Court File No.: CV-21-00658784-0000

ONTARIO
SUPERIOR COURT OF JUSTICE

B E T W E E N:

DR. KULVINDER KAUR GILL

Plaintiff

-and-

AMIR ATTARAN and THE UNIVERSITY OF OTTAWA

Defendants

MOTION RECORD OF THE RESPONDING PARTY,
DR. KULVINDER GILL

March 8, 2024

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AFFIDAVIT OF DR. KULVINDER GILL

I, Dr. Kulvinder Kaur Gill, in the City of Brampton, in the Province of Ontario, **MAKE OATH AND SAY**:

1. I am the plaintiff in this action. As such, I have personal knowledge of the information hereinafter deposer. Where I do not have direct knowledge, but rely on information and belief, I have stated the source of my information and I believe it to be true.

Background

2. I am a specialist physician practicing at two allergy, asthma and clinical immunology clinics in Brampton and Milton. I provide essential medical care for pediatric and adult patients, from the regions of Peel, Halton and beyond, upon referrals from family physicians and specialist physicians practicing both in the community and at medical institutions.

3. I completed significant post-graduate training in pediatrics, and allergy and clinical immunology, including scientific research in microbiology, virology and vaccinology and have published extensively in these areas.

4. I have had extensive research experience in microbiology, molecular biology and virology laboratories, including various university and federal government laboratories in Canada.

5. I was previously employed as a research assistant for the Government of Canada's Department of Fisheries and Oceans' molecular biology laboratory, the Freshwater Institute (one of the world's leading research centres for freshwater and Arctic aquatic research), where I had conducted molecular biology, virology and genetics research analyzing migration and extinction patterns of aquatic life and identifying emerging viruses within endangered species, which involved performing, optimizing and interpreting tens of thousands of Polymerase Chain Reactions (PCRs) on genetic samples.

6. Subsequently, my own scientific research at Canada's only Level-4 Biosafety Lab, the Public Health Agency of Canada's National Microbiology Laboratory, specifically focused on harnessing the powers of natural T-cell immunity found amongst HIV-resistant Kenyan sex-workers for the development of HIV-1 candidate vaccines. I had required the highest level of security clearance from CSIS. My virology and vaccinology research supervisor was the late Dr. Frank Plummer, who was the Scientific Director General of the National Microbiology Laboratory and the Senior Scientific Director of the Public Health Agency of Canada at the time.

7. I was recognized for my scholarly research during both my medical and post-graduate training at the University of Manitoba and the University of Western Ontario, having been awarded scholarships and prizes for best overall clinical project, presentation and poster for my research in the fields of medical microbiology, virology and immunology. My research was published in leading peer-reviewed medical and scientific publications, including Tissue Antigens, Human Immunology, Canadian Journal of Infectious Diseases and Medical Microbiology, and AIDS.

8. To-date, I have never had a patient complaint to my professional regulator, the College of Physicians and Surgeons of Ontario ("CPSO").

9. I have been active in my self-regulating profession, having been on the elected delegate council, and serving as an elected district chair to council, of the Ontario Medical Association ("OMA"), and heavily involved in co-founding and the leadership of Concerned Ontario Doctors ("COD"), a non-profit advocacy organization of frontline physicians, which has, amongst other issues, advocated regarding transparency issues at the OMA and the impact of escalating cuts to frontline health care on the delivery and accessibility of essential patient care. I have represented the interests of Canadian patients and physicians with testimony on behalf of COD regionally,

provincially, nationally and internationally, including before legislative committees on healthcare policy at the Ontario Legislature, the House of Commons and the Senate of Canada.

10. I was born in a small farming village in rural India, to a mother who had only a third-grade education due to lack of access to education opportunities for young girls in rural India at the time. As a baby, I immigrated with my family to remote northern Manitoba, where my father found work in a mine. When I was still an elementary student, my mother was diagnosed with breast cancer, and she courageously battled various forms of cancer for twelve long years. As a young teen, I often accompanied my mother on the 1600km round-trip to Winnipeg to access essential cancer care. It was then that I decided I wanted to be a doctor, encouraged by my mother who wanted her own daughter to have the education she never did. When I was in medical school, my mother passed away of metastatic breast cancer after being fortunate to receive timely palliative care.

11. In 2016, I was motivated to start Concerned Ontario Doctors because of terrible stories of hallway medicine and a lack of access to essential care both within the marginalized communities I practice in and throughout the province. Watching my own mother's difficulties accessing necessary treatment, I committed myself to patient advocacy. When unprecedented lockdowns were imposed, I was alarmed to see patients shut out of cancer care and other necessary diagnostics and treatment, as the rest of the medical profession became singularly focused on Covid-19. I was distressed by palliative and terminally-ill patients being forced to die alone in hospitals and medical institutions without their loved ones by their bedside. I quickly appreciated that the secondary impacts could be even more destructive than the virus itself, especially on children and the most marginalized. I also knew that there would be death and misery in the developing world, in which I have deep roots, because of lockdowns imposed within the developed world where I reside. The actions of those focused exclusively on Covid have caused people great harm, which is only beginning to be tallied and acknowledged.

