Court File No. CV-22-00682682-0000

Courts of Justice Act

ONTARIO
SUPERIOR COURT OF JUSTICE

BETWEEN:

RANDY HILLIER

Applicant

-and-

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF ONTARIO

Respondent

AFFIDAVIT OF DR. JOEL KETTNER
SWORN THE 7TH DAY OF SEPTEMBER, 2022

I, Dr. Joel Kettner, of the [redacted], MAKE OATH AND SAY AS FOLLOWS:

1. I have personal knowledge of the facts and matters hereinafter deposed to by me, except where same are stated to be based upon information and belief, and those I do verily believe to be true.
2. I am an epidemiologist and former Chief Medical Officer of Health of Manitoba.
3. I currently hold a position as geographic full-time associate professor in the Department of Community Health Sciences at the College of Medicine at the University of Manitoba. I hold Canadian Royal College Fellowship certifications in Public Health and Preventative Medicine as well as General Surgery. I obtained a Master of Science in Epidemiology from the London School of Hygiene and Tropical Medicine at the University of London in the United Kingdom.

4. During my time as Manitoba's Chief Medical Officer of Health, I led the Province's public health responses to several outbreaks including the SARS Coronavirus-1 and the H1N1 pandemic influenza.

5. Following the SARS-01 outbreak, I was part of the Canadian delegation to the World Health Organization ("WHO") special meeting in Geneva to develop the fourth edition of the International Health Regulation which introduced the concept, definition, and expectations of countries during a public health emergency of international concern.

6. I played a leading role at the WHO Pan American Health Organization special H1N1 meeting in Washington, D.C. In addition to the plenary presentation describing Manitoba's experience with the first wave of H1N1, I led a working group of guidance for the prevention and treatment of H1N1 in low resourced parts of the world. At that same meeting, I collaborated as an author of the first comprehensive review article of H1N1 influenza published in the New England Journal of Medicine.

7. Following my tenure as Chief Medical Officer of Health of Manitoba, I have undertaken a number of relevant roles and responsibilities including that of scientific director of the Public Health Agency of Canada's National Collaborating Centre for Infectious Diseases, medical director of the International Centre for Infectious Diseases in Winnipeg, board director of the Canadian Public Health Association, and president of the Public Health Physicians of Canada.

8. Specific relevant roles at the University of Manitoba have included director of the Medical College undergraduate program in Community Health Sciences and director of the Master in Public Health program. I continue to teach public health

and epidemiology at the undergraduate, graduate, and post-graduate levels. During this current COVID-19 pandemic, I have been active in organizing learning events and providing expert opinion and dialogue in a variety of consultive, academic and public platforms.

9. My qualifications are set out in the attached Curriculum Vitae ("CV") and marked as **Exhibit "A"** to this my Affidavit.

10. I have been asked by counsel for the Applicants to prepare a report as an expert witness to provide my professional opinions on the following questions:

    1. What relevant information has been provided by the Ontario Ministry or Public Health Ontario with respect to the effectiveness of restrictions of outside gatherings to reduce transmission of COVID-19 infection?
    2. In your opinion, with respect to the government of Ontario and public health officials, what information should have been used and what issues should have been considered, to explain and justify restrictions of outside gatherings?
    3. Based on what you have been able to find, with respect to the Ontario government and public health officials, what information has been used, what issues have been considered, and how have these been used to explain and justify the restrictions of outdoor gatherings?
    4. Based on information you have been able to find on official publications and postings, what were the estimated rates of transmission of public outdoor gatherings available to and/or used by the Ontario government and public health officials before, during, and after the enforcement of

the Stay-at-Home order that was in place from April to June 2021?

5. For the periods before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021, and based on information you have been able to find on official publications and postings, what were the estimated changes in rates of community transmission following large outdoor gatherings that were available to and/or used by the Ontario government and public health officials to explain and justify the restrictions of outdoor gatherings?
6. Based on information that you have been able to find, what was the hospital capacity in Ontario, in particular ICU capacity, before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021?
7. In your opinion, has the Government of Ontario provided sufficient data, information, evidence, analysis, and rationale to explain and justify the necessity and appropriateness of the restrictions of outdoor gatherings?

11. My signed Acknowledgement of Expert's Duty to this Honourable Court as an expert is attached as **Exhibit "B"** to this my Affidavit.

12. I acknowledge that in preparing this report and providing expert evidence, the Applicants' counsel 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 areas of expertise. This duty prevails over any obligations that I may owe to any party on whose behalf I am engaged.

13. Attached hereto and marked as **Exhibit "C"** to this my Affidavit is a copy of my report which I adopt and sets out the information and assumptions on which my opinion is based and a summary of my opinion.

14. Where I have relied on a document or data in forming my opinion, I have set out the citation to that document or data in the endnotes.

SWORN REMOTELY by videoconference by)
Dr. Joel Kettner at the [redacted])
[redacted], before me at the [redacted],)
this 7th day of September, 2022 in accordance)
with O.Reg. 431/20 Administering Oath or)
Declaration Remotely)

[redacted]

HENNA PARMAR
Barrister & Solicitor

[redacted]

DR. JOEL KETTNER

This is **Exhibit "A"** referred to in the Affidavit of **Dr. Joel Kettner** sworn before me virtually this 7th day of September, 2022.

_____ _____

Barrister and Solicitor in the
Province on Ontario

CURRICULUM VITAE

Joel David Kettner
MSc MD FRCSC FRCPC

September, 2022

TABLE OF CONTENTS

PERSONAL AND PROFESSIONAL INFORMATION, CONTACT INFORMATION

Home Address: [redacted]
Canada

Home Telephone Numbers: [redacted]

Work Phone Number: [redacted]

Mobile Phone [redacted]

Work Emails: [redacted]

[redacted]

UM Address: University of Manitoba
Dept. of Community Health Sciences
College of Medicine, Faculty of Health Sciences
University of Manitoba
S108C-750 Bannatyne Avenue
Winnipeg MB
R3E 0W3
(204) 789-3277

Personal History

Date of Birth: [redacted]

Place of Birth: [redacted]

Citizenship: Canadian

Marital Status: Married, six children, seven grandchildren

Places of Residence

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

PRESENT EMPLOYMENT

University of Manitoba	Associate Professor, Departments of Community Health Sciences and Surgery (since 1990); Associate Director, Public Health clerkship rotation, undergraduate medical education program; Postgraduate Medical Education CanMEDS intrinsic roles lead; Co-chair, Postgraduate Medical Education Truth and Reconciliation Action Plan Committee
University of Winnipeg	Adjunct professor, Dept of Indigenous Studies
Self-Employment	Independent consultant
	Consultant to several organizations with respect to COVID-19 (see court affidavits and expert reports, page 31.
	Consultant, Advisory Circle, Health Transformation Project, Southern Chiefs Organization, Manitoba.
	Members, College of Physicians and Surgeons of Manitoba Truth and Reconciliation Advisory Circle.
	Vaccinator, First Nations Communities COVID-19 vaccine project.
	Chair, College of Physicians and Surgeons of Manitoba Inquiry Panel

EDUCATION and TRAINING

Pre-University

1968 – 1969	St. John's High School, Winnipeg, Canada
1967 – 1968	Woodhouse Grammar School, London, England
1964 – 1967	St. John's High School, Winnipeg, Canada

University – Undergraduate

1972 – 1976	Faculty of Medicine, University of Manitoba, Dean A. Naimark Winnipeg, Canada
1969 – 1971	"Pre-med" Arts & Science" University of Manitoba, Winnipeg, Canada

University – Graduate and Post – Graduate

2000	Medical Assistance in Dying Addictions medicine, opiate agonist therapy
1989 – 1990 (6 months)	Family Medicine Weekly clinics, Family Medicine Centre, University of Manitoba Winnipeg, Canada
1988 – 1990	Community Medicine (now Public Health and Preventive Medicine) Residency, Dept. of Community Health Sciences, Faculty of Medicine University of Manitoba Winnipeg, Canada
1987 – 1988	Clinical Research Fellow, Imperial Cancer Research Fund Colorectoral Cancer Unit, St. Mark's Hospital, London, England
1986 – 1987	Clinical Research Fellow, Hepato-biliary Surgical Unit, Dept. of Surgery, University of London Royal Postgraduate Medical School and Hammersmith Hospital, London, England

1985 – 1986	Master of Science, Epidemiology, Faculty of Medicine, University of London, England, London School of Hygiene and Tropical Medicine
1985	Post – fellowship, Gastrointestinal Endoscopy, Gastrointestinal Surgery and Gastroenterology (Health Sciences Centre and St. Boniface General Hospital, Winnipeg Canada
1979 – 1984	General Surgery Residency, Dept. Faculty of Medicine, University of Manitoba (Health Sciences Centre and St. Boniface General Hospital), Winnipeg, Canada
1977	Extended Internship, Intensive Care (voluntary), Health Sciences Centre and St. Boniface General Hospital, Winnipeg, Canada
1976 – 1977	Rotating Internship, University of Manitoba, Faculty of Medicine (Manitoba Affiliated Teaching Hospitals – Health Sciences Centre and St. Boniface General Hospital, Winnipeg, Canada)

UNIVERSITY DEGREES AND CERTIFICATES

1991	Specialist Certification, Community Medicine (now Public Health and Preventive Medicine), Royal College of Physicians of Canada (FRCPC)
1985	Master of Science in Epidemiology, London School of Hygiene and Tropical Medicine, Faculty of Medicine, University of London, England, (MSc) (MSc Thesis – Epidemiology for Surgeons)
1984	Specialist Certification, General Surgery, Royal College Surgeons of Canada (FRCSC)
1976	Doctor of Medicine (MD), University of Manitoba, Winnipeg, Canada
1976	Licentiate, Medical Council of Canada (LMCC)

FELLOWSHIPS, ACADEMIC PRIZES, DISTINCTIONS AND AWARDS

2021/2022	Postgraduate medical education (PGME) Faculty and Staff Award in Professionalism, Advocacy and Social Accountability
2021	Co-chair of the PGME Truth and Reconciliation Action Plan Committee which received recognition from the PGME accreditors of the Royal College of Physicians and Surgeons of Canada and the College of Family Physicians of Canada as a leading practice and innovation.
2021/2022	Best teacher nominations for innovation, inspiration, mentorship, and small group settings in Med 1 and inspiration and small group settings for Med 2.
1991-2020	Nominated for best teacher of the year by undergraduate medical students in most years; most recently for small group teaching, inspiration, innovation, and mentorship by first and second year medical students.
2016	Long Service Award in Recognition and Appreciation of Twenty-five Years of Loyal Service, University of Manitoba.
2012-2014	McArthur Foundation Fellowship (two years), Masters Development Practice program, University of Winnipeg
2012	Nominated for Manitoba Civil Service Excellence Team Award – CPPHO Report on the Health of Manitobans report-team (leader).
2010	Winner of Manitoba Civil Service Excellence Team Award - Manitoba Health Pandemic H1N1 Influenza Incident Command Team (Medical lead)
1987 – 1988	University of Manitoba Faculty Fund Fellowship for studies in the clinical epidemiology of colorectal cancer.
1987 – 1988	Visiting Clinical Research Fellowship, Imperial Cancer Research Fund, UK, to study clinical epidemiology and Screening of colorectal cancer at the ICRF Colorectal Cancer Unit, St. Mark's Hospital, London, England
1985 – 1987	J.H.F. Knight Fellowship (University of London, England) to study epidemiology and screening for colorectal cancer
1985 – 1987	R.S. McLaughlin Foundation Fellowship (University of Manitoba) to study epidemiology and surgery at the

