academic Half-day session
January 2011	Pediatric ID UGME M3 Academic Half-day session
September 2010	Pediatric ID UGME M3 Academic Half-day session
2010 to 2018	<i>The Infectious Diseases/Medical Microbiology Case of the Week (ID/MM COTW).</i> Produce, administer, and review cases that reinforce key ID and MM principles to medical students in their first and second years through the OPAL online system at the University of Manitoba

Postgraduate Trainees Supervised:

2020 to present	<i>Therapeutic factors influencing the disclosure process of HIV status on Manitoba children and adolescents born with HIV</i> Supervisor of Trisha Vera Physician's Assistant Capstone Project Participant recruitment and interview
2020 to present	<i>Correlation of Syphilis Serology Chemiluminescent Immunoassay (CMLA) to Rapid Plasma Reagin (RPR) to Assess Disease Activity</i> Co-Supervisor of Dr. Matthew Kochan Drafting research proposal
2019 to present	<i>Radiological features of congenital syphilis in Manitoba 2015-2020</i> Co-supervisor with Dr. John Bonanni of Dr. Andrea Marks Pediatric Resident Research Project Protocol being drafted, consulting with REB
2018 to present	<i>SARS-CoV-2 RT-PCR Cycle Thresholds (Ct) values and Correlation with Symptom onset to Test (STT) in Pediatric Patients in Manitoba during the COVID-19 Pandemic</i> Supervisor of Dr. Jonathan Ripstein Pediatric Resident Research Project Data collection and analysis
2017 to 2019	<i>Syphilis in Pregnancy and Infant Outcomes in Manitoba from 2012-2017</i> Supervisor of Drs. Alison Lopez and Santana Lee Data analysis and manuscript preparation
2016 to 2019	<i>Detection of HIV in Urine from Patients with Known HIV-1 Infection utilizing the Aptima™ HIV-1 Quant Dx Assay: A Proof of Concept Study</i> Supervisor of Dr. Jennifer Wiebe Pediatric Resident Research Project Manuscript preparation and revisions
2015 to 2016	<i>Ixodes scapularis, Fighting Back! A Clinician's Guide to Lyme disease testing in Manitoba: A Critical Appraisal of Current and Proposed Testing Methods</i> Supervisor of Elizabeth Paulson Physician's Assistant Capstone Project Mentor Final paper and poster presentation completed

2015 to 2018	<i>Clinical and Epidemiological Characteristics and outcomes of Children Infected with Enterovirus D-68 in Manitoba in 2010 and 2014</i> Supervisor of Dr. Santina Lee Pediatric Resident Research Project Presented at the Local Pediatric Resident Research Competition
2014 to 2017	<i>Bloodborne Sexually Transmitted Infection Testing Discrepancies in the Pediatric Population in Manitoba: A Retrospective Database Review</i> Supervisor of Dr. Teryl Sansom Pediatric Resident Research Project Presented at 29 th Annual Local Pediatric Resident and Fellow Research Competition (2017)
2013	<i>First In Vivo Evidence of a Rare Mutation Causing Drug-Resistant HSV Stomatitis</i> Co-advisor for Dr. Aly-Khan Lalani Podium presentation at CancerCare Manitoba and Department of Medicine Research Day Second Prize by a Core resident for a case report at Medicine Research Day
2010 to 2014	<i>Clinical and Microbiological characteristics of peritoneal dialysis-associated peritonitis (PDAP) and exit site infections (ESI) in pediatric patients in Manitoba from 1992 to 2010</i> Co-supervisor of Dr. Samantha Witt Pediatric Resident Research Project Presented at Children's Hospital Foundation Local Research Competition (2013)

Postgraduate Trainees Mentored:

June 2019	<i>Pediatric Resident Journal Club Host</i>
May 2018	<i>Pediatric Resident Journal Club Mentor</i> Select, review and provide guidance for residents in their scholarly review of recent diagnostic Pediatric literature
June 2015	<i>Pediatric Resident Journal Club/Mentoring Session</i> Hosted and led discussions on work-life balance with the Pediatric Resident group
2011 to 2015	Pediatrician Mentor for Dr. Diana Popescu Provision of personal and professional guidance to Pediatric Residents during their training

Postgraduate Teaching:

August 2020	Infectious Diseases/Medical Microbiology Resident Academic Half-day: Pediatric HIV Cases
August 2020	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics
November 2019	Physician Assistant Student Lecture: Practical Diagnostic Microbiology for Future Physician Assistants
November 2019	Physician Assistant Student Case Studies: Infections in Special Populations 3 (HIV and Immunocompromised)
December 2019	STACER for Dr. Kaitlyn Hogue (Pediatric Resident)
July 2019	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics
June 2019	STACER for Dr. James Johnston (Pediatric Resident)
November 2018	Physician Assistant Student Case Studies: Infections in Special Populations 3 (HIV and Immunocompromised)
August 2018	Infectious Diseases/Medical Microbiology Resident Academic Half-day: Pediatric HIV NIH Guideline Review: Part 2 – Pediatric/Adolescent Guidelines
July 2018	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics

June 2018	Physician Assistant Student Case Studies: Infections in Special Populations 3 (HIV and Immunocompromised)
June 2018	Pediatric Resident Academic Half-day: Practical Diagnostic Microbiology for the Pediatric Clinician
May 2018	Infectious Diseases/Medical Microbiology Resident Academic Half-day: Pediatric HIV NIH Guideline Review: Part 1 – Perinatal Guidelines
February 2018	STACER for Dr. William Li (Pediatric Resident)
July 2017	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics
May 2017	Infectious Diseases/Medical Microbiology Resident Academic Half-day: Pediatric HIV Cases
May 2017	Physician Assistant Student Case Studies: GI and GU Infections
January 2017	Pediatric Resident R4 Royal College Examination Preparation
July 2016	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics
June 2016	PAEP 7084: Infections in special populations – Neonates, pregnancy, hospitalized patients: Physician Assistant course
May 2016	Pediatric Resident R4 OSCE
May 2016	Infectious Diseases/Medical Microbiology Resident OSCE
May 2016	Family Medicine Resident Academic Half Day: Lower Respiratory Tract Infections (LRTIs)
March 2016	STACER for Dr. Teryl Sansom (Pediatric Resident)
January 2016	Pediatric Residents Academic Half-day: Antimicrobial Resistance
December 2015	STACER for Dr. Shannon Mohoric (Pediatric Resident)
July 2015	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics
June 2015	STACER for Dr. Miriam Katzman (Pediatric Resident)
May 2015	Pediatric Resident R4 OSCE
February 2015	Senior Pediatric Resident Morning Report: 5 sessions (Feb-Dec 2015)
December 2014	Infectious Diseases/Medical Microbiology Resident OSCE
December 2014	STACER for Dr. Rachael Gardner (Pediatric Resident)
November 2014	Infectious Diseases/Medical Microbiology Resident Academic Half-day: Pediatric HIV Cases
October 2014	Pediatric Resident R4 Royal College Examination Preparation
August 2014	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics
July 2014	Pediatric Resident Academic Half-day: Common Pediatric ID Problems II
May 2014	Physician Assistant Student Case Studies: Sepsis and CNS Infection
March 2014	Pediatric Resident OSCE
October 2013	Public Health and Preventative Medicine Resident Academic Half-day: STBBI Testing and Public Health Implications
September 2013	Pediatric Resident Academic Half-day: Pediatric HIV/AIDS
July 2013	Pediatric Resident R1 Academic Half-day: ABCs of Antibiotics
July 2013	STACER for Dr. Megan Cooney (Pediatric Resident)
May 2013	Pediatric Resident R4 Royal College OSCE Preparation
May 2013	Pediatric Resident R4 OSCE
March 2013	Pediatric Resident OSCE
January 2013	STACER for Dr. Diana Popescu (Pediatric Resident)
January 2013	Infectious Diseases/Medical Microbiology Resident Academic Half-day: Viral Monitoring in the Immunocompromised Host
November 2012	Pediatric Resident R4 Royal College Examination Preparation
May 2012	Pediatric Resident R4 Royal College OSCE Preparation
May 2012	Pediatric Resident R4 OSCE
March 2012	Pediatric Resident OSCE
June 2011	Pediatric Resident Academic Half-day: Infection Control Practices (ICP)
May 2011	Pediatric Resident R4 Royal College OSCE Preparation
January 2011	Structured Assessment of Clinical Evaluation Report (STACER) for Dr. Meghan McPherson (Pediatric Resident)
November 2010	Pediatric Resident OSCE
October 2010	Pediatric Residents Academic Half-day: Pediatric HIV
July 2010	Physician Assistant Student Lecture: Sepsis, Fevers and FUOs

July 2010 to present

Primary supervisor of trainees rotating through CPL:

Dr. Josh Aquin, Public Health and Preventative Medicine, August 2020
 Dr. Carl Boodman, Adult ID and Medical Microbiology, April-May 2020
 Dr. Robert Taylor, Clinical Microbiology, January-February 2020
 Dr. Jessica Kafka, Clinical Microbiology, November 2019
 Dr. Sarah Lesperance, Public Health and Preventative Medicine, September 2019
 Dr. Milena Semproni, Adult ID, February 2019
 Dr. Thomas Fear, Adult ID, January 2019
 Dr. Santana Lee, Pediatric ID, October 2018
 Dr. Jordyn Lerner, Public Health and Preventative Medicine, July 2018
 Dr. Natalie Casacang, Public Health and Preventative Medicine, June 2018
 Dr. Sarah Henni, Adult ID, April 2018
 Dr. Alison Lopez, Pediatric ID, December 2017
 Dr. Rupeena Purewal, Pediatric ID, September 2017
 Dr. Peter Benoit, Public Health and Preventative Medicine, May 2017
 Dr. Salem Agabawi, Adult ID, April 2017
 Dr. Joanna Joyce, Adult ID, March 2017
 Dr. Vanessa Tran, Clinical Microbiology, January 2017
 Dr. Lydia Chen, Public Health and Preventative Medicine, December 2016
 Dr. Sameer Kassim, Medical Microbiology, May-June 2017, June-August 2016, December 2013
 Dr. Chloe Bogaty, Adult ID/Medical Microbiology, March 2016, July 2017, March-April 2018
 Dr. Beverly Wudel, Adult ID, February 2016
 Dr. Jasdeep Atwal, Public Health and Preventative Medicine, July 2015
 Dr. Davinder Singh, Public Health and Preventative Medicine, May 2015
 Dr. Rachel Dwilow, Pediatric ID, May 2015
 Dr. Abed El-Allegry, Public Health and Preventative Medicine, April 2015
 Dr. Cheryl Foo, Pediatric ID, January 2015
 Dr. Maher Al-Harbi, Adult ID, November 2014
 Dr. Matthew Gilmour, Clinical Microbiology, October 2014
 Dr. Vanessa Poliquin, Reproductive ID, October 2014
 Dr. Marc Wallace, Public Health and Preventative Medicine, September 2014
 Dr. Safa Edagiz, Medical Microbiology, May 2014
 Dr. Siddarth Kogilwaimath, Adult ID, March 2014
 Dr. Majid Daraj, Adult ID, February 2014
 Dr. Michael Isaac, Public Health and Preventative Medicine, October 2013
 Dr. Susan Cuvelier, Gastroenterology/Hepatology, August 2013
 Dr. Meaghan O'Brien, Gastroenterology/Hepatology, July 2013
 Dr. Lorine Pelly, Pediatric ID, April 2013
 Dr. Lauren MacKenzie, Adult ID, February 2013
 Dr. Ilan Schwartz, Adult ID, January 2013
 Dr. Shadi Sepehri, Clinical Microbiology, January 2013, September 2011
 Dr. Nora Al-Fattoh, Pediatric ID, November 2012
 Dr. Adrienne Morrow, Community Medicine, September 2012
 Dr. Heejune Chang, Community Medicine, July 2012
 Dr. Guillaume Poliquin, Pediatric ID, April 2012
 Dr. Yahya Al-Fifi, Adult ID, February 2012
 Dr. Assim Al-Saedi, Adult ID, January 2012
 Dr. Joss Reimer, Community Medicine, July 2011
 Dr. Terry Wuerz, Adult ID, May 2011
 Dr. Alaa Al-Juaid, Pediatric ID, March 2011
 Dr. Brent Roussin, Community Medicine, August 2010
 Dr. Sandra Allison, Community Medicine, July 2010

Research Collaborations

2020	Canadian Paediatric Surveillance Program (CPSP) for Congenital Syphilis Principal investigator with Dr. Carsten Krueger Finalizing questionnaire
2020	Evaluation of Point-of-Care Testing for detection of SARS-CoV-2 infection Local co-investigator with Drs. Guillaume Poliquin, Paul Sandstrom, Adrienne Myers, John Kim, Yoav Keynan and Michael Becker Evaluation of POCT under way
2020	Canadian Population Serological Survey Utilizing Antenatal Serum Samples (CANCOVID-Preg) Manitoba Lead and co-investigator, project for the COVID-19 Immunity Task Force Samples being collected and analyzed
2020	Manitoba COVID-19 Serology (MaCS) Network Co-investigator with Drs. Lauren MacKenzie, Yoav Keynan, Sylvain Lothier <i>et al.</i> Research Manitoba COVID-19 Rapid Response Grant for \$448,500
2020	Rapid research in the CHILD Cohort to inform Canada's response to the COVID-19 pandemic: investigating the prevalence and predictors of SARS-CoV-2 infection, and the health and psychosocial impact of the COVID-19 crisis on Canadian families Knowledge User for Dr. Meghan Azad CIHR Grant for \$1,689,795
2020	A Multi-centre, Adaptive, Randomized, Open-label, Controlled Clinical Trial of the Safety and Efficacy of Investigational Therapeutics for the Treatment of COVID-19 in Hospitalized Patients (CATCO) Local co-investigator in CATCO-ADULT Local principal investigator in CATCO-KIDS, co-investigator Dr. Lauren Kelly Awaiting recruitment in Wave 2 Project discontinued at national level
2020	SARS-CoV-2 and COVID-19 in children admitted to Canadian Hospitals: Understanding clinical spectrum and severity. A Paediatric Investigators Collaborative Network on Infections in Canada (PICNIC) study Local co-investigator with Dr. Rachel Dwilow Supported by the Children's Hospital Research Institute of Manitoba (CHIRM) Manuscript in draft
2020	Correlation of positive COVID-19 respiratory samples with time from symptom onset to sample, RT-PCR cycle threshold (Ct) values and viral viability through cell culture Primary investigator with co-investigators Drs. Kerry Dust, Duane Funk, Jim Strong and Guillaume Poliquin Investigation to predict infectious SARS-CoV-2 from diagnostic samples Supported by the National Microbiology Laboratory Manuscript published in Clinical Infectious Diseases (CID) Currently drafting pediatric infectivity manuscript Recruiting for ICU/hospitalized patient infectivity study
2020	Serology-based tests for Healthcare Workers exposed to COVID-19 Co-investigator with Drs. Ken Kasper, Yoav Keynan, Allen Kraut, Mike Drebot, Robbin Lindsay and Tim Booth Study to determine seroconversion in exposed healthcare workers from a hospital outbreak in Winnipeg Supported by the National Microbiology Laboratory Analysis phase
2020	Point of care testing to identify COVID-19 Co-investigator with Drs. Ken Kasper and Yoav Keynan

- Validation of the Cepheid GeneXpert and Spartan Cube for SARS-CoV-2 detection
Supported by the National Microbiology Laboratory
Final report completed
- 2019 **A Study to Evaluate the Accuracy, Usability and Readability of the INSTI HIV Self Test Performed by Observed Intended Users in Canada**
Co-investigator at Manitoba Site with Dr. Laurie Ireland
Sponsored by bioLytical Laboratories, Inc.
Recruitment complete, data analysis
- 2016 **Mother to Child Transmission of Hepatitis B and C in Manitoba**
Co-investigator with Drs. Stacy Chapman, Safa Edagiz, Sameer S. Kassim, Jared Bullard, Paul Van Caesele and Joanne Embree (PI)
Presented at AMMI/CACMID in May 2018
Manuscript being prepared for publication
- 2015 **Evaluation of HIV Screening Among Admitted Patients to the Health Sciences Centre (HSC) Medical Wards**
Co-investigator with Drs. Majid Darraj, Yoav Keynan, Marissa Becker, Anas Merdad, Beverly Wudel
Gilead Grant for \$32,400
Manuscript published
- 2015 **Testing Innovation: Bridging the Gaps to Sexually Transmitted and Blood Borne Infections (STBBI) Testing Among Youth at risk in Select Non-Urban Settings**
Collaborator with group looking to provide innovative STBBI testing strategies incorporating HIV point of care testing (POCT) in non-urban settings in Atlantic Canada and the Prairies
- 2015 **Infective Complications after allogeneic Hematopoietic Stem Cell Transplants (HSCT) in Chronic Lymphocytic Leukemia (CLL) in comparison with Follicular Lymphoma (FL)**
Co-investigator with Drs. D. Sytnik (PI), P. Lambert, K. Weber, K. Paulson, M. Seftel, J. Johnston and R. Kumar
Presented at Canadian Bone and Marrow Transplant Group Conference (March 2016) and CCOLD (April 2016)
- 2015 **Early Pediatric Initiation – Canadian Child Cure Cohort Study (EPIC⁴)**
Local PI with Dr. J. Embree
Examine the timing of antiretroviral therapy initiation and its impact on human immunodeficiency virus (HIV) reservoir size in the context of vertically-acquired HIV infection.
Canadian Institute of Health Research (CIHR) grant for \$1.95 million
Study finalized, no Manitoba participants
Manuscript published
- 2014 **Missed Opportunities for Diagnosis of HIV Epidemiological Study (MODES)**
Co-investigator with M. Becker (PI), S. Shaw, Laurie Ireland, L. McClarty, C. Ens, N. Yu, J. Wylie, P. Van Caesele, Y. Keynan, Ken Kasper, and J. Blanchard
Determining clinical and epidemiological risk factors associated with missed opportunities in patients ultimately diagnosed with HIV
Gilead Grant for \$96,000
Multiple provincial presentations to stakeholders
- 2012 **Discrepancies in Testing Practices for Sexually Transmitted and Blood-Borne Infections in Manitoba: A Retrospective Database Review**
Primary investigator with co-investigators Kellee Hodge, Dr. Michael Isaac, Dr. Pierre Plourde, Craig Ross, Dr. Paul Van Caesele and Bohdanna Kinasevych.
Data presented at Manitoba STBBI Meetings
- 2010 ***Point of Care Testing in the Emergency Department***

Co-investigator with Drs. Marissa Becker, Ken Kasper, Natalie Bridger (PI), Paul Van Caesele, Wes Palatnick and Carla Pindera
 Gilead Canada Grant for \$80,000.00
 Presented at CAHR 2012, published in 2013

Publications

Peer-reviewed publications:

1. Lagace-Wiens P., **Bullard J.**, Cole R. and Van Caesele P. "Seasonality of Coronaviruses: Implications for COVID-19". Accepted in Canadian Communicable Disease Report (CCDR), in press.
2. Dust K., Hedley A., Nichol K., Stein D., Adam H., Karlowsky J.A., **Bullard J.**, Van Caesele P. and Alexander D. "Comparison of Commercial Assays and Laboratory Developed Tests for Detection of SARS-CoV-2". *J Virol Methods*. Sept 10, 2020. Doi: <https://doi.org/10.1016/j.jviromet.2020.113970>.
3. Boodman C., Lagacé-Wiens P. and **Bullard J.** "Diagnostic testing for SARS-CoV-2". *CMAJ*, June 3, 2020. Doi: <https://doi.org/10.1503/cmaj.2008585>.
4. **Bullard J.**, Dust K., Funk D., Strong J.E., Alexander D., Garnet L., Boodman C., Bello A., Hedley A., Schiffman Z., Doan K., Bastien N., Li Y., Van Caesele P.G. and Poliquin G. "Predicting infectious SARS-CoV-2 from diagnostic samples". *Clin Infect Dis*, ciaa631, <https://doi.org/10.1093/cid/ciaa638> (published online May 22 2020).
5. Boodman C., Lee S. and **Bullard J.** "Idle medical students review emerging COVID-19 research". *Med Educ Online*. 2020 Dec; 25(1):1770562. Doi: 10.1080/10872981.2020.1770562. PMID 32441229.
6. Bitnun A, Ransy DG, Brophy J, et al. "Clinical Correlates of Human Immunodeficiency Virus-1 (HIV-1) DNA and Inducible HIV-1 RNA Reservoirs in Peripheral Blood in Children With Perinatally Acquired HIV-1 Infection With Sustained Virologic Suppression for at Least 5 years". *Clin Infect Dis*. 2020. February 14; 70(5): 859-66. Collaborators including **Bullard J.** Doi: 10.1083/cid/ciz251. PMID: 30919879
7. Lopez AA., Dwilow R., **Bullard J.** and Mujawar Q. "A Case of Refractory Diphyllbothriasis in a Young Pediatric Patient". *Journal Pediatric Infectious Diseases Society* 2020; Jan 23:piaa001. doi: 10.1093/jpids/piaa001.
8. Tse CCK., **Bullard J.**, Rusk R., Douma D, Plourde PJ. "Surveillance of Echinococcus tapeworm in coyotes and domestic dogs of Winnipeg, Manitoba". *Can Commun Dis Rep* 2019;45(7/8): 171-6.
9. Lau L., Wudel B., Lee E., Darraj M., Richert Q., Trajtmann A., Bresler K., **Bullard J.**, Kasper K., Becker M., and Keynan, Y. "Evaluation of the Utility of Point-of-Care HIV Testing on a Canadian Internal Medicine Inpatient Unit". *Can J Infect Dis Med Microbiol* 2017. November; 1-6. PMID: 8495307.
10. Johnston J.B., Reimer J.N., Wylie J.L., **Bullard J.** "Observational study of the populations accessing rapid point-of-care HIV testing in Winnipeg, Manitoba, Canada, through a retrospective chart review of site records". *Sex Transm Infect*. 2017 Oct 7. pii: sextrans-2017-053195. doi: 10.1136/sextans-2017-053195. [Epub ahead of print]. PMID: 28988194
11. Gupta S., Taylor T., Patterson A., Liang B., **Bullard J.**, Sandstrom P., Van Domselaar G., and Ji H. "A Robust PCR Protocol for HIV Drug Resistance Testing on Low-Level Viremia Samples". *Biomed Res Int*. 2017;2017:4979252. doi: 10.1155/2017/4979252. Epub 2017 Apr 3. PMID: 28473986
12. Shaw S.Y., Ireland L., McClarty L.M., Loepky C., Yu N., Wylie J.L., **Bullard J.**, Van Caesele P., Keynan Y., Kasper K., Blanchard J.F., and Becker M.L. "Prior history of testing for syphilis, hepatitis B and hepatitis C among a population-based cohort of HIV-positive individuals and their HIV-negative controls". *AIDS Care*. 2016 Jun 23:1-6. PMID: 27339807
13. German G.J., Jamieson F.B., Gilmour M., Almohri H., **Bullard J.**, Domingo M.C., Fuller J., Girouard G., Haldane D., Hoang L., Levett P.N., Longtin J., Melano R., Needle R., Patel S.N.,

- Rebbapragada A., Reyes R.C., and Mulvey M.R. "Interim Recommendations for the Reporting of Extensively Drug Resistant and Pan Drug Resistant Isolates of *Enterobacteriaceae*, *Pseudomonas aeruginosa*, *Acinetobacter* spp. and *Stenotrophomonas maltophilia*". *Can Commun Dis Rep* 2016; 42-4:91-7.
14. Ross C., Shaw S., Marshall S., Stephen S., Bailey K., Cole R., Wylie J., **Bullard J.**, Van Caesele P., Reimer J., Plourde, P. "Impact of social media campaign targeting men who have sex with men during an outbreak of syphilis in Winnipeg, Canada", *Can Comm Dis Rep*. 2016; 42-2:45-49.
 15. Foo C.P.Z., McDermid A., Grudeski E., Booth TF, **Bullard J.** "A 9 month old girl with respiratory failure and rhomboencephalitis", *Can J Infect Dis Med Microbiol* 2015 Sept-Oct.; 241-2. PMID: 26600807
 16. **Bullard, J.**, Ahsanuddin A., Perry A., Lindsay L.R., Iranpour M., Dibernardo A., Van Caesele, P.G. "The first case of locally acquired tick-borne *Babesia microti* infection in Canada". *Can J Infect Dis Med Microbiol*. 2014 Nov-Dec; 25(6): e87-e89. PMID 25587297
 17. Becker M.L., Thompson L., Pindera C., Bridger N., Lopez C., Keynan Y., **Bullard J.**, Van Caesele, P.G. "Feasibility and success of HIV point-of-care testing in an emergency department in an urban Canadian setting." *Can J Infect Dis Med Microbiol*. 2013 Spring; 24(1): 27-31. PMID: 24421789
 18. Forbes J.C., Alimenti A.M., Singer J., Brophy J.C., Bitnun A., Samson L.M., Money D.M., Lee T.C., Lapoint N.D., Read S.E. "A national review of vertical HIV transmission". *AIDS*. March 27, 2012, 26(6): 757-63. 28 Collaborators including **Bullard, J.** PMID: 22210635
 19. Fanella S.T., Pinto M.A., Bridger N.A., **Bullard, J.**, Coombs J.M., Crockett M.E., Olekson K.L., Poliquin P.G., Van Caesele P.G., Embree J.E. "Pandemic (H1N1) 2009 influenza in hospitalized children in Manitoba: nosocomial transmission and lessons learned from the first wave." *Infection Control and Hospital Epidemiology*. 2011 May; 32(5): 435-43. PMID: 21515973

Other publications:

1. **Bullard, J.**, Embil J.M. "Nitpicking the Details about Lice". *Canadian Journal of CME*. April 2008, 20(4).