12. In addition to my life experiences, my faith as a Sikh tells me that I must speak out against all forms of discrimination, tyranny and coercion. Sikh means *"Seeker of Truth"*. The founder of Sikhism, Guru Nanak Dev Ji, had said "*Realization of Truth is higher than all else. Higher still is truthful living."* My late mother had always said to me in Punjabi: *"With the truth and goodwill in your heart, there is nothing to ever fear in this world."* As a practicing Sikh, I was taught to value

individual freedom and sovereignty. Distrust of government and institutions is part of our scripture, and stems from Sikh genocides through the ages and in present-day times dating recently to the Sikh genocide of 1984 wherein horrific atrocities were perpetrated by the state against innocent Sikhs living in India.

The COVID-19 Pandemic and My Position on Vaccinations

13. Although, I was initially alarmed about Covid-19 like most other people, I began examining the published data more closely and, a few months into the pandemic, I had started sharing my evidence-based views on the social media platform now known as "X" (previously Twitter).

14. My general concerns that I expressed, properly understood, are that (1) the risks posed by Covid-19 were exaggerated; (2) lockdowns were scientifically unjustified; (3) the authorization and production of a Covid-19 vaccine should not be a condition precedent to ending harmful lockdowns; (4) early outpatient hydroxychloroquine ("HCQ") could be safely used in treating high-risk Covid-19 patients; (5) the critical importance of cellular (T-cell) immunity was being ignored; (6) pandemic measures did not reflect the known age-stratified risk of Covid-19 (i.e. a 1000 times greater risk to the elderly than to the youth); and (7) the importance of returning to Canada's and the World Health Organization's response plans (prepared prior to the pandemic), which were abruptly abandoned in favour of unprecedented and catastrophic lockdowns (known to disproportionately harm children and the most marginalized).

15. At the time my comments were made, they were well-supported in the developing medical and scientific literature, much of which I had typically referenced in my social media commentary. I was compelled by concern for marginalized communities in Canada and the developing world to speak against harmful government policies. My comments were also within the range of rational public debate and in accordance with a long history of public health pandemic plans and World Health Organization guidance.

16. During the last few years, I have kept an ongoing record, which now contains at least 80 scholarly journal articles, most of them peer-reviewed, which support my online activity (most of which I have shared links to with my online commentary) and the positions I have adopted (in addition to the peer reviewed papers cited in this affidavit). This is merely a sampling of the

available literature and growing body of scientific and medical evidence which establishes that my opinions are not misinformation. **A copy of the synopsis of the documents contained in this record is attached as Exhibit A.**

17. Although I have expressed reservations about the necessity of the Covid-19 injection for every single person (regardless of their risk profile), I have always been pro-vaccination. I have been an advocate for existing routine childhood vaccinations for years on my personal Twitter account. I have supported giving the Covid-19 vaccine to high-risk individuals with their informed consent. I am a medical professional who regularly administers vaccines, including to children, and I have devoted years of my life to conducting scientific research for the development of HIV-1 candidate vaccines.

18. What I opposed in 2020 was waiting for the development and authorization of a Covid-19 vaccination as a pre-requisite for the end of harmful lockdowns. It is essential to note that in the summer of 2020, no Covid-19 vaccine had yet completed clinical trials nor been authorized for use anywhere in the world.

19. The normal vaccine development cycle is ten to fifteen years. In 2020, the shortest vaccine development cycle on record was for the mumps vaccine at four years. All of the details of the clinical trials for the SARS-CoV-2 (the virus known to cause Covid-19) vaccine candidates were publicly accessible on the US' National Institutes of Health Clinical Trials database which allows one to search past/active clinical trials globally for therapeutics and vaccines, including current status, funding, eligibility criteria, study designs, primary/secondary outcomes, tracking information, anticipated completion dates, etc.