	University of London, England
1983	Davis and Geck Award for Best Surgical Resident of the Year
1982	Second Prize for paper presented at the American College of Surgeons (Manitoba Chapter), Manitoba
1969 – 1971	Dean's Honour List, both years of Pre-Medicine, Faculty of Science, University of Manitoba

MEDICAL WORK EXPERIENCE

Current	See "Present Employment"
2017	Consultant to Manitoba Keewatinowi Okimakanak, Inc. re northern health clinical transformation
2012-2017	Medical director, International Centre for Infectious Diseases
2012-2015	Director, Master of Public Health program, University of Manitoba
2012-2015	Scientific director, National Collaborating Centre for Infectious Diseases, International Centre for Infectious Diseases.
2012-2014	University of Winnipeg Visiting Professor and Senior Fellow Masters in Development Practice Program, Indigenous Faculty of Graduate Studies
2008-2012	Chief Provincial Public Health Officer of Manitoba
1999 – 2008	Chief Medical Officer of Health Province of Manitoba
1999	Medical Officer of Health Winnipeg Community Health Authority
1995 – 1999	Medical Officer of Health Winnipeg Region, Manitoba
1995 - 1999	Part-time general medical practice and travel clinics, Winnipeg City Clinic, 385 River Avenue, Winnipeg
1995 – 2010	Casual employment as emergency room physician, urgent care physician, and surgical assistant, Seven Oaks General Hospital Concordia General Hospital, Misericordia General Hospital, Grace Hospital, Victoria Hospital
1991 – 1995	Medical Officer of Health Thompson, Norman and Interlake Regions, Manitoba Health
1990	Attending surgeon, Surgical Intensive Care Unit, Health Sciences Centre

1986 – 1988	Locum tenens as senior registrar in Surgery, Hammersmith and St. Mark's Hospitals, London, England
1984 – 1985	Surgical Assistant, Cardiac, Surgery Unit, Health Sciences entre, Winnipeg, Canada
1977 – 1979	Full-time emergency room physician, St. Boniface General Hospital, Winnipeg, Canada

SELECTED CONTINUING PROFESSIONAL DEVELOPMENT

Current	Weekly Dept of Community Health Sciences Colloquia, on-line sessions, webinars, and conferences on topics including medical education, Community of Practice equity, diversion, and inclusion, Indigenous health and anti-Indigenous racism, and COVID-19.
2022	Pacific Rim Indigenous Doctors Conference, Vancouver, July 10 – 15, 2022. (Co-presenter, UM PGME TRAP program)
2022	Public Health 2022, Canadian Public Health Association annual conference, on-line, June 14 – 16, 2022.
2022	Public Health Physicians of Canada annual Continuing Professional Development Day, on-line, June 11, 2022.
2019	Family medicine sessions and teaching development sessions at the University Office of Continuing Professional Development and the Office of Educational and Faculty Development. Annual Scientific Assembly, Manitoba College of Family Physicians, Canadian Conference of Medical Education, Niagara Falls. Canadian Public Health Association annual conference, Ottawa Public Health Physicians of Canada annual Continuing Professional Development Symposium, Ottawa.
2018	Canadian Conference Medical Education, Halifax. Canadian Public Health Association annual meeting, Montreal. Public Health Physicians of Canada annual meeting, Montreal. Weekly Colloquia, Department of Community Health Sciences. CPD sessions, Office of Educational and Faculty Development. Preparation for CAPE (clinical assessment and professional enhancement for re-entry to clinical practice.
2017	Canadian Conference Medical Education, Winnipeg. Canadian Public Health Association annual meeting. Public Health Physicians of Canada annual meeting. Weekly Colloquia, Department of Community Health Sciences.
2015-2016	Canadian Conference Medical Education, Montreal. Canadian Public Health Association Annual Meeting, Toronto. Choosing Wisely symposium, Public Health Physicians of Canada, Toronto. Association of Medical Microbiology and Infectious Diseases Annual Meeting, Vancouver. Annual BIO Conference, San Francisco. Weekly Colloquia, Department of Community Health Sciences and Weekly Medical Microbiology Case Presentations.

	Peer Mentoring session for instructors of Indigenous health course.
2014	Faculty Development Workshop - Community Health Sciences June 12, 2014
2012	Medical Education Workshops, University of Manitoba Learning Styles in the Classroom Feb 16/12 Teaching Clinical Reasoning April 10/12 Teaching Critical Thinking May 22/12
2007	Queen's University Executive Leadership Course
1994-1995	Observation and supervised experience in Emergency Medicine, Seven Oaks Hospital, Winnipeg Canada (organized by Dr. Kopelow, Department of Continuing Medical Education)
1993	Clinician's Assessment and Enhancement Program, Department of Continuing Medical Education, Faculty of Medicine, University of Manitoba, Winnipeg, Canada

PROFESSIONAL MEMBERSHIPS, ORGANIZATIONS AND LICENSES

2020	Co-founder and lead, WhatsApp Chat Group, Open-Minded Critical Thinkers, COVID-19
2013 – 2016	President, Public Health Physicians of Canada.
2012 – 2018	Member, Board of Directors, Canadian Association of Medical Education Foundation, currently liaison member to the Canadian Medical Education Journal.
2012 – 2015	Executive member, Clinical Teachers Association of Manitoba
2012 – 2014	Member, Board of Directors, Canadian Public Health Association of Canada
1999 – present	Member, Public Health Physicians of Canada, previously National Specialty Society of Community Medicine
1993 - 2020	Member, College of Family Physicians of Canada
2000 – present	Member, Canadian Association of Medical Education
1991 – present	Fellow of the Royal College of Physicians of Canada (Community Medicine – now Public Health and Preventive Medicine)
1990 – present	Member of the Canadian Association of Teachers of Community Health
1988 – present	Member of the Canadian Public Health Association and the Manitoba Public Health Association
1984 – present	Fellow of the Royal College of Surgeons of Canada (General Surgery)
1976 – present	Licentiate of the College of Physicians and Surgeons of Manitoba, Current license, General Practice, with Specialty privileges in General Surgery and Community Medicine
1976 – present	Licentiate of the Medical Council of Canada
1976 – present	Member of the Canadian Medical Association (Manitoba Division)
1976 – present	Member of the Canadian Medical Protective Association

UNIVERSITY AND OTHER ACADEMIC ACTIVITIES

2020 - present	Faculty appointee, Undergraduate Medical Education Financial Award Committee
2020 – present	Member, PGME Continous Quality Improvement Committee, PGME Accreditation working group, PGME Mental Wellness Working Group,
2018 - 2020	Member, Postgraduate Medical Education Assessments Committee, Professional Curriculum Committee, Education Advisory Committee, Accreditation Working Group, and Competency-based Medical Education Committee.
2019 – present	Co-chair, Post-graduate Medical Education Truth and Reconciliation Action Plan Working Group
2017 - present	Post-graduate medical education CanMEDs intrinsic roles subject advisor
2015 - present	Associate director, Public Health part of Family Medicine/Public Health Clerkship.
1991- present	Member (and previous chair), Dept of Community Health Sciences Undergraduate Committee
2013- 2017	Member, Healthy Campus Advisory Committee, University of Winnipeg.
2012-2015	Director, Master of Public Health program, University of Manitoba
2012-2014	Visiting professor and senior fellow, University of Winnipeg, Masters in Development Practice program, Faculty of Graduate Studies
2012	Promoted to associate professor, University of Manitoba
2012-2015	Elected to University of Manitoba Senate by the Faculty Council of Medicine
2011-2012	Co-chair Curriculum Renewal Task Group on Health systems, Public Health, and Environmental and Occupational Health and member of the Curriculum Renewal Steering Committee, Faculty of Medicine, University of Manitoba

2007-2012	Founding member of the first national Public Health Educators Network, and participant author of its first national on-line learning resource for medical students (The Primer);
1995, 2006, 2010	Member, Search Committees for Head of the Department Community Health Sciences, Department of Community Health Sciences, Faculty of Medicine, University of Manitoba
1992-1994	MSc thesis advisor for Anita Kozyrskyj: Validation of an Electronic Prescription Database in Manitoba: An Opportunity to Evaluate Pharmacist Participation in Drug Utilization Review.
1994 – 1996	Member, Med I and II Curriculum Reform Committee –Core Concepts Block, Faculty of Medicine, University of Manitoba
1994 - 1995	Member, Search Committee for new tenure-track position, Department of Community Health Sciences, Faculty of Medicine, University of Manitoba
1991 – 2011	Member, Executive Committee, Department Community Health Sciences, Faculty of Medicine, University of Manitoba
1991 – 2015	Member, Committee of Evaluation, Faculty of Medicine, University of Manitoba
1991 – 2015	Member, Clerkship Curriculum Committee, Faculty of Medicine, University of Manitoba
1991 – 2011	Director, Undergraduate Program, Department of Community Health Sciences, Faculty of Medicine, University of Manitoba (special teaching responsibilities include Course Director, Line and major clerkship-Family Medicine Community Medicine, graduate course teaching, thesis supervision and teaching and supervision of community medicine residents).

Undergraduate courses taught at University of Manitoba

2015 - present	Small group teaching in the population and public health pre-clerkship and clerkship programs and the Indigenous health longitudinal course, totaling more than 100 hours per year.
1991- 2014	Average of more than 50 hours per year in undergraduate teaching, including 2-5 lectures and 2-3 tutorials in Population Health and Medicine, including Introduction to Health and Medicine (first lecture to first year medical students), Natural History of Disease and Levels of Prevention, Measurements of Health and Disease, Determinants of Health, Social Responsibility of Physicians; Public Health part of the Family Medicine/Public Health clerkship rotation (8 rotations per year), including orientation, community health status assessment, a "hot" current topic, followed after the rotation by a debrief; Annual summary presentation of Population and public health (invited consistently by 4th year students) as part of the LMCC QE Part I exam review.

Graduate and Postgraduate courses taught at University of Manitoba

2004 – present	Graduate teaching (MPH, MSc and PhD level): Problem Solving in Public Health (formerly Current Topics in Community Medicine 93.7510)
2016 - present	Invited regular speaker on Population Health and Health Care Organization to surgical residents as part of their Principles of Surgery training program.
2019	Invited speaker, Clinical Investigators Program: Health advocacy and health advocacy research.
1991- 2015	Annual guest teaching of "Principles of Prevention" in Epidemiology I and "Risk Communication" in Epidemiology II
1995-2008	Designer, supervisor, and lecturer in a recurring series of learning sessions in Epidemiology, Statistics, and Critical Appraisal in the PGME Core curriculum for all residents at the Faculty of Medicine;

Graduate Student Supervision

2015-2016	Supervised practicum of MPH student at International Centre for Infectious Diseases and National Collaborating Centre for Infectious Diseases
1994 - 2015	Supervisor for PGME students in Public Health and Preventive Medicine (average one - two per year for one to four month rotations)
2012-2015	Advisor to 13 MPH students, including field placement supervision.
1992-1994	MSc thesis advisor for Anita Kozyrskyj: Validation of an Electronic Prescription Database in Manitoba: An Opportunity to Evaluate Pharmacist Participation in Drug Utilization Review.

Current Research Activities

2013 – present	Health mentor, Grand Challenges Phase 1 Grant (total $100,000) "Improving Maternal and Child Health at the Root through Village Level Biotechnologies" with International Institute of Sustainable Development (co-PI) and CTx Green (P.I.)
Work in progress	A logical and quantitative surveillance framework for classifying possible, probable, and confirmed cases
	A framework for the settings approach to public health problem-solving
	A new approach to obtaining informed consent.