Poster and Oral Presentations

National Presentations:

Poster Presentations

1. Kassim, S., **Bullard J.**, McGeer A. "Epidemiology of Viral Respiratory Infections and Preventative Measures in High Acuity Units in Manitoba [VIRIAC-MB]". Annual Association of Medical Microbiology and Infectious Diseases (AMMI). Ottawa, ON. April 2019. *Presented by S. Kassim*.
2. Wudel B., Darraj M., Lau L., Trajtman A., Richert Q., Lee E., Bresler K., Keynan Y. **Bullard J.** "Feasibility and Acceptance of HIV Point-of-Care Testing on an Internal Medicine Inpatient Unit". 25th Annual Canadian Conference on HIV/AIDS Research (CAHR). April, 2017. *Presented by B. Wudel*.
3. Sytnik D., Lambert P., Weber K., Paulson K., Seftel M., **Bullard J.**, Johnston J., Kumar R. "Infective Complications after Allogeneic Hematopoietic Stem Cell Transplants in Chronic Lymphocytic Leukemia in Comparison with Follicular Lymphoma". Canadian Bone and Marrow Transplant Group Conference. Vancouver, BC. April, 2016. *Presented by D. Sytnik*.
4. Sytnik D., Lambert P., Weber K., Paulson K., Seftel M., **Bullard J.**, Johnston J., Kumar R. "Infective Complications after Allogeneic Hematopoietic Stem Cell Transplants in Chronic Lymphocytic Leukemia in Comparison with Follicular Lymphoma". Canadian Conference on Lymphoproliferative Disorders (CCOLD). Lake Louise, Alberta. March, 2016. *Presented by D. Sytnik*.
5. Walkty A., Karlowsky J., **Bullard J.** "Time to Reporting of Positive Blood Cultures for Pediatric Patients Assessed at a Children's Hospital Emergency Department". Annual Association of Medical Microbiology and Infectious Diseases (AMMI). Vancouver, BC. March, 2016. *Presented by A. Walkty*.

6. Johnston J., Wylie J., Reimer J., **Bullard J.** "Descriptive Epidemiology of HIV Point-of-Care Testing (POCT) in Manitoba from 2011 to 2014". Annual Association of Medical Microbiology and Infectious Diseases (AMMI). Vancouver, BC. March, 2016. *Presented by J. Johnston.*
7. Shaw, S., Becker M., Ireland L., Ens C., McClarty L., Yu B., Keynan Y., **Bullard J.**, Wylie J., Van Caesele P., Kasper K. "A population-based examination of bacterial sexually transmitted infections testing and history prior to HIV diagnosis among HIV cases and HIV-negative controls: the Missed Opportunity for Diagnoses Epidemiological Study (MODES)". 23rd Annual Canadian Conference on HIV/AIDS Research (CAHR). April, 2015. *Presented by S. Shaw.*
8. Rank C., Bangura H., Krajden M., Zahariadis G., **Bullard J.**, Halverson J., Kim J., Archibald C.P., Sandstrom P., Brooks J. "Subtypes and transmitted drug resistance among recent HIV infections in four Canadian provinces, 2000-2008." 21st Annual Canadian Conference on HIV/AIDS Research (CAHR). April, 2012. *Presented by C. Rank.*
9. Ramdahin S., Fowke K.R., Wayne S., **Bullard J.**, Plummer F., Embree J. "Design of Novel, Sensitive and Specific HIV Nested Primers for Polymerase Chain Reaction of Lymphocyte DNA." Annual Canadian Conference on HIV/AIDS Research (CAHR). April, 2002. *Presented by S. Ramadahin.*
10. Xiao-Juan M., **Bullard J.**, Ramdahin S., Fowke K.R. "Development of an African Clade-Optimized Quantitative Assay for HIV RNA Viral Load Determinations." Annual Canadian Conference on HIV/AIDS Research (CAHR). June, 2001. *Presented by M. Xiao-Juan.*

Oral Presentations

1. Chapman S., **Bullard J.**, Kassim S., Edagiz S., Van Caesele P. Embree J. "Evaluation of Adherence to Clinical Guidelines for the Prevention of Mother to Child Transmission of Hepatitis B and C in Manitoba, Canada". Annual Association of Medical Microbiology and Infectious Diseases (AMMI). Vancouver, BC. May 2018. *Presented by P. Van Caesele.*
2. **Bullard J.**, Dust K., Van Caesele P.G. "Morbilliform rash associated with coronavirus detection during an outbreak of measles in Manitoba." Annual Association of Medical Microbiology and Infectious Diseases (AMMI) Meeting. Vancouver, BC. April, 2016. *Presented by J. Bullard.*
3. Becker M., Thompson L., Bridger N., Pindera C., Keynan Y., **Bullard J.**, Van Caesele P.G., Kasper K. "Point of Care HIV Testing in Tertiary Care Emergency Department in Winnipeg, Canada." Oral presentation. 21st Annual Canadian Conference on HIV/AIDS Research (CAHR). April, 2012. *Presented by M. Becker.*
4. **Bullard J.**, Embree J. "The Pediatric HIV Experience in Manitoba, Canada 1989 to 2007." Children's Hospital Foundation Local Research Competition in the Fellow's category. Winnipeg, MB. March, 2008. *Presented by J. Bullard.*

International Presentations:

Poster Presentations:

1. **Bullard J.**, Baxter M., Adam H., Hoban D., Zhanel G. "Antimicrobial Susceptibilities of Wound Isolates in Canada from 2007 to 2010: the CANWARD Surveillance Study." IDSA Annual Meeting. Boston, MA. October, 2011. *Presented by J. Bullard.*
2. **Bullard J.**, Embree, J. "The Pediatric HIV Experience in Manitoba, Canada 1989 to 2007". St. Jude PID Conference. Memphis, TN. February, 2009. *Presented by J. Bullard.*

Oral Presentations:

1. **Bullard J.**, Ramdahin S., Wayne S., Fowke K.R. "The Role of Dendritic Cells and DC_SIGN in mediating resistance to HIV infection." National Student Research Forum (NSRF). Galveston, TX. April, 2003. *Presented by J. Bullard.*

Local Presentations:

Keynote Address:

1. "Syphilis Gone Wild". Keynote speaker. Canadian Society for Medical Laboratory Sciences (CSMLS). Winnipeg, MB. May 2019.
2. "Zika Virus – What's the Deal?". Keynote Speaker. *Manitoba Association of Asian Physicians (MAAP) Summer Symposium*. Hecla Island, MB. August, 2017.
3. "Diagnostic testing for STBBIs in 2012: What you should know about GC, syphilis and HIV POCT". Keynote speaker. *Winnipeg Regional Health Authority New and Emerging Issues in STBBIs*. Winnipeg, MB. March, 2012.

Grand Rounds Presentations:

1. "Confessions of a Hypomaniac Black Ukrainian during Wave 1.0 of the COVID-19 Pandemic". Invited Speaker. *Department of Pediatrics & Child Health*. Winnipeg, MB. November 2020.
2. "COVID Update #6". Invited speaker at the Department of Anesthesiology Grand Rounds, University of Manitoba, Winnipeg, MB. April 2020
3. "Chlamydia, Gonorrhea and Syphilis, Oh My! Sexually Transmitted Infections in Manitoba Adolescents 2017". Invited co-speaker *Pediatric Grand Rounds, University of Manitoba*, Winnipeg, MB. May, 2017.
4. "Help Us Help You: A Review of Microbiology Testing that Every Pediatrician Can Use". Invited speaker. *Pediatric Grand Rounds, University of Manitoba*. Winnipeg, MB. October, 2013.
5. "A review of the new Women's Hospital HIV Guidelines: reducing HIV mother-to-child transmission in HIV-positive mothers". Guest presenter. *Pediatric Grand Rounds*. Winnipeg, MB. March, 2011.
6. "What's Really Going On at Winnipeg Children's Hospital: A Glimpse into the Microbial World of CK5 and the Units". Recruitment presentation. *University of Manitoba Recruitment Presentation at Pediatric Grand Rounds*. Winnipeg, MB. May, 2010.

Symposium Presentations:

1. "Positive or Not? Laboratory Testing for COVID-19". Invited Speaker. Bug Day 2020. Winnipeg, MB. October 2020.
2. "How Do I Interpret the Results of Lumbar Puncture and Treat Meningitis". Invited Speaker. 15-Minute Consultations for Common Ailments. Winnipeg, MB. March 2020.
3. "How can I avoid rash decisions in childhood viral exanthema?". Invited speaker. Manitoba College of Family Medicine Annual Scientific Assembly. Winnipeg, MB. April 2019.
4. "Update on STBBI Diagnostics and Screening Testing 2015". Invited speaker. *Healthy Sexuality & Harm Reduction Sex and STIigma Matters*. Winnipeg, MB. May, 2015.
5. "Discrepancies in Testing Practices for Sexually Transmitted and Blood-Borne Infections in Manitoba: A Retrospective Database Review". Invited speaker. *HIV Program Research Day*. Winnipeg, MB. March, 2015.
6. "Ebola". Invited speaker. *Manitoba Congress for Medical Laboratory Services*. Winnipeg, MB. October, 2014.
7. "What can we Learn from Testing: An Examination of HIV and STBBI Testing Rates in Manitoba?" Invited speaker. *Canadian Association of Nurses in AIDS Care (CANAC) XXII Annual Conference*. Winnipeg, MB. April, 2014.
8. "Update on STBBI Diagnostic Testing". Invited Speaker. *Sex and Drug Matters Annual Winnipeg Regional Health Authority, Population and Public Health Conference*. Winnipeg, MB. March, 2014.

9. "STBBI Diagnostic Testing Update". Invited Speaker. *Sex Matters: From Precedents to Practice, a Conference on Preferential Populations and Sexually Transmitted and Blood Borne Infections*, Winnipeg Regional Health Authority Population and Public Health. Winnipeg, MB. March, 2013.
10. "Viruses!!" Invited Speaker. *Manitoba Congress for Medical Laboratory Services*. Winnipeg, MB. October, 2012.
11. "Prepare to be Boarded! The Waterborne Infectious Risks of Travel". Invited speaker. *Manitoba 10th Annual Travel Conference*. Winnipeg, MB. April, 2012.
12. "Viruses!!". Invited lecturer. *Manitoba Blood & Marrow Transplant Program 20th Anniversary Symposium*. Winnipeg, MB. November, 2011.
13. "A Case of HIV MTCT in Manitoba in 2010 and Review of Epidemiological and Clinical Characteristics of Maternal and Pediatric HIV in Manitoba, Canada from 1989 to 2010". Invited speaker. *Manitoba HIV Conference*. Winnipeg, MB. November, 2011.
14. "A Tale of 3 Viruses". Special seminar. *Recruitment presentation at Cadham Provincial Laboratory*. Winnipeg, MB. April, 2010.
15. "Weirdness in Kids". Invited speaker. *Diagnostic Services of Manitoba Grand Rounds*. Winnipeg, MB. May, 2009.
"Listeria Hysteria". Invited Speaker. *Manitoba Society of Medical Laboratory Technologists Conference*. Winnipeg, MB. October, 2008.

Invited Lectures and Sessions:

1. "Panel Discussion: COVID-19 in Northern Manitoba". Invited panelist for Ongomiizwin – Health Services (Virtual) Annual Meeting. Manitoba. January 2021.
2. "Confessions of a Hypomaniac Black Ukrainian during Wave 1.0 of the COVID-19 Pandemic". Invited Speaker. *Department of Medical Microbiology & Infectious Diseases Seminar Series*. Winnipeg, MB. October 2020.
3. "Questions around COVID-19". Winnipeg Police Service Cadets special presentation. Invited speaker, August 2020.
4. "SARS-CoV-2: Just how infective is this virus?". University of Manitoba CPD: COVID-19 Clinical Updates Webinar. May 2020.
5. "Tick Diseases". Invited presenter. *University of Manitoba Department of Pediatrics Small Group Discussion*. Winnipeg, MB. May 2019.
6. Master of Ceremony (MC) for the *Department of Pediatrics & Child Health Retreat Annual Retreat*. Winnipeg, MB. March 2019.
7. "Syphilis Gone Wild". Invited Speaker. *Manitoba Pediatric Society (MPS)*. Winnipeg, MB. November 2019.
8. "HIV Testing in Manitoba: Data from HIV Testing Day 2018", Invited Speaker. *Collective Impact Network – Testing and Linkage WG Meeting*, Winnipeg, MB. October 2018.
9. Master of Ceremony (MC) for the *Department of Pediatrics & Child Health Retreat Annual Retreat*. Winnipeg, MB. March 2018.
10. "A Journey through HIV in Manitoba from Newborns to Bathhouses to Awkward Teenage Moments". Invited Speaker. *Department of Medical Microbiology & Infectious Diseases Seminar Series*. Winnipeg, MB. March 2018.
11. "Carbapenemase Producing Enterobacteriaceae (CPE)". Invited Speaker. *Annual Infection Practices & Control Education Day*. January 2018.
12. Master of Ceremony (MC) for the *Department of Pediatrics & Child Health Retreat and Appreciation Dinner*. Winnipeg, MB. May, 2017.
13. "Zika Virus: What's the deal?". Invited speaker. *Clinical & Research Nursing Network (CRNN)*. Winnipeg, MB. May, 2017.
14. "Syphilis is back!". Invited presenter. *University of Manitoba Department of Pediatrics Small Group Discussion*. Winnipeg, MB. January 2017.
15. Master of Ceremony (MC) for the *Department of Pediatrics & Child Health Retreat and Appreciation Dinner*. Winnipeg, MB. February, 2016.

16. "The Biting Truth about Lyme Disease". Invited presenter. *University of Manitoba Department of Pediatrics Small Group Discussion*. Winnipeg, MB. December, 2015.
17. "HIV Prevention of Mother to Child Transmission and Point of Care Testing". Invited speaker. *St. Boniface General Hospital Obstetrics/Gynecology High-Risk Rounds*. Winnipeg, MB. June, 2014.
18. "Important ID Topics in Pediatric Hem/Onc Patients". Invited speaker. *Hem/Onc Nursing Educational Day, Health Sciences Centre*. Winnipeg, MB. November, 2013.
19. "CMV in Renal Solid Organ Transplants". Invited Speaker. *Department of Pediatric Nephrology, University of Manitoba*. Winnipeg, MB. April, 2013.
20. "HIV: Transition from Adolescence to Adulthood". Invited speaker. *Manitoba HIV Program Continuing Education Series*. Winnipeg, MB. February, 2013.
21. "Viruses!!" Invited Speaker. *Collaborative Adult and Pediatric BMT Education Day*. Winnipeg, MB. January, 2012.
22. "Antiretrovirals: What you need to know and how to use them". Invited presenter. *University of Manitoba Department of Pediatrics Small Group Discussion*. Winnipeg, MB. November, 2011.
23. A Case of HIV MTCT in Manitoba in 2010 and Review of Epidemiological and Clinical Characteristics of Maternal and Pediatric HIV in Manitoba, Canada from 1989 to 2010". Invited speaker. *Manitoba HIV Program's CME Guest Lecture Series*. Winnipeg, MB. April, 2011.
24. "HIV Testing: An Update for 2010". Invited presenter. *University of Manitoba Department of Pediatrics Small Group Discussion*. Winnipeg, MB. September, 2010.

National Presentations:

Symposium Presenter:

1. "COVID-19: Pathophysiology of the Virus". 2020 Canadian Association of Physician Assistants (CAPA) Annual Conference. October 2020.
2. "Ask Anything: COVID-19 for Rural Practitioners". BC Rural Health Conference (RHC): Webinar Series/University of British Columbia (UBC) CPD. May 2020. <https://ubccpd.ca/courses/rhcwebinars>
3. "Clinical Presentation of COVID-19 Infections". The College of Family Physicians of Canada (CFPC) Presentation. April 2020. <https://www.youtube.com/watch?v=cIU-3xUWUfA>
4. "Keeping Children Safe". Coping during COVID-19: Canadian Medical Association (CMA) Joule COVID-19 Learning Series. April 2020. <https://joulecma.ca/joule-covid-19-learning-series>
5. "HIV-exposed infants in Manitoba: collaborative efforts to prevent infection". Invited speaker. *Infant Feeding in HIV in Canada CIHR Planning Grant Meeting*. Toronto, ON. January, 2016.
6. "Viral Therapy and Monitoring in the Solid Organ and Bone Marrow Transplant Patient". Invited speaker. *Pediatric Grand Rounds, Memorial University*. St. John's, NFLD. June, 2013.
7. "What We Should Know About Pneumococcal Disease in Kids". Invited speaker. *Canadian Respiratory Conference*. Niagara Falls, ON. May, 2011.

International Presentations:

Invited Lectures and Sessions:

1. "COVID-19 Seminar Series: Pediatric Cases, Laboratory Diagnostics and Critical Care". Pacific Island Health Officers' Association (PIHOA), webinar. June, 2020. <https://www.pihoa.org/covid-19-clinical-training-course-materials/>

Media and Podcasts

Local Media/Podcasts:

1. "Ottawa, Manitoba on same pandemic page for return to school". Interview with Maggie Macintosh, Winnipeg Free Press. August 2020. <https://www.winnipegfreepress.com/special/coronavirus/ottawa-manitoba-on-same-pandemic-page-for-return-to-school-572070392.html>
2. "Local research suggests COVID-19 not infectious after eight days". Interview with Michelle Gerwing, CTV News Winnipeg. May 2020. <https://winnipeg.ctvnews.ca/local-research-suggests-covid-19-not-infectious-after-eight-days-1.4955543>.
3. "Pediatric Inflammatory Diseases associated with COVID-19". Interview with Richard Cloutier, Global News 680 CJOB. May 2020. <https://omny.fm/shows/news-on-cjob/dr-jared-bullard#description>.
4. "Simple precautions can keep enterovirus away". Winnipeg Free Press, Health Column. September 2014.

National Media/Podcasts:

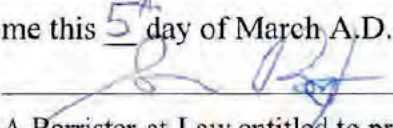
1. "When is a case of COVID still COVID? Critics suggest the gold-standard of testing could be too sensitive". Interview with Sharon Kirkey, National Post. October 2020. <https://nationalpost.com/news/canada/when-is-a-case-of-covid-still-covid-critics-suggest-the-gold-standard-of-testing-could-be-too-sensitive>
2. "COVID-19 not very infectious 8 days after symptoms occur, Winnipeg study suggests". Interview with Bartley Kives, CBC News. May 2020. <https://www.cbc.ca/news/canada/manitoba/covid19-infectious-period-1.5583722>.
3. "Local research suggests COVID-19 not infectious after eight days". Interview with Angela Kokott, Global News 770 CHQR, Calgary AB. May 2020. <https://omny.fm/shows/afternoons-with-rob-breakenridge/interview-with-dr-bullard>.
4. "Update: Testing for COVID-19 in Canada": A Public Health Podcast. April 2020. <https://nccid.ca/podcast-2019-ncov/#subMenuSection0>.
5. "Testing for 2019-nCoV". Infectious Questions: A Public Health Podcast. February 2020. <https://nccid.ca/podcast-2019-ncov/>
6. "Congenital Syphilis Risks and Prevention". National Collaborating Centre for Infectious Diseases (NCCID) podcast, January 2019. <https://nccid.ca/webcast/congenital-syphilis-risks-and-prevention-jared-bullard/>

International Media/Podcasts:

1. "FactCheck: No, a claim by an Irish doctor that PCR tests have a 97% false positive rate is not true". Interview with Anthony King, TheJournal.ie. December 2020. <https://www.thejournal.ie/factcheck-pcr-tests-irish-video-5304097-Dec2020/>
2. "Factcheck: Nee, 'Oxford-studie' zegt niet dat covidtest 70% valspositieven oplevert". Interview with Brecht Castel, Knack. September 2020. <https://www.knack.be/nieuws/factchecker/factcheck-nee-oxford-studie-zegt-niet-dat-covidtest-70-valspositieven-oplevert/article-longread-1647383.html>
3. "Minnesota's broad COVID-19 testing under microscope". Interview with Jeremy Olson, Star Tribune. September 2020. <https://www.startribune.com/broad-covid-19-testing-under-microscope/572396572/>
4. "Behind the Paper: Predicting infectious SARS-CoV-2 from diagnostic samples". Invited contribution to Nature Research Microbiology Community. June 2020. https://naturemicrobiologycommunity.nature.com/users/411193-jared-bullard/posts/predicting-infectious-sars-cov-2-from-diagnostic-samples?utm_source=digest_mailer&utm_medium=email&utm_campaign=daily_digest

5. "Winnipeg research suggests virus not very infectious eight days after onset". Radio Canada International. May 2020. <https://www.rcinet.ca/en/2020/05/27/winnipeg-research-suggests-virus-not-very-infectious-eight-days-after-onset/>.