20. By the summer of 2020, it was known that none of the covid vaccine clinical trials were designed to determine whether they prevented infection or stopped transmission. Even a few international press had reported on this fact in September 2020, including a piece in Forbes entitled "Covid-19 Vaccine Protocols Reveal That Trials Are Designed To Succeed" written by Dr. Haseltine, professor emeritus at Harvard Medical School and Harvard School of Public Health which stated: "*Prevention of infection is not criterion for success for any of these (covid) vaccines… None list mortality as critical endpoint… These vaccine trials are testing to prevent common cold symptoms.*" **A copy of the Forbes article is attached as Exhibit B.**

21. In October 2020, the British Medical Journal, one of the oldest and most prestigious medical journals in the world (founded in 1840), published an editorial entitled: "Will covid-19 vaccines save lives? Current trials aren't designed to tell us" stating that: "*None of the (covid) trials currently under way are designed to detect a reduction in any serious outcome such as hospital admissions, use of intensive care, or deaths. Nor are the vaccines being studied to determine whether they can interrupt transmission of the virus*." **A copy of the British Medical Journal article is attached as Exhibit C.**

22. In November 2020, the British Medical Journal, published an editorial entitled: "Pfizer and Moderna's "95% effective" vaccines—let's be cautious and first see the full data" stating:

> "*Let's put this in perspective. First, a relative risk reduction is being reported, not absolute risk reduction, which appears to be less than 1%. Second, these results refer to the trials' primary endpoint of covid-19 of essentially any severity, and importantly not the vaccine's ability to save lives, nor the ability to prevent infection, nor the efficacy in important subgroups (e.g. frail elderly). Those still remain unknown. Third, these results reflect a time point relatively soon after vaccination, and we know nothing about vaccine performance at 3, 6, or 12 months, so cannot compare these efficacy numbers against other vaccines like influenza vaccines (which are judged over a season). Fourth, children, adolescents, and immunocompromised individuals were largely excluded from the trials, so we still lack any data on these important populations.. Let's be cautious. Only full transparency and rigorous scrutiny of the data will allow for informed decision making. The data must be made public*."
>
> **A copy of the British Medical Journal editorial is attached as Exhibit D.**

23. I approached the government's response to Covid-19 from the perspective of an ethical, evidence-based, medical scientist, whose opinions are subject to change on better evidence.

24. In the early days of the pandemic, I had lobbied the government for more and better measures to protect healthcare workers and the public. Through Concerned Ontario Doctors, of which I am the co-founder and President, I had written an open letter to the both the federal and provincial governments along with COD's Board of Directors, dated April 14, 2020, asking for safety measures to be taken to "flatten the curve" of Covid-19 to ensure hospital resources would not be overwhelmed. **A copy of the letter is attached as Exhibit E.**

25. I, along with the COD Board, had even met (virtually) with senior advisors to the federal Minister of Health to discuss the concerns highlighted in the open letter. In those early months, I worked actively to get the pandemic under control and advocate for safety measures. Like all good

scientists, when I obtained new information, including about risk stratification, infection fatality ratio and lockdown harms, I adjusted my thinking and set out to educate myself further.

26. My evidence-based and ethical approach ultimately led me to my criticisms of the governments' harmful public health policies. I do not speak out because I enjoy being attacked or defamed on X by my detractors. Nor do I do it for any perceived benefit. I speak out because of my personal history, my ethical responsibility, and a deep spiritual and moral obligation to stand up for the marginalized and against oppression and tyranny.

27. I have been an advocate for existing routine childhood vaccinations for years on my personal Twitter account. I oppose all types of mandates because it violates the core medical/ethical doctrine of informed consent and it violates my religious beliefs on opposing all forms of coercion and discrimination. I am a medical professional who regularly administers vaccines, including to children, and I have devoted years of my life to conducting scientific research for the development of HIV-1 candidate vaccines.

28. I have supported giving the Covid-19 vaccine to high-risk individuals with their informed consent. It is important to note that the effect of lockdowns and the general distrust of public health that has developed will likely lead to a significant decline in routine childhood vaccinations. Lockdowns have already led to many children missing routine childhood vaccinations globally.

29. Indeed, this concern is being expressed more openly now, including in a recent article in Tablet Magazine by Drs. Leslie Bienen and Tracy Beth Hoeg, entitled: “The CDC is Breaking Trust in Childhood Vaccination.” **A copy of the article by Dr. Bienen and Dr. Hoeg is attached as Exhibit F.**

30. As a pediatrician who wants children to have their routine vaccinations and administers them in my medical practice, I share this concern and it motivates me to challenge poor science which leads to damaging policies, and which ultimately erodes that necessary trust in vaccinations.

31. There can be little question now that lockdown policies and vaccine mandates have harmed some people, particularly those who are marginalized, working class and poor. I practice in communities where the majority of my patients are from these marginalized groups. Brampton is the most ethnically diverse city in Canada with 73% of its residents identifying as people of colour,

mostly South Asian and Black. I take my responsibility as a health advocate for my community very seriously.

32. On January 22, 2020, approximately one month before the declaration of Covid pandemic, I had organized and led a three-hour COD delegation of patients and physicians before the Brampton City Council that resulted in the City of Brampton unanimously passing a motion declaring an unprecedented "healthcare emergency" and urgently called upon all levels of government to address the chronic underfunding of essential frontline medical care and unprecedented hallway medicine crisis at the epi-centre of Ontario's healthcare crisis.