SELECTED SERVICES, PROVINCIAL COMMITTEES AND OTHER RELEVANT ACTIVITIES

2021 – 2022/present	Chair, Inquiry Panel , College of Physicians and Surgeons of Manitoba, case of Dr. Lockman.
2021 – present	Member Manitoba College of Physicians and Surgeons, Truth and Reconciliation Advisory Circle
2012 – present	Member, Manitoba Provincial Vaccine Advisory Committee
2015-2016	Member, planning committee, *Conference to develop a federal framework on Lyme disease, Ottawa, May 15-17, 2016*
1994 – 2018	Examiner, Medical Council of Canada Part II Qualifying Exam
2014 - 2016	Member, Winnipeg Harvest Health and Hunger Committee
2015 - 2016	Member, Advisory committee to the Public Interest Law Committee research study on guaranteed annual income.
2003 – 2015	Statistics Canada Canadian Health Measures Survey Expert Advisory Committee
2013-2015	Member, Public Health Infrastructure Task Group to develop a blueprint for a federated surveillance system in Canada
2006 – 2012	Member of the Advisory Committee, National Collaborating Centre for Infectious Disease
2003 – 2007	Healthy Living Issue Group of the Population Health Promotion Expert Group, Canadian Public Health Network responsible for leading the writing of the Pan-Canadian Healthy Living Strategy,
2006 – 2011	Federal Provincial Territorial Roles & Responsibilities in Pandemic Preparedness and Response Task Group, Public Health Network Council
2006	Member of the selection committee for scientific director, National Collaborating Centre for Infectious Disease
2006 – 2008	Medical Advisory Committee, Health Science Centre, Winnipeg, Manitoba, representing Department of Community Health Sciences
2002 – 2009	Emergency Preparedness Expert Group, Canadian Public Health Network

2002 – 2006	Manitoba member, Federal Provincial Territorial Deputy Ministers of Health Advisory Committee Population Health and Health Security
2004	Member of the Canadian delegation to the World Health Organization special meeting in Geneva November 1-12, 2004 to develop the fourth edition (2005) of the International Health Regulation introducing the concept, definition, and expectations of countries during a Public Health Emergency of International Concern (PHEIC).
2002 – 2003	Co-chair, Health Disparities Task Group, Federal Provincial Territorial Deputy Ministers of Health Advisory Committee Population Health and Health Security
2000-2001	Chair, Province of Manitoba Drinking Water Advisory Committee and sole accountable author of Report on Bacterial Safety of Drinking Water In Manitoba
1999 – 2002	Chair, Federal Provincial Territorial Deputy Ministers of Health Advisory Committee on Population Health
1999 – 2012	Council of Chief Medical Officers of Health of Canada (CCMOH)
1995 – 1999	Co-chair, Project Team, Community Health Status Assessments, Epidemiology Unit, Manitoba Health
1995	Participant, Federal-Provincial Working Group/Workshop for present the Prevention of Neural Tube Defects, Manitoba Health and Health Canada, Ottawa
1995	Member, Provincial Committee on Hepatitis A, B and C amongst Winnipeg street-evolved youth
1995 – 1999	Member, core committee to review the Public Health Act of Manitoba
1995	Member, Advisory Committee to the Baby Alert Program
1994 – 1995	Member, Steering Committee for Psychiatric Day Hospital and Community Services in Mental Health for Winnipeg, Manitoba Health
1994 – 1999	Member of the Manitoba Health Communicable Disease Control Surveillance Review Committee and Chairman, Subcommittee on Analysis and Dissemination of Results.
1994 – 1999	Member of the Winnipeg Air Quality Index Committee

1993 – 1995	Member, Provincial Cancer Control Committee and Chair of Subcommittee on Secondary Prevention of Cancer, Manitoba Health
1993-1994	Member, Working Group for Psychogeriatric Services in Winnipeg, Manitoba Health
1993-1994	Member, Committee to Define Core Services for Rural Health Associations, Manitoba Health***author of report.
1993-1994	Member, Provincial Surgery Committee, Manitoba Health
1993	Participant, national workshop and consensus conference on the training of community medicine specialists, Toronto
1991 – 1995	Member, National Population Health Survey Provincial Advisory Committee, Manitoba Health
1989	Member, Provincial Task Force on Breast Cancer Screening in Manitoba, Manitoba Health
1986-1988	Member, Public Health Alliance of Britain
1985-1988	Member, International Physicians for the Prevention of Nuclear War
1977-1985	President, Progressive Medical Association, Winnipeg
1974-1976	Founding member of "The Community Medicine Group" medical students concerned about social and public health issues
1974-1976	Founding co-editor (with Dr. Brian Postl) of "The Meditoban", first medical school student newspaper
1974-1976	Founding board member, NorWest Health Co-op, Winnipeg

PUBLISHED BOOKS

Northover, John M.A., Kettner, Joel D. and Mr. Barry Paraskeva PhD, FRCS. Your Guide to Bowel Cancer (Royal Society of Medicine). A Hodder Arnold Publication, 2007

Northover, John M.A. and Kettner, Joel D. Bowel Cancer: The Facts. New York, Oxford University Press, 1992

SIGNIFICANT REPORTS

Chief Provincial Public Health Officers' "Report on the Health Status of Manitobans 2010: Priorities for Prevention – Everyone, Every Place, Every Day" (published November, 2011)

PEER-REVIEWED PUBLISHED PAPERS

- SM Moghadas, M Haworth-Brockman, H Isfeld-Kiely, J Kettner. Improving public health policy through infection transmission modelling: Guidelines for creating a Community of Practice. Can J Infect Dis Med Microbiol 2015;26(X):1-5.

- Mahmud S, Hammond G, Elliott L, Hilderman T, Kurbis C, Caetano P, Van Caeseele P, Kettner J, Dawood M. Effectiveness of the pandemic H1N1 influenza vaccines against laboratory-confirmed H1N1 infections: population-based case-control study. **Vaccine**. 2011 Oct 19;29(45):7975-81. Epub 2011 Aug 30.

- Writing Committee of the WHO Consultation on Clinical Aspects of Pandemic (H1N1) 2009 Influenza, Bautista E, Chotpitayasunondh T, Gao Z, Harper SA, Shaw M, Uyeki TM, Zaki SR, Hayden FG, Hui DS, Kettner JD, Kumar A, Lim M, Shindo N, Penn C, Nicholson KG. Clinical aspects of pandemic 2009 influenza A (H1N1) virus infection. Review. **N Engl J Med**. 2010 May 6;362(18):1708-19.

- Zarychanski R, Stuart TL, Kumar A, Doucette S, Elliott L, Kettner J, Plummer F. Correlates of severe disease in patients with 2009 pandemic influenza (H1N1) virus infection. **CMAJ**. 2010 Feb 23; 182(3): 257-64. Epub 2010 Jan 21, 2010

- Verne J, Kettner J, Mant D *et al.* Self-administered faecal occult blood tests do not increase compliance with screening for colorectal cancer: results of a randomized controlled trial. **Eur J Cancer Prev** 1993; Jul: 301-305

- Yassi A, Kettner J, Hammond, G *et al.* Effectiveness and costs-benefit of an Influenza Vaccine Program for Healthcare Workers. **Can J In Dis** 1991: 101-108;

- Kettner, JD, Whatrup C, Verne JE *et al.* Is there a preference for different ways of performing faecal occult blood tests? **Int J. Colorectal Dis** 1990; May:82-86;

PUBLISHED ABSTRACTS

Kettner JD, Whatrup C, Miller K. A comparative study of three patient approach methods for faecal occult b1000 testing in a North London general practice. Coloproctology. 1988;10:129

Kettner JD, Whatrup C, Young K. A within-person comparison of efficacy and individual preference for two methods of faecal occult blood detection. Coloproctology 1988;10:123

Kettner JD, Whatrup C, Miller K *et al*. Evaluation of new faecal occult blood test-a comparison of individual preference and efficacy using Early Detector and Haemoccult. Theoretical Surgery 1987;2:82

Kettner JD, Whatrup C, Miller K *et al*. A randomized trail of invitation methods for occult blood screening. Theoretical Surgery 1987;2:81-82

Kettner J, Paetkau D, Slykerman L *et al*. Effect of treatment on cardiac performance when right ventricular afterload is gradually increased in dogs. Critical Care Medicine 1983; II;3:217

Paetkau D, Kettner J, Girling L, Slykerman L, Prewitt RM. What is the appropriate therapy to maintain cardiac output as pulmonary vascular resistance increases? Anacsthesiology, 57;3:A-56, September, 1982

PUBLISHED LETTERS (medical journals)

Kettner, J. Quebec's Public Health Cuts Canadian Journal of Public Health 2015:106:3 March/April.

Scholefield JH, Kettner, JD, Northover JMA. Papillomavirus infection and progress to abnormal cervical smears. Lancet, 1988:i:1405;

Scholefield JH, Kettner, JD, Northover JMA. Problems with anal cancer demographics. Diseases of the Colon and Rectum; 1988:31:10:831;

Kettner JD, Mant D, Northover JMA. Ethics of preventive medicine. Lancet; 1988;ii:44-45;

Kettner Joel and Northover, JM. Screening for colorectal cancer, Lancet 1986;i:562-563;

Kettner Joel and Northover, JM. Occult-blood screening, Lancet 1986;ii:110;

NON-PEER REVIEWED PUBLICATIONS

Kettner, JD and Neufeld, J.: The Settings Approach in Public Health: Thinking about Schools in Infectious Disease Prevention and Control, Purple Paper, Public Health Agency of Canada National Collaborating Centre for Infectious Diseases, April, 2014.

PRESENTATIONS, WEBINARS AND OTHER SCHOLARLY AND EDUCATIONAL ACTIVITIES

2022 Invited speaker, International webinar, Schools For Resilience, Equity, Safety, and Health: *Covid & Schools: A Post-Mortem & Development of a Framework (Multi-Intervention Program) To Prevent/Manage Infectious Disease Outbreaks*, May 14, 2022.

2021 Presentation to Southern Chiefs Organization summit meeting. Public Health and Primary Health Care in a Transformed Indigenous Health System. November 26, 2021.

2021 Invited speaker, Carleton Breakfast Club. COVID-19 - Questions and Answers. June 25, 2021.

2016 Planning consultant and facilitator, NCCID-York University Workshop on Mathematical Modelling in Public Health Infectious Diseases, York University, Toronto, October 3-4, 2016

2016 Guest (as Infectious Diseases Public Health specialist) on This Hour Has 22 Minutes, CBC Television.

2016 Member of scientific planning committee, Lyme Disease symposium, May 15-17, 2016, Ottawa.

2016 Facilitator, national workshop, "Starting from Square One: An Equity Model of Burden of Disease", Public Health Agency of Canada National Collaborating Centre of Infectious Diseases, Winnipeg, May 11, 2016.

Public Health 2016 (annual conference of the Canadian Public Health Association)

- Member, Conference Scientific Planning Committee
- Welcoming remarks on behalf of the Public Health Physicians of Canada at the opening ceremony
- Organized and participated in a panel discussion on "Public Health Inspectors, Public Health Nurses, and Public Health Physicians As Leaders: A Candid Conversation about Collaboration and Change "

Moderator, and member of the scientific planning committee, International Centre for Infectious Diseases National Grand Rounds:

- February 18, 2016: *Zika virus - What to Know, What to Do*, University of Manitoba, in collaboration with the Dept of Community Health Sciences Bold Ideas Colloquium Series.