This is Exhibit " B " referred to
in the Affidavit of Jared Manley
Peter Bullard Affirmed before
me this 5th day of March A.D. 2021



A Barrister-at-Law entitled to practice
in and for the Province of Manitoba

Paul Van Caesele, MD FRCPC

Professor

Department of Medical Microbiology & Infectious Diseases

Department of Pediatrics and Child Health

Max Rady College of Medicine, Rady Faculty of Health Sciences

CURRICULUM VITAE



**University
of Manitoba**

December 2020

CURRICULUM VITAE of Paul Van Caesele MD FRCPC

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Paul Van Caesele, MD FRCPC

IDENTIFICATION

Business Address:

[REDACTED]

[REDACTED]

Faculty Address:

[REDACTED]

Citizenship:

Canada

Security clearance:

Secret (2003)

EDUCATION AND TRAINING

DEGREES AND CERTIFICATIONS

1995 to 2000

Medical Microbiology Specialty (FRCPC)
University of Manitoba, Faculty of Medicine

1991 to 1995

Doctor of Medicine (MD)
University of Manitoba, Faculty of Medicine

1988 to 1991

Bachelor of Sciences (BSc. Gen)
University of Manitoba, Faculty of Science
Major in Chemistry/Microbiology, Dean's Honour List, 1989 to 1991

PROFESSIONAL EXAMINATIONS

Medical Council of Canada Part I – 1995

Medical Council of Canada Part II – 1997

Medical Microbiology (FRCPC) – June 2000

SPECIAL SKILLS AND CONTINUING EDUCATION

Summer Field Epidemiology Training Program Certificate, 1998
 E. coli O157:H7 Workshop, LCDC, Winnipeg, Manitoba, 1998
 Teaching Improvement Project Systems Certificate (T.I.P.S.), 1998-99
 Workplace Hazardous Materials Information System, 1997 to present
 Manitoba Emergency Management Course, 2000
 Transport of Dangerous Goods Certified, 2001 to present
 Emergency Response Assistance Plan Certified, 2001 to present
 College of American Pathologists Inspector Self-Study Course, 2004, 2009;
 Team Leader Training, 2007, 2015
 Private Pilot License/ Aeronautical Radiotelephone Operator License, 1990 (current)
 University of Manitoba Animal User Certificate, 2005
 Prenatal Screening Course, Rhode Island, 2005
 Training for Tri-Council Policy Statement: Ethical Conduct for Research involving Humans, 2007
 National Institutes of Health Certificate in Protecting Human Research Participants, 2008
 Teaching and Evaluation Professionalism, 2008
 Faculty Development for Teachers of International Medical Graduates, 2008
 CMPA Delegation and Supervision of Medical Trainees, 2014
 Governing for Quality and Patient Safety, Canadian Healthcare Association, 2014
 Manitoba Government Training Workshops and Online Courses (M=Mandatory)
 Introduction to Office Access (I and II), 2002
 Personal Health Information Act (M), 2014, 2016, 2017, 2019
 Effective Communication Strategies for Difficult Conversations, 2014
 Powerful Listening, 2015
 Values and Ethics in the Manitoba Government, 2015 (M)
 Respectful Workplace and Harassment Prevention, 2016 (M), 2018 (M)
 Introduction to Manitoba's Comptrollership Framework, 2016 (M)
 Information Security Awareness, 2016 (M)
 The Accessibility for Manitobans Act, 2016 (M)
 Inclusion and Diversity in the Workplace, 2016 (M)
 Lean Online Series, 2018
 Algonquin College: Fundamentals of OCAP, 2016
 Accessible Customer Service, August 2017 (University of Manitoba mandatory online course)
 Tri-Council TCPS 2: CORE Ethical Conduct for Research, 2021
 University of Manitoba PHIA and FIPPA for Researchers, 2021

AWARDS & HONOURS

1988 – Euclid Medal for Excellence in Mathematics
 1990 – UFCW Local 832 Scholarship Award
 1994 – Earl S. Bryngelson Award in Family Medicine
 2000 – Canadian Society for Circumpolar Health Travel Award
 2007 – (Nomination) Manitoba Service Excellence Award (West Nile Virus Team)
 2010 – Best Overall Poster Presentation, Epidemiology & Public Health, 26th International
 Papillomavirus Conference
 2011 – Lancet Paper of the Year, 2010 (March) JAMA Article
 2013 – GTEC Award for Excellence in Collaboration (as partner to eHealth)

Student Awards

2017 – Canadian Student Health Research Symposium, Student Dean of Medicine Award of
 Excellence, Poster 29, Dr. Davinder Singh (MSc. Thesis supervised)
 2019 – Dept. of Pediatrics & PGME, Child Health Research Days Resident Award, Gold Award, Dr.
 Bhreagh Phipps (resident project supervised)
 2019 – Manitoba Student Health Research Poster Competition, Community Health Sciences Bold
 Idea Student Award, Lexy Anderson (MSc. Thesis advised)

WORK EXPERIENCE & ADMINISTRATION

ACADEMIC POSITIONS AND APPOINTMENTS

University of Manitoba, Rady Faculty of Health Sciences, Max Rady College of Medicine

Professor (Nil-Salary) – Dept. of Medical Microbiology & Infectious Diseases, 2017-present

Assistant Professor (Nil-Salary) – Medical Microbiology, 2000-2007

Associate Professor (Nil-Salary) – Medical Microbiology & Infectious Diseases, 2007-2017

Program Director, Medical Microbiology Fellowship Training Program, 2006-2010

Cross Appointment – Dept. of Pediatrics and Child Health, 2005-present

Associate Member – Manitoba Institute for Child Health, 2005-2013 (lapsed)

EMPLOYMENT, WORK AND CONTRACT EXPERIENCE

Current

Medical Director – Cadham Provincial Laboratory (CPL), July 2000-present

Responsibilities: Medical and administrative leadership of the Manitoba provincial public health laboratory. CPL consists of seven administrative sections with four distinct lab sections of excellence: Newborn Screening and Public Health Chemistry, Virus Detection, Public Health Bacteriology, and Serology & Parasitology. The 120+ professional and technological staff working there are engaged in laboratory-based screening programs, outbreak and emerging disease response, disease surveillance, consultation, research and education activities. The annual budget in 2019/20 was approximately \$20 Million.

Context: A public health laboratory is a key component of the local, national and international public health infrastructure, and must stay abreast of and contribute to broad direction in all three spheres.

Accreditation: When best practices are employed, the quality and safety of a medical laboratory are assured through external accreditation, preferably that of peers. CPL has maintained full accreditation with the following agencies throughout my tenure:

- College of American Pathologists
- Manitoba Quality Assurance Program (MANQAP)

Prior

Acting Medical Advisor – MB Communicable Diseases Control Branch, 2008-2010

Director – Percy E. Moore and Norway House Hospital Laboratories, July 2000- 2012

Medical Consultant – Manitoba Worker's Compensation Board, 2009

Director – St. Amant Centre Laboratory, August 2000-April 2001

Director – Mt. Carmel Clinic Laboratory, August 2000-April 2001

Medical Consultant – THiiNC Health Incorporated, *Operational Review of the Ontario Public Health Laboratory System*, Jul-Sep 2005

Program Director – University of Manitoba Medical Microbiology Training Program, 2006-2010

Transit Field Researcher – City of Winnipeg, Dept. of Transportation, 1991-1995

Research Assistant – Dept. of Geology, University of Manitoba, 1989-1990

COMMITTEES AND OTHER SERVICE
Cadham Provincial Laboratory (CPL) and/or Manitoba Department of Health

Chair – CPL, Laboratory Management Committee, 2000 to present
 Chair – Manitoba Perinatal Screening Committee, 2000 to present
 Chair – Cystic Fibrosis Working Group, 2009-2011
 Member – Metabolic Working Group, 2017 to present
 Chair – SCID/PID Screening Implementation Working Group, 2020-2021
 Chair – CPL Quality Assurance Committee, 2002 to present
 Chair – MACID Sub-committee on HIV testing, 2000-2002
 Chair – HIV Antibody Testing Planning and Implementation Group, 2003 to 2010
 Chair – Pandemic Influenza Laboratory Planning Committee, 2009-2010
 Member – Manitoba Health (MH) Pandemic Clinical Care Group, 2009-2010
 Member – MH Pandemic Surveillance and Planning Group, 2009-2010
 Member – MH Pandemic Scientific Advisory Committee, 2009-2010
 Member – H1N1 Strategic Advisory Group, 2009-2010
 Chair – CPL Laboratory Information Management System Steering Committee, 2006-2010
 Member/Chair – CPL Policy & Procedure Committee, 2002 to present
 Co-chair – Manitoba Maternal Serum Screening Committee, 2000 to present
 Lead – Manitoba ERAP Team and Biohazard Response Team, 2000 to present
 MB ERAP Provincial Territorial Response Coordinator (PTRC), 2009 to present
 Member – Manitoba Public Health Laboratory Committee (PHLC), 2000 to present
 Acting Chair – PHLC, 2009 to 2011
 Secretary – PHLC, 2000 to 2011
 Member – Public Health Branch Management Committee, 2000-2007, 2011-2019
 Member – Manitoba Advisory Committee on Infectious Diseases, 2000-2007
 Member – Manitoba Blood Advisory Committee, 2005-2015
 Member – Manitoba Public Health Protocol Steering Committee, 2006-2009
 Member – Manitoba Provincial Vaccine Advisory Committee, 2013 to present
 Member – West Nile Virus Advisory and Scientific Advisory Committees, 2004 to present
 Member – MACID Advisory Sub-committee on Tuberculosis, 2001 to 2006
 Member – Manitoba Tuberculosis Steering Committee, 2012 to present
 Member – F/P/T Pandemic Influenza Working Group, 2000-2009
 Member – Manitoba HPV Advisory Committee, 2007-2012
 Member – Provincial HPV Integrated Committee, 2012-2014
 Member (Mgmt.) – Manitoba Health Workplace Safety & Health Committee, 2008-2010
 Member – Manitoba Health Extended Management Committee, 2012 to present
 Member – Information Communication and Technology (ICT) Internal Working Group, 2014-2015
 Member – Infoway Pan Canadian CD Surveillance Solution Set Project Mgmt Committee, 2006-2007
 Member – MB Panorama Public Health Advisory Group, 2013 to present
 Member – Collaborative Laboratory Expert Review Group, 2013
 Member – CD Investigations Working Group, 2014 to present
 Member – MB Provincial Syphilis Outbreak Response Team, 2015-2016
 Member – Provincial STBBI Outbreak Management Steering Committee, 2016 to present
 Member – Intergovernmental Newborn Screening Working Group, 2014 to present
 Member – Universal Newborn Hearing Screening Working Group, 2014-2017
 Member – Manitoba Quality and Patient Safety Council, 2016-2019
 Member – Healthcare Associated Infection (HAI) Indicator Working Group, 2017-2019
 Member – MHSAL Business Process Coordination Group, 2018 to present
 Member – CPL eHealth_hub Project Steering Committee, 2018-2019
 Member – STBBI Special Advisory Committee, 2019
 Chair, Testing Subcommittee, 2019
 Member – WRHA STBBI Outbreak Response Team (SORT), 2019 to present
 Member – Department Integration Network, 2019 to present

Member – STBBI PUSH Committee, 2020 to present
 Member – Provincial Respiratory Virus Steering Committee, 2020 to present
 Member – Respiratory Virus Public Health Working Group, 2020 to present
 Member – Respiratory Virus Public Health Operations Group, 2020 to present
 Member – Manitoba Health COVID-19 Incident Command Structure:
 Member – Unified Public Health Operations, 2020 to present
 Member – Long Term Care Asymptomatic Staff Testing Working Group, 2020 to present
 Member – Winnipeg Urban Indigenous Rapid Test Site Working Group, 2020 to present

Legislative and/or Regulatory Consultation

Member – Manitoba Health Standing Committee on Diagnostic Services, 2002 to present
 Member – MB College of Physicians – Subcommittee on Laboratory Medicine, 2000-2005
 Councillor – Medical Laboratory Technologists Transitional Council, 2003-2007
 Member – National Notifiable Disease Expert Advisory Committee, 2004-2007
 Member – MB College of Physicians – Laboratory Accreditation Standards Committee, 2006-2008
 Guest – The Commons Standing Committee on Health, March 2009 (by teleconference)
 Member – MB *Human Pathogens and Toxins Act* Consultation Steering Committee, 2010-2013
 Member – Pharmacy Act and Regulations Implementation Working Group, 2012-2013
 Member – Universal Newborn Hearing Screening Implementation Group, 2015-2017
 Member – Manitoba Public Health Protocol Advisory Committee, 2015 to present
 Member – RN Ordering Pilot Working Group, 2019 to present

Diagnostic Laboratory Systems (not public health)

Director – Diagnostic Services of Manitoba Board of Directors, 2011 to 2018
 Member – Patient Safety and Quality Committee of DSM Board, 2011 to 2018
 Chair - Patient Safety and Quality Committee of DSM Board, 2014 to 2018
 Member – Executive Committee of the Board, 2014 to 2018
 Interim Chair – Quality and Patient Safety Interim Committee of the Interim Board, Shared Health Manitoba, 2018 to present
 Laboratory Inspection Team Leader – College of American Pathologists, 2004 to present
 Trinity Health – St. Joseph's Laboratory (Minot, ND), 2004
 Minot AFB 5th Medical Group (ACC) SGSAL (North Dakota), 2007
 Luther Midlefort Mayo Health System (Wisconsin, as Molecular Pathology specialist), 2009
 Oklahoma State Public Health Laboratory, 2012
 Kentucky Cabinet for Health and Family Services Public Health Laboratory, 2014
 Member – Clinical Microbiology Proficiency Testing (CMPT) Clinical Bacteriology Advisory Committee, 2003-2007
 Member – Manitoba Health Community Laboratories Policy Advisory Committee, 2011 to present
 Member – MHLS Point of Care Testing (POCT) Advisory Committee, 2014
 Member – WRHA/DSM Provincial Point of Care Testing Advisory Committee, 2016 to present
 Member – WRHA Prenatal Diagnosis Discipline Committee, 2012 to present

National & Other

Associate Member – Canadian Public Health Laboratory Network (CPHLN), 2000 to present
 Co-Chair Elect – CPHLN, 2007 to 2009, 2016-2018
 Co-Chair – CPHLN, 2009-2011, 2018 to present
 Past-Chair – CPHLN, 2011-2013
 Co-Chair & Member – CPHLN Subcommittee on Bioterrorism, 2002-2007
 Co-Chair & Member – CPHLN Laboratory Preparedness and Emergency Response Issue Group, 2007 to present
 Member – Laboratory Directors' Council, 2001 to present
 Member – CPHLN Subcommittee on Laboratory Standards, 2003-2008

Member – Pandemic Influenza Laboratory Planning Network, 2005 to present
 Member – Listeria Task Group, 2008-2009
 Member – Biorepository Working Group, 2015-2017
 Member – Zika Virus Working Group, 2016-2017
 Member – Respiratory Virus Infection (ReVI) Working Group, 2017 to present
 Member – Whole Genome Sequencing (WGS) Steering Committee, 2017 to present
 Member – Lyme Disease Diagnostics Working Group, 2019 to present
 Member – Spartan and COVID-19 POC Testing Working Group, 2020 to present
 Member – CPHLN CanCOGen Steering Committee, 2020 to present
 Member – Pan-Canadian Public Health Network (PHN) Communicable and Infectious Diseases Steering Committee, 2018-2020
 Member – Expert Advisory Group on Rubella in Canada, 2001
 Member – Special Pathogens Advisory Committee (CSCHAH), 2016 to present
 Active Member – Association of Medical Microbiology and Infectious Diseases Canada (AMMI)
 Member – Human Health Resources Working Group of AMMI, 2011-2014
 Member/AMMI representative – Canadian Alliance of Laboratory Medicine, 2016 to present
 Member – Point of Care Testing Working Group, 2018 to present
 Member – Red River College Medical Laboratory Science Advisory Committee, 2007-2009
 Member – iEHR Project Steering Committee, 2011-2013
 Member – Manitoba Electronic Health Record (EHR) Business Advisory Committee, 2010 to present
 Member – Health Sciences Centre Infection Control Committee, 1996-1999
 Member – St. Boniface General Hospital MRSA Outbreak Control Committee, 1998
 Member – Foodborne Illness Outbreak Response Protocol (FIORP) Team, 2007 to present
 Member – Canadian Food Laboratory Forum, 2012 to present
 Member – International Lyme Symposium Organizing Committee, 2010-2012
 Member – Manitoba Centre for Health Policy Project Advisory Group, “Systematic Investigation of Manitoba’s Provincial Lab Data for Population Health & Health Services Research” 2011-12
 Member – Planning Committee of Annual Manitoba Travel Health Conference, 2015-2018
 Member – COVID-19 Federal/Provincial/Territorial Logistics Advisory Committee, 2020
 Member – Canadian COVID-19 Immune Task Force (CITF) Leadership Group, 2020 to present

Reviewerships and Examination Boards

Examiner – Medical Council of Canada, 1997-98
 Examiner – Royal College of Physicians and Surgeons of Canada (RCPSC) Examination Board/Committee for Medical Microbiology (EBMM), 2005 to present
 Chair – RCPSC EBMM, 2010-2015
 Past-Chair – RCPSC EBMM, 2015-2018
 Executive Sub-Committee of EBMM, 2013-2016
 Member – RCPSC Specialty Committee in Medical Microbiology, 2008-2010, 2016-present, *ex officio* 2010-2016
 Member – RCPSC – Kuwait Institute of Medical Specialization (KIMS) Clinical Microbiology Examination Board, 2017 to present
 Member – RCPSC Examination Committee, 2016-2018
 Academic Promotions External Reviewer
 Dalhousie University, Dept. of Pathology, 2008, 2018
 Memorial University of Newfoundland, Faculty of Medicine, 2016
 McGill University, 2019
 Manuscript Review for Peer-Reviewed Periodicals
 Anaerobe, 2002-03;
 Canadian J. of Emergency Medicine, 2005;
 Canadian Journal of Infectious Diseases & Medical Microbiology, 2001, 2003, 2015;
 Canadian Medical Association Journal, 2008;
 Clinical Infectious Diseases, 2001-2002, 2005;
 Journal of the Association of Medical Microbiology and Infectious Diseases Canada, 2017;
 Viral Immunology 2012
 Manuscript Editor, Professional non-peer Review

Pharmacist's Letter Canada, 2020

External Reviewer – National Laboratory Reference Services, 2005 to present

University of Manitoba

Voting Member – Department of Medical Microbiology Council, 1999 to present

Member – Department of Medical Microbiology Headship Review Committee, 1998

Member – Infectious Diseases Core Curriculum Sub-Committee, 1998

Member – Faculty of Medicine Undergraduate Laboratory Medicine Training Committee, 2001-2005

Member – PGME Program Directors Committee, 2007-2009

Member – Section of Pediatric Infectious Diseases Committee, 2007 to present

Member – ID/MM Academic Half Day Committee, 2009-2010

Member - Dept.of Pediatrics & Child Health, Pediatric Infectious Diseases Search Committee, 2010

Member – Section of Infectious Diseases, Antimicrobial Stewardship Committee, 2011

University of Manitoba Training Committees:

Member – Adult Infectious Diseases Training Program Committee, 1996-2010

Member – Pediatric Infectious Diseases Training Committee, 2006 to present

Member – Clinical Microbiology Training Committee, 2009-2010

Member – Medical Microbiology Training Committee, 1998 to present

Chair – Medical Microbiology Training Committee, 2006 to 2010

Member – Anatomic Pathology/General Pathology Residency Committee, 2007-2008

Member – Community Medicine Training Committee, 2007-2008, 2019 to present

CLINICAL & PROFESSIONAL SERVICE

PROFESSIONAL LICENSURE

Province of Manitoba, Medical Microbiology Specialist, July 2000 – present
Territory of Nunavut, Medical Microbiology Specialist, July 2000-2001 (lapsed)

CLINICAL APPOINTMENTS

Medical Staff, Pediatric Infectious Diseases – Winnipeg Regional Health Authority, 2000-present
Admit/Treat/Consult/Discharge Privileges
Member – St. Amant Centre Medical Staff, 2001 to present
Associate Director and Travel Health Specialist – WRHA Travel Health and Tropical Medicine Clinic, 2001 to present

PROFESSIONAL MEMBERSHIPS

Canadian Infectious Diseases Society, since 1997; & AMMI Canada, since 2005
Professional Association of Residents and Interns of Manitoba, 1995-2000
Canadian Association for Clinical Microbiology and Infectious Diseases, since 1999
Royal College of Physicians and Surgeons of Canada, since 2000
American Society for Microbiology, since 1997
College of Physicians and Surgeons of Manitoba, registered since 1995
Canadian Owners and Pilots Association, 1993-2006
Manitoba Medical Association/Doctors Manitoba, since 2000
Canadian Medical Association, since 2015
Association of Public Health Laboratories, since 2001
American Society of Tropical Medicine and Hygiene, since 2005
Clinical Laboratory Standards Institute (CLSI), Active Member (CPL) since 2002

CONFERENCES & MEETINGS

American Society for Microbiology General Meeting: Miami 1997, Atlanta 1998, Orlando 2001
ICAAC: Toronto 2000, San Diego 2002
Conjoint Meeting on Infectious Diseases (AMMI-CACMID): Edmonton 1999, Halifax 2002, Montreal 2003, 2011, Vancouver 2018.
Canadian Public Health Laboratory Network Semi-Annual or Annual Meeting, 2001 to present
International Congress on Circumpolar Health (ICCH): Harstad, Norway, 2000
Association of Public Health Laboratories (APHL/CSTE): Portland 2001
NOWECOMM 2004. Workshop on molecular diagnostics. Vancouver 2004
CHICA (Manitoba) Annual Conference: Winnipeg 2005, 2008, 2010
Manitoba Annual Travel Health Conference: Winnipeg 2001, 2002, 2005-2014, 2016, 2017, 2018
PulseNet Canada Annual Meeting, Winnipeg 2007, 2010, 2013
North American Laboratory Summit for Influenza: Toronto 2008, Vancouver 2010 (Moderator)
Severe H1N1 Disease: Preventing Cases, Reducing Mortality, 2009 (Moderator)
Canadian Public Health Association Centenary Annual Conference, Winnipeg 2009
Network of Networks, Toronto 2011
Canadian Institute for Public Health Inspectors Annual Meeting and Conference, Winnipeg, 2013.
Annual Meeting of Canadian Association of HIV Clinical Laboratory Specialists (CAHCLS), 2013-present

REVIEWERSHIPS

Academic Promotions External Reviewer

Dalhousie University, Dept. of Pathology, 2008, 2018

Memorial University of Newfoundland, Faculty of Medicine, 2016

McGill University, 2019

Manuscript Review for Peer-Reviewed Periodicals

Canadian Journal of Infectious Diseases & Medical Microbiology, 2001, 2003, 2015;

Journal of the Association of Medical Microbiology and Infectious Diseases Canada, 2017;

Anaerobe, 2002-03;

Clinical Infectious Diseases, 2001-2002, 2005;

Viral Immunology 2012;

Canadian Medical Association Journal, 2008;

Canadian J. of Emergency Medicine, 2005;

External Reviewer – National Laboratory Reference Services, 2005 to present

NEWSLETTER CONTRIBUTIONS

1. Mighty Microbes, an Infection Control Newsletter for Manitoba Infection Control Practitioners

September 2000 – Phippen D, Van Caesele P. Parainfluenza Virus

March 2001 – Phippen D, Van Caesele P. RSV Update

June 2001 – Phippen D, Van Caesele P. Cryptosporidium update

September 2001 – Phippen D, Van Caesele P. Scabies update

March 2002 – Phippen D, Van Caesele P. ESBLs

September 2002 – Phippen D, Van Caesele P. Hepatitis A Virus update

December 2002 – Phippen D, Van Caesele P. Small round enteric viruses

March 2003 – Phippen D, Van Caesele P. Human metapneumovirus

October 2004 – Van Caesele P. Tularemia

March 2005 – Van Caesele P. CA-MRSA.