33. By the summer of 2020, when I first began to speak out publicly on X against the catastrophic lockdowns, there was already ample evidence on the devastating and irreparable harms these unprecedented government public health policies would have on children and the most marginalized, both in Canada and in the developing world. In the nearly four years since, not only has the body of this compelling scientific evidence continued to grow, but we are now tragically seeing the realization of these preventable harms that were known in 2020 and which I had warned about in 2020. It has been devastating and heartbreaking to helplessly watch the known carnage of lockdowns unfold.

Amir Attaran

34. I have never met Amir Attaran ("Attaran"). Nor have I engaged with him in any personal or professional capacity, either online or offline. Nor do I comprehend why he has spent the past 3.5 years publicly attacking me and defaming me on X. To-date, I have never engaged with him in any capacity.

35. On December 20, 2020, Attaran chose to attack an old tweet which I had written three months prior, on October 20, 2020, in which I had stated my concern with the focus on the number of cases of COVID. **A copy of the October 20th twitter post is attached as Exhibit G.**

36. On December 20, 2020, using his Twitter handle @profamirattaran, Attaran had quote-tweeted my above-mentioned tweet referring to me as: "*This idiot is a doctor in Ontario. Sort of a female version of Dr. Scott Atlas*." **A copy of Attaran's tweet is attached as Exhibit H.**

37. Approximately one hour after his tweet, Attaran then tweeted a link to a July 28, 2020 article, from the New York Times, which alleged that Russian Intelligence had been pushing

"disinformation" and he proceeded to post this article on Twitter as a thread underneath his original tweet above, with the following false and malicious commentary: "*Looks like the Flying Monkeys are out today for Dr. Gill. Research shows that Russian military intelligence (the GRU) are behind anti-science, COVID conspiracy social media. So with love from Canada*." A copy of Attaran's tweet previously attached at Exhibit H**.**

38. Attaran has a large following on social media and is often quoted in online/print news media, and occasionally on television news stations. In his twitter bio, Attaran describes himself as: "*Professor. Litigator. Scientist… Wrecks grifters, anti-vaxxers & scientific illiterates*." In the past three years since his initial defamatory attacks against me in December 2020, Attaran has continued to defame and malign me as a dangerous "*anti-vaxxer*", "*idiot*", "*covid disinfo doc*" and he has stated that my "*beliefs*" have "*killed thousands*" and that I've "*weaponized the law*".

39. On August 29, 2022, after without prejudice exchanges occurred between the parties in this litigation, Attaran breached the confidential nature of these settlement discussions by tweeting about them. **A copy of Attaran's twitter posts are attached as Exhibit I.**

40. In a National Post article published on November 3, 2022, it was reported that: "*(Attaran) said he wants her to apologize for suing and admit she was wrong about COVID, but so far Gill has declined to do so*." **A copy of the National Post article is attached as Exhibit J.**

41. On April 15, 2023, Attaran quote-tweeted a tweet which had cited an Ontario physician resigning his medical license, after being found (among other things) to have sold mask and vaccine exemptions, and Attaran stated: "*I think I know who's next for this: Kulvinder Kaur, another COVID disinfo doc who filed absurd lawsuits.. Let's just say I've only once been sued, and it's by these two half-wits*". **A copy of Attaran's tweets are attached as Exhibit K.**

42. On February 17, 2024, Attaran tweeted: "*That anti-vaxxer loser Dr. Gill is still suing me*". **A copy of Attaran's tweet is attached as Exhibit L.**

43. Attaran's tweets against me have been broadcasted widely to his nearly 15,000 followers and have also been retweeted and quote-tweeted several hundreds of times further amplifying his attacks against me. This has led to me being the subject of further attacks, hostility, harassment and hate online and offline. For example, underneath Attaran's tweet of August 29, 2022, in which he had directly named/tagged me as an "anti-vaxxer", someone who had retweeted and amplified

him further tweeted a reply under Attaran's tweet on August 29, 2022 stating: "*Anti vaxxers shouldn't breed and shouldn't vote. They are cretinous scums of society that barely deserve human consideration*." **A copy of Attaran's tweet is attached as Exhibit M.**

44. In a tweet of August 29, 2022, responding to a tweet tagging Attaran's employer, the University of Ottawa, and asking if it was supportive of Attaran's "threats", he posted: "*Oh yes, it is, I assure you. I will litigate this to the end and I NEVER give in to anti-vaxxer intimidation*." **A copy of Attaran's tweet is attached as Exhibit N.**

45. I have also received phone messages of hate referring to me as "dangerous" and an "anti-vaxxer" at my medical clinics. These calls were very hostile and filled with vulgarity and profanity, from across the country and even the United States, with some callers expressing hope that I would die like Covid patients, or otherwise wishing harm on me. I have been the subject of multiple death and rape threats and, as a result of recommendations by the police, I have had to create a safety plan and I have had to take additional security measures at my clinics.