Moderator, and member of the scientific planning committee, International Centre for Infectious Diseases International Webinars:

- December 1, 2016: *Difficult-to-treat Gram Negative Pathogens*
- November 8, 2016: *The Burden and Preventability of Non-respiratory Complications of Influenza in Older Adults*
- October 27, 2016: *Antibacterial Resistance in Gram-Negatives: Prevalence, risk factors, and impact of inappropriate therapy*
- October 13, 2016: *Pneumococcal Immunization for Older Adults*.
- August 17, 2016: *Pneumococcal conjugate vaccines for infants: What have we learned since their introduction?*
- June 22, 2016: *HPV Immunization Programs: What is the advantage of including males?*
- February 25, 2016: *Vaccine Hesitancy: What is it, Why is it, What to do about it?*
- January 13, 2016: *Mind your T's and Q's - What do we know about today's influenza vaccine options?* (moderator) and speaker: *Today's Menu of Vaccine Choices – the Basics and the New Ingredients*

2017	Radio interview re: legal age of marijuana purchase and use in Manitoba.
2015-2016	Radio, Television, and Media interviews on subjects including Ebola, ZikaVirus, Malathion, Influenza.
2015-2016	Designer, moderator, and speaker of ICID National Grand Rounds (Influenza vaccine for under 2 year olds, Influenza vaccine choices for seniors, Zika virus) and webinars (e.g. HPV vaccine, new vaccine options including quadrivalent, pneumococcal disease)
2015-2016	Co-chair (International Centre for Infectious Diseases/National Foundation for Infectious Diseases) of scientific planning committee and chair of international advisory committee for an accredited on-line learning module produced by MDBriefcase on *Seasonal Influenza in Older Adults: Immunization Challenges and Options for Vaccination Strategies*

2015:

Moderator, and member of the scientific planning committee, International Centre for Infectious Diseases National Grand Rounds:

- December 17, 2015: *Influenza Vaccines for Adults Over 65: Evaluating the Evidence*, University of Manitoba Medical College
- October 27, 2015: *Flu Vaccines for Little Kids – What's New, What's True*, University of Toronto

Moderator, and member of the scientific planning committee, International Centre for Infectious Diseases International Webinars:

- May 6, 2015: *Males and HPV: Burden of Disease and Prevention through Immunization*

November 25, 2015: Invited speaker, Public Health Physicians of Canada Residents' national educational webinar series: *Life After Residency.*

Lyme Disease Best Brains Exchange in Ottawa, June, 2015.

Chaired panel discussion at annual meeting of CHVI RD Alliance Coordinating Office at Canadian Association of HIV Research annual meeting, Toronto, 2015.

DCHS Colloquium presentation on the NCCID program: with Ms. Margaret Haworth Brockman: Ebola Virus Disease and other Challenges and Opportunities for the NCCID

Activities at Public Health 2015 (annual conference of the Canadian Public Health Association)

- Welcoming remarks on behalf of the Public Health Physicians of Canada at the opening ceremony
- Organized and chaired a panel discussion on "The ebola outbreak: What have we learned that we didn't know before?"
- Facilitated a workshop on Burden of Illness in Infectious Diseases

Association of Medical Microbiology and Infectious Diseases annual conference, Charlottetown, May, 2015.

- Poster presentation: AMR, Public Health, and Knowledge Translation: A Forward Approach

2014	Reviewer of research proposals for CIHR SPOR projects, Institutes of Population and Public Health and Health Services Delivery.
2013-2014	Member, scientific planning committee, Consensus Conference on Antimicrobial Resistant Organisms, University of and Institute of Health Economics, June 18-20, 2014
2014	Invited speaker, Consensus Conference on Antimicrobial Resistant Organisms, University of Alberta Institute of Health Economics, June 18-20, 2014: "What is surveillance? What is screening? How are they related?"
2014	Series of four public lectures at the University of Winnipeg on Public Health in the 21st Century: - *Public Health Unpacked: What is it? Who needs it?* - *Priorities for Prevention in Manitoba: our Provincial Profile* - *Public Health ahead: What are the Possibilities? How can we prevent the threats that we do not see or know?* - *Power, Process, and Public Policy: The Peculiar Ethics and Politics of Public Health and its relationship to Sustainable Development.*

2013-2014	National webinars for Public Health and Preventive Medicine residents and public health physicians hosted by the National Collaborating Centres for Public Health. Topic: - "Treatment as Prevention" with Drs. A. Ronald and J. Montaner - " Knowledge Translation for Emerging Diseases"
2013	Options (VIII) for the Control of Influenza, September 5-9, Capetown, South Africa - Paper: Rapid Knowledge Translation during the 2009 influenza pandemic - Poster: A project to translate and exchange knowledge towards more effective, efficient and equitable public health and primary care strategies for influenza and influenza-like illness (ILI) in Canada. JD Kettner , E Cheuk
2013	Innovation in Medicine and Health Care, University of Piraeus, Piraeus, Greece - Paper: Knowledge Translation for Emerging Infectious Diseases: Challenges and Opportunities
2013	University of Winnipeg Summer Institute Course: Hosted a morning session and presented a lecture on "Principles of prevention of infectious and chronic diseases"
2014	Series of four public lectures on public health, University of Winnipeg.
2012	Surgery Grand Rounds: "A Surgeon's Career in Public Health – the Long and the Short of It"
2003-2011	Annual lecture (most years) at "Bug Day" including SARS, "Little Bugs in the Big Picture", H1N1, and tuberculosis.
2010	National Collaborating Centre for Public Health, Making Connections, Opening Ceremony and plenary, keynote speaker, and co-presenter with Dr. Pat Martens on partnerships between government and university in public health policy setting, Summer Institute of the National Collaborating Centres of Canada
2010	The Manitoba College of Family Physicians, 52 Annual Scientific Assembly, key note speaker: H1N1 De-Brief
2010	Doctors Manitoba, Western Conference of Provincial/Territorial Medical Association, "*How to Survive a Pandemic –What have we learned?*"
2010	International College of Dentists Annual meeting, Winnipeg. *Public Health and the H1N1 Pandemic Influenza*
2009	Continuing Medical Education, Mini Medical School, University of Manitoba 2009;
2009	Presented on H1N1 for disadvantaged populations and led a practice guidelines consensus session at the Pan-American Health Organization of the World Health

	Organization consultation conference in October 14-16, 2009 in Washington, D.C.,
2008	Mini-university lecture on what on public health and evidence for the news
2007-2013	Annual lecture on *Issues and Trends in Public Health* at Red River Community College Issues and Trends in Health course taught by Jim Hayes as part of the Health management course for employees in regional health authorities
2007	Plenary speaker and panel discussant: Ethical issues in the practice of public health. The First Canadian Roundtable on Public Health: Exploring the Foundations, Montreal, Quebec.

2000-2022 Department of Community Health Sciences Colloquia:

- 2020: COVID-19 – Is the Prevention Worse than the Disease?
- February 5, 2020: Organizer and moderator of Coronavirus – an Open Forum, livestreamed, University of Manitoba Faculty of Health Sciences.
- 2018: Seeking Bold Ideas to Strengthen Inter-College Collaboration in Primary Care and Public Health
- 2017: Trumpism: Another Global Public Health Threat Originating in the USA?
- 2015: Colloquium presentation on the status and future of the National Collaborating Centre for Infectious Diseases
- 2014: Hosted colloquium and joint learning session with students and staff of the University of Winnipeg MDP program and University of the North Midwifery program: Dr. Janet Smylie and Sara Wolfe: "Indigenous Knowledge Work as a tool for Community Driven Health Services Development"
- 2013: Co-presented with Dr. Julie Pelletier (University of Winnipeg) on "Two Masters Programs – Two Universities – One Vision?"
- CPPHO Report on the Health Status of Manitobans ... Priorities for Prevention: Everyone, Every Place, Every Day – 2011
- The New Public Health Act "Does it meet the Public's Needs of Today and Tomorrow?" – 2009
- Reorganization of Public Health in Manitoba: Challenges and Opportunities –2008
- Healthy Living Strategy: New-Old or Old-New? –2003
- Walkerton Water – Could it happen here? - 2000

1993 The role of the urban medical officer of health. Cadham Provincial Laboratory Seminar

1990 "Screeening" for an awful disease. Community Health Sciences, Colloquium, Faculty of Medicine, University of Manitoba

1990 Epidemiology in Orthopedic Surgery, Orthopedic Grand Rounds, Health Sciences Centre

1989 Surgical Epidemiology, Western Association of Clinical Surgeons

1989 Screening for colorectal cancer, Concordia General Hospital Medical Rounds

1989 Screening for colorectal cancer, Surgery Grand Rounds, Health Sciences Centre

1987 Epidemiology of hepatic metastases, Annual course in advance hepatobiliary and pancreatic surgery, Royal Postgraduate Medical School, Hammersmith Hospital, London, England

1987 Obstructive jaundice, Surgery for GPs annual course. Royal Postgraduate Medical School. Hammersmith Hospital, London England

1987 Epidemiological aspects of hepatobiliary malignancies. Workshop in Research Methods in Surgery, Royal Postgraduate in Medical School, Hammersmith Hospital, London, England

1987	The surgical epidemiology of cholangiocarcinomas. UK Chapter of the World Congress of Hepato-biliary Surgeons, Cardiff, Wales
1987	Community Screening – Early Diagnosis and Prevention of Colorectal Cancer – a meeting for general practitioners, St. Mark's Hospital, London, England
1987	Mass Screening for colorectal cancer. Common Gastrointestinal Problems – Course for general practitioners, St. Bartholomew's Hospital Medical College, London, England.
1986	Mass Population Screening for Colorectal Cancer. Symposium on Screening, Carmarthen General District Hospital Carmarthen, Wales

Prior to career as medical officer of health 1990-2012:

1990 "Community Health Status Assessment – A model for Aboriginal Communities". Poster presentation, circumpolar health Conference, Whitehorse, Yukon;

1987-1988 The following two papers were presented by me at the Surgical Efficiency and Economy World Conference, Lund, Sweden, August, 1987 and at the 2nd Beonnial Congress of the European Council of Coloproctology Advances in Coloproctology, Geneva, Switzerland, 1988:

" A randomized trail of invitation methods for occult blood screening"

"Evaluation of new faecal occult blood test- a comparison of individual preference and efficacy using Early Detector™ and Haemoccult™"

1982-1983 "Effect of treatment on cardiac performance when right ventricular afterload is gradually increased in dogs" (Authors: Kettner Joel, Paetkau Don, Slykerman M, Girling L and Prewitt R. Departments of Surgery, Anaesthesia and medicine, University of Manitoba.

This paper was presented by me at the following meetings:

- American College of Surgeons, Manitoba Chapter, Winnipeg, 1982 (awarded 2nd prize);
- Critical Care Society Meeting, New Orleans, USA, 1983;
- American Society of Anaesthesiologists, Las Vegas, USA 1982;
- Canada Anaesthetists Society Meeting, Vancouver, 1983

CONTRACTED AND OTHER REPORTS

Southern Chiefs Organization Health Transformation: Public Health and Primary Health Care – Report and Recommendations (scientific, policy, and legal review), 2022.