December 2005 – Thompson G, Van Caesele P. Avian influenza

April 2006 – Thompson G, Van Caesele P. Mycoplasma pneumonia

September 2006 – Thompson G, Van Caesele P. E. coli O157:H7

June 2006 – Thompson G, Van Caesele P. Mumps

June 2010 – Kadkhoda K, Van Caesele P. Measles.

2. Cadham Provincial Laboratory – Public Health in Action, 2001-2005 (2 articles)

3. Communicable Disease Control Newsletter (2 articles)

4. Just Us – An HIV positive community Newsletter, 2001 (1 article)

5. Manitoba Health Physician's Newsletter, 2002- (3 articles)

6. College of Physicians and Surgeons of Manitoba Newsletter, 2001 (1 article)

7. Clinical Microbiology Proficiency Testing (CMPT) Critiques Newsletter, contributor to a number of critiques, 2003-2007

Numerous work-related pamphlets, Fact Sheets, Protocols, Procedures, Policies and white-papers.

CAREER PLANNING

Manitoba High School Career Fair (Medical Microbiology and laboratory medicine), January 2003

Medical Microbiology as a Career, University of Manitoba Faculty of Medicine Career Evening,

Feb 2007 & April 2008

TEACHING

Except where indicated, all teaching is under the University of Manitoba, Rady Faculty of Health Sciences.

UNDERGRADUATE: DIDACTIC OR TUTORIAL

i. Laboratory Medicine (Mini-Hospital)

1997-2000	In training: over 80 hours of Lab Medicine tutorials
2000-2001	50 hours
2001-2002	50 hours
2002-2003	37 hours
2003-2004	10 hours
2004-2005	3 hours
2005-2006	14 hours

ii. Med I, Block 3, LM007, Serology (Lecture)

Annually from 2006-2016 (1 hour each year)

iii. Tutorials

1997-2000	In training: over 42 hours of ID/Microbiology tutorials			
2005	WRH 232	Perinatal Infections	Nov 14	2 hours
	-----	Pediatric ID	Nov 21	1 hour
2006	RS071	Pneumonia 3	May 4	1 hour
	SF120	Tuberculosis	Oct 26	1 hour
	SF143	Prevention & Control	Nov 2	1 hour
2007	NE090	CNS Infections	Mar 8	1 hour
	SF120	Tuberculosis	Oct 31	1 hour
	SF143	Prevention & Control	Nov 7	1 hour
2008	LM007	Serology	Feb 13	2 hours
2015	WRH232	Perinatal Infections	Nov 23	2 hours
2016	WRH234	Perinatal Infections	Nov 29	2 hours
2017	RS232	Upper Respiratory Infections	May 15	2 hours
	RS235	Lower Respiratory Infections	May 23	2 hours
	WRH2	Perinatal Infections	Nov 28	2 hours
2018	RS232	Upper Respiratory Infections	May 14	2 hours
2019	EVAL8	Evaluating Treatment	Oct 30	1 hour
	WRH2	Perinatal Infections	Nov 28	2 hours
2020	WRH2	Perinatal Infections	Nov 24	2 hours

iv. Medical Microbiology and Infectious Diseases HYG 1280

2018	Skin and Soft Tissue Infection	2 hours
2019-2021	Skin and Soft Tissue Infection II	1 hour

POSTGRADUATE: DIDACTIC OR TUTORIAL
i. Clinical Bacteriology, 97.704/ MMIC 7040 (Course Leader 2000-2012)

1999-2000	Meningococcus & Moraxella, 2 hours (Lecturer only)
2000-2001	52 hours
2001-2002	52 hours
2002-2003	50 hours
2003-2004	50 hours
2004-2005	50 hours
2007-2008	22 hours
2009-2010	16 hours
2011-2012	14 hours (last year as Course Leader)

Note: The above only reflects direct teaching hours and does not include the considerable effort expended in overseeing and administering the course, including guidance of lecturers, developing, invigilating and marking exams and assignments, & other administrative duties.

ii. Clinical Virology, 97.713 / MMIC 7210 (Lecturer)

2003-2004	Respiratory Viruses, 2 hours; Pox/Papilloma/Papovaviruses	1 hour
2005-2006	Respiratory Viruses, 2 hours; Pox/Papilloma/Papovaviruses	1 hour
2016, 2018	Influenza, Parainfluenza and Metapneumovirus	2 hours
	RSV, Rhinovirus and Coronaviruses	1 hour
	Gastroenteritis Viruses	1 hour

iii. Clinical Parasitology, 97.714 / MMIC 7140 (Lecturer)

2002-2003	Tissue Protozoa	2 hours
2008	Tissue Protozoa	2 hours
	Nematodes	3 hours
2010	Tissue Protozoa	2 hours
	Nematodes	3 hours
2012	Tissue Protozoa	2 hours
	Nematodes	3 hours
2015, 2017	Tissue Protozoa	2 hours
2019, 2021	Tissue Protozoa 1 and 3	3 hours
	Laboratory, Protozoa	3 hours
	Intestinal Nematodes	2 hours

iv. The Ecology of Infectious Diseases MMIC 7220

2007	Preparing for Pandemic Influenza	1 hour
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v. Half Day Sessions

2005	Pediatrics	Malaria & Malnutrition	Dec 14	2 hours
2013	ID/MM	Viral Diagnostics	Jan 9	2 hours

STUDENT SUPERVISION**Supervision of Graduate Students****a. As University of Manitoba Medical Microbiology Training Program Director (2006-2010)**

- Don Vinh MD, 2006*
- Philippe Lagace-Wiens MD, 2006-2008
- Ahmed Haleis MD, 2006-2009

- Andrew Walkty MD, 2006-2009**
- Oscar Larios MD, 2006-2009**
- Majid Al-Shamrani MD, 2005-2006*
- Jared Bullard MD, 2007-2010**
- Safa Edagiz MD, 2010

*Left the program

**In combination with Infectious Diseases Training Program

b. As Site Director for Cadham Provincial Laboratory (CPL) for clinical training programs (2000-2010):

- Ken Von Kuster MD (General Pathology), Feb-Mar 2001
- Sarah Forgie, MD (Pediatric ID, May-Jun 2001
- Shannon MacDonald MD (Community Medicine), Aug 2001
- Marilyn Kirkpatrick MD (General Pathology-Hematopathology), Nov 2001-Jan 2002
- Frank Bovell MD (ID), Jan-Mar 2002
- Lisa Richards MD (Community Medicine), Jul-Aug 2002
- Nora Alfattoh MD (Pediatric ID), Nov-Dec 2002
- Marissa Becker MD (ID), Feb & Nov 2003
- Samira Mubareka MD (ID & Medical Microbiology), Mar-Apr 2003
- Michael Routledge MD (Community Medicine), May-Jun 2003
- Evelyn Lo MD (ID), Oct-Nov 2003
- William Libich MD (Community Medicine), Nov 2003
- Graham Tipples PhD (Clinical Microbiology), Jan-Feb 2004
- Cathy Smith MD (ID), Apr-Jun 2004
- Don Vinh MD (ID), May-Jun 2005
- Denise Koh MD (Community Medicine), Jul-Aug 2006
- Ghanem Al-Hujailan MD (ID), Sep-Nov 2006
- Camelia Stefanovici MD (General Pathology), Jun 2007
- Mario Calvo MD (Otorhinolaryngology), Sep-Oct 2007
- Sergio Fanella MD, (Pediatric Infectious Diseases), Oct 2007
- Ahmed Al-Suwaidi MD (Pediatric ID), Nov-Dec 2007
- Oscar Larios MD (ID & Medical Microbiology), Nov 2007-Jan 2008
- Andrew Walkty MD (ID & Medical Microbiology), Jan-Feb 2008
- Ahmed Haleis MD (Medical Microbiology), Mar 2008
- Stu Skinner MD (ID), May-Jun 2008
- Nataliya Skuridina MD (Community Medicine), May-Jun 2008
- Richard Rusk MD (Community Medicine), July-Aug 2008
- Karen Robinson MD (Community Medicine), Dec 2008-Jan 2009
- Kamran Kadkhoda PhD (Clinical Microbiology), Jan-Feb 2009
- Yoav Keynan MD (ID), May 2009
- Jared Bullard MD (ID & Medical Microbiology), Jul-Sep 2009
- Majid Al-Shamrani MD (ID), Aug-Sep 2009
- Nathalie Bridger MD (Pediatric Infectious Diseases), Nov-Dec 2009
- Salah Mahmud MD PhD (Community Medicine), Jan 2010
- Jonathon Gabor MD (ID), Mar 2010
- Terry Wuerz MD (ID), April 2010
- Brent Roussin MD (Community Medicine), May, Jul-Aug 2010
- Sandra Allison MD (Community Medicine), July 2010

Note: after this point the role of Site Director was turned over to another specialist physician and I provided only 1-2 hours of direct didactic contact per resident, or covered in the Site Director's absence.

c. Postgraduate Student Research Supervision:

Structured research project supervision as part of accredited residency programs:

- Drs. Safa Edagiz and Sameer Kassim (Medical Microbiology). *Mother to child transmission of hepatitis B and C in Manitoba*. 2015-2016. Co-supervisor with Drs. Joanne Embree and Jared Bullard.

- Dr. Bhreagh Kennedy (Pediatrics). *The effect of varicella vaccination on the incidence of herpes zoster in Manitoba*. 2017-2020. Co-supervisor with Dr. Guillaume Poliquin.
- Dr. Rachel Dwillow (Pediatric Tuberculosis). *A participatory mixed-methods evaluation of Manitoba's tuberculosis program*. 2017. Scholarship Oversight Committee member for American Board of Pediatrics Scholarly Activity Work Product.

d. As Pediatric Infectious Diseases Consultant at Winnipeg Children's Hospital (2000-present):

In this position I have supervised post-graduate and undergraduate medical trainees on an almost routine basis. The list is quite long, and includes local and external trainees from the following fields of training (not an exclusive list):

- Pediatrics
- Pediatric Infectious Diseases
- Adult Infectious Diseases
- Medical Microbiology
- Clinical Microbiology
- Obstetrics and Gynaecology
- General Surgery
- Undergraduate Medical Trainees

e. As Travel Medicine Specialist at WRHA Travel Health and Tropical Medicine Clinic, (2001- present):

In this position I have supervised post-graduate and undergraduate medical trainees on a steady but infrequent basis.

Student Thesis Advisory Committee(s)

- a. Arwa Faizo, MSc. (Dept of Medical Microbiology, University of Manitoba) *Prenatal screening of potential infectious diseases in Manitoba*. 2014
- b. Kerry Dust, PhD. (Dept. of Medical Microbiology & Infectious Diseases, University of Manitoba). *Significance of HPV E6 PDZ binding domain on transformation of primary human neonatal keratinocytes*. Ex officio. 2019.
- c. Dr. Davinder Singh, MSc. (Dept. of Community Health Sciences, University of Manitoba). *The effect of timing of oseltamivir prophylaxis in controlling influenza A H3N2 and influenza B outbreaks in long term care facilities in Manitoba, Canada, 2014-2015: A retrospective cohort study*. 2019
- d. Dr. George Okoli, PhD. (College of Pharmacy, University of Manitoba) *Individual and provider factors associated with differential seasonal influenza vaccine uptake in Manitoba*. 2019.
- e. Alexandra Anderson, MSc. (in progress, Dept. Of Community Health Sciences, University of Manitoba) *Achieving health equity for individuals living with HIV in Manitoba: Identifying potential cancer disparities using population-based data*. Since 2018.
- f. Saba Shaikh, MSc. (in progress, Dept. of Medical Microbiology & Infectious Diseases, University of Manitoba) *Expression of Mumps Virus Fusion and Hemagglutinin protein glycoproteins to achieve stable cell line for Jeryl Lynn vaccine strain and Gentotype G*. Since 2020.

OTHER TEACHING

- a. Victoria General Hospital Central Services Technology Certification Course (Lecturer), 1998
 - Anatomy and Physiology (2 hours)
 - Microbiology I (2 hours)
 - Microbiology II (2 hours)
- b. Health Sciences Centre Respiratory Technology Training Course (Lecturer), 1999

- Gram Positive Bacteria (1 hour)
 - Gram Negative Bacteria (1 hour)
- c. Bayer Canada Preceptorship Program, May 1999
- Infections in the Neutropenic Host (2 hours)
- d. University of Manitoba Faculty of Nursing Practicum Seminars (Surgery) 2001-2002
- Surgical Site Infections (2 hours annually)
 - Infection Control (2 hours annually)
- e. Manitoba Health Infection Control Practitioner Refresher Course, 2000-2004
- Infection and Immunity (2 hours annually)
 - Virulence and Antibiotics (2 hours annually)
- f. Federal Hospital Continuing Medical Education Series, 2000-2007
- Meningitis (2000)
 - Scabies (2001)
 - The Bugs of Summer (2002)
 - Indoor Moulds and Human Health (2003)
 - Sexually Transmitted Diseases (2004, 2007)
- g. As Medical Director of Cadham Provincial Laboratory (CPL), annually oversee, orient and approve delegated supervision of the following trainees at CPL:
- Government of Manitoba STEP students
 - University of Manitoba Faculty of Science Co-Op Students
 - Red River College Medical Laboratory Technology Trainees
 - Neeginan College Medical Laboratory Assistant Trainees
 - Robertson College Medical Laboratory Assistant Trainees
 - Novice Infection Prevention and Control Practitioner (Practicum)

INVITED PRESENTATIONS

1. Scabies. Gimli Medical Staff. Gimli, Manitoba. May 2001.
2. Bioterrorism. Manitoba Society of Clinical Chemists Annual Meeting. Winnipeg, November, 2002.
3. Meningitis. Central Regional Health Authority Infection and Prevention Control Day, Oct 2002.
4. West Nile Virus: After the Fever: Diagnosis, Treatment & Prevention. Brandon Public Health Day. Brandon, Manitoba. October 2003.
5. Acanthamoeba keratitis. University of Manitoba Department of Ophthalmology Grand Rounds, Winnipeg, Manitoba, December 2003.
6. Unravel the Mystery of Microbiology Reports. Canadian Society of Hospital Pharmacists. Winnipeg, MB. May 15, 2005.
7. What's the Bug? Interpreting Microbiology Reports. 2005 National Education Conference, CHICA Canada, Winnipeg, Manitoba, 2005.
8. Marine toxins and envenomation. Manitoba 5th Annual Travel Health Conference, Winnipeg, Manitoba, April 2006.

9. Laboratory waste and its management. CSMLS/MSMLT 2006 National Congress, Winnipeg, Manitoba, May 2006.
10. What's happening out there: Global shifts in disease. Manitoba 6th Annual Travel Conference, Winnipeg, Manitoba, April 2008.
11. Specimen Collection: Microbiology Laboratory Rules and Etiquette. CHICA Manitoba Annual Meeting, Winnipeg, Manitoba, June 2008.
12. Battling the enemy within: HPV vaccine and detection. MSMLT Annual Congress, Winnipeg, Manitoba, October 2008.
13. HPV: Detection and surveillance, the view from the lab. International Centre for Infectious Diseases (ICID), Winnipeg, Manitoba. November 2008.
14. Seafood Poisoning: What's in your sushi? Manitoba 7th Annual Travel Health Conference, Winnipeg, Manitoba, April 2009.
15. Travel Clinics as GeoSentinel sites. Manitoba 7th Annual Travel Health Conference, Winnipeg, Manitoba, April 2009.
16. Diagnosing Influenza A H1N1. Internal Medicine Grand Rounds, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba. June 23, 2009.
17. Diagnosis: Lessons learned – current recommendations vs. clinical reality. Severe H1N1 Disease: Preventing cases, Reducing Mortality Conference, Winnipeg, Manitoba, September 2 & 3, 2009.
18. What you should know about Infection Control. Manitoba Para-Optometric Association Annual Conference, Winnipeg, Manitoba. June 2010.
19. Role of a Public Health Laboratory during Pandemic. CHICA Manitoba Infection Prevention and Control Conference, Winnipeg, MB. June 18, 2010.
20. An Update on Newborn Screening in Manitoba: Past, Present and Future. Pediatric Grand Rounds, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba, February 24, 2011.
21. Cadham Can Do: So What Does Cadham Provincial Laboratory Do? Manitoba Health Employee Growth Day, Winnipeg, MB. October 18, 2011.
22. Lyme Diagnostics: Challenges Controversies and Needs. International Lyme Disease Symposium. Winnipeg, Manitoba. March 19, 2012.
23. Newborn screening for cystic fibrosis: the child who tastes like salt. MCMLS Annual Congress, Winnipeg, Manitoba, October 2012.
24. Triage for travel-related diseases. WRHA Triage Update 2012, Winnipeg, MB, October 2012.
25. Microbiology testing and the eye: Proper specimen collection, microbiology laboratory use & etiquette. Manitoba Optometrist Association Annual Meeting. April 2013.
26. Diagnostic Virology: A primer on the art and science for IPC. WRHA Infection Prevention and Control Annual Education Day, Winnipeg, Manitoba, January 2016.
27. The Travelling Germophobe. Manitoba 15th Annual Travel Health Conference, Winnipeg, Manitoba, April 2018.

28. The COVID-19 Pandemic: Looking Back to Move Forward. Bug Day 2020, Winnipeg, Manitoba, October 20, 2020.

29. COVID-19, A Primer. Manitoba Chapter - Risk and Insurance Management Society Annual Meeting, 2020, Winnipeg Manitoba, October 27, 2020.

30. Leaving no child behind: Best practices for promoting equitable, ethical and community oriented expansion of newborn screening in Canada (presenter & panel member). 12th Canadian Science Policy Conference, virtual. November 17, 2020.

Department of Medical Microbiology & Infectious Diseases Research Seminars

1. What's New at CPL? March 20, 2002

2. Looking for Pearls; A dive into the data. March 9, 2016

Organized Research

Responsive Inquiry

Advancement and Support

As an academic in a leadership position situated in Government, it has become my role to steer and connect other public health, basic science and clinical researchers together, and to continue to advocate for the role and interest of Government in research and education. This advocacy extends into Government(s), academia and community, and includes finding resources and supporting facilities for conduct of research.

GRANTS AND FINANCIAL AWARDS

1. From: BiochemPharma Amount: \$5,000 Date: 2001
To: Manitoba Health (principle investigator for funding, co-investigator for study)
For: Relationship between the size of naïve T cell repertoire and the development of immune response to influenza vaccine among the elderly
2. From: CRTI Amount: \$1,200,000 Date: 2002-2003
To: Canadian Public Health Laboratory Forum (co-participant) & National Microbiology Lab
For: National real-time network for identification of bioterrorist agents
3. From: CIHR Amount: \$655,833 Date: 2003-2006
To: SAFER study group (co-investigator)
For: Second and first trimester evaluation of risk of fetal trisomies
4. From: MMSF Amount: \$30,000 Date: 2005-2006
To: P Van Caeseele, M Dawood
For: Development of monoclonal antibodies against vaccinia virus
5. From: HSC Research Foundation Amount: \$35,000 Date: 2006
To: E Rubinstein, E Bow, P Hazelton, C Bernstein, H Singh, G Hammond, P Van Caeseele
For: Diarrheal syndromes in lymphoma patients

6. From: CIHR Amount: \$93,594 Date: 2007
To: D Skowronski, L Roos, G DeSerres, G Hammond, B Law, Y Li, C Metge, P Van Caesele
For: Influenza vaccine effectiveness against serious outcomes
 7. From: MICH Amount: \$40,000 Date: 2007
To: E Rubinstein, J Wylie, P Van Caesele, P Hazelton, S Fanella
For: Acute infectious diarrhea in pediatric cases
 8. From: NIH Amount: \$3,623,676 USD Date: 2008-2011
 9. From: CIHR Amount: \$500,000 Date: 2008-2011
To: M. Loeb and the Hutterite Influenza Team (includes P Van Caesele)
For: A randomized trial of influenza vaccination in Hutterite children
 10. From: CIHR Amount: \$105,304 Date: 2007-2009
To: C Beaudoin, J Wylie, M Dawood, T Larsen, M Sloane, P Van Caesele, M Wood
For: Epidemiology of STI and BBP in an inmate population
 11. From: CIHR Amount: \$8,440 Date: 2007-2013
To: J Wylie, A Jolly, C Beaudoin, M Dawood, P Van Caesele
For: Determining risk space in Canada's vulnerable populations
 12. From: Gilead Sciences Canada Amount: \$ 80,000 Date: 2010-2011
To: M Becker, K Kasper, C Pindera, N Bridger, P Van Caesele, J Bullard, L Thompson
For: Point of Care Testing in the Emergency Department
 13. From: Children's Hosp. Foundation Amount: \$157,175 Date: 2011-2012
To: H Pasterkamp, C Rockman-Greenberg, P Van Caesele
For: Newborn Screening for Cystic Fibrosis in Manitoba
 14. From: PHAC Amount: \$94,000 Date: 2011-2012
To: P Van Caesele, S Mahmud
For: Sentinel Network for Influenza Surveillance
 15. From: MMSF Amount: \$15,000 Date: 2020
To: K. Pylypjuk, P Van Caesele, B. Chodirker, et al
For: Amongst Pregnant Women in Manitoba, are false-positive Maternal Serum Screening results associated with adverse pregnancy outcomes? A 15-Year Cohort Study
 16. From: CIHR Amount: \$825,367 Date: 2020-2021
To: D. Money, et al (P Van Caesele as key collaborator)
For: CANCOVID-Preg: Canadian Surveillance of COVID-19 in Pregnancy: Epidemiology and Maternal and Fetal Outcomes.
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PUBLICATIONS

Books

1. **Van Caesele P.** Infectious Diseases and Medical Microbiology Fellows' Handbook, 1st Ed., Privately Published, Winnipeg, 1999.

