June 26, 2021

University of Winnipeg
Senate Appeals Committee
515 Portage Avenue
Winnipeg, MB Canada
R3B 2E9

Dear Committee Members:

I am an Infectious Diseases consultant and Medical Microbiologist. I have been a member of the College of Physicians and Surgeons of Ontario since 2009.

I have conducted a review of studies relevant to SARS-CoV-2 transmission and have broad experience with the issues of infectious diseases and virus transmission over 10 years of practice as an infectious diseases specialist and medical microbiologist.

I have been asked to provide you with an opinion on the risk of transmission of SARS-CoV-2, the virus that causes COVID-19, at outdoor protests.

The risk of outdoor transmission of SARS-CoV-2 at outdoor protests is negligible, particularly when physical distancing is maintained. The evidence for this assertion can be examined in two domains: first, by examining the evidence for outdoor transmission of other important respiratory tract infections such as tuberculosis (TB) and Influenza; second, by examining the evidence for transmission of SARS-CoV-2 itself.

Since we only have just over one year of experience with SARS-CoV-2, it is helpful to look at the risk of outdoor transmission of the two most comparable and important respiratory tract infections, TB and Influenza.

TB is a respiratory tract infection that is transmitted through airborne particles. The *Canadian Tuberculosis Standards* published by the Public Health Agency of Canada state that TB "transmission is rarely thought to occur outdoors"[1] and the "risk of [outdoor] transmission is negligible provided they are not in very close contact with susceptible individuals for prolonged periods of time".[2] The result is that "outdoor exposures are not investigated during a contact tracing exercise".[3]

Influenza is another important respiratory tract infection. In a systematic review of outdoor mass gatherings and respiratory disease (mostly influenza) performed by the United States Centers for

[1] Chapter 12. Canadian Tuberculosis Standards, 7th edition. Public Health Agency of Canada. 2014.
[2] Chapter 15. Canadian Tuberculosis Standards, 7th edition. Public Health Agency of Canada. 2014.
[3] Chapter 2. Canadian Tuberculosis Standards, 7th edition. Public Health Agency of Canada. 2014.

Disease Control and Prevention, "no single-day mass gathering-related outbreaks were identified in our review".[4]

Similarly, a global review of outbreaks (including Influenza outbreaks) at outdoor large gatherings from 1980 to July 2012 did not identify any outbreaks associated with single day gatherings.[5]

These studies and others were included in a systematic review of outdoor transmission of SARS-CoV-2 and other respiratory viruses; influenza outbreaks only occurred in the context of multiday outdoor events or communal housing.[6]

The primary mode of SARS-CoV-2 transmission is known to occur indoors. Household transmission (indoors) accounted for 78%-85% of all SARS-CoV-2 transmission in China in one report from the World Health Organization.[7]

Household contacts and travel together were the most important sources of SARS-CoV-2 transmission in another study.[8]

Outbreaks in indoor contexts such as long-term care facilities, hospitals and shelters have been established as an important source of indoor transmission in the Canadian context.

The evidence for outdoor SARS-CoV-2 transmission, when present, is negligible. In one comprehensive study from China, only one outdoor outbreak involving two cases occurred out of 7324 identified cases.[9]

The reason for negligible outdoor transmission is that airflow outdoors rapidly dilutes any SARS-CoV-2 virus present to negligible amounts not considered to be infectious.[10]

As shown above, outdoor gatherings of short duration (less than 24 hours; no overnight component) such as outdoor public protests should be considered safe based on the evidence.

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[4] Rainey JJ, Phelps T, Shi J (2016) Mass Gatherings and Respiratory Disease Outbreaks in the United States – Should We Be Worried? Results from a Systematic Literature Review and Analysis of the National Outbreak Reporting System. PLoS ONE 11(8): e0160378. https://doi.org/10.1371/journal.pone.0160378

[5] Botelho-Nevers E, Gautret P. Outbreaks associated to large open air festivals, including music festivals, 1980 to 2012. Euro Surveill. 2013 Mar 14;18(11):20426. doi: 10.2807/ese.18.11.20426-en. PMID: 23517872.

[6] Bulfone, T. C., Malekinejad, M., Rutherford, G. W., & Razani, N. (2021). Outdoor Transmission of SARS-CoV-2 and Other Respiratory Viruses: A Systematic Review. *The Journal of infectious diseases*, *223*(4), 550–561. https://doi.org/10.1093/infdis/jiaa742

[7] https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf

[8] Bi Q, Wu Y, Mei S, Ye C, Zou X, Zhang Z et al. Epidemiology and transmission of COVID-19 in 391 cases and 1286 of their close contacts in Shenzhen, China: a retrospective cohort study. The Lancet Infectious Diseases. 2020 Aug;20(8):911-919. https://doi.org/10.1016/S1473-3099(20)30287-5

[9] Qian H, Miao T, Liu L, Zheng X, Luo D, Li Y. Indoor transmission of SARS-CoV-2. Indoor Air. 2021 May;31(3):639-645. doi: 10.1111/ina.12766. Epub 2020 Nov 20. PMID: 33131151.

[10] See Chirizzi D, Conte M, Feltracco M, Dinoi A, Gregoris E, Barbaro E, La Bella G, Ciccarese G, La Salandra G, Gambaro A, Contini D. SARS-CoV-2 concentrations and virus-laden aerosol size distributions in outdoor air in north and south of Italy. Environ Int. 2021 Jan;146:106255. doi: 10.101i/j.envint.2020.106255. Epub 2020 Nov 12. PMID: 33221596; PMCID: PMC7659514.

The risk of outdoor transmission of SARS-CoV-2 is negligible, similar to other important respiratory infections such as TB and influenza. As long as physical distancing can be maintained, outdoor public protests should be considered safe.

Sincerely,

[redacted]

[redacted], MD FRCPC
Infectious Diseases & Medical Microbiology
Assistant Clinical Professor (Adjunct), McMaster University

cc: [redacted]