Manitoba Health Provincial Health Indicators, member of Working Group. 1999. https://www.gov.mb.ca/health/documents/ind-all.pdf

Kettner, Joel D. Community Health Status Assessment, Waterhen First nation; 1993 (for Waterhen First Nation, Manitoba)

Kettner, Joel D. and Postl, B Community Health Status Assessment: a tool to understand and improve the health of Aboriginal communities: 1991 (Northern Health Research Unit for Medical Services Branch, Health Canada)

Kettner, Joel D. Community Health Status Assessment, Cross Lake, Manitoba; 1989 (for Medical Services Branch, Health Canada)

INVITED REVIEWS

2017- 2022: Canadian Journal of Public Health

2018-2022: Canadian Journal of Medical Education

2021: Association of Medical Microbiologists and Infectious Disease Specialists of Canada

2021: University of Manitoba Medical Students Journal

SELECTED MEDIA, COVID 19

Winnipeg Free Press panel, Dec 10, 2020
https://www.youtube.com/watch?v=9l52CWsUGTE

Toronto Caribbean interview, November 26, 2020
https://www.youtube.com/watch?v=cpjk53umB_0&feature=emb_title

CBC West of Centre panel discussion
Circuit Breakers and Personal Freedom, November 12, 2020.
https://www.cbc.ca/listen/cbc-podcasts/407-west-of-centre/episode/15808413-circuit-breakers-and-personal-freedom

Open letter to first ministers, July 29, 2020
https://healthydebate.ca/opinions/an-open-letter-to-pm-covid19

Opinion piece CBC Manitoba, July 25, 2020

A new normal, or new abnormal? Change in direction needed on COVID-19 response
https://www.cbc.ca/news/canada/manitoba/joel-kettner-opinion-covid-19-response-1.5654062

Letter to the editor, Winnipeg Free Press, June, 27, 2020
https://www.winnipegfreepress.com/search/?keywords=clergy+kettner&searchSubmitted=y&sortBy=-startDate

Cross-country Check-up, March 15, 2020.
https://www.cbc.ca/listen/live-radio/1-13-cross-country-checkup/clip/15765826-march-15-2020-is-enough-done-slow-covid-19

Invited interviews and expert advice between March 15, 2020 till August 15, 2021:

- **CTV local news**
- **Global TV local news**
- **CBC TV local news**
- **CJOB local radio**
- **Winnipeg Free Press**
- **Shaw local television, Victoria, BC**

COURT AFFIDAVITS AND EXPERT REPORTS (available from courts or by request to joel.kettner@umanitoba.ca)

Supreme Court of Yukon 20-AP002
Mercer vs Government of Yukon
Affidavit filed January 28, 2021

Supreme Court of British Columbia S 210209
Beaudoin vs Government of British Columbia and the Provincial Health Officer
Affidavit filed February 12, 2021

Supreme Court of Manitoba CI 20-01-29284
Gateway Bible Baptist Church et al vs Government of Manitoba
Affidavit filed April 1, 2021

Ontario Superior Court of Justice CV-20-00652216-000
Adamson Barbeque et al vs Ontario (Attorney General)
Affidavit filed April 14, 2021
Reply affidavit filed May 17, 2021

Ontario Superior Court of Justice CV-21-00013361-0000
Wellandport United Reformed Church vs Ontario (Attorney General)
Affidavit filed May 4, 2021.

Ontario Superior Court of Justice Court File No. CV-21-666
The Corporation of the City of Barrie vs Tyler Nicholson
Affidavit filed November16, 2022

Supreme Court of British Columbia S210831
Canadian Society for the Advancement of Science in Public Policy
And Dr. Bonnie Henry in her capacity as provincial health officer for the province of British Columbia
Affidavit file October 20, 2021

Court of Queen's Bench of Alberta
Wetaskiwin
Plaintiffs: Dr. Blaine Achen, Dr. Gert Grobler, Dr. Nadr Jomha and Dr. Tyler May
Defendant: Alberta Health Services
Affidavit filed December 9, 2021

No. S-210831
Vancouver Registry
Canadian Society for The Advancement Of Science In Public Policy
Plaintiff and: Her Majesty The Queen In Right Of The Province Of British Columbia and Dr. Bonnie Henry in her capacity as Provincial Health Officer for the Province of British Columbia
Affidavit January 10, 2022

Ontario Superior Court of Justice Court File No.: CV-21-00670360-0000
Sarah Harjee et al and Her Majesty the Queen in Right of Ontario
Affidavit filed January 21, 2022

Federal Court of Canada
Rickard and Harrison vs Her Majesty the Queen as represented by the Attorney General of Canada and Transport Canada
Affidavit filed March 11, 2022

Ontario Superior Court of Justice Court File No.: CV-21-00670360-0000
Sarah Harjee et al and Her Majesty the Queen in Right of Ontario
Response affidavit filed April 7, 2022

Volunteer and other non-medical activities

Volunteer surveyor, #Street Census, Winnipeg, May 25, 2022.

This is **Exhibit "B"** referred to in the Affidavit of **Dr. Joel Kettner** sworn before me virtually this 7th day of September, 2022.

_____ _____

Barrister and Solicitor in the
Province on Ontario

Court File No. CV-22-00682682-0000

FORM 53
Courts of Justice Act

ONTARIO
SUPERIOR COURT OF JUSTICE

BETWEEN:

RANDY HILLIER

Applicant

-and-

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF ONTARIO

Respondent

ACKNOWLEDGMENT OF EXPERT'S DUTY

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1. My name is Dr. Joel Kettner. I live at the [redacted].
2. I have been engaged by or on behalf of Randy Hillier, the Applicant, to provide evidence in relation to the above-noted court proceeding.
3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:
   (a) to provide opinion evidence that is fair, objective and non-partisan;
   (b) to provide opinion evidence that is related only to matters that are within my area of expertise; and
   (c) to provide such additional assistance as the court may reasonably require, to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Date: September 7, 2022

[redacted]

Signature

NOTE: This form must be attached to any expert report under subrules 53.03(1) or (2) and any opinion evidence provided by an expert witness on a motion or application.

RCP-E 53 (July 22, 2014)

This is **Exhibit "C"** referred to in the Affidavit of **Dr. Joel Kettner** sworn before me virtually this 7th day of September, 2022.

_____ [redacted] _____

Barrister and Solicitor in the
Province on Ontario

For Hassan/Parmar
Outdoor gathering report
Final report
Joel Kettner
September 2, 2022

Summary of questions and answers

1. What relevant information has been provided by the Ontario Ministry or Public Health Ontario with respect to the effectiveness of restrictions of outside gatherings to reduce transmission of COVID-19 infection?

    - I was unable to find any relevant evidence or information regarding effectiveness of restrictions of outside gatherings to reduce transmission of COVID-19 infections.

2. In your opinion, with respect to the government of Ontario and public health officials, what information *should* have been used and what issues should have been considered, to explain and justify restrictions of outside gatherings?

    - There should have been an estimate of the number and rate of direct and indirect transmissions causally associated with outdoor gatherings.
    - There should have been an estimate of the number and rate of severe outcomes (hospitalizations and deaths) attributable to transmissions causally associated with outdoor gatherings.
    - There should have been a quantitative estimate of the effectiveness of restrictions of outdoor gatherings to reduce transmissions and severe outcomes.
    - In consideration of the above, there should have been an analysis and estimate of the number and rate of transmissions causally associated with alternative activities of people in comparison to attendance at an outdoor gathering.
    - There should have been a description of the potential harms of the restriction policy including an estimate of the increased transmission resulting from participation in other activities.

3. Based on what you have been able to find, with respect to the Ontario government and public health officials, what information has been used, what issues have been considered, and how have these been used to explain and justify the restrictions of outdoor gatherings?

    - Other than general concerns and descriptions of increasing reported cases of COVID-19, hospitalizations, and anticipated pressure on hospital capacity to justify the Stay-at-Home Orders, I was unable to find an explanation or justification specifically regarding restrictions of outdoor gatherings.

4. Based on information you have been able to find on official publications and postings, what were the estimated rates of transmission of public outdoor gatherings available to and/or used by the Ontario government and public health officials before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021?

    - I was unable to find any specific information on the number or rates of transmissions associated with outdoor gatherings.
    - There were no reports of outbreaks (i.e. one or more cases) associated with outdoor gatherings before, during, or after the Stay-at-home orders.

5. For the periods before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021, and based on information you have been able to find on official publications and postings, what were the estimated changes in rates of community transmission following large outdoor gatherings that were available to and/or used by the Ontario government and public health officials to explain and justify the restrictions of outdoor gatherings?

    - I was unable to find descriptions, reports, or analyses of numbers or rates of transmission associated with large outdoor gatherings.
    - I was unable to find specific information that could have been or was used to attribute changes in rates of transmission to restrictions of large outdoor gatherings.

6. Based on information that you have been able to find, what was the hospital capacity in Ontario, in particular ICU capacity, before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021?

- The number of hospitalized and intensive care unit COVID-19 cases were relatively stable until the third month of the Stay-at-Home orders. Hospital cases fell by 2/3 during the month of June 2021; ICU cases fell by ½ during the same month.
- Compared with March, Average ICU bed availability decreased by 93 beds (18%) during the month of April and increased by 55 (10%) and 290 (55%) in May and June, respectively.

7. In your opinion, has the Government of Ontario provided sufficient data, information, evidence, analysis, and rationale to explain and justify the necessity and appropriateness of the restrictions of outdoor gatherings?

- I have been unable to find sufficient data, information, evidence, analysis, and rationale to explain and justify the necessity and appropriateness of the restrictions of outdoor gatherings.

The Questions and answers

Relevant context and definition

Before answering these questions, I will provide some context in the way of concepts and definitions relating to transmission of COVID-19 infections.

COVID-19 and SARS-CoV-2

COVID-19 is the name of the disease caused by the SARS-Coronavirus 2 virus. The terms are not synonymous.

Transmission of COVID-19

Transmission of COVID-19 is the event in which one person that is not infected by the SARS-CoV-2 virus becomes infected during close contact with a person that has COVID-19 and is infectious with the SARS-CoV-2 virus.

Not all exposures result in transmission.

There are several factors associated with the probability of exposure to virus during a contact event. These include closeness of the contact, duration of the contact, and environmental

factors. Environmental barriers include masks, shields, and other physical barriers such as screens. Other environmental factors relate to dispersion and dilution of viruses by indoor ventilation or outdoor space, wind and ultraviolet radiation from the sun.

There are also factors associated with the probability of transmission. These include the volume (load) of virus in the infectious person, the load of virus propelled by talking, coughing, or sneezing, and the resilience of the exposed person to defend against getting infected because of their general health status, immune competence, natural immunity from previous infection, or vaccine-mediated immunity.

Effectiveness of interventions to reduce transmission of COVID-19 infections.

Interventions to reduce transmission events can be classified as follows.

- Reducing the probability of infectiousness in either of the contacts;
- Avoiding close contact exposures;
- Reducing the probability of transmission from a close contact event.

These factors are considered in the management of cases and the follow up of their contacts.

Effectiveness of interventions is defined as their ability to prevent the transmission of infections.

Any method to assess the effectiveness of prohibition of outdoor gatherings must begin with an estimate of the number or rate of transmissions associated with attendance at outdoor gatherings. One way to do that is by using the data of the Ontario case and contact management system. Case and contact management data should have been used to determine potential contacts and settings where transmission occurred and potential contacts of further transmission. During this process, including the time period before the declaration of the orders, data should have been available to identify outdoor gatherings that may have been a setting for transmission.

If the goal is to reduce transmission of infections, interventions should be prioritized by their effectiveness to achieve that. A person is either in an outdoor or indoor setting. During the Stay-at-home orders, many indoor activities were prohibited but for many settings the number of persons at any one time were reduced, but not eliminated. One could reasonably ask whether outdoor activities would be expected to be protective – i.e. reduce the probability of transmission for an individual by replacing higher risk indoor activities with lower risk outdoor activities. The data to answer this question should have been available and should have been analyzed and transparently shared with the public.

1. What relevant information has been provided by the Ontario Ministry or Public Health Ontario with respect to the effectiveness of restrictions of outside gatherings to reduce transmission of COVID-19 infection?