Peer Reviewed Publications

1. Cooper CL, **Van Caesele P**, Canvin J, Nicolle LE. Chronic prosthetic device infection with *Francisella tularensis*. *Clinical Infectious Diseases* 1999; 29: 1589-91.
2. **Van Caesele P**, Alfa MJ, Harding GKM. Assessment of the FAN anaerobic bottle for culture of continuous ambulatory peritoneal dialysis fluid using the BacT/Alert System. *Diagnostic Microbiology and Infectious Disease* 2000; 36: 85-90.
3. **Van Caesele P**, Macaulay A, Orr P, Aoki F, Martin B. Rapid pharmacotherapeutic intervention for an influenza A outbreak in the Canadian Arctic: lessons from the Sanikiluaq experience. *International Journal of Circumpolar Health* 2001; 60: 640-648.
4. Alfa MJ, Robson D, McFarlane N, Davi M, Bernard K, **Van Caesele P**, Harding GKM. *Clostridium neonatale*: a new *Clostridium* species associated with an outbreak of necrotising enterocolitis in a neonatal intensive care unit. *Clinical Infectious Diseases* 2002;35:S101-S105.
5. Boyd D, **Van Caesele P**, Wylie J, Giercke S, Cabral T, Hizon R, Mulvey M. Molecular characterization of the vanE gene region from a vancomycin resistant *Enterococcus faecalis* isolated in Canada. *Antimicrobial Agents and Chemotherapy* 2002; 46: 1977-1979.
6. Bastien N, Ward D, **Van Caesele P**, Brandt K, Lee S, McNabb G, Li, Y. Human metapneumovirus infection in the Canadian population. *Journal of Clinical Microbiology* 2003, 41; 4642-4646.
7. Tsang RSW, Lau AKH, Sill ML, Halperin SA, **Van Caesele P**, Jamieson F, Martin IE. Polymorphisms of the fimbriae *fim3* gene of *Bordetella pertussis* strains isolated in Canada. *Journal of Clinical Microbiology*. 2004; 42: 5364-5367.
8. Nicolle LE, Gutkin A, Smart G, Dawood M, Drebot M, **Van Caesele P**, Giulivi A, Minuk GY. Serological studies of West Nile virus in a liver transplant population. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2004;15: 271-274.
9. Bastien N, Anderson K, Hart L, **Van Caesele P**, Brandt K, Milley D, Hatchette T, Weiss EC, Li Y. Human coronavirus NL63 infection in Canada. *Journal of Infectious Diseases*. 2005; 191: 503-506.
10. Tracz D, Boyd D, Bryden L, Hizon R, Giercke S, **Van Caesele P**, Mulvey M. Increase in |*bital*|ampC|*eital*| promoter strength due to mutations and deletion of the attenuator in a clinical isolate of cefoxitin resistant |*bital*|*Escherichia coli*|*eital*| as determined by RT-PCR. 2005. *Journal Antimicrobics and Chemotherapy*. 2005; 55: 768-72.
11. Mubareka S, Alfa M, Harding GK, Booton G, Ekins M, **Van Caesele P**. *Acanthamoeba* keratitis in a soft contact lens wearer molecularly linked to well water. *The Canadian Journal of Infectious Diseases and Medical Microbiology*. 2006; 17: 120-122.
12. Lagace-Wiens P, Koschik C, **Van Caesele P**. *Dientamoeba fragilis* – an emerging intestinal parasite. *Canadian Medical Association Journal*. 2006; 175: 468-469.
13. Sandhu A, Gross M, Wylie J, **Van Caesele P**, Plourde P. *Pseudomonas aeruginosa* necrotizing chondritis complicating high helical ear piercing case report. *Canadian Journal of Public Health*. 2007 (Jan-Feb); 98: 74-77.
14. Yusuf S, Piedmonte G, Auais A, Demmler G, Krishnan S, **Van Caesele P**, Singleton R, Broor S, Parveen S, Avendano L, Parra J, Chavez-Bueno S, Murgia De Sierra T, Simoes E, Shaha S, Welliver R. The relationship of meteorological conditions to the epidemic activity of respiratory syncytial virus. *Epidemiology and Infection*. 2007(October) ; 135(7): 1077-90.

15. Hatchette TF, Bastien N, Berry J, Booth TF, Chernesky M, Couillard M, Drews S, Ebsworth A, Fearon M, Fonseca K, Fox J, Gagnon JN, Guercio S, Horsman G, Jorowski C, Kuschak T, Li Y, Majury A, Petric M, Ratnam S, Smeija M, **Van Caesele P**, and the **Pandemic Influenza Laboratory Preparedness Network**. The limitations of point of care testing for pandemic influenza: what clinicians and public health professionals need to know. *Canadian Journal of Public Health*. 2009 (May-June); 100(3): 204-7.
16. Loeb M, Russell ML, Moss L, Fonseca K, Fox J, Earn DJ, Aoki F, Horsman G, **Van Caesele P**, Chokani K, Vooght M, Babiuk L, Webby R, Walter SD. Effect of influenza vaccination of children on infection rates in Hutterite communities: a randomized trial. *Journal of the American Medical Association (JAMA)*. 2010 (March); 303(10):943-50.
17. MacRae AR, Chodirker BN, Davies GA, Palomaki GE, Knight GJ, Minett J, Kavsak PA, Toi A, Chitayat D, **Van Caesele PG**. Second and first trimester estimation of risk for Down syndrome; implementation and performance in the SAFER study. *Prenatal Diagnosis*. 2010 (May); 30 (5): 459-66.
18. Martin IE, Lefebvre B, Sawatzky P, Hoang L, **Van Caesele P**, Horsman G, Ang L, Bourgault AM, Ng LK. Identification of prolyliminopeptidase-negative *Neisseria gonorrhoeae* strains in Canada. *Sexually Transmitted Diseases*. 2010(July); 38(1): 40-42.
19. Mahmud S, Becker M, Keynan Y, Elliott L, Thompson L, Fowke K, Avery L, **Van Caesele P**, Harlos S, Blanchard J, Dawood M. Estimated cumulative incidence of pandemic (H1N1) influenza among pregnant women during the first wave of the 2009 pandemic. *Canadian Medical Association Journal*. 2010 (Oct 5);182(14):1522-4.
20. Tyrell GGJ, Lovgren M, St Jean T, Hoang L, Patrick DM, Horsman G, **Van Caesele P**, Sieswerda LE, McGeer A, Laurence RA, Bourgault AM, Low DE. Epidemic of Group A *Streptococcus* M/emm59 causing invasive disease in Canada. *Clinical Infectious Diseases* 2010 Dec 1; 51 (11): 1290-7.
21. Fanella ST, Pinto MA, Bridger NA, Bullard JM, Coombs JM, Crockett ME, Olekson KL, Poliquin PG, **Van Caesele PG**, Embree JE. Pandemic (H1N1) 2009 influenza in hospitalized children in Manitoba: nosocomial transmission and lessons learned from the first wave. *Infection Control and Hospital Epidemiology*. 2011 May; 32(5); 435-43.
22. Hottes TS, Skowronski DM, Hiebert B, Janjua NZ, Roos LL, **Van Caesele P**, Law BJ, DeSerres G. Influenza vaccine effectiveness in the elderly based on administrative databases: change in immunization habit as a marker for bias. *PLoS One*. 2011; 6(7):e22618.Epub 2011 Jul 26.
23. Mahmud S, Hammond G, Elliott L, Hilderman T, Kurbis C, Caetano P, **Van Caesele P**, Kettner J, Dawood M. Effectiveness of the pandemic H1N1 influenza vaccine against laboratory-confirmed H1N1 infections: population-based case-control study. *Vaccine*. 2011 Oct 19; 29(45): 7075-81. Epub 2011 Aug 30.
24. Walkty A, **Van Caesele P**, Hilderman T, Buchan S, Weiss E, Sloane M, Fatoye B. Mumps in prison: description of an outbreak in Manitoba, Canada. *Canadian Journal of Public Health*. 2011 Sep-Oct; 102(5): 341-4.
25. Alharbi S, **Van Caesele P**, Consunji-Araneta R, Zoubeidi T, Fanella S, Souid AK, Alsuwaidi AR. Epidemiology of severe pediatric adenovirus lower respiratory tract infections in Manitoba Canada 1991-2005. *BMC Infectious Diseases*. 2012 Mar 13;12:55.
26. Tyrrell G, Lovgren M, Ibrahim Q, Garg S, Chui L, Boone T, Mangan C, Patrick D, Hoang L, Horsman G, **Van Caesele P**, Marrie T. Epidemic of invasive pneumococcal disease, Western Canada, 2005-2009. *Emerging Infectious Diseases*. 2012 May; 18(5): 733-40.

27. Mahmud S, **Van Caesele P**, Hammond G, Kurbis C, Hilderman T, Elliott L. No association between 2008-09 influenza vaccine and Influenza A(H1N1) pdm09 virus infection, Manitoba, Canada, 2009. *Emerging Infectious Diseases*. 2012 May; 18(5): 801-10.
28. Kruk T, Ratnam R, Preiksatis J, Lau A, Hatchette T, Horsman G, **Van Caesele P**, Timmons B, Tipples G. Results of a continuous monitoring of the performance of Rubella Virus IgG and Hepatitis B Virus surface antibody assays using trueness controls in a multicentre trial. *Clinical Vaccine and Immunology*. 2012 October; 19 (10): 1624-32.
29. Kim TH, Russell M, Fonseca K, Aoki F, Horsman G, **Van Caesele P**, Chokani K, Voight M, Babiuk L, Moss L, Webby R, Earn D, Singh P, Howse C, Loeb M. Characteristics of respiratory viral infections during influenza season in Canadian Hutterite communities. *Influenza and Other Respiratory Viruses*. 2012 (Oct 19); epub.
30. Thompson LH, Mahmud S, Keynan Y, Blanchard J, Slater J, Dawood M, Fowke K, **Van Caesele P**, Becker M. Serological survey of the novel influenza A H1N1 in inner city Winnipeg Manitoba, 2009. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2012 (Summer); 23(2); 65-70.
31. Skowronski DM, Janjua N, De Serres G, Dickinson J, Winter A-L, Mahmud S, Sabaiduc S, Gubbay J, Charest H, Petric M, Fonseca K, **Van Caesele P**, Kwindt T, Krajden M, Eshaghi A, Li Y. Interim estimates of influenza vaccine effectiveness in 2012/13 from Canada's Sentinel Surveillance System Network, January 2013. *Eurosurveillance*. 2013 (January 31); 18 (5): pii=20394.
32. Wylie J, **Van Caesele P**, Gilmour M, Sitter D, Guttek C, Giercke S. Evaluation of a new chromogenic agar medium for detection of Shiga Toxin-producing *Escherichia coli* (STEC) and relative prevalence of O157 and non-O157 STEC, Manitoba, Canada. *Journal of Clinical Microbiology*. 2013 (Feb); 51 (2); 466-471.
33. Becker M, Thompson LH, Pindera C, Bridger N, Lopez C, Keynan Y, Bullard J, **Van Caesele P**, Kasper K. Feasibility and success of HIV point-of-care testing in an emergency department in an urban Canadian setting. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2013 (Spring); 24(1); 27-31.
34. DeRiviere L, Stopera S, **Van Caesele P**, Lotocki R. Comparative models of cervical cancer screening in Manitoba. *Health Care Quarterly*. 2013; 16 (1): 77-85.
35. Clark CG, Kruczkiewicz P, Guan C, McCorrister SJ, Chong P, Wylie J, **Van Caesele P**, Tabor HA, Snarr P, Gilmour M, Taboada EN, Westmacott G. Evaluation of MALDI-TOF mass spectroscopy methods for determination of *Escherichia coli* pathotypes. *Journal of Microbiological Methods*. 2013 Sep; 94(3): 180-91. Doi: 10.106/j.mimet.2013.06.020.Epub 2013 Jun 28.
36. Martin I, Sawatzky P, Liu G, Allen V, Lefebvre B, Hoang L, Lovgren M, Haldane D, **Van Caesele P**, Horsman G, Garceau R, Ratnam S, Wong T, Gilmour M. Antimicrobial susceptibilities and distribution of sequence types of *Neisseria gonorrhoeae* isolates in Canada: 2010. *Canadian Journal of Medical Microbiology*. 2013 Oct; 59(10): 671-8. Doi: 10.1139/cjm-2013-0367. Epub 2013 Aug 27.
37. Jilkina O, Thompson JR, Kwan L, **Van Caesele P**, Rockman-Greenberg C, Schroeder M. Retrospective TREC testing of newborns with Severe Combined Immunodeficiency and other primary immunodeficiency diseases. *Molecular Genetics and Metabolism Reports*. 2014; 1: 324-333.
38. Skowronski D, Janjua NZ, Sabaiduc S, De Serres G, Winter AL, Gubbay JB, Dickinson J, Fonseca K, Charest H, Bastien N, Li Y, Kwindt T, Mahmud S, **Van Caesele P**, Krajden M, Petric M. Influenza A/Subtype and B/Lineage Effectiveness Estimates for the 2011-2012 Trivalent Vaccine:

Cross-Season and Cross-Lineage Protection with unchanged vaccine. *Journal of Infectious Diseases*. 2014 Apr 1.

39. Skowronski D, Chambers C, Sabaiduc S, De Serres G, Dickinson J, Winter A, Fonseca K, Gubbay J, Charest H, Petric M, Krajden M, Mahmud S, **Van Caesele P**, Kwindt T, Eshaghi A, Bastien N, Li Y. Interim estimates of 2013/14 vaccine effectiveness against influenza A(H1N1)pdm09 from Canada's surveillance network, January 2014. *Euro Surveillance*. 2014 Feb 6; 19(5). Pii: 20690. Erratum in : *Euro Surveillance*. 2014; 19(6): 20698.

40. Mataseje LF, Boyd DA, Delport J, Honag L, Imperial M, Lefebvre B, Kuhn M, **Van Caesele P**, Willey BM, Mulvey MR. *Serratia marcescens* harbouring SME-type class A carbapenemases in Canada and the presence of blaSME on a novel island, SmarGI1-1. *Journal of Antimicrobials and Chemotherapy*. 2014 Jul; 69(7): 1825-9.

41. Skowronski D, Janjua N, De Serres G, Sabaiduc S, Eshaghi A, Dickinson J, Fonseca K, Winter A, Gubbay J, Krajden M, Petric M, Charest H, Bastien N, Kwindt T, Mahmud S, **Van Caesele P**, Li Y. Low 2012-13 influenza vaccine effectiveness associated with mutation in the egg-adapted H3N2 vaccine strain not antigenic drift in circulating viruses. *PLoS One*. 2014 Mar 25; 9(3): e92153.

42. Schillberg E, Isaac M, Deng X, Peirano G, Wylie J, **Van Caesele P**, Pillai D, Sinnock H, Mahmud S. Outbreak of invasive *Streptococcus pneumoniae* serotype 12F among a marginalized inner-city population in Winnipeg, Canada, 2009-2011. *Clinical Infectious Diseases*. 2014 Sep 1; 59(5): 651-7.

43. Bullard J, Ahsanuddin A, Perry A, Lindsay R, Iranpour M, Dibernardo A, **Van Caesele P**. The first case of locally acquired tick-borne *Babesia microti* infection in Canada. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2014 Nov-Dec; 25(6): 87-89.

44. Hinds A, Bozat-Emre S, **Van Caesele P**, Mahmud S. Comparison of the epidemiology of laboratory-confirmed influenza A and influenza B cases in Manitoba, Canada. *BMC Public Health*. 2015 Jan 30; 15(1): 35.

45. Skowronski DM, Chambers C, Sabaiduc S, DeSerres G, Winter AL, Dickinson JA, Gubbay J, Fonseca K, Charest H, Krajden M, Petric M, Mahmud S, **Van Caesele P**, Bastien N, Eshaghi A, Li Y. Integrated sentinel surveillance linking genetic, antigenic and epidemiologic monitoring of influenza vaccine-virus relatedness and effectiveness during the 2013-14 influenza season. *Journal of Infectious Diseases*. 2015 Sep 1; 212(5): 726-39.

46. Wylie JL, **Van Caesele P**. Interpretation of laboratory detection trends for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*: Manitoba, Canada, 2000-2012. *Sexually Transmitted Infections*. 2016 Feb; 92(1): 55-57.

47. Teatero S, Athey TB, **Van Caesele P**, Horsman G, Alexander DC, Melano RG, Li A, Flores A, Shelburne S, McGeer A, Demczuk W, Martin I, Fittipaldi N. Emergence of serotype IV Group B *Streptococcus* adult invasive disease in Manitoba and Saskatchewan, Canada, is driven by clonal sequence type 459 strains. *Journal of Clinical Microbiology*. 2015 Sep ; 53(9): 2919-26.

48. Sawatzky P, Liu G, Dillon J, Allen V, Lefebvre B, Hoang L, Tyrrell G, **Van Caesele P**, Levett P, Martin I. Quality assurance for antimicrobial susceptibility testing of *Neisseria gonorrhoeae* in Canada, 2003 to 2012. *Journal of Clinical Microbiology*. 2015 Nov; 53(11): 3649-9.

49. Mahmud S, Bozat-Emre S, Hammond G, Elliott L, **Van Caesele P**. Did the H1N1 vaccine reduce the risk of admission with influenza and pneumonia during the pandemic? *PLoS One*. 2015 Nov 23; 10(11): e0142754.

50. Poliquin V, Wylie J, Cole R, Yudin M, **Van Caesele P**. Preparedness for implementing change in neonatal ocular prophylaxis policies. *Journal of Obstetrics and Gynaecology of Canada*. 2016 Jan; 38(1): 7-8.
51. Ross C, Shaw S, Marshall S, Stephen S, Bailey K, Cole R, Wylie J, Bullard J, **Van Caesele P**, Reimer J, Plourde P. Impact of social media campaign targeting men who have sex with men during an outbreak of syphilis in Winnipeg, Canada. *Canada Communicable Disease Report*. 2016 Feb 4; 42(2): 45-49.
52. Wang B, Russell M, Moss L, Fonseca K, Earn D, Aoki F, Horsman G, **Van Caesele P**, Chokani K, Vooght M, Babiuk L, Webby R, Walter S, Loeb M. Effect of influenza vaccination in infection rate in Hutterite communities: Follow-up study of a randomized trial. *PLoS One*. 2016 Dec 15; 11(12): e0167281.
53. Shaw S, Ireland L, McClarty L, Loeppky C, Yu N, Wylie J, Bullard J, **Van Caesele P**, Keynan Y, Kasper K, Blanchard J, Becker M. Prior history of testing for syphilis, hepatitis B and hepatitis C among a population-based cohort of HIV-positive individuals and their HIV-negative controls. *AIDS Care*. 2017 Jan; 29(1): 67-72.
54. Wang B, Russell M, Fonseca K, Earn D, Horsman G, **Van Caesele P**, Chokani K, Vooght M, Babiuk L, Walter S, Loeb M. Predictors of influenza A molecular viral shedding in Hutterite communities. *Influenza and Other Respiratory Viruses*. 2017 Feb 16; doi:10.1111/irv.12448.
55. Anid G, Isaac M, Penner C, **Van Caesele P**, Tsang R, Kadkhoda K. A non-healing syphlid: Another face of the great imitator. *ID Cases*. 2017 Feb 11; 8: 14-16.
56. Gu, K, **Van Caesele P**, Dust K, Ho J. Atypical pneumonia due to human bocavirus in an immunocompromised patient. *Canadian Medical Association Journal*. 2017 May 15; 189 (19): E697-E699.
57. Demczuk W, Martin I, Hoang L, **Van Caesele P**, Lefebvre B, Horsman G, Haldane D, Gubbay J, Ratnam S, German G, Daley Bernier J, Strudwick L, McGeer A, Zhanel G, Van Domselaar G, Graham M, Mulvey M. Phylogenetic analysis of emergent *Streptococcus pneumoniae* serotype 22F causing invasive pneumococcal disease using whole genome sequencing. *PLoS One*. 2017 May 22; 12 (5): e0178040.
58. Mataseje L, Boyd D, Fuller J, Haldane D, Hoang L, Lefebvre B, Melano R, Poutanen S, **Van Caesele P**, Mulvey M. Characterization of OXA-48-like carbapenemase producers in Canada, 2011-14. *Journal of Antimicrobials and Chemotherapy*. 2017 December. Doi:10.1093/jac/dkx462.
59. Tsang R, Ahmad T, Tyler S, Lefebvre B, Deeks S, Gilca R, Hoang L, Tyrrell G, **Van Caesele P**, Van Domselaar G, Jamieson F. Whole genome typing of the recently emerged Canadian serogroup W *Neisseria meningitidis* sequence type 11 clonal complex isolates associated with invasive meningococcal disease. *International Journal of Infectious Diseases*. 2018 February 4; 69: 55-62.
60. Demczuk W, Martin I, Desai S, Griffith A Caron-Poulin L, Lefebvre B, McGeer A, Tyrrell G, Zhanel G, Gubbay J, Hoang L, Levett P, **Van Caesele P**, Raafat Gad R, Haldane D, Zahariadis G, German G, Daley Bernier J, Strudwick L, Mulvey M. Serotype distribution of invasive *Streptococcus pneumoniae* in adults 65 years of age and over after the introduction of childhood 13-valent pneumococcal conjugate vaccination programs in Canada, 2010-2016. *Vaccine*. 2018 July 25; 36(31): 4701-4707.
61. Golden A, Adam H, Karlowsky J, Baxter M, Nichol K, martin I, Demczuk W, **Van Caesele P**, Gubbay J, Lefebvre B, Levett P, Zahariadis G, Haldane D, Gad R, German G, Gilmour M, Mulvey M, Hoban D, Zhanel G, Canadian Antimicrobial resistance Alliance (CARA). Molecular characterization of predominant *Streptococcus pneumoniae* serotypes causing invasive infection sin

Canada: the SAVE study, 2011-2015. *Journal of Antimicrobics and Chemotherapy*. 2018 July 1; 73(Supp 7): 20-31.

62. Singh D, Jiang D, **Van Caesele P**, Loeppky C. The effect of timing of oseltamivir chemoprophylaxis in controlling influenza A H3N2 outbreaks in long-term care facilities in Manitoba, Canada, 2014-2015: a retrospective cohort study. *Infection Control and Hospital Epidemiology*. 2018 August; 39(8): 955-960.

63. El-Matary W, Stafanovici C, **Van Caesele P**, Deora V, McCurdy J. Detection of cytomegalovirus in colonic mucosa of children with inflammatory bowel disease. *Journal of Pediatric Gastroenterology and Nutrition*. 2018 August; 67(2): 221-224.

64. Rubin T, Rockman-Greenberg C, **Van Caesele P**, Cuvelier G, Kwan L, Schroeder M. Newborn screening for IKBKB deficiency in Manitoba, using genetic mutation analysis. *Journal of Clinical Immunology*. 2018 October; 38(7): 742-744.