46. Attaran's twitter comments on August 29, 2022, and his comments in the print/online media on November 3, 2022, had led to me receiving hateful and harassing phone calls, including death and rape threats at my clinics between November 3-4, 2022. This has led to significant personal mental and emotional distress and anguish.

47. Attaran's ongoing attacks have also harmed me professionally and financially. I am a specialist physician in private community practice and see patients solely based upon referrals from physician colleagues. Attaran's ongoing defamatory attacks have led to a reduction in my referrals. His ongoing vicious attacks on my credibility and competence have also resulted in me being disparaged and maligned by not only the public, but by other professionals. I have had a specialist physician colleague leave my clinic because they were concerned that they would soon be the subject of similar public attacks, harassment and personal/professional harm simply by association, and I have had difficulty recruiting another colleague to my clinic since my colleague's departure, leading to a significant increase in my overhead operating costs.

48. Some context is required to respond to allegations contained in Attaran's affidavit, tendered in this motion. Attaran suggests that my Statement of Claim referred to my aforementioned tweet of October 20, 2020 as referring to Polymerase Chain Reaction (PCR) testing, and claims that

"*none of this post hoc explanation in her Statement of Claim was explicitly stated in her tweet at the time, it is also not true*." Both of Attaran' statements are patently false.

49. In 2020, Twitter had a 140-character maximum for tweets. Hence, one only had two options to include further context beyond 140 characters: quote-tweets or multi-part threads. Attaran purposely chose to omit from his affidavit that my aforementioned tweet of October 20, 2020 was a direct quote-tweet of my tweet from October 4, 2020 in which I had stated:

> "Never-ending loop of societal harm
> -Elevated PCR cycle thresholds
> →False positive "casedemic"
> →Irrational fear
> →Catastrophic lockdowns and restriction
> →More flawed PCR tests ↓↑

50. In December 2020, instead of engaging in any scientific discourse, Attaran chose to defame me by referring to me as an "*idiot*" and a "*female version*" while referring to my comments as "*anti-science*" and "*covid conspiracy*."

51. In the weeks and months leading up to my tweets of October 2020, and in the several months and years since, I had tweeted several peer-reviewed and academic publications about serious concerns with PCR testing utilizing high cycle thresholds (Ct) leading to false positive covid testing and with these "case" counts subsequently being used by governments to impose harmful covid policies. As mentioned earlier, I have had years of extensive first-hand experience with PCR while conducting scientific research in immunology, molecular biology, genetics, microbiology virology and vaccinology spanning several years at various laboratories. As a practicing physician, I also have years of first-hand experience with the utilization and interpretation of PCR tests in the clinical diagnosis and treatment of patients. As such, I have years of expertise (training and first-hand experience) to speak on the utility of PCR tests from the perspective of a physician-scientist: from the lab bench to the patient bedside.

52. Attaran is not unfamiliar with litigation. In May 2022, it was reported Attaran launched a private criminal prosecution against Premier of Ontario Doug Ford for removing his mask while in quarantine, and he filed police complaints against Prime Minister Trudeau and Chief Medical Officer of Health Dr. Kieran Moore in Vancouver and Toronto because of masking. **A copy of the National Post article is attached as Exhibit O.**

53. Had Attaran chosen to read the tweet he had maliciously attacked in its entirety in December 2020, and had he chosen to actually read through my twitter feed, he would have read several of my tweets, quote-tweets and retweets with linked peer-reviewed studies and academic publications about covid PCR testing, including a selection of some of my PCR tweets, retweets and quote-tweets dated below with the accompanying hyperlinks in my tweets:

a) Tweets of September 2, 2020, and September 5, 2020, copies of which are attached as **Exhibit P**.

b) A tweet of September 7, 2020, and quote tweet, copies of which are attached as **Exhibit Q** and **Exhibit R**.

c) A tweet of September 15, 2020, and quote tweet, copies of which are attached as **Exhibit S** and **Exhibit T**.

d) A tweet of September 18, 2020, copy of which is attached as **Exhibit U**.

e) A re-tweet of a COD tweet of video of interview of Oxford Professor Dr. Carl Heneghan, Director of Oxford Centre for Evidence-Based Medicine on September 18, 2020, which I later also quote tweeted on November 10, 2020, is attached as **Exhibit V**

f) Tweets of September 19, 2020, copies of which are attached as **Exhibit W** and **Exhibit X**.

g) Tweet of September 19, 2020, and quote tweet of September 20, 2020, are attached as **Exhibit Y** and **Exhibit Z**.

h) Tweet of September 30, 2020, copy of which is attached as **Exhibit AA**.

i) Tweet of November 16, 2020, copy of which is attached as **Exhibit BB**.