Public Health Ontario posted 35 reviews of COVID-19 Public Health Measures (PHM)[1] between January 7, 2021 and June 17, 2021, evidence that would have been available for Ontario public health decision-makers prior to and during the Stay-at-Home Orders from April to June.

The purpose and scope of these reviews are described as follows:

> *PHO is reviewing current local, national and international evidence, as well as local epidemiology to assist our partners in planning community public health measures, identifying potential unintended consequences, and considerations for health equity. The Government of Ontario and local public health units are responsible for providing direction on specific public health measures that are implemented at a provincial or local level.*
>
> *Public health measures can include:*
>
> - *personal measures such as self-monitoring, isolation, and quarantine*
> - *general recommendations such as hand hygiene, non-medical mask use, physical distancing*
> - *community measures such as public messaging and education campaigns*
> - *restrictive community measures that limit activities or access to resources, facilities, or institutions, these are often referred to as "lockdown" measures*

I was not able to find in any of these reviews any data, information, evidence, analyses, or rationale regarding the risks of transmission associated with outdoor public gatherings or the effectiveness of measures to restrict outdoor gatherings with respect to rates of transmission of COVID-19.

On November 20, 2020, Public Health Ontario posted a "Jurisdictional Scan of Frameworks and Epidemiological indicators to Inform Public Health Measures during COVID-19"[2]

Although the frameworks include only indicators and thresholds of the occurrence, transmission, and severity of COVID-19, there is reference to guidelines of the Public Health Agency of Canada and the World Health Organization, which, together, express the importance

[1] https://www.publichealthontario.ca/en/Diseases-and-Conditions/Infectious-Diseases/Respiratory-Diseases/Novel-Coronavirus/Public-Health-Measures

[2] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/Documents/nCoV/he/2020/12/covid-19-jurisdictional-scan-epi-indicators-public-health.pdf?sc_lang=en

of ***science-based and transparent decision-making and data-sharing***, as well as ***the importance of taking into account effectiveness and minimizing unintended consequences***.

It states *"The Public Health Agency of Canada (PHAC) has provided four guiding principles **for lifting or implementing PHMs**.[3] First, **decisions should be based on current epidemiology and be science-based** and guided by advice from public health officials. Second, jurisdictions should ensure collaboration and coordination in response activities. Third, **jurisdictions should be transparent in decision-making and sharing data**. Fourth, implementation or relaxation of PHMs should occur in a **stepwise manner and be based on the current science**."*

On January 12, 2021 Ontario declared its second provincial emergency to address COVID-19 Crisis and Save lives.

> "*In response to the alarming and exceptional circumstances at hand, and to further interrupt the deadly trend of transmission in Ontario communities, hospitals, and long-term care homes, the following additional public health measures will take effect January 13, 2021 at 12:01 a.m.:* [4]
>
> - *"Outdoor organized public gatherings and social gatherings are further restricted to a limit of five people with limited exceptions. This is consistent with the rules during the lockdown during the first wave of COVID-19 in spring 2020 and will allow individuals and families to enjoy time outdoors safely."*
> - *"Individuals are required to wear a mask or face covering in the indoor areas of businesses or organizations that are open. Wearing a mask or face covering is now recommended outdoors when you can't physically distance more than two metres."*

Evidence was not presented nor was a rationale provided for the limitation of five persons for outdoor gatherings.

As referenced in the answer to question 2, a World Health Organization document states that the size of outdoor gatherings has not been associated with increased transmission rates. One could reasonably argue that the rate of close contact exposures would be higher in smaller gatherings where longer and closer encounters between individuals would be more likely to occur. Again, data should have been available to describe and compare the number and rate of transmissions associated with the size of gatherings.

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[3] 1. Government of Canada. Guidance for strategic approach to lifting restrictive public health measures [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 May 30; cited 2020 Nov 13]. Available from: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirusinfection/guidance-documents/lifting-public-health-measures.html

[4] https://news.ontario.ca/en/release/59922/ontario-declares-second-provincial-emergency-to-address-covid-19-crisis-and-save-lives

2. In your opinion, with respect to the government of Ontario and public health officials, what information should have been used, what issues should have been considered, and how should they have been used to explain and justify restrictions of outside gatherings?

What is the estimated absolute risk, relative risk, and relative proportional impact of outdoor gatherings?

Absolute risk, also referred to as actual risk, is a measure of the frequency or probability of a specific outcome. For example, the absolute risk of transmission during an outdoor event could be measured as the number of transmissions per person per event or per hour.

Relative risk is the comparison of absolute risks, e.g. the comparison of the rate of transmission per hour outdoors with the rate of transmission per hour indoors.

Proportional impact is the proportion of a specific outcome attributed to a specific activity or exposure, e.g. the proportion of all cases or outbreaks attributed to outdoor gatherings.

Public health strategists can assess the risk of an activity by drawing on past knowledge and, on a go forward basis, from current and ongoing surveillance.

Regarding past knowledge, I am not aware of any reasonable theoretical (based on scientific principles) or empirical (based on observations) arguments that counter the prevailing scientific opinion that the risk of transmission of respiratory viruses and bacteria is significantly less in outdoor settings than in indoor settings.

Risk factors for transmission in mass gatherings were described before March, 2020, and have been reinforced since. The World Health Organization published on February 14th 2020, and updated on Novermber 4, 2021, the guidance: *Key planning recommendations for mass gatherings in the context of COVID-19*.[5] Regarding risks associated with mass gatherings - which were not defined with respect to size or setting - the guidance states:

[5] https://apps.who.int/iris/handle/10665/348018

> *An analysis of mass gatherings held globally in 2020 and 2021 has indicated that the most important factors associated with increased risk of SARS-CoV-2 transmission in conjunction with such events are:*
>
> *• duration: risk grows with the duration of the event, or with the **duration** of stay of attendees at the event, **especially in the case of multiple days**;*
>
> *• location: risk is **higher in indoor venues than in outdoor venues**; and*
>
> *• compliance with precautionary measures: risk is higher when measures are not applied, weakly implemented, or not followed by attendees.*
>
> *The risk of person-to-person transmission of SARS-CoV-2 was **not found to directly correlate with the size of the gathering**.*

The guidance refers to the "*detection and management of event-related COVID-19 cases*", including "***contact tracing**, i.e. the process of identifying, assessing and managing people who have been exposed to a confirmed or probable COVID-19 case in conjunction with the event, to prevent onward transmission*."

Regarding the contact tracing referred to in the World Health Organization guidance, and other forms of surveillance, I have been unable to find any Ontario reports of cases or outbreaks attributed to attendance at an outdoor gathering.

Nor have I seen a risk assessment of the estimated number of additional direct or indirect cases or hospitalizations resulting from exposures at outdoor gatherings.

Referring, by necessity, to anecdotal evidence and expert opinion in the media, it appears that there has been no evidence of significant transmission at outdoor gatherings in Ontario.

An example is this CBC news article[6] featuring two frequently interviewed infectious disease experts. Following the day-long Toronto Trinity Bellwoods gathering of thousands of persons, in April 2021, there was apparently no evidence of transmission or reported cases or outbreaks associated with that event.

> *Last summer, Toronto officials and Premier Doug Ford slammed crowds who flocked to Trinity Bellwoods Park on a day when the weather was particularly nice, saying it could cause a spike in COVID-19 cases and undo weeks of effort to curb the spread of the virus.*
>
> *But Dr. Chakrabarti says the risk of outdoor transmission is so small, the outrage was unwarranted in regard to its effect on case counts — or lack thereof.*

[6] https://www.cbc.ca/news/canada/toronto/risk-of-covid-19-transmission-outdoors-explained-1.5981935

> *"If you look at it, a month afterwards, there was no increase in COVID transmission. Not to say that there probably wasn't a case or two but the point is it pales in comparison to the types of transmission we see in indoors," he said.*

Chagla estimated that one in 1000 infections can be attributed to outdoor activities, consistent with an Irish study that found the same.

A similar estimate by the US Centers for Disease Control[7] and published by the WHO is described below.

Following an updated and corrected systematic review of "Outdoor transmission of SARS-CoV-2 and Other Respiratory Viruses" published in The Journal of Infectious Diseases[8], the USA's CDC reduced by an order of magnitude its earlier estimate of the proportion of cases attributed to outdoor exposures.

Its authors concluded that the proportion of all COVID-19 infections that are happening outdoors is "likely much lower than 10%; and some of the studies we have reviewed thus far suggest that it is likely less than 1%".

This reassessment is significant for public health strategies that should focus on the settings and exposures which most contribute to transmission of infection and burden of disease. Having estimated that outdoor settings and exposures are associated with an order of magnitude of 1% of all transmissions might be expected to result in strategies to shift the focus onto the other settings and exposures that are responsible for 99% of transmissions.

Absolute risk of transmission and illness in outdoor settings and the relative risk of transmission, comparing outdoor settings with indoor settings

Public Health Ontario's "Risk Assessment Approach for COVID-19 Contact Tracing"[10] states "Outdoor environments are lower risk than indoor environments due to plentiful supply of outdoor air resulting in dispersion and dilution of droplets and aerosols, the presence of natural ultraviolet light, and ability to physically distance" and that "Smaller, confined indoor

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[7] https://www.who.int/publications/i/item/holding-gatherings-during-the-covid-19-pandemic-who-policy-brief-2-august-2021

[8] https://academic.oup.com/jid/article/224/5/925/6291889

[10] https://www.publichealthontario.ca/-/media/documents/ncov/main/2020/09/covid-19-contact-tracing-risk-assessment.pdf?la=en

environments with inadequate ventilation increase the risk of transmission, compared to larger spaces with adequate ventilation, up to 18.7 times in one preprint estimate."

According to Public Health Ontario's Risk Assessment Approach for COVID-19 Contact Tracing, less than 15 minutes duration of face-to-face contact with one person is a low-risk exposure and does not qualify for contact tracing, even in the absence of mask-wearing or two-meter distancing.[11]

Notably, these criteria were developed for indoor environment exposures in which the risk of transmission is much higher than for similar exposures in outdoor settings. I am not aware of adjusted criteria in Ontario for outdoor exposures, but risk assessment guidelines consistently indicate that indoor exposures are more likely to result in transmission than outdoor exposures.[12]

This assessment is consistent with the Canadian Public Health Agency's definition of a high-risk exposure as well as that of the European Centres for Disease Control, namely "contacts who have spent 15 minutes or more in close proximity to (2 meters or less) or in a closed environment with a case". [13]

Furthermore, high-risk exposures between members of the same household or close friends or relatives at an outdoor event should be considered a negligible risk compared to their risk of household transmission. One could argue that participation at an outdoor event lowers their risk of transmission if it replaces indoor or other higher risk exposures and settings. This is because the exposures between household members, close friends, and close relatives are mostly indoors and because exposures during a one- or two-hour rally per week would be expected to constitute a small proportion of their total time together.

Despite observations and surveillance of these outdoor events, no evidence or estimate has been provided of the frequency of encounters which would be classified as high-risk exposures using the standards established by Ontario Public Health.

More importantly, I was unable to find information provided on an Ontario website or the Ontario Public Health websites about the number and/or rates of transmission, hospitalizations, or deaths attributable to attendance at an any outdoor gathering. Furthermore, I could find no description of a process to determine the number and rate of transmissions attributable to attendance at an outdoor gathering.

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[11] https://www.publichealthontario.ca/-/media/documents/ncov/main/2020/09/covid-19-contact-tracing-risk-assessment.pdf?la=en

[12] https://www.who.int/publications/i/item/holding-gatherings-during-the-covid-19-pandemic-who-policy-brief-2-august-2021

[13] https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-Contract-tracing-scale-up.pdf

Factors which should be considered in public health decision-making, whether by public health officials or elected representatives, especially when public health measures interfere with autonomy and restrict individual rights and freedoms.