65. Thompson LH, Nugent Z, Wylie J, Loeppky C, **Van Caesele P**, Blanchard J, Yu N. Laboratory detection of first and repeat chlamydia cases influenced by testing patterns: a population-based study. *Microbial Insights*. 2019 February 27; 12: 11786361198297975.

66. Martin I, Sawatzky P, Allen V, Lefebvre B, Hoang L, Naidu P, Minion J, **Van Caesele P**, Haldane D, Gad RR, Zahariadis G, Corriveau A, German G, Tomas K, Mulvey M. Multi-drug resistant *Neisseria gonorrhoeae* in Canada, 2012-2016. *Canada Communicable Diseases Report*. 2019 February 7; 45 (2-3): 45-53.

67. Tsang R, Hoang L, Minion J, **Van Caesele P**, Kus J, Lefebvre B, Haldane D, Garceau R, German G, Zahariadis G, Hanley B. Increase in ST-11 serogroup W *Neisseria meningitidis* invasive meningococcal disease in Canada, 2016-2018. *Canada Communicable Disease Report*. 2019 Jun 6; 45(6): 164-169.

68. Tsang R, Shuel M, Ahmad T, Hayden K, Knox N, Van Domselaar G, Hoang L, Tyrrell G, Minion J, **Van Caesele P**, Kus J, Ulanova M, Lefebvre B, Haldane D, Garceau R, German G, Zahariadis G, Hanley B, Kondola K, Patterson M. Whole genome sequencing to study the phylogenetic structure of serotype a *Haemophilus influenzae* recovered from patients in Canada. *Canadian Journal of Microbiology*. 2020 Feb; 66(2): 742-744.

69. Bullard J, Dust K, Strong J, Alexander D, Garnett L, Boodman C, Bello A, Hedley A, Schiffman Z, Doan K, Bastien N, Li Y, **Van Caesele P**, Poliquin G. Predicting infectious SARS-CoV-2 from diagnostic samples. *Clinical Infectious Diseases*. 2020 May 22; ciaa638.

70. **Van Caesele P, Canadian Public Health laboratory Network**, Bailey D, Canadian Society for Clinical Chemists, Forgie S, Association of Medical Microbiology and Infectious Diseases Canada, Dingle TC, Canadian Association for Clinical Microbiology and Infectious Diseases, Krajden M, **COVID-19 Immunity Task Force**. *Canadian Medical Association Journal*. 2020 Aug 24; 192(34): E973-979.

71. Dust K, Hedley A, Nichol K, Stein D, Adam H, Karlowisky J, Bullard J, **Van Caesele P**, Alexander D. Comparison of commercial assays and laboratory developed tests for detection of SARS-CoV-2. *Journal of Virological Methods*. 2020 Nov 28; 285: 113970.

Publications as Part of Networks

1. Mulvey MR, Boyd D, Cloeckart A, Ahmed R, Ng L, and the **Provincial Public Health Laboratories**. Emergence of multidrug-resistant *Salmonella* Paratyphi B dT+, Canada. *Emerging Infectious Diseases*. 2004; 10: 1307-10.

2. Woodward D, Clark C, Caldeira R, Ahmed R, Soule G, Bryden L, Tabor H, Melito P, Foster R, Walsh J, Ng LK, Malclom G, Strockbine N, Rodgers F, and the **Canadian Public Health Laboratory Network**. Identification and characterization of *Shigella boydii* 20 serovar nov., a new and emerging *Shigella* serotype. *Journal of Medical Microbiology*. 2005; 54: 741-748.
3. Pagotto F, Ng LK, Clark C, Farber J, and the **Canadian Public Health Laboratory Network**. Canadian listeriosis reference service. *Foodborne Pathogens and Disease*. 2006; 3: 132-137.
4. **Canadian Public Health Laboratory Network**. The laboratory diagnosis of Lyme borreliosis: guidelines from the Canadian Public Health Laboratory Network. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2007; 18:145-148.
5. **Pandemic Influenza Laboratory Preparedness Network**. Annex C: Pandemic Influenza Laboratory Guidelines. In Public Health Agency of Canada. The Canadian Pandemic Influenza Plan for the Health Sector. 2006 December. ISBN 0-662-44409-4
6. Mataseje LF, Xiao J, Kost S, Ng LK, Doré K, Mulvey MR; **Canadian Public Health Laboratory Network**. Characterization of Canadian cefoxitin-resistant non-typhoidal *Salmonella* isolates, 2005-06. *Journal of Antimicrobials and Chemotherapy*. 2009; 64(4): 723-30.
7. Clark CG, Farber J, Pagotto F, Ciampa N, Doré K, Nadon C, Bernard K, Ng LK; **Canadian Public Health Laboratory Network**. Surveillance for *Listeria monocytogenes* and listeriosis, 1995-2004. *Epidemiology and Infection*. 2010; 138(4): 559-72.
8. Demczuk WH, Finley R, Nadon C, Spencer A, Gilmour M, Ng LK, PulseNet Canada, CIPARS, **Canadian Public Health Laboratory Network**. Characterization of antimicrobial resistance, molecular and phage types of *Salmonella enterica* serovar Typhi isolations. *Epidemiology and Infection*. 2010 October; 138 (10): 1414-26.
9. Graham M, Liang B, Van Domeselaar G, Bastien N, Beaudoin C, Tyler S, Kaplen B, Landry E, **National Influenza A/H1N1pdm Genomics Study Team (NIGST)**, Li, Y. Nationwide molecular surveillance of pandemic H1N1 influenza A virus genomes: Canada 2009. *PLoS One*. 2011 Jan 7; 6(1): e16087.
10. Martin I, Jayaraman G, Wong T, Liu G, Gilmour M, and the **Canadian Public Health Laboratory Network**. Trends in antimicrobial resistance in *Neisseria gonorrhoeae* isolated in Canada: 2000-2009. *Sexually Transmitted Disease*. 2011 Oct; 38(10):892-8.
11. Nesbitt A, Ravel A, Murray R, McCormick R, Savelli C, Finley R, Parmley J, Agunos A, Majowicz SE, Gilmour M; the Canadian Integrated Program for Antimicrobial Resistance Surveillance Public Health Partnership; the **Canadian Public Health Laboratory Network**. *Epidemiology and Infection*. 2011 Dec 14:1-16.
12. Demczuk W, Martin I, Griffith A, Lefebvre B, McGeer A, Shane A, Zhanel GG, Tyrell GJ, Gilmour M, **Canadian Public Health Laboratory Network**. Serotype distribution of invasive *Streptococcus pneumoniae* in Canada during the introduction of the 13-valent pneumococcal conjugate vaccine, 2010. *Canadian Journal of Microbiology*. 2012 Aug; 58(8): 1009-17.
13. Knabel SJ, Reimer A, Verghese B, Lok M, Ziegler J, Farber J, Pagotto F, Graham M, Nadon C, **Canadian Public Health Laboratory Network**, Gilmour M. Sequence typing confirms that a predominant *Listeria monocytogenes* clone caused human listeriosis cases and outbreaks in Canada from 1988 to 2010. *Journal of Clinical Microbiology*. 2012 May; 50(5): 1748-50.
14. Demczuk W, Martin I, Giffith A, Lefebvre B, McGeer A, Lovgren M, Tyrell G, Sherrard L, Adam H, Gilmour M, Zhanel GG, Toronto Bacterial Diseases Network, **Canadian Public Health**

Laboratory Network. Serotype distribution of invasive *Streptococcus pneumoniae* in Canada during the introduction of the 13-valent pneumococcal conjugate vaccine, 2010. *Canadian Journal of Microbiology*. 2013 Dec; 59(12): 778-88.

15. Chernesky M, Jang D, Martin I, Hoang L, Naidu P, Levett P, Wylie J, Rebbapragada A, Ratnam S, Smieja M, Weinbaum B, Getman D, **The Canadian MG Study Group.** *Mycoplasma genitalium* antibiotic resistance-mediating mutations in Canadian women with or without *Chlamydia trachomatis* infection. *Sexually Transmitted Diseases*. 2017 July; 44(7): 433-435.

Communications & Reports

1. **Van Caesele P**, Giercke S, Wylie J, Amin S, Ofner-Agostini M, Boyd D, Mulvey M. Identification of the first *Enterococcus faecalis* harbouring *vanE* in Canada. *Canada Communicable Disease Report* 2001 June 15; 27: 101-104.

2. **As a participant of Health Canada.** Proceedings of a meeting of the expert advisory group on rubella in Canada. *Canada Communicable Disease Report*. 2002; 28S4: 1-24.

3. Macey JF, Roberts A, Lior L, Tam TW, **Van Caesele P.** Outbreak of community-acquired pneumonia in Nunavut, October and November, 2000. *Canada Communicable Disease Report*. 2002 Aug 15; 28: 131-138.

4. Beaudoin C, Sloane M, Wood M, Larsen T, Wylie J, Dawood M, **Van Caesele P**, Kinasevych B, Hodge K. The epidemiology of sexually transmitted infections and blood borne pathogens in a random sample of inmates in Manitoba Correctional Centres. *Health Canada Statistical Report*. 2009, 15 pp.

5. **As a participant of Public Health Agency of Canada.** Case definitions for communicable diseases under national surveillance. *Canada Communicable Disease Report*. 2009, November; 35S2: 1-128.

6. Patel SN, Gubbay JB, **Pandemic Influenza Laboratory Preparedness Network (PILPN).** Impact of pandemic influenza A (H1N1) on laboratory services. *Pandemic H1N1 Evidence Reviews*. National Collaborating Centre for Infectious Diseases May 2012. <http://www.nccid.ca/evidence-reviews> .

7. Antonation K, Patel S, Trumble Waddell J, Poliquin G, Alexander D, Hoang L, Farrell D, Garceau R, Haldane D, Jamieson F, Marchand R, MacKeen A, Marcino D, Theriault S, Tyrrell G, Zahariadis G, Zelyas N, **Canadian Public Health Laboratory Network.** Interim laboratory testing guidelines for the detection of non-tuberculous *Mycobacterium* (NTM) infections in post-operative patients exposed to heater-cooler units. *Canada Communicable Disease Report*. 2017 (Jan 5); 43(1): 25-28.

8. **Canadian Public Health Laboratory Network**, Device Testing Working Group. CPHLN device testing recommendations regarding non-tuberculous *Mycobacteria* (NTM) contamination in heater-cooler units. *Canada Communicable Disease Report*. 2017 (March 2); 43(3/4): 83.

9. Tsang R, Hoang L, Tyrrell G, Horsman G, **Van Caesele P**, Jamieson F, Lefebvre B, Haldane D, Gad R, German G, Zahariadis G. Increase in *Neisseria meningitidis* serogroup W invasive disease in Canada: 2009-2016. *Canada Communicable Disease Report*. 2017 (July 6); 43(7/8): 144-149.

10. Berenger B, Chui L, Reimer A, Allen V, Alexander D, Domingo M, Hoang L, Levett P, MacKeen A, Marcino D, Sheitoyan-Peasant C, Zahariadis G, **Canadian Public Health Laboratory Network.** Canadian Public Health Laboratory Network position statement: non-culture based diagnostics for gastroenteritis and implications for public health investigations. *Canada Communicable Disease Report*. 2017 December 7; 43(12): 279-281.

11. Respiratory Virus Infections Working Group. Canadian Public Health Laboratory Network Best Practices for COVID-19. *Canada Communicable Disease Report*. 2020 May 7; 46(5): 112-118.

12. Respiratory Virus Infections Working Group. Canadian Public Health Laboratory Network Statement on Point-of-Care Serology Testing in COVID-19. *Canada Communicable Disease Report*. . 2020 May 7; 46(5): 119-120..

13. Griffiths E, Tanner J, Knox N, Hsiao W, Van Domselaar, Canadian Public Health Laboratory Network, CanCoGen. CanCOGen Interim Recommendations for Naming, Identifying and Reporting SARS-CoV-2 Variants of Concern. 2021 January 15. Accessed online at: <https://nccid.ca/wp-content/uploads/sites/2/2021/02/CanCOGeN-Interim-Recommendations-for-Naming-Identifying-and-Reporting-SARS-CoV-2-Variants.pdf>

Published Abstracts, Presentations & Posters

* invited presentation

1. **Van Caesele P**, Alfa MJ, Harding GKM. Assessment of the FAN Anaerobic Bottle for Culture of Continuous Ambulatory Peritoneal Dialysis Fluid Using the BacT/Alert System. *Abstracts of the 97th American Society for Microbiology General Meeting*. 1997:136.
2. **Van Caesele P**, Hoban S, Alfa MJ, Harding GKM. Evaluation of Blood Culture Skin Preparation Methods: Impact on Detection of Skin Contaminants. *Abstracts of the 98th American Society for Microbiology General Meeting*. 1998: 204.
3. **Van Caesele P**, Fiola Y, Alfa M, Harding GKM. Broth culture method for sterile body fluids: Comparison of BacT/Alert Peds and FAN bottles supplemented with Fildes and/or serum. *The Canadian Journal of Infectious Diseases*. 1999: 10, Supplement D; 55D.
4. **Van Caesele P**, Alfa M, Harding GKM. Detection of ESBL producing *Enterobacteriaceae* using ceftazidime/clavulanic acid E-test on isolates flagged by Microscan. *The Canadian Journal of Infectious Diseases*. 1999: 10, Supplement D; 44D.
5. **Van Caesele P**, Alfa M, Harding GKM. Evaluation of the Microscan ESBL flags for *Enterobacteriaceae* using the Ceftazidime/Clavulanic acid confirmatory E-test. *Abstracts of the 100th American Society for Microbiology General Meeting*. 2000: 192.
6. Alfa MJ, Swan B, Van Derkerkhove B, Pang P, **Van Caesele P**, Harding GKM. Comparison of Triage C. difficile EIA for tox A/B and cytotoxin assays for the diagnosis of C. difficile-associated diarrhea. *Abstracts of the 100th American Society for Microbiology General Meeting*. 2000: 166 (H2).
- *7. **Van Caesele P**, Martin BD, Orr P, et al. Influenza A epidemic in a remote island Canadian Inuit Community; An epidemiologic review. *Abstracts of the 11th International Congress on Circumpolar Health*. 2000: number 301.
8. Martin BD, **Van Caesele P**, Macaulay A, et al. Influenza A epidemic in a remote island Canadian Inuit community: An intervention strategy. *Abstracts of the 11th International Congress on Circumpolar Health*. 2000: number 300.
9. Bernard KA, Shuttleworth L, Munro C, Alfa M, **Van Caesele P**, Harding G. Novel *Clostridium* species derived from neonates with necrotising enterocolitis. In *Abstracts of the 1st International Congress of the Confederation of Anaerobic Societies* 2000, in print.
10. Milley D, Klisko B, **Van Caesele P**. Comparison of Becton Dickinson's Directigen Flu A+B kit with viral culture for the detection of influenza B. In *Abstracts of the Canadian Association for Clinical Microbiology and Infectious Diseases*, 2001: 3.
11. Boyd D, **Van Caesele P**, Wylie J, Giercke S, Cabral T, Hizon R, Mulvey M. Molecular characterization of the vanE gene region from a vancomycin resistant *Enterococcus faecalis* isolated in Canada. In *Abstracts of the Canadian Association for Clinical Microbiology and Infectious Diseases*, 2001: 28.
12. Melito PL, Harvie S, Bryden L, Giercke S, Woodward DL, **Van Caesele P**, Clark CG. A phenotypic and genotypic study of *Helicobacter pylori* antimicrobial susceptibility. In *Abstracts of the Canadian Association for Clinical Microbiology and Infectious Diseases*, 2002: 45.
13. Li Y, Bastien N, Ward D, Tam T, **Van Caesele P**, Brandt K, Le S, Chan E, McNabb G. Molecular epidemiology of human metapneumovirus in Canada. In press
14. Mubareka S, Alfa M, Booton G, Ekins E, **Van Caesele P**. Acanthamoeba keratitis in a soft contact lens wearer. *Abstracts of the Canadian Infectious Diseases Society*, 2003, in press.
15. Sandhu A, Gross M, Wylie J, **Van Caesele P**, Plourde P. Pseudomonas aeruginosa necrotizing chondritis complicating helical ear piercing: Clinical and Public Health perspectives of a case report. Presented at *American Academy of Pediatrics*, 2003. Submitted to AJPH, 2003.

16. Tipples GA, **Van Caesele P**, Loparev V, Dawood M, Mar W, Kruk T, Gray M, Wells B, Carriere P, Cistarelli B, McCusker P. A laboratory confirmed reinfection of varicella: a case study. Presented at CACMID, Regina, SK, 2004.
17. Martin I, Sill M, Halperin S, **Van Caesele P**, Jamieson F, Tsang R. Laboratory surveillance of pertussis in Canada: genetic and antigenic analysis of clinical *B. pertussis* isolates. Presented at CACMID, Regina SK, 2004.
18. McCracken M, Mulvey M, Giercke S, **Van Caesele P**, Wylie J. Molecular Characterization of Extended-Spectrum Beta-Lactamase Producing *Escherichia coli* and *Klebsiella* spp. in a Long Term Care Facility in Canada. Presented at CACMID, Regina SK, 2004, poster LB9.
19. Yusuf S, Piedimonte G, Auais A, Demmler G, Krishnan S, **Van Caesele P**, Singleton R, Broor S, Parveen S, Avendano L, Parra J, Chavez-Bueno S, Simoes E, Welliver R Sr. An analysis of the effects of meteorological conditions on the epidemic activity of respiratory syncytial virus. Presented at American Pediatric Society/Society for Pediatric Research, Washington, DC, 2005: number 500.
20. Chen R, **Van Caesele P**, Dawood M. Production of murine monoclonal antibodies (MAbs) with different neutralizing abilities for intracellular mature (IMV) and extracellular enveloped (EEV) vaccinia virus particles. Presented at International Centre for Infectious Diseases Conference, Winnipeg, MB, 2005.
21. Mehta P, Cleven R, Pinto V, Wylie J, **Van Caesele P**, Rubinstein E, Hazelton P. The spectrum and frequency of infectious pathogens associated with acute infectious diarrhea in a remote First Nations community. Presented at American Society for Virology, 2007.
22. Dawood M, Roberecki S, Schellenberg F, Ahmed S, Chochinov D, Smart G, **Van Caesele P**. Trends in West Nile Virus (WNV) infection in Manitoba, Canada. A public health laboratory study. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2007;18(1): 77-78.
23. Tyrell G, Lovgre M, Kellner J, Hoang L, Patrick D, Horsman G, **Van Caesele P**, and the Serotype 5 Invasive Pneumococcal Investigation Team. Outbreak of *Streptococcus pneumoniae* serotype 5 in Western Canada. At Lancefield 2008 (International Streptococcal Surveillance Society D)
24. Lagacé-Wiens PRS, Makowski K, Andonova M, Drebot M, Lindsay R., Dawood M, **Van Caesele P**, Artsob H. The Development and Application of Serological Diagnostics for the Surveillance of California (CAL) Serogroup Viruses in Canada and Manitoba. 2007. Presented at the 107th General Meeting of the American Society for Microbiology in Toronto, Canada.
25. Makowski K, Lagacé-Wiens PRS, Andonova M, Drebot M, Lindsay R., Dawood M, **Van Caesele P**, Artsob H. The Development and Application of Serological Diagnostics for the Surveillance of California (CAL) Serogroup Viruses in Canada. 2007 Meeting of the Association of Medical Microbiology and Infectious Diseases of Canada in Halifax, Canada, 2007.
26. Artsob H, Lagacé-Wiens P, Makowski K, Andonova M, Dawood M, **Van Caesele P**, Dibernardo A, Lindsay R, Drebot M. California serogroup and Powassan virus infections in Canada. 2007 International Conference on Diseases in Nature Communicable to Man, Madison, WI, USA, 2007.
27. Thompson R, **Van Caesele P**, Taback S, Lehotay DC. Screening for CAH by MS/MS as a Primary Screen. 2008 Newborn Screening and Genetic Testing Symposium. San Antonio, TX. Nov 3-6, 2008.
28. MacRae AR, Kavask PA, Palomaki GE, Knight GJ, Minnett J, Davies GA, Toi A, Chitayat D, **Van Caesele P**, Chodirker B. Uptake and overall performance of multiple new Down syndrome screening protocols introduced coincidentally. *Clinical Biochemistry*. 2008; 41:195.
29. Al-Suwaidi A, Alharbi S, **Van Caesele P**, Chernic V, Consunji-Araneta R. Clinical symptoms and outcomes of pediatric adenoviral lower respiratory tract infections in Manitoba: Fifteen year experience. *Canadian Pediatric Society*, Victoria, BC, 2008.
30. MacRae A, Davies G, Kavask P, Palomaki G, Knight G, Minett J, Toi A, Chitayat D, **Van Caesele P**, Chodirker B. Clinical performance of multiple new Down syndrome screening protocols introduced coincidentally. *Journal of Obstetrics and Gynaecology*. 2008; 30: S38.