j) A tweet of November 21, 2020, copy of which is attached as **Exhibit CC.**

k) A tweet of December 3, 2020, copy of which is attached as **Exhibit DD**.

l) Tweets of December 16, 2020, and January 20, 2021, copies are attached as **Exhibit EE**.

m) Tweets of January 19, 2021, copies are attached as **Exhibit FF**.

n) A tweet thread of February 2, 2021, copy which is attached as **Exhibit GG**.

o) A tweet from February 22, 2021, copy of which is attached as **Exhibit HH**.

p) Tweet thread of June 18, 2021, copy of which is attached as **Exhibit II**.

q) A tweet of August 8, 2021, copy of which is attached as **Exhibit JJ**.

r) A tweet of August 11, 2021, copy of which is attached as **Exhibit KK**.

54. In addition to the information contained in my Twitter feed, there were other scientific sources that supported the views I espoused.

55. In May 2020, Harvard professors had published a peer-reviewed paper in Clinical Infectious Diseases entitled "To Interpret the SARS-CoV-2 Test, Consider Cycle Threshold Value" concluding:

> "*Closer examination of what the (PCR) test results mean clinically, particularly when results are from RNA quantities near the lower limit of detection of the assay, could help guide clinical and public health strategies… A positive RT-qPCR result may not necessarily mean the person is still infectious or that he or she still has any meaningful disease. First, the RNA could be from nonviable or killed virus. Live virus is often isolable only during the first week of symptoms but not after day 8, even with positive RT-qPCR tests… The Ct value is inversely related to the viral load and every ~3.3 increase in the Ct value reflects a 10-fold reduction in starting material*."
>
> A copy of this study is available at the following URL:
> https://academic.oup.com/cid/article/71/16/2252/5841456

56. There were distinguished and eminent professors of medicine and infectious diseases sounding the alarm on lockdown harms as early as spring of 2020. On March 17, 2020, Dr. John Ioannidis, MD, PhD, a Stanford professor of medicine and infectious diseases epidemiologist, who has authored more than 1000 peer-reviewed scientific/medical papers and is one of the most cited scientists in the world, had authored a column entitled "A fiasco in the making? As the coronavirus pandemic takes hold, we are making decisions without reliable data" in which he had stated:

> "*The current coronavirus disease, Covid-19, has been called a once-in-a-century pandemic. But it may also be a once-in-a-century evidence fiasco.. Vaccines or affordable treatments take many months (or even years) to develop and test properly. Given such timelines, the consequences of long-term lockdowns are entirely unknown., If we had not known about a new virus out there, and had not checked individuals with PCR tests, the number of total deaths due to 'influenza-like illness' would not seem unusual this year. At most, we might have casually noted that flu this season seems to be a bit worse than average. The media coverage would have been less than for an NBA game between the two most indifferent teams*."
>
> A copy of this column is available at the following URL:
> https://www.statnews.com/2020/03/17/a-fiasco-in-the-making-as-the-coronavirus-pandemic-takes-hold-we-are-making-decisions-without-reliable-data/

57. Professor Ioannidis had then followed this up his piece above with two peer-reviewed papers with similar early findings published in April 2020 and October 2020 showing a low infection-fatality rate for SARS-CoV-2:

a) April 9, 2020: "Coronavirus disease 2019: The harms of exaggerated information and non-evidence based measures" published in European Journal of Clinical Investigation. A copy of the article is available at the URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7163529.

b) October 7, 2020: "Global perspective of COVID-19 epidemiology for a full-cycle pandemic" published in the European Journal of Clinical Investigation and as an official WHO Bulletin on October 14, 2020. A copy of the study is available at the URL: https://onlinelibrary.wiley.com/doi/10.1111/eci.13423. A copy of the WHO Bulletin is available at the URL: https://web.archive.org/web/20201015144933/https://www.who.int/bulletin/online_first/BLT.20.265892.pdf.

58. In July 2021 and October 2022, Professor Ioannidis et al continued to published further peer-reviewed and academic papers on the infection fatality rate of Covid-19 (based on sero-prevalence studies from around the world) reaffirming that SARS-CoV-2 had age-stratified risk with the infection fatality rate (IFR) much lower than the media headlines and WHO had initially sounded the alarm with in early 2020. These papers are available at the following URLs: https://www.medrxiv.org/content/10.1101/2021.07.08.21260210v1, https://link.springer.com/article/10.1007/s10654-022-00853-w, and https://www.medrxiv.org/content/10.1101/2022.10.11.22280963v1.