The World Health Organization highlights essential aspects to take into account when developing response frameworks and epidemiological indicators and thresholds.[14] Firstly, jurisdictions should understand the current level of transmission in the community. Secondly, jurisdictions need to assess health care system capacity (clinical care and public health measures) to respond. Public health measure (PHM) implementation or discontinuation must take into account effectiveness and unintended harmful consequences. Moving from one level to another must occur in a step-wise manner. Epidemiology and current science should inform PHMs at various geographical scales, rather than universally.

As described in the *Public Health Ethics Framework: A guide for use in response to the COVID-19 pandemic in Canada*[15], to comply with the principle of proportionality, "potential benefits should be balanced against risks of harm".

Identification and considerations of the burden of the hazard, the effectiveness and harms of intervention options, and their impact on autonomy and rights and freedoms are at the core of good and ethical public health practice[16]. These considerations are also reflected in most provincial public health legislation which are further consistent with the *Canadian Charter of Rights and Freedoms*[17]. In Ontario, reference to the *Charter* is contained in the *Emergency Management and Civil Protection Act*.

1. The *Ontario Emergency Management and Civil Protection Act*[18] states:

> *7.0.2 (1) The purpose of making orders under this section is to promote the public good by protecting the health, safety and welfare of the people of Ontario in times of declared emergencies in a manner that is subject to the Canadian Charter of Rights and Freedoms 2006, c. 13, s. 1 (4).*

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[14] World Health Organization. Considerations for implementing and adjusting public health and social measures in the context of COVID-19: interim guidance [Internet]. Geneva: World Health Organization; 2020 [cited 2020 Nov 13]. Available from: https://www.who.int/publications/i/item/considerations-in-adjusting-public-health-and-socialmeasures-in-the-context-of-covid-19-interim-guidance

[15] https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/canadas-reponse/ethics-framework-guide-use-response-covid-19-pandemic.html

[16] https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/canadas-reponse/ethics-framework-guide-use-response-covid-19-pandemic.html

[17] https://www.canada.ca/content/dam/pch/documents/services/download-order-charter-bill/canadian-charter-rights-freedoms-eng.pdf

[18] https://www.canlii.org/en/on/laws/stat/rso-1990-c-e9/latest/rso-1990-c-e9.html

Canadian public health legislation addresses this issue in various ways, but the principles are similar. Like any medical advice – for an individual, a community, or a government - public health leaders are expected to assess the magnitude of the threat and to weigh up the pros and cons of alternative interventions.

Step four of the guidelines section of the *Ontario Hazard and Identification Risk Assessment Program*[19] states that considerations of extraordinary public health interventions require clear descriptions of quantitative estimates of likelihoods (probabilities) of events and the level of severity of the consequences of those events. In other words, a reasonable risk assessment must describe how severe, how likely, and how frequently the threat is expected to occur. This assessment must be done at the following intervals: before the event(s), during the event(s) and after the event(s).

To assess the threat of any potential hazard, epidemiological descriptors should include specific probabilities –in the form of rates, ratios, or proportions – not only crude numbers (numerators without denominators). For effectiveness of interventions, this includes measurements and estimations of quantifiable outcomes, including benefits and harms. These estimates are fundamental to the process of determining whether public health interventions are proportionate to the threat and are therefore reasonably necessary. Early in a pandemic, there may be limited data to predict anticipated benefits and harms, but estimates were made and can be adjusted with new information. At the time of the Stay-at-Home Orders, more than one year of data had been collected.

I have not been able to find on an Ontario Public Health website any data, information, or estimated rates of cases and/or severe outcomes associated with outdoor exposures. I also could not find an estimate of the benefits and harms associated with the prohibition of peaceful outdoor gatherings. The absence of such information is inconsistent with the guidelines of the *Ontario Hazard and Identification Risk Assessment Program*[20] as described above. A risk assessment is expected to be quantified, as is an assessment of the benefits and harms of interventions. In the absence of such information or estimates, it is not apparent – or transparent – how public health decisions and interventions have been made.

More specifically, I have been unable to find information on an Ontario government website to estimate or explain the risk of spreading COVID-19 outdoors, or to what degree it may place further strain on hospital and ICU capacity. Nor have I been able to find data or information to estimate or explain the expected and observed beneficial effect size of the measures in place to reduce the risk of spreading COVID-19 when outdoors and to curb the spread of COVID-19 in our community.

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[19] https://www.emergencymanagementontario.ca/english/emcommunity/ProvincialPrograms/HIRA/Guidelines/main.h tml

[20] https://www.emergencymanagementontario.ca/english/emcommunity/ProvincialPrograms/HIRA/Guidelines/main.html

Data, information, knowledge, principles, and arguments which should have been included to estimate harmful outcomes associated with outdoor activities and to justify the public health restrictive policies.

Until January 20, 2022[21], the policy of Public Health in Ontario was to interview all cases of COVID-19 to identify close contacts.[22] Close contacts were tested for SARS-CoV-2 and followed up for the occurrence of symptoms. If a contact has a positive test, they then become defined as a case, leading to further contact tracing by public health.

Given the apparent level of concern regarding outdoor events, it would be expected that cases would have been specifically asked about their attendance at or contact with an attendee of these and other outdoor events, especially highly visible and well-publicized events. The ability to identify potential cases and contacts should have been aided by enhanced surveillance – closer follow up of cases and contacts associated with outdoor events - and other efforts made by officials to identify participants. Despite these opportunities to identify cases and contacts, I have been unable to find data, evidence, or estimates of the number or rate of cases or close contacts of COVID-19 associated – directly or indirectly - with attendance at outdoor rallies or other similar events. If the probability of transmission was high enough to justify the restrictive public health measures against outdoor gatherings, one would expect at least some evidence of the frequency of COVID-19 transmission in the past 18 months.

If, as reported in the Journal of Infectious Diseases, less than 1% of all COVID-19 infections are associated with outdoor exposures[23], it is understandable that outdoor settings may not have been prioritized for surveillance and investigation. It does, however, raise the question as to why there has been so much focus and effort on the relatively low-risk events of the public gatherings in question.

[21] https://covid-19.ontario.ca/exposed?utm_source=mobile-app-organic&utm_medium=referral&utm_campaign=covid-alert-mobile-app-english&utm_content=covidalertapppage-text

[22]https://health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/contact_mngmt/management_cases_contacts.pdf

[23] https://academic.oup.com/jid/article/224/5/925/6291889

3. Based on what you have been able to find, with respect to the Ontario government and public health officials, what information has been used, what issues have been considered, and how have these been used to explain and justify the restrictions of outdoor gatherings?

On April 1, 2021, the Ontario government announced its intention to impose a "province wide emergency brake" [24] because of an "alarming surge in case numbers and COVID-19 hospitalizations across the province".

The rationale for the "shutdown" was:

> *Ontario's key indicators and latest modelling show that additional measures must be taken. From March 26 to 28, 2021, provincial case rates have increased by 7.7 per cent to 101.1 cases per 100,000 people. Current COVID-19 related ICU admissions are already over the peak of wave two and hospitals in regional hotspots will need to further ramp down scheduled surgeries. COVID-19 related ICU admissions are projected to exceed 650 beds in a few weeks. These increases are being driven by COVID-19 variants, which are transmitted easily and result in a higher risk of death and hospitalization, including in younger populations.*

Regarding outdoor events, the measures included:

> *Prohibiting indoor organized public events and social gatherings and limiting the capacity for outdoor organized public events or social gatherings to a 5-person maximum, except for gatherings with members of the same household (the people you live with) or gatherings of members of one household and one other person from another household who lives alone.*

On April 7, 2021, the Ontario government announced its third "provincial emergency" under s 7.01 (1) of the *Emergency Management and Civil Protection Act (EMPCA).*[25]

> *Effective Thursday, April 8, 2021 at 12:01 a.m., the government is issuing a province-wide Stay-at-Home order requiring everyone to remain at home except for essential purposes, such as going to the grocery store or pharmacy, accessing health care services (including getting vaccinated), for outdoor exercise, or for work that cannot be done remotely.*

Included in the exceptions, outdoor shopping was allowed with limitations:

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[24] https://news.ontario.ca/en/release/60986/ontario-implements-provincewide-emergency-brake

[25] https://news.ontario.ca/en/release/61029/ontario-enacts-provincial-emergency-and-stay-at-home-order

> *Permitting outdoor garden centres and plant nurseries, and indoor greenhouses that engage in sales to the public, to operate with a 25 per cent capacity limit and a restriction on hours of operation to between 7 a.m. and 8 p.m.*

In my opinion, the information provided above does not show adequately what information was used, what issues were considered, and what rationale and explanations justified the restrictions.

Without estimates of the number and rate of outdoor transmission of infections and their consequences, there is no epidemiological foundation to justify the restrictions. The lack of detected or reported transmissions - after identifying and contact-tracing for a total of 363,000 cases as of April 3, 2021[26] - four days before the orders of April 7, 2021 - indicates that the transmission in outdoor events had been negligible.

4. Based on information you have been able to find on official publications and postings, what were the estimated rates of outdoor transmission available to and/or used by the Ontario government and public health officials before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021?

The Ontario Enhanced Epidemiological Survey[27] reports COVID-19 outbreaks and cases in Ontario by setting: February 16, 2020 to June 12, 2021. During this time, there were 92,665 confirmed COVID-19 cases associated with 10,669 outbreaks.

Based on the numbers provided, the average outbreak size is 9 cases, the average number of outbreaks per week was 150, and the average number of cases associated outbreaks was 1300.

How many outbreaks have been associated with outdoor public gatherings? Neither this report nor any other report that I have seen answers this question with sufficient clarity or accuracy.

Using the data that has been provided in this report, one can estimate that maximum number of reported outbreaks that could have been associated with public outdoor gatherings.

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[26] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/2021/04/covid-19-weekly-epi-summary-report-apr-3.pdf?sc_lang=en

[27] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/documents/ncov/epi/covid-19-settings-based-outbreaks-epi-summary.pdf?sc_lang=en

Culture and other recreation	199	6 (3 - 13)	365	8 (4 - 14)
Places of worship	62	6 (3 - 12)	54	8 (4 - 12)
Private events	35	8 (3 - 14)	43	6 (4 - 9)
Other	102	5 (3 - 13)	365	9 (5 - 21)

Based on the setting definitions, public outdoor gatherings would be a subset of "other" settings, for which 102 outbreaks and 365 cases were identified. This group of settings – *which includes theatres, banquet halls (not including weddings), race tracks, private transportation, private residences, and other community settings* - constituted 1% of all outbreaks and one in 250 outbreak-associated cases. This constitutes 365/363,000 = 0.1% of all reported cases.

How many of these outbreaks and outbreak-associated cases have been associated with outdoor gatherings?

I was not able to find any documentation of whether any of these outbreaks were associated with public outdoor gatherings. Furthermore, I have not been able to find any counts or anecdotes of outbreaks or cases associated with attendance at an outdoor public gathering in surveillance data, government announcements, or media reports – before, during, or since the Stay-at-home orders implemented between from April to June, 2021.

Given the apparent concerns about outdoor gatherings, one might expect that any cases or outbreak associated cases would have been highlighted in epidemiological summaries and brought to the attention of the public in other ways.

Public Health Ontario has surveilled and reported weekly on the occurrence of outbreaks since February 2020. In its cumulative report, there are definitions for 45 types of settings. The word "outdoor" does not appear in any setting other than as part of a group of "Culture and other recreation" settings[28], as defined below.

> *A setting in which social gatherings take place, including places of worship, indoor and outdoor private events (including weddings and funerals), and other community gathering spaces. Examples of settings captured under 'culture and other recreation – other' include theatres, banquet halls (not including weddings), race tracks, private transportation, private residences, and other community settings.*

[28] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/documents/ncov/epi/covid-19-settings-based-outbreaks-epi-summary.pdf?sc_lang=en

The reports do not include definitions of how many cases constitute an outbreak, as explained below.

> "Definitions of outbreaks, including the number of cases, vary across settings. In addition, due to variations in data entry processes across public health units, some outbreaks included in this report may not have met the criteria included in an outbreak definition (i.e., size or duration of outbreak). Further, there is no provincial outbreak definition for several setting types classified within the other settings category; as such, there may be variation in declaring outbreaks by public health unit."

Using the data that has been provided in these reports, one can estimate the maximum number of reported outbreaks that may have been associated with public outdoor gatherings.

The following tables show the cumulative counts of outbreaks and outbreak-associated cases in the categories that may have included outdoor exposures at January 2, 2021[29], March 27[30], June 26[31], and September 25[32], 2021.

[29] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/2021/01/covid-19-weekly-epi-summary-report-jan-2.pdf?sc_lang=en
[30] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/2021/04/covid-19-weekly-epi-summary-report-mar-27.pdf?sc_lang=en
[31] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/2021/06/covid-19-weekly-epi-summary-report-june-26.pdf?sc_lang=en
[32] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/2021/10/covid-19-weekly-epi-summary-report-sept-25.pdf?sc_lang=en

Using these reports, the number of outbreaks and case-associated outbreaks in the categories of other recreation and other recreation/community – the categories which are most related to outdoor public gatherings - for the three-month periods before, during, and after the Stay-at-home orders can be calculated and shown in the following table:

	January – March, 2021	April – June, 2021	July – September, 2021
Other recreation/community setting outbreaks	69	65	71
All-settings outbreaks	3,182	3,155	903
% of all outbreaks	2%	2%	8%
Other recreation/community outbreak-associated cases	1,200	1,066	690
All-settings outbreak-associated cases	31,247	22,612	5,909
% of all outbreak-associated cases	4%	5%	12%
All cases	151,044	199,952	43,928
% of all cases	0.8%	0.5%	1.6%

This table shows that the category in which outdoor public events would be included has been associated with 2% of all outbreaks and 4% of all outbreak-associated cases during the three months before the Stay-at-Home orders and the three months during the Stay-at-Home orders. In the absence of any reports of outdoor outbreaks, it is quite possible, if not likely, that none of these outbreaks were associated with public outdoor gatherings. Furthermore, it appears that there was no change in the number of outbreaks in this category during this nine-month period. The decrease in the number of outbreak-associate cases during the three-month period after the orders can only be explained by a decrease in the average number of cases detected per outbreak. Most importantly this category of outbreaks has been reported to constitute an average of 1% of all reported cases.

As explained in the Data Caveats and Methods: Case Data[33] of the weekly epidemiology summaries below, an outbreak-associated exposure would be given precedence over a close contact with a confirmed case. In other words, if a person reported to a case manager that they had a close contact with a confirmed case as well as attendance at an event that had been classified as an outbreak, their setting of exposure would be classified as the event, not their exposure to known confirmed case. Therefore, it would be reasonable to expect that this would result in an overestimation of outbreak-associated cases as the source of transmission.

> *Cases with multiple risk factors were assigned to a single likely acquisition source group which was determined hierarchically in the following order: For cases with an episode date on or after April 1, 2020: Outbreak-associated > close contact of a confirmed case > travel > no known epidemiological link > information missing or unknown*.

5. For the periods before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021, and based on information you have been able to find on official publications and postings, what were the estimated changes in rates of community transmission following large outdoor gatherings that were available to and/or used by the Ontario government and public health officials to explain and justify the restrictions of outdoor gatherings?

I have been unable to find data or information that could be used to inform an answer to this question. At the very least, the following information would be needed:

- The dates, duration, and numbers of people in attendance at each outdoor event, including an estimate of the number of close contact high risk exposures;
- Case and contact management data and analyses to estimate the frequency of transmissions associated with each event and to determine whether exposures at the settings of outdoor gatherings were more or less likely to explain each association as causal;
- Before and after observations of rates of transmission in individuals, families, groups, and communities that participated in the gatherings.

Without an estimate of denominators i.e. the number, duration, and sizes of public outdoor gatherings, it is not feasible to estimate accurately the rate of transmissions during such events or the impact of such transmissions on the community at large.

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[33] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/2021/06/covid-19-weekly-epi-summary-report-june-26.pdf?sc_lang=en

As previously explained, it would be reasonable to conclude that attendance at an outdoor public gathering would constitute a lower probability of transmission than participation in other events permitted during the Stay-at-Home orders. These include indoor private household gatherings of no more than five people plus one non-household members that lives alone and indoor shopping at grocery stores, pharmacies, and indoor farmers' markets at 50% capacity, and other retail limited at 25% capacity.

6. Based on information that you have been able to find, what was the hospital capacity in Ontario, in particular ICU capacity, before, during, and after the enforcement of the Stay-at-Home order that was in place from April to June 2021?

ICU capacity January 1, 2021 – September 30, 2021

The table below is based on calculations of data from two sources of the Ontario data tool - Availability of adult ICU beds and occupancy for covid-related critical illness[34] and COVID-19 cases in hospital and ICU by Ontario health regions. [35]

During the three-month periods prior to, during, and after the Stay-at-Home order, the daily average number of available intensive care unit beds was 550, 610, and 788. These data – as shown below - do not appear to be consistent with the following statement made at the announcement of the Stay-at-home orders on April 7:

> *Case rates, hospitalizations, and ICU occupancy are increasing rapidly, threatening to overwhelm the health care system. The number of COVID-19 hospitalizations in the province have increased by 28.2 per cent between the period of March 28 and April 5, 2021. In addition, between March 28 and April 5, 2021, Ontario has seen the number of COVID-19 patients in intensive care escalate by 25 per cent. While every action possible is being taken to increase capacity and continue daily surgeries and procedures, the province is reaching a tipping point.*

During the three-month periods prior to, three months during, and three months after the Stay-at-Home order, the daily average number of intensive care COVID-19 cases was 328, 575, and 128.

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[34] https://data.ontario.ca/en/dataset/availability-of-adult-icu-beds-and-occupancy-for-covid-related-critical-illness-crci

[35] https://data.ontario.ca/en/dataset/covid-19-cases-in-hospital-and-icu-by-ontario-health-region

ICU capacity was stable at about 25% available beds prior to and during the orders. In other words, at no time was ICU capacity fully utilized or exceeded.

As indicated in early parts of this report, I have been unable to find information about how many – if any – hospitalized cases have been associated with transmission at outdoor gatherings.

Dates	ICU Available beds	ICU beds occupied	ICU bed capacity	% of ICU beds occupied	ICU COVID cases	COVID cases % of ICU cases	COVID cases % of total ICU beds	Non-ICU hospital COVID cases
Jan 1-31	571	1571	2142	73%	374	21%	17%	1487
Feb 1-28	554	1777	2331	76%	302	17%	13%	848
March 1-31	526	1779	2305	77%	307	17%	13%	784
April 1-30	433	1886	2319	81%	705	37%	30%	1875
May 1-31	581	1966	2547	77%	696	35%	27%	1526
June 1-30	816	1738	2554	68%	326	19%	13%	454
July 1-31	904	1622	2526	64%	129	8%	5%	162
August 1-31	771	1611	2382	68%	98	6%	4%	192
September 1-30	688	1687	2375	71%	157	9%	7%	333

7. In your opinion, has the Government of Ontario provided sufficient data, information, evidence, analysis, and rationale to explain and justify the necessity and appropriateness of the restrictions of outdoor gatherings?

Public health interventions, when necessary and appropriate, may justifiably limit personal autonomy or cause unintended harm in other ways. To be consistent with good public health practice and ethics, such interventions must be justified reasonably, clearly, and transparently. This must include an assessment of the severity of the threat, an explanation for the necessity of the interventions, and reasonable estimates of their expected benefits and harms.

As a public health practitioner and teacher, I have found the following list of expectations useful when considering and justifying public health interventions, especially when such interventions restrict rights or cause harms.

1. The severity of the public health threat should be estimated in absolute and relative terms.

- I was unable to find an estimate of the actual risk or comparative risk of COVID-19 infection transmissions or more severe consequences that would be or have been associated with exposures at public outdoor gatherings.

2. A reasonable strategy should be described with clear rationale and justification, broad goals, and specific, measurable, achievable, and relevant, time-defined objectives.

- General goals and some indicators of the overall public health strategy have been described but I was unable to find specific measurable objectives of the overall public health strategy or the restrictions of outdoor gatherings.

3. The interventions should be expected to significantly contribute to achieving one or more of the goals of the strategy and one or more of the objectives of the strategy.

- In the absence of specific measurable objectives of the overall public health strategy, I was not able to identify or evaluate how restrictions of public outdoor gatherings would contribute to achieving the goals of the overall strategy.

4. To describe the anticipated impact of an intervention, the quantifiable effect size should be estimated and monitored throughout the implementation of the intervention.

- I was unable to find any quantified estimates of the effect size on reduced transmissions resulting from restrictions of public outdoor gatherings.

5. The anticipated harms of the intervention should be estimated and monitored.

- I was unable to find any descriptions or estimates of the harms from restrictions of public outdoor gatherings. Specifically, I was unable to find an analysis or estimate of the potential unintended consequence of increasing household and community transmission, by replacing outdoor activity with indoor activity. From a broader perspective, it is important to consider the impact on trust and confidence in governments and public health officials resulting from intrusive measures without adequate evidence and explanation should be a significant concern.[38]

6. The estimated balance of benefits and harms should be estimated and monitored. This balance should be assessed in the broadest context of all health problems, health equity, and the determinants of health of the whole population.

- I was unable to find processes or outcomes of estimating and monitoring benefits and harms associated with restrictions of outdoor gatherings.

7. Comparisons should be made transparently of alternative strategies and interventions to identify options that optimize the balance of benefits and harms.

- I was unable to find descriptions or analyses of alternative strategies to restricting outdoor gatherings, especially regarding comparison with other activities such as retail shopping.

8. The data, information, analyses, evidence, estimates, and rationale used to justify interventions should be made available to the public in an accessible manner.

- As described above in my responses to the first seven items, I was unable to find the expected data, information, evidence, analysis, and rationale to justify the restrictions. I cannot say whether some or all of these were known or used to make and evaluate policies. Ethical public health practice requires transparency of the information and

[38] https://gh.bmj.com/content/7/5/e008684

rationale used for decision-making.

9. To foster reconsideration of the strategies and all interventions, ongoing reviews of threat and outcomes data should be undertaken and shared transparently with the media and directly with the public.

- As stated above in my responses to the first eight items, I was unable to find such reviews.

10. There should be meaningful and systematic engagement with others to provide input to public health interventions, ensuring that decision-makers are informed of considerations relevant to the effectiveness and equity of the interventions.

- I am not aware of a process or occurrences of meaningful and systematic engagement with stakeholders and others affected by or concerned about the restrictions of outdoor gatherings.

Based on my answers to these questions and the information and opinions provided elsewhere in this report, I conclude that I have been unable to find sufficient data, information, evidence, analysis, and rationale to explain and justify the necessity and appropriateness of the restrictions of outdoor gatherings.