31. Skowronski DM, Hiebert B, Hottes TS, Roos LL, **Van Caesele P**, De Serres, G. Selection bias in the measure of vaccine protection against serious but non-specific influenza outcomes in seniors: Examination through linked Manitoba databases. Presented at: *Canadian Immunization Conference*, Toronto, ON, 2008 AND *12th Annual Conference on Vaccine Research*, Baltimore, 2009.
32. Tyrrell G, Lovgren M, Kellner J, Grimsrud K, Hoang L, Patrick D, Horsman G, **Van Caesele P**, and the Serotype Invasive Pneumococcal Investigative Team 2008. A large outbreak of invasive *Streptococcus pneumoniae* serotype 5 in Western Canada. Abstract S05-O3, *Abstracts of the 6th International Symposium on Pneumococci and Pneumococcal Diseases*, June 2008, Reykjavik, Iceland.
33. Wylie J, Thompson L, Wood M, Giercke S, **Van Caesele P**. Large scale implementation of nucleic acid amplification testing for Chlamydia. *International Society for Sexually Transmitted Diseases and Research*, London, UK, June 2009.
34. Hazelton PR, Chawdury F, Yamamoto J, Fanella S, Bridger NA, Wells B, Wylie JL, **Van Caesele P**, Rubinstein E. Molecular epidemiology of acute infectious diarrhea in pediatric cases attending a pediatric hospital emergency room. Presented at American Society for Virology, 2009.
35. Holloway K, Fearon M, Scalia V, Dawood M, Mamiya H, **Van Caesele P**, Khurana V, Appleyard G, Pabbaraju K, Fox J, Grinev A, Rios M, Barker I, Drebot M. Identification and characterization of West Nile virus genetic variants collected from Canadian samples 2006–2008. Abstract 052, *International Journal of Antimicrobial Agents*. 2009; 34-S2: S18-S19.
36. Tayback SP, Thompson R, **Van Caesele P**, Lehotay D. Newborn screening for congenital adrenal hyperplasia (CAH) using tandem mass spectrometry (MS/MS) as a primary screen. Abstract 550731, *Proceedings of the 8th Joint Meeting of the Lawson Wilkins Pediatric Endocrine Society/European Society of Paediatric Endocrinology*, New York, September 2009.
37. Thompson L, Becker M, Mahmud S, Dawood M, Keynan Y, Fowke K, **Van Caesele P**, Slater J, Blanchard J. Serological survey of the novel influenza A H1N1 in inner-city Winnipeg, Manitoba, 2009. *Canadian Public Health Association Centenary Conference*, Toronto, Ontario. 2010.
38. Kavsak PA, MacRae AR, Toi A, Davies GD, Chodirker BN, Minnett J, Palomaki GE, Knight GJ, Chitayat D, **Van Caesele PG**. Factors affecting screen completion in two forms of integrated prenatal screening for Down Syndrome in the SAFER Study. *Conference of the Canadian Society of Clinical Chemists*, Saskatoon, Canada. June 2010.
39. Holloway K, Fearon M, Scalia V, Dawood M, Mamiya H, **Van Caesele P**, Khurana V, Appleyard G, Pabbaraju K, Fox J, Grinev A, Rios M, Baker I, Drebot M. The identification, isolation and characterization of West Nile virus (WNV) deletion mutants. *International Conference on Diseases of Nature Communicable to Man*. Fairbanks, USA, August 2010.
- *40. DeRiviere L, Stopera S, **Van Caesele P**, Lotocki R. Cost feasibility study of five cervical screening laboratory technology models in Manitoba. Abstract P-748, 26th International Papillomavirus Conference, Montreal, Canada. July 2010. In Passos M, Passos F, Steben M. 26th International Papillomavirus Conference and Clinical & Public Health Workshops. *DST – J Bras Doenças Sex Trans Dis*. 2010; 22(2): 91.
41. Loeb M, Russell M, Moss L, Fonseca K, Earn D, Aoki F, Horsman G, **Van Caesele P**, Chokani K, Vooght M, Babiuk L, Webby R, Walter S. Efficacy of influenza vaccine for preventing symptomatic illness given infection: results from a cluster randomized trial in Hutterite colonies. Abstract O13 of the 9th Canadian Immunization Conference, Quebec City, Dec 2010. In *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2010; 21(4): p. 180.
42. Kadkhoda K, Smart G, **Van Caesele P**. Evaluation of a new Health Canada-approved Lyme Immunoblot assay for confirmation of positive EIA screens. Poster P20 presented at AMMI Canada-CACMID, Montreal Canada, April 2011.
43. Dimitrova K, Andonova M, Makowski K, Holloway K, Levett P, Kadkhoda K, **Van Caesele P**, Drebot M. Preliminary evidence of Cache Valley Virus infections and associated illness in Western Canada in 2009. Presentation H5 at AMMI Canada- CACMID, Montreal, Canada, April 2011.

44. Makowski K, Dimitrova K, Andonova M, Holloway K, Kadkhoda K, **Van Caesele P**, Drebot M. The identification of probable cases of California Serogroup Virus infections in Manitoba in 2010. Presentation H6 at AMMI Canada- CACMID, Montreal, Canada, April 2011.
45. Kanji JN, Lovgren M, Low D, Bourgault A, **Van Caesele P**, Horsman G, Tyrrell G. Epidemiology of invasive Group A streptococci in Canada from 2000-2009. Abstract O034 presented at ECCMID-ICC, Milan, Italy, May 2011. Abstracts of 21st ECCMID-ICC, p. S60.
46. Dimitrova K, Andonova M, Makowski K, Holloway K, Levett P, Kadkhoda K, **Van Caesele P**, Drebot M. Preliminary evidence of Cache Valley virus infections and associated human illness in western Canada in 2009. Poster 523 at December 2011 American Society of Tropical Medicine and Hygiene, Philadelphia, PA. Abstracts of 60th ASTMH Annual Meeting.
47. Li W, Mamiya H, **Van Caesele P**. Optimization of triplex real-time RT-PCR for the detection of norovirus and rotavirus. University of Manitoba, Faculty of Science Undergraduate Research Symposium, January 2012 (unpublished).
48. Becker M, Thompson L, Bridger N, Pindera C, Keynan Y, Bullard J, **Van Caesele P**, Kasper K. Point of Care HIV testing in a tertiary care emergency department in Winnipeg, Canada. Abstract O018 presented at Canadian Association of HIV Researchers (CAHR), Montreal, QC, April 2012. *Canadian Journal of Infectious Diseases and Medical Microbiology*, 2012; 23 Suppl A; 14A.
49. Rank C, Bangura H, Gilbert M, Zahariadis G, **Van Caesele P**, Halverson J, Kim J, Archibald C, Sandstrom P, Brooks J. Distribution and correlates of recent HIV infection in four Canadian provinces, 2000-2008. Abstract P148 presented at Canadian Association of HIV Researchers (CAHR), Montreal, QC, April 2012. *Canadian Journal of Infectious Diseases and Medical Microbiology*, 2012 (May); 23 Suppl A;86A.
50. Ratnam S, Kruk T, Lau A, Hatchette T, Preiksaitis J, Horsman G, **Van Caesele P**, Timmons B, Tipples G. Continuous monitoring of the performance of rubella IgG and hepatitis B surface antibody assays using reference controls: results of a multi-centre trial. Abstract I1 presented at May 2012 Annual AMMI-CACMID Conference. *Canadian Journal of Infectious Diseases and Medical Microbiology*, 2012 (May); 23 Suppl B.
51. Giercke S, Wylie JL, **Van Caesele P**, Gilmour M, Sitter D, Guttek C. Evaluation of a new chromogenic agar medium for detection of Shiga Toxin-producing *Escherichia coli*. Presented at American Society for Microbiology, San Francisco, CA, May 2012.
52. Demczuk W, Martin I, Griffith A, Lefebvre B, McGeer A, Shane A, Gilmour M, **Canadian Public Health Laboratory Network**. National laboratory surveillance of invasive pneumococcal disease in Canada, 2010. Poster 58 presented at 8th International Symposium on Pneumococci and Pneumococcal Diseases, Iguacu Falls, Brazil, March 2012. Abstracts of the same, p. 369.
53. Golding G, Vaid N, Jayaraman G, Mac Donald J, Fang L, Njihia J, Mc Cracken M, Archibald C, Mulvey M, Wong T, Embil J, Conly J, **COMRSA Pilot Group**. Characterization of community onset methicillin-resistant *Staphylococcus aureus* (CO-MRSA) infections through population based surveillance in Canada. Poster C2-1380 in *Abstracts of the 52nd ICAAC*, San Francisco USA, Sept 2012, p. 145.
54. Sawatzky P, Martin I, Liu G, Allen V, Hoang L, Lefebvre B, Lovgren M, Haldane D, **Van Caesele P**, Horsman G, Robberts L, Garceau R, Wong T, Gilmour M. Multi-antigen sequence types (NG-MAST) and antimicrobial susceptibilities of *Neisseria gonorrhoeae* isolated in Canada, 2010. Poster P168, XVIIIth International Pathogenic Neisseria Conference, Wurzburg, Germany, Sept 2012, p. 309.
55. Janjua N, Skowronski D, De Serres G, Winter A, Dickinson J, Mahmud S, Gubbay J, Fonseca K, Charest H, **Van Caesele P**, Crowcroft N, Fradet M, Bastien N, Li Y, Krajden M, Sabaiduc S, Petric M. Component-specific estimates of 2011-12 influenza vaccine effectiveness based on the Canadian Sentinel Surveillance System. 10th Canadian Immunization Conference, Vancouver, Canada, Dec 2012.
56. Bernard K, Pacheco A, Burdz T, Wiebe D, Ng B, **Van Caesele P**, Gall R, Hoang L. Characterization of three strains of the recently described Genus *Auritidibacter* referred to the National Microbiology Laboratory (NML). Abstract J4, AMMI Canada – CACMID Annual Conference, Quebec City, Canada, April 2013. Program p. 25.

57. Mataseje L, Boyd D, Hussain Z, Imperial M, Lefebvre B, **Van Caesele P**, Willey B, Mulvey M. *Serratia marcescens* beta-lactamase (SME): The new carbapenemase on the block in Canada. Abstract P17, AMMI Canada – CACMID Annual Conference, Quebec City, Canada, April 2013. Program p. 37.

*58. Skowronski D, Janjua N, De Serres G, Sabaiduc S, Winter A, Gubbay J, Dickinson J, Fonseca K, Petric M, Krajden M, Charest H, Mahmud S, **Van Caesele P**, Bastien N, Li Y. Influence of prior immunization on current influenza vaccine protection: observations from Canada's sentinel surveillance system. Presented at Influenza -Monitoring Vaccine Effectiveness (I-MOVE) Annual Meeting. Veyrier du Lac, France. July 2013.

*59. Skowronski D, Janjua N, De Serres G, Sabaiduc S, Winter A, Gubbay J, Dickinson J, Fonseca K, Petric M, Krajden M, Charest H, Mahmud S, **Van Caesele P**, Bastien N, Li Y. Influenza vaccine effectiveness (VE): sentinel surveillance monitoring system, Canada, 2012-13 season. Presented at Influenza -Monitoring Vaccine Effectiveness (I-MOVE) Annual Meeting. Veyrier du Lac, France. July 2013.

60. Mataseje L, Boyd D, Hussain Z, Imperial M, Lefebvre B, Kuhn M, **Van Caesele P**, Willey B, Mulvey M. Emergence of *Serratia marcescens* harbouring the class A carbapenemase SME in Canada. Poster C2-085, 52nd ICAAC, San Francisco USA, Sept 2013.

61. Rumore J, Tschetter L, **PulseNet Canada Members**, Nadon C. Variability among outbreak and non-outbreak associated MLVA profiles for *Escherichia coli* O157:H7 outbreaks in Canada. 10th International Meeting on Microbial Epidemiologic Markers, Paris France, Oct 2013.

62. Liu G, Sawatzky P, Allen V, Hoang L, Lefebvre B, Lovgren M, Haldane D, **Van Caesele P**, Horsman G, Garceau R, Ratnam S, Wong T, Martin I. Antimicrobial susceptibilities of *Neisseria gonorrhoeae* isolated in Canada, 2010-2012. 2013 Health Canada Science Forum, Ottawa, Canada, Dec 2013.

63. Singh R, Demczuk W, Griffith A, Martin I, **Canadian Public Health Laboratory Network (CPHLN)**. Serotype distribution of invasive *Streptococcus pneumoniae* in Canada, 2012. Abstract 0242, 9th International Symposium on Pneumococci and Pneumococcal Diseases, Hyderabad, India Mar 2014, in *Pneumonia*. 2014; 3: p. 274.

64. Demczuk W, Martin I, Sawatzky P, Liu G, Allen V, Hoang L, Lefebvre B, Lovgren M, Haldane D, **Van Caesele P**, Horsman G, Ratnam S, Garceau R, Wong T, Archibald C, Mulvey M. Antimicrobial susceptibilities and multi-antigen sequence types (NG-MAST) of *Neisseria gonorrhoeae* isolated in Canada, 2008-2012. Abstract P22. AMMI Canada – CACMID Annual Conference. Victoria, Canada, April 2014. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2014 March/April; 25 (2): p. e46.

65. Martin I, Sawatzky P, Allen V, Hoang L, Lefebvre B, Lovgren M, Levett P, **Van Caesele P**, Dillon J. External quality assurance and comparability of antimicrobial susceptibility testing of *Neisseria gonorrhoeae* in Canada. Abstract TP16, 2014 STD Prevention Conference, Atlanta, USA, June 2014. *Sexually Transmitted Diseases*. 2014 June; 41(Supplement 1): p. S43-44.

66. Martin I, Sawatzky P, Liu G, Allen V, Lefebvre B, Hoang L, Lovgren M, Haldane G, **Van Caesele P**, Horsman G, Ratnam S, Garceau R, Wong T, Archibald C, Mulvey M. Multi-antigen sequence types (NG-MAST) and antimicrobial susceptibilities of *Neisseria gonorrhoeae* isolated in Canada, 2010-2012. Abstract TP130, 2014 STD Prevention Conference, Atlanta, USA, June 2014. *Sexually Transmitted Diseases*. 2014 June; 41(Supplement 1): p. S74.

67. Sawatzky P, Martin I, Yue A, Allen V, Hoang L, Lefebvre B, Lovgren M, Horsman G, **Van Caesele P**, Garceau R, Wong T, Archibald C, Mulvey M. Assessment of gentamicin and ertapenem susceptibilities of Canadian *Neisseria gonorrhoeae* isolates. Abstract WP148, 2014 STD Prevention Conference, Atlanta, USA, June 2014. *Sexually Transmitted Diseases*. 2014 June; 41(Supplement 1): p. S135.

68. Demczuk W, Bharat A, Lynch T, Martin I, Allen V, Hoang L, Lefebvre B, Lovgren M, Horsman G, **Van Caesele P**, Haldane D, Garceau R, Wong T, Archibald C, Van Domeselaar G, Graham M, Mulvey M. Whole genome sequencing of *Neisseria gonorrhoeae* isolates with reduced cephalosporin susceptibility collected in Canada from 1989 to 2012. Poster O31, XIXth International Pathogenic Neisseria Conference, Asheville, USA,, Oct 2014, p. 216.

69. Demczuk W, Singh R, Hoang L, Kellner J, Horsman G, **Van Caesele P**, Gubbay J, Lefebvre B, Haldane D, Garceau R, Ratnam S, German G, Martin I. Multi-locus sequence typing for the differentiation of prevalent and

emerging *Streptococcus pneumoniae* serotypes. Abstract 247 at XIXth Lancefield International Symposium on Streptococci and Streptococcal Diseases, Buenos Aires, Argentina, Nov 2014.

70. Sabaiduc S, Skowronski D, Chambers C, Gubbay J, Fonseca K, Charest H, Petric M, Bastien N, **Van Caesele P**, Eshaghi A, De Serres G, Dickinson J, Winter A, Mahmud S, Kwindt T, Li Y. Genotypic and phenotypic characterisation of influenza A (H1N1)pdm09 viruses circulating during the 2013/14 season of epidemic resurgence: Findings from the Canadian Physician Sentinel Surveillance Network (SPSN). *11th Canadian Immunization Conference*. Ottawa, Canada, Dec 2014.

71. Sabaiduc S, Skowronski D, Chambers C, Gubbay J, Fonseca K, Charest H, Krajden M, Petric M, Bastien N, **Van Caesele P**, Eshaghi A, De Serres G, Dickinson J, Winter A, Mahmud S, Kwindt T, Li Y. Clade-level mismatched influenza B/Yamagata-lineage viruses circulated during the 2013/14 influenza season: Findings from the Canadian Physician Sentinel Surveillance Network (SPSN). *11th Canadian Immunization Conference*, Ottawa, Canada, Dec 2014.

72. Chambers C, Skowronski D, Sabaiduc S, Gubbay J, Fonseca K, Charest H, Petric M, Bastien N, **Van Caesele P**, Eshaghi A, De Serres G, Dickinson J, Winter A, Mahmud S, Kwindt T, Li Y. Effect of prior season's immunization and potential for negative interference on vaccine protection during the 2013/14 influenza season. *11th Canadian Immunization Conference*, Ottawa, Canada, Dec 2014.

73. Chambers C, Skowronski D, Sabaiduc S, Gubbay J, Fonseca K, Charest H, Petric M, Bastien N, **Van Caesele P**, Eshaghi A, De Serres G, Dickinson J, Winter A, Mahmud S, Kwindt T, Li Y. Residual protection from prior 2009 monovalent AS03-adjuvanted pandemic vaccine no longer evident during 2013/14 influenza season of A(H1N1)pdm09 resurgence. *11th Canadian Immunization Conference*, Ottawa, Canada, Dec 2014.

74. Skowronski D, Chambers C, Sabaiduc S, De Serres G, Winter A, Dickinson J, Mahmud S, Gubbay J, Fonseca K, Charest H, Krajden M, Petric M, Bastien N, **Van Caesele P**, Kwindt T, Li Y. End of season estimates of 2013/14 influenza vaccine effectiveness from the Canadian Sentinel Physician Surveillance Network (SPSN). *11th Canadian Immunization Conference*, Ottawa, Canada, Dec 2014.

75. Shaw S, Becker M, Ireland L, Ens C, McClarty L, Yu B, Keynan Y, Bullard J, Wylie J, **Van Caesele P**, Kasper K. A population-based examination of bacterial sexually transmitted infections testing and history prior to HIV diagnosis among HIV cases and HIV-negative controls: The Missed Opportunity for Diagnoses Epidemiological Study (MODES). Abstract O014. Canadian Association of HIV Researchers 2015. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 2015 March/April; 26(Suppl B): p. 12B.

***76.** Rockman-Greenberg C, Schroeder M, Dick A, Kwan L, Zacharias R, Thompson JR, **Van Caesele P**. Newborn screening for severe combined immunodeficiency disease (SCID). Canadian Newborn and Child Screening Symposium, Ottawa, Canada, April/May 2015.

77. Shaw S, Reimer J, Ross C, Wylie J, Cole R, Bailey K, Stephen S, Marshall S, **Van Caesele P**, Plourde P. Using digital media to respond to an outbreak of syphilis in the Winnipeg Health Region. Session HI-3, Canadian Public Health Association Conference, Vancouver, Canada, May 2015.

78. Teatero S, Athey T, **Van Caesele P**, Horsman G, Alexander D, Melano R, Li A, Flores A, Sherburne S, McGeer A, Demczuk W, Martin I, Fittipaldi N. An emerging clone of sequence type 459 predominates among adult invasive infections due to Serotype IV Group B *Streptococcus* in Manitoba and Saskatchewan, Canada. Abstract 2288, *Abstracts of the 115th American Society for Microbiology General Meeting*, New Orleans USA, May/June 2015, p. 193.

79. Martin I, Sawatzky P, Allen V, Hoang L, Lefebvre B, Naidu P, Haldane D, **Van Caesele P**, Archibald C, Mulvey M. Antimicrobial susceptibilities and multi-antigen sequence types (NG-MAST) of *Neisseria gonorrhoeae* isolated in Canada, 2011-2014. Abstract P133 in *Book of Abstracts 29th European Conference on Sexually Transmitted Infection*, Catalonia, Spain, Sept 2015. *International Journal of STD & AIDS*. 2015; 26(11) Supplement I: p. 91.

80. Mulvey M, Fuller J, German G, Girouard G, Haldane D, Hoang L, Lefebvre B, Levett P, Melano R, Needle R, **Van Caesele P**, Mataseje L. Carbapenemase-producing *Enterobacteriaceae* identified in Canada: 2008-2014. Abstract C-1111, *54th ICAAC*, San Diego USA, Sept 2015.

81. Rockman-Greenberg C, Schroeder M, Thompson JR, **Van Caesele P**. Newborn screening for severe combined immunodeficiency disease (SCID). *The 3rd Annual MFN CAHR Indigenous Health Research Symposium*, Winnipeg, Canada, Nov 2015.
82. Bullard J, Dust K, Cole R, **Van Caesele P**. Morbilliform rash associated with coronavirus detection during an outbreak of measles in Manitoba. Abstract N01. AMMI Canada – CACMID Annual Conference. Vancouver, Canada, April 2016. *Journal of the Association of Medical Microbiology and Infectious Diseases Canada*. 2016 March/April; 1 (1): p. e32.
83. Dust K, Hedley A, **Van Caesele P**. Effects of time and temperature on the ability of Hologic's Aptima HPV Assay to detect HPV in cervical samples collected in Surepath preservative. Abstract P19. AMMI Canada – CACMID Annual Conference. Vancouver, Canada, April 2016. *Journal of the Association of Medical Microbiology and Infectious Diseases Canada*. 2016 March/April; 1 (1): p. e56.
84. Wylie J, Alexander D, **Van Caesele P**. The correlation between practitioner numbers and screening program uptake: a population-based analysis of chlamydia and gonorrhea screening. Poster THP 97. *Proceedings of the 2016 STD Prevention Conference*. Atlanta, Georgia, USA, September 2016. Page 134.
85. Sawatzky P, Martin I, Demczuk W, Liu G, Allen V, Hoang L, Lefebvre B, Naidu P, Haldane H, **Van Caesele P**, Horsman G, Ratnam R, Garceau R, Archibald C, Mulvey M. Clonal spread of high level tetracycline resistant *Neisseria gonorrhoeae* in Canada, 2012 to 2015. Abstract/Poster 17. *20th International Pathogenic Neisseria Conference*. Manchester, United Kingdom, September 2016. Page 107.
86. Chernesky M, Jang D, Gilchrist J, Hoang L, Naidu P, Levett P, Wylie J, Rebbapragada A, Hatchette T, Singh A, Read R, Smychek P, Ratnam S, **Van Caesele P**, Labbe A, Getman D, Smieja M, Martin I. *Mycoplasma genitalium* infections in Canadian women with *Chlamydia trachomatis* and/or *Neisseriae gonorrhoeae*. Presentation 4A1. *Proceedings of the 2016 STD Prevention Conference*. Atlanta, Georgia, USA, September 2016. Page 80.
87. Griffith A, Demczuk W, Martin I, Lefebvre B, McGeer A, Tyrell G, Zhanel G, Mulvey M, **The Canadian Public Health Laboratory Network**. Shifts in distribution of invasive pneumococcal PCV13 serotypes and antimicrobial susceptibilities in Canada: 2011-2014. Poster 36, *CIC Canadian Immunization Conference, 2016 Final Program*. Ottawa, Canada, December 2016. Page 42.
88. Wang B, Russell M, Fonseca K, Earn D, Horsman G, **Van Caesele P**, Chokani K, Vooght M, Babiuk L, Walter S, Loeb M. Vaccinating children against influenza in Hutterite colonies: Follow up of a randomized trial. Poster 7, *CIC Canadian Immunization Conference, 2016 Final Program*. Ottawa, Canada, December 2016. Page 69.
89. Golden A, Adam H, Martin I, Demczuk W, Nichol K, Gilmour M, **Van Caesele P**, German G, Lefebvre B, Zahariadis G, Gubbay J, Haldane D, Horsman G, Mulvey M, Zhanel G, Canadian Antimicrobial Resistance Alliance (CARA). Characterization by Whole-Genome Sequencing (WGS) of *Streptococcus pneumoniae* (SPN) Causing Invasive Infections in Canada, 2011-2015. *2017 Antimicrobial Resistance Symposium*. Winnipeg, Canada. May 2017.
90. Singh D, Jiang D, **Van Caesele P**, Loeppky C. The effect of timing of oseltamivir chemoprophylaxis in controlling influenza A H3N2 and influenza B outbreaks in long term care facilities in Manitoba, Canada, 2014-15: A retrospective approach. Poster 29. *2017 Canadian Student Health Research Forum*. University of Manitoba. Winnipeg, Canada, June 2017.
91. Mataseje L, Boyd D, Fuller J, Haldane D, Hoang L, Lefebvre B, McGeer A, Melano R, Poutanen S, Willey B, **Van Caesele P**, Mulvey M. Characterization OXA-48-like carbapenemase producers in Canada, 2011-2014. Poster II 055. *2017 Canadian Society of Microbiology Conference*. Waterloo, Canada, June 2017.
92. Golden A, Adam H, Martin I, Demczuk W, Nichol K, Gilmour M, **Van Caesele P**, German G, Lefebvre B, Zahariadis G, Gubbay J, Haldane D, Horsman G, Karlowsky J, Mulvey M, Zhanel G, Canadian Antimicrobial Resistance Alliance (CARA). Characterization by Whole-Genome Sequencing (WGS) of *Streptococcus pneumoniae* (SPN) causing invasive infections in Canada, 2011-2014. *ASM Microbe 2017*. New Orleans USA. June 2017.
93. El-Matary W, Stefanovici C, **Van Caesele P**, Deora V, McCurdy J. Cytomegalovirus complicating pediatric inflammatory bowel disease. Presentation 98. *4th International Symposium on Pediatric Inflammatory Bowel Disease*. Barcelona, Spain, September 2017.