59. In October 2022, Professor Ioannidis et al published a peer-reviewed paper entitled: "Age-stratified infection fatality rate of COVID-19 in the non-elderly population" and was based on 31 seroprevalence (antibody studies) from around the world in the PRE-vaccination era (i.e. prior to the authorization of any covid vaccination). The study found that the Infection Fatality Risk (IFR) of SARS-Cov-2 PRE-vaccination was lower than the IFR for influenza virus (the common flu virus). A copy of the paper is available at the URL: https://www.sciencedirect.com/science/article/pii/S001393512201982X

60. I had tweeted all the above-mentioned IFR peer-reviewed and academic papers in real-time between 2020-2023 with their accompanying links.

61. It was known in 2020, and further scientific evidence over the past four years since, has shown the critical importance of natural T-cell (cellular) immunity and innate (mucosal IgA) immunity in the immune responses against SARS-CoV-2; we also knew then, and further peer-reviewed evidence continues to strongly support, that the T-cell immune response is robust, broad and durable, including against emerging variants. However, this was entirely ignored at the time with the focus erroneously and solely on (short-lived) antibodies leading to immense fear of a "novel" pathogen.

62. Dr. Stephen Templeton, PhD, professor of microbiology and immunology, and formerly of the US Centers for Disease Control and Prevention (CDC), has aptly referred to this as the "politicization of immunology" in an article available at the following URL: https://brownstone.org/articles/the-politicization-of-immunology/.

63. It was also known in 2020, and further peer-reviewed evidence strongly supports, that an individual can be seronegative (antibody negative) but still have strong T-cell immunity to a SARS-CoV-2; this was previously known in regards to other pathogens, including HIV-1 and was the focus of my previous scientific research for the development of an HIV-1 vaccine by harnessing the powers of natural T-cell immunity found amongst Kenyan sex-workers who were seronegative (antibody negative) to HIV-1 but were either resistant to HIV-1 infection or did not progress to AIDS. Peer-reviewed medical/scientific studies supporting the critical role of T-cell immunity (both pre-existing cross-reactive and post-infectious) is found in the synopsis of the documents contained in my record of relevant academic papers, which is attached as Exhibit A.

64. As noted, it was known in 2020 that the risks posed by Covid-19 were exaggerated, that "case" counts were falsely elevated from elevated PCR cycle thresholds leading to a significant number of non-infectious false positive "cases" and that there was a clear age-stratified risk and that pandemic measures did not reflect the known age-stratified risk of Covid-19 (i.e. a 1000 times greater risk to the elderly than to the youth). The same flawed PCR tests that had led to falsely elevated "case" counts, had also subsequently led to falsely elevated covid death counts. Further, there was no distinction being made between a death "with covid" versus a death "from covid".

65. I had presented many of these concerns in my delegation to the Region of Peel Council on November 12, 2020, while urging the Region not to embark on another round of harmful lockdowns, which included more school closures known to harm children.

66. The harms of unprecedented lockdowns were known in 2020. Hence why several jurisdictions around the world either chose to never impose lockdowns in response to Covid (such as Sweden, Belarus, South Dakota, Iowa, Nebraska, Arkansas) or quickly corrected course (such as Florida, North Dakota, Oregon, Tennessee, etc.). Throughout the Covid pandemic, governments' public health policies have varied daily to weekly and vastly by jurisdictions globally, within Canada and even provincially, often without any evidence provided. It must be said that neither the long-established pandemic preparedness reports for Canada nor the World Health Organization had included widespread lockdowns of healthy individuals as an evidence-based, non-pharmaceutical measure in response to a pandemic.

a) A copy of the World Health Organization's 2019 Report on "Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza" is available at the URL:
https://iris.who.int/bitstream/handle/10665/329438/9789241516839-eng.pdf

b) A copy of Canada's 2006 Report on "*The Canadian Pandemic Influence Plan for the Health Sector*" is available at the URL:
https://www.longwoods.com/articles/images/Canada_Pandemic_Influenza.pdf

67. Physicians and/or scientists and professors of epidemiology and public health at respected institutions, including Harvard, Stanford, and Oxford, had co-authored the Great Barrington Declaration opposing lockdowns in October 2020. To-date, the Declaration has nearly one million signatories, including over 60,000 physicians and public health scientists. I had also signed the Declaration in October 2020.

Context of the August 2020 Tweets

68. On August 4, 2020, I had tweeted two separate tweets after a news conference by the Chief Medical Officer of Health, Dr. Theresa Tam, at approximately 1pm which was reported widely by Canadian media, wherein Tam had stated that harmful lockdown measures would continue even after mass covid vaccination. This was reported widely by national media that day and this news conference was the "trending" news story on twitter. At the time my tweets were made in August 2020, no Covid-19 vaccine had yet completely preliminary clinical trials or was authorized for use anywhere globally; and, secondly, it was a direct response to an announcement Tam made that even two to three years after the vaccine was approved, various restrictions would continue in

effect. In other words, the mass vaccination campaign would not result in freedom from lockdowns.

69. The headline of the CBC news story on August 4, 2020 stated: "*Physical distancing, mask-wearing could be in place for 2-3 years even with a vaccine, Tam warns*." The CTV's headline on August 4, 2020 was: "*Even if there's a vaccine, pandemic may persist for years to come: Tam***". Copies of these articles are attached, respectively, as Exhibits LL and MM.**

70. Of note are the following statements made by Tam on August 4, 2020:

> "*We're planning, as a public health community, that we're going to have to manage this pandemic certainly over the next year, but certainly it may be planning for the longer term on the next two to three years during which the vaccine may play a role. But we don't know yet." And, "People might think that if we get a vaccine then everything goes back to normal the way it was before. That's not the case… All of the measures we've put in place now will still have to continue with the new reality for quite some time." And, "Certainly I think that we need to temper people's expectations, thinking that the vaccines can be that silver bullet that will take care of everything, and everything we've done up to now won't be necessary in the future*."

71. Dr. Tam was speaking frankly here, as little was known about what the vaccines, if approved, could accomplish.

72. My tweet at 1:15pm on August 4, 2020 had stated: "*If you have not yet figured out that we don't need a vaccine, you are not paying attention. #FactsNotFear*". **A copy of this tweet is attached as Exhibit NN.**

73. Then my tweet at 5:03pm on August 4, 2020 had stated: "*There is absolutely no medical or scientific reason for this prolonged, harmful and illogical lockdown. #FactsNotFear*". **A copy of this tweet is attached as Exhibit OO.**

74. The purpose of my tweets was to point out that we had no idea what the vaccines could accomplish, if anything, and we did not need to wait for mass vaccination as a condition precedent for ending lockdowns, in light of the fact that our own public health officials did not see a direct line between vaccines and the end of restrictions, including harmful lockdowns. Lockdowns which we knew in 2020 would cause irreparable harms, especially on children and the most marginalized both in Canada and the developing world.

75. As noted earlier, I have also been pro-vaccination. I have also supported the Covid-19 vaccine for individuals at high-risk with their informed consent.

HCQ

76. I have contributed to the scholarship with a peer-reviewed paper on HCQ. This paper is available at the following URL:
https://www.sciencedirect.com/science/article/pii/S0306987721001419

77. Furthermore, HCQ has been on the WHO's List of Essential Medicines for more than fifty years and its safety profile is well known. In most parts of the world, HCQ is available over the counter without a prescription.

78. In 2020, several countries globally had implemented outpatient treatment with HCQ for early covid (administered within the first five days) for high-risk individuals, including the governments of India, Brazil and many countries in Africa, Europe, South America and Asia. Many of these countries had incorporated HCQ use into their official government treatment public health protocols.

79. On May 28, 2020, the Indian Council of Medical Research (ICMR), which is funded by the Government of India and is one of the oldest and largest medical research bodies in the world, had written an open letter to the WHO warning the WHO of the toxic (lethal) doses of HCQ (four-times the standard dosing) being used in the WHO's "Solidarity Trial" (identical to WHO's "Recovery Trial") which was administering HCQ to critically-ill late hospitalized/ICU patients, in contrast to the success ICMR stated having with lower standard HCQ dosing. The WHO halted its HCQ trials on June 17, 2020. The open letter is available at the following URL: https://www.spectator.com.au/2020/06/bring-on-britains-corona-clowns/

80. There were two very influential but fraudulent studies on HCQ that were published in The Lancet (published May 22, 2020) and the New England Journal of Medicine (published May 1, 2020) based on fabricated data (by the same authors) and both were officially retracted by The Lancet (on June 4, 2020) and by the NEGM (on June 18, 2020).

81. As The Guardian's investigation reported at the time, it was these fraudulent studies that had "halted hydroxychloroquine trials" globally because of increased deaths from HCQ reported in these fraudulent papers. The physician at the centre of the controversy at the time and a lead

author on both of the aforementioned retracted papers subsequently had his medical license revoked by the Ohio State Medical Board on September 13, 2023. Copies of the relevant Guardian Articles are available at the following URLs: https://www.theguardian.com/world/2020/jun/04/covid-19-lancet-retracts-paper-that-halted-hydroxychloroquine-trials and https://www.theguardian.com/world/2020/jun/03/covid-19-surgisphere-who-world-health-organization-hydroxychloroquine.

82. There were several peer-reviewed studies published in 2020 that had shown when administered at the appropriate dose, HCQ was safe with no cardiac toxicity. Copies of the peer-reviewed studies are available at:

a) https://www.sciencedirect.com/science/article/pii/S0022073620305288

b) https://www.sciencedirect.com/science/article/pii/S2052297520301281

83. In particular, a peer-reviewed systematic review published in the Journal of New Microbes and New Infections in August 2020 concluded that:

> "*Hydroxychloroquine is protective to the heart, not harmful: A systematic review. No Torsade de Pointes or related deaths were