94. Tam H, Rockman-Greenberg C, Thompson JR, **Van Caesele P**, Schroeder M, Rubin T. Presymptomatic Newborn Detection of IKBKB Severe Combined Immune Deficiency Mutations in Manitoba: a Pilot Project. *2017 Child Health Research Day*. Winnipeg, Canada. October 2017.
95. Demczuk W, Martin I, Gubbay J, Zhanel G, **Van Caesele P**, Lefebvre B, Levett P. Phylogenetic diversity of the *Streptococcus pneumoniae* serotype 3 causing invasive pneumococcal disease in Canada. Poster 134. 11th *International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD 11)*. Melbourne Australia April 2018.
96. Tran V, Wei J, Hilderman T, Tsang R, **Van Caesele P**, Alexander D. The genomic epidemiology of invasive meningococcal disease caused by *Neisseria meningitidis* ST-154 in Canada. Poster P0993. *European Congress of Clinical Microbiology and Infectious Diseases*. Madrid Spain April 2018.
97. Orbien L, Wylie J, Christianson S, Reimer A, Walker M, **Van Caesele P**, Alexander D. Stool consistency impacts performance of the BD MAX Enteric Bacterial Panel. Presentation I01. *13th Annual Conjoint AMMI-CACMID Conference*. Vancouver Canada May 2018.
98. Chapman S, Bullard J, Kassim S, Edagiz S, **Van Caesele P**, Embree J. Evaluation of adherence to clinical guidelines for the prevention of mother to child transmission of hepatitis B and C in Manitoba Canada. Presentation J03. *13th Annual Conjoint AMMI-CACMID Conference*. Vancouver Canada May 2018.
99. Tran V, Wei J, Hilderman T, Tsang R, **Van Caesele P**, Alexander D. The genomic epidemiology of invasive meningococcal disease caused by *Neisseria meningitidis* ST-154 in Canada. Poster SP27. *13th Annual Conjoint AMMI-CACMID Conference*. Vancouver Canada May 2018.
100. Singh D, Jiang D, **Van Caesele P**, Loepky C. The effect of timing of oseltamivir chemoprophylaxis in controlling influenza A H3N2 and influenza B outbreaks in long term care facilities in Manitoba, Canada, 2014-2015: a retrospective cohort study. Poster SP64. *13th Annual Conjoint AMMI-CACMID Conference*. Vancouver Canada May 2018.
101. Griffith A, Demczuk W, Martin I, Lefebvre B, McGeer A, Tyrrell G, Mulvey M, **The Canadian Public Health Laboratory Network**. Shifting epidemiology of pneumococcal serotypes among various age groups in Canada from 2011 to 2017. Poster 93. *Canadian Immunization Conference 2018*. Ottawa Canada December 2018.
102. Alexander D, Martin I, Demczuk W, Cole R, **Van Caesele P**. Disseminated gonorrhoea infections in Manitoba, Canada: 2013-2018. Poster P05. *14th Annual AMMI-CACMID Conference*. Ottawa Canada April 2019.
103. Hink R, Golden A, Adam H, Martin I, Demczuk W, Peterson S, Nichol K, **Van Caesele P**, German G, Lefebvre B, Zahariadis G, Gubbay J, Haldane D, Minion J, Gad R, Mulvey M, Karlowsky J, Zhanel G, and the Canadian Antimicrobial Resistance Alliance. Whole genome sequencing analysis of penicillin-susceptible, -intermediate and -resistant *Streptococcus pneumoniae* isolated in Canada, 2011-2016. Poster AAR-536. *ASM Microbe*. San Francisco USA June 2019.
104. Golden A, Adam H, Martin I, Demczuk W, Nichol K, **Van Caesele P**, Minion J, Gubbay J, Mulvey M, Karlowsky J, Zhanel G, and the Canadian Antimicrobial resistance Alliance. Canadian Multidrug-resistant *Streptococcus pneumoniae* serotype 19A-ST320 isolates with unusually low macrolide MICs possess Tn2010 with altered *ermB*. Poster AAR-621. *ASM Microbe*. San Francisco USA June 2019.
105. Sawatzky P, Martin I, Allen V, Hoang L, **Van Caesele P**, Naidu P, Mulvey M. Cases of gonorrhoea with multiple anatomic sites of infection in Canada, 2016 to 2017. Poster P631. *STI&HIV 2019 World Congress: Joint Meeting of the 23rd ISSTD and 20th IUSTI*. Vancouver Canada July 2019.
106. Anderson A, Lix L, Loepky C, **Van Caesele P**, Mahar A. Identifying potential cancer disparities for individuals living with HIV using population-based data in Manitoba and Ontario. Canadian Cancer Research Conference (CRCC) 2019. Ottawa Canada, November 2019.
107. Phipps B, Poliquin G, **Van Caesele P**. The effect of varicella vaccination on the incidence of herpes zoster. Abstract 002. *2020 Annual AMMI-CACMID Conference*. Vancouver Canada April 2020.
108. Griffith A, Demczuk W, Martin I, Lefebvre B, McGeer A, Tyrrell G, Hoang L, Minion J, **Van Caesele P**, Kus J, Haldane D, Gad R, German G, Zahariadis G, Mulvey M. Shifting epidemiology of pneumococcal

serotypes among various age groups in Canada from 2010-2018. *International Symposium on Pneumococci and Pneumococcal Diseases*. Toronto Canada June 2020.

109. Drews S, **Van Caesele P**, Bullard J, Lindsay R, Gaziano T, Zeller M, Lane D, Ndao M, Allen V, Boggild A, O'Brien S, Marko D, Musuka C, Almiski M, Bigham M. Identification of a *Babesia microti* in a Canadian blood donor and lookback in a red blood cell recipient. *36th International Society of Blood Transfusion (ISBT) Congress*. Virtual meeting December 2020.

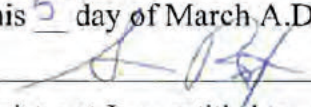
REGISTERED ISOLATES OR SEQUENCES

Sequences

1. GenBank – AF473567. Human calicivirus NLV/Steinbach/EG/2001/CA RNA-dependent RNA polymerase (pol) gene (orf1), partial cds.
2. GenBank – AF430807. Enterococcus faecalis strain N00-410 vancomycin-resistance vanE gene cluster, partial sequence.

End

This is Exhibit " C " referred to
in the Affidavit of Jared Manley
Peter Bullard Affirmed before
me this 5th day of March A.D. 2021


A Barrister-at-Law entitled to practice
in and for the Province of Manitoba

**Principles and practice of molecular testing for Severe Acute Respiratory Syndrome
Coronavirus 2 (SARS-CoV-2) during the Coronavirus Disease 2019 (COVID-19) pandemic in
Manitoba, Canada**

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February 24, 2021

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Overview of SARS-CoV-2 molecular testing in Manitoba

What is SARS-CoV-2?

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus causing coronavirus disease 2019 (COVID-19). As a member of the coronavirus family, it has certain characteristics including use of RNA (instead of DNA) to encode and produce its various components. Viral detection from clinical samples targets these genes in almost all circumstances. Examples of some specific genes of SARS-CoV-2 include envelope (E), spike (S) and nucleocapsid (N) genes that are found on the outer surface of SARS-CoV-2. These same proteins are targeted by the human immune system to eliminate the virus or produce an immune response to vaccine.

What is the diagnostic process used on a sample from a suspect case to detect SARS-CoV-2?

Samples from people are taken from the back of the nose, throat and occasionally from deeper sites such as the trachea or lungs. Usually these people have disease that is compatible with COVID-19 (fever, headache, cough, muscles aches) or they have been recently exposed to someone with confirmed or suspected COVID-19. Specimens such as swabs from any of the various anatomic sites are placed in viral transport medium (VTM) to ensure that the specimen (the viral RNA and viral particles) retain their integrity. All specimens are labelled and have a laboratory requisition that link the patient, the sample and the ordering practitioner. This ensures that the final result is on the correct person, and goes to the correct practitioner who can then respond to the result accordingly.

Laboratory specimens are received at Cadham Provincial Laboratory (CPL) (specimens are also received at DynaCare Laboratories and at Shared Health Microbiology) by staff throughout the day and directed into appropriate SARS-CoV-2/COVID-19 testing streams dependent on the priority that a result is required. Staff confirm that specimens and requisitions match prior to further testing. Once directed into the laboratory testing stream, medical laboratory technologists (MLTs) further process the specimen in preparation for testing.

All definitive testing for COVID-19 in Manitoba is performed using molecular techniques, which is another way of saying that genetic elements of the virus are sought. Reverse transcription polymerase chain reaction (RT-PCR) is one very common example of a molecular technique. Once molecular testing is completed, a result is reported back to the ordering practitioner. Results can be either negative (no SARS-CoV-2 detected in the submitted sample) or positive (SARS-CoV-2 detected in the submitted sample). In rare cases a specimen is unsuitable and is deemed incapable of being tested (cancelled) or does not provide a result if tested (invalid). If positive, the result will also be shared with public health so that appropriate case contact and investigation can occur to limit the spread of COVID-19 in the community.

What is PCR and how is it used in the diagnosis of COVID-19?

SARS-CoV-2 testing of respiratory samples is conducted on several different platforms (instruments capable of performing molecular testing) at CPL and other laboratories in Manitoba. The premise of almost all molecular techniques is to amplify an initial small amount of genetic target (genes unique to SARS-CoV-2) in a sample a predetermined number of times.

If sufficient genetic material is present in a sample to be detected, that sample is considered positive for the SARS-CoV-2 virus. If no target genetic material is detected after all amplification cycles are complete, then the sample is considered negative for SARS-CoV-2. The chemistry, genetic targets and rounds of amplification differ from platform to platform. Health Canada authorizes commercial platforms and accredited laboratories such as CPL must follow Health Canada authorized instructions from the manufacturer. In addition, reference laboratories regularly develop in-house methods of molecular detection known as laboratory developed tests (LDTs). Development of LDTs must have detailed experimental proof of performance and maintain strict adherence to documented test procedures to ensure testing accuracy. CPL is part of the Canadian Public Health Laboratory Network (CPHLN). This national group of experts regularly discuss methods of detection of SARS-CoV-2 and employ very similar techniques across their LDTs. Their collective experience and expertise is essential to maintain quality diagnostic performance that meets national standards. CPL currently utilizes an internationally recognized protocol for the molecular detection of SARS-CoV-2 in respiratory specimens¹.

The most common method of molecular amplification used to detect SARS-CoV-2 in samples is RT-PCR. Like other molecular techniques, RT-PCR first takes SARS-CoV-2 RNA found in respiratory samples and converts it to DNA. A targeted portion of the DNA is subsequently doubled for typically 40 cycles. Commercial platforms may use a different number of amplification cycles. The current SARS-CoV-2 RT-PCR methodology at CPL uses a total of 40 cycles of amplification. The cycle in which detection of SARS-CoV-2 genetic material first becomes evident is called the cycle threshold (Ct). The Ct value is a semi-quantitative (an imprecise but approximate) measure of how much genetic material is present in the initial

sample. If more cycles are required (higher Ct) to detect SARS-CoV-2, then less viral RNA was present to start. In comparison, samples with more RNA will typically, but not always, require fewer cycles (with a lower Ct) to detect the virus. There can be differences in Ct values for many reasons including between a sample tested on different platforms, between two different anatomic samples from the same individual, or samples from the same individual obtained at different times. A study performed at CPL demonstrated that the various platforms used for testing of samples for SARS-CoV-2 have very similar, but not identical, Ct values². This is important as samples tested for SARS-Cov-2 on any RT-PCR platform at CPL will have consistent Ct results within an acceptably narrow range.

Why is culture not used for the diagnosis of SARS-CoV-2?

Like other viruses, cell culture can be used to detect SARS-CoV-2. A cell culture is when a sample with suspected SARS-CoV-2 is put into a test tube of media with a layer of cells that can be infected with this virus. Over time, usually 3 to 5 days, infected cells will change in appearance indicating they have been infected with SARS-CoV-2. Cell culture has certain advantages over molecular detection. The primary advantage is that cell culture is better able to determine if viruses are still viable, that is, if the virus in a sample can enter a cell, reproduce itself and then release viral progeny to infect more cells. Molecular methods such as RT-PCR do not distinguish between virus that is viable (can cause infection in cell culture) or non-viable virus. Cell culture has important limitations. It can take several days before a cell culture can be called positive whereas molecular tests take hours. This is important in conducting a timely public health response. Specialized laboratory facilities are required to safely handle and

propagate live infectious virus. These facilities are called containment level 3 (CL3) and are relatively limited compared to the containment level 2 (CL2) space needed for molecular work. The only operational CL3 laboratory space in Manitoba at this time is at the National Microbiology Laboratory, and most jurisdictions are highly limited in the amount of CL3 lab space that they have access to. The number of samples that can be processed by cell culture is significantly less than what can be processed by molecular methods and automated platforms. Finally, the diagnostic accuracy of cell culture is not as robust as molecular methods; SARS-CoV-2 is less likely to grow successfully in cell culture than have genetic material detected (i.e. more samples would appear as false negatives by cell culture). This is very commonly due to delayed or non-standard transport conditions, improper collection technique, or simply technical limitations of the method. As an example, some common viruses will only grow 50-90% of the time where PCR methods more reliably do not fail. For those reasons, cell culture is not routinely performed on specimens in the diagnosis of COVID-19 and RT-PCR is the current gold standard for accurately detecting the presence of SARS-CoV-2.

What is the diagnostic accuracy of SARS-CoV-2 RT-PCR?

Any diagnostic test is in part defined by what are called performance characteristics. Performance characteristics describe different ways in which a test is accurate, and can be broken down into sensitivity and specificity, among others. Sensitivity is the proportion of people with COVID that the test will call positive. Poor sensitivity results in false negatives. Specificity is the proportion of people who do not have COVID that the test will call negative. Poor specificity results in false positives. The sensitivity of SARS-CoV-2 RT-PCR is estimated to

be greater than 95% (5 times out of 100, the test will be negative when the person truly has COVID-19 and usually occurs if testing is performed late in the incubation period before symptoms develop). It has a specificity of greater than 99.9% (less than 1 in 1000 will have a false positive result). These performance characteristics are typical of RT-PCR tests for other respiratory viruses.

Can SARS-CoV-2 RT-PCR Ct values be used to determine if someone is infectious?

There have been some studies that evaluated samples from people with COVID-19 to determine the relationship between SARS-CoV-2 RT-PCR Ct values, symptom duration and cell culture positivity^{3, 4}. In our study of 90 samples, which was the first published study of its kind, we found that samples taken from people with COVID-19 at day 8-10 of illness (from symptom onset) had a reduced risk of successfully growing SARS-CoV-2 in cell culture. The implication is that people beyond day 8-10 of illness with COVID-19 may be at lower risk for being infectious, simply because it becomes difficult to demonstrate viable virus at that point. Notably, the study did not conclude that persons were not infectious after 8-10 days, but rather that further study of larger size would be required⁴. This is important as the average duration that SARS-CoV-2 is detectable by RT-PCR is 17 days, though can range up to as long as 3 months⁵. Many viruses are shed for prolonged periods and are generally considered less or perhaps non-infectious within 1-2 weeks of symptom onset.

It is important to note that the cell culture model of infectivity is the best laboratory-based system to reproduce infectiousness in humans but it remains a surrogate. Numerous factors including the host immune response, pre-existing medical conditions and treatments,

amount of and strain of virus and the interplay between the host and SARS-CoV-2 must be considered in assessing whether an individual is infectious.

In our study referred to above, samples with a Ct value of 25 or greater did not grow SARS-CoV-2 in cell culture. Further unpublished work in Manitoba has confirmed that a Ct value of under 24 has the highest probability of growing SARS-CoV-2 in cell culture. Other studies have found infectious virus at Ct values between 30 - 40⁶. An excellent study evaluating 3790 positive samples (using similar chemistry to that utilized in Manitoba) for SARS-CoV-2 in cell culture demonstrated that at a Ct of 25 had up to 70% culture positivity with a culture positivity drop to 20% at a Ct of 30 and a further reduction to <3% at Ct 35⁷. The implication of these studies is that higher Ct values are associated with a lower likelihood of growing SARS-CoV-2 in cell culture, but this cannot rule that the person was or was not infectious at the time of sample collection. Finding the laboratory correlates of those infectious endpoints has been of intense interest to practitioners, but studies have yet to yield a reliably dichotomous endpoint – some small probability of transmissibility may still remain beyond even conservatively set Ct endpoints. No single SARS-CoV-2 RT-PCR Ct value in isolation can be used to determine infectiousness of a case and must be interpreted in the overall clinical context^{8,9}.

What is the role of the SARS-CoV-2 RT-PCR testing in public health?

Public health will use the positive SARS-CoV-2 test and diagnosis of COVID-19 both to direct the individual case to isolate and also to perform contact tracing to determine if other individuals are at risk of developing COVID-19. Those contacts considered at high risk will be instructed to remain in quarantine for 14 days (the incubation period of SARS-CoV-2, or the

longest time from exposure to developing disease). It is essential that cases be found before they become symptomatic, which is when they are most infectious, to minimize forward community transmission. Testing information is collected by Manitoba Health to monitor COVID-19 disease activity in the population (determine the overall burden of disease in Manitoba), take appropriate public health measures and direct resources accordingly.

The Ct value is not reported by the laboratory and not doing so is supported by national and international practice and guidelines⁸. In consultation with an experienced public health virologist (CPL physicians), other physicians and healthcare workers may request the Ct value on a given sample. Infection control practitioners in acute care or long term care facilities may utilize this information to perform a risk assessment to remove cases with COVID-19 from isolation and reduce unnecessary PPE usage. Medical officers of health (MOHs) may also consult with CPL physicians and use Ct values to assist in determining if an individual with COVID-19 is more likely to have remote SARS-CoV-2 infection or a more recent infection. This distinction is important as contact tracing can be more precisely directed, and identifying an acute infection is essential to minimize risk of community spread. The risk to an institution of an individual with a remote infection is also significantly less than an acute infection.

In December 2020, 5825 Manitoba SARS-CoV-2 positive results were analyzed and categorized by Ct value. Almost 60% had a Ct value less than 25 (~35% <20 and ~23% 20-25) and of the remaining samples, 18% had Ct 25-30, 18% had Ct 30-36 and 7% had Ct 36-40. The large majority (~68%) of these patients would be considered as higher level risk of infectiousness, just based on Ct value alone. The remaining smaller percent with high Ct values

would require in depth investigation to make a judgement call on their relative degree of infectiousness.

It is essential to state that high Ct values can be found in two distinct, yet equally important scenarios. First, a high Ct may be found in those who have just developed symptoms of COVID-19, usually within the first 24 hours⁴. These individuals have less virus at this early stage but will go on to have significantly more virus in the next few days. As they produce more virus, they will become increasingly infectious with significant risk of community transmission, and if re-tested we would expect to see a dramatic drop in the Ct value from their specimens. The second scenario is in those with infection that is resolving. They will have been infectious earlier in their disease. Public health must still investigate their contacts to determine if these contacts have developed COVID-19, even though the person with the high Ct test is less likely to be infectious at the point that the sample was taken. It is challenging to know where in their disease trajectory an individual with a high Ct is, thus it remains essential to identify them as a case, at a minimum to identify and investigate contacts in order to minimize secondary SARS-CoV-2 spread.

A Ct value of 25 or greater representing a false positive is a common misconception amongst the lay-public and even some healthcare professionals. As explained above, it is inaccurate to state that a COVID-19 case with a SARS-CoV-2 RT-PCR Ct value of over 25 is not infectious (based on cell culture data) and is even more inaccurate to suggest that the positive test represents a false positive. If the individual tests positive, they have the SARS-CoV-2 pathogen detectable and have been diagnosed with COVID-19. The term “functional false positive” is not recognized in the conventional medical literature. Concluding that a particular

220 individual is not infectious based on population level probability is flawed logic and should be
221 avoided. In public health and population studies this phenomenon is called “ecological fallacy”
222 – population level rules cannot reliably be applied at the individual level. In any event, the
223 individual with a positive COVID-19 RT-PCR test is a true positive case ~99.9% of the time and,
224 even if no longer infectious, may have recently transmitted the virus to close contacts or the
225 individual may yet become infectious (if at the start of disease).

References:

1. Corman VM, Landt O, Kaiser M, et al. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. *Euro. Surveill.* 2020 Jan; 25(3). doi: 10.2807/1560-7917.ES.2020.25.3.2000045.
2. Dust K, Hedley A, Nichol K, et al. "Comparison of Commercial Assays and Laboratory Developed Tests for Detection of SARS-CoV-2". *J Virol Methods*. Sept 10, 2020. DOI: <https://doi.org/10.1016/j.jviromet.2020.113970>.
3. Wolfel R, Corman VM, Guggemos W, et al. Virological assessment of hospitalized patients with COVID-2019. *Nature*. 2020;581(7809):465-469.
4. Bullard J, Dust K, Funk D, et al. Predicting infectious SARS-CoV-2 from diagnostic samples. *Clin Infect Dis*. 2020.
5. Cevik M, Tate M, Lloyd O, et al. SARS-CoV-2, SARS-CoV, and MERS-CoV viral load dynamics, duration of viral shedding, and infectiousness: a systematic review and meta-analysis. *Lancet Microbe*. November 19, 2020. DOI: [https://doi.org/10.1016/S2666-5247\(20\)30172-5](https://doi.org/10.1016/S2666-5247(20)30172-5).
6. Sarkar B, Sinha RN and Sarkar K. Indian J Community Med. 2020 Jul-Sep: 45(3):278-282.
7. Jaafar R, Aherfi S, Wurtz N, et al. Correlation Between 3790 Quantitative Polymerase Chain Reaction – Positives Samples and Positive Cell Cultures, Including 1941 Severe Acute Respiratory Syndrome Coronavirus 2 Isolates. *Clin Infect Dis*. 28 September 2020. <https://doi.org/10.1093/cid/ciaa1491>.

- 247 8. Association of Public Health Laboratories. "Ct Values: What They Are and How They
248 Can be Used", Version 1, November 9, 2020
249 <https://www.nj.gov/health/cd/documents/topics/NCOV/APHL-COVID19-Ct-Values.pdf>
- 250 9. Centers for Disease Control and Prevention. "Frequently Asked Questions about
251 Coronavirus (COVID-19) for Laboratories", Updated January 26, 2001.
252 <https://www.cdc.gov/coronavirus/2019-ncov/lab/faqs.html#print>
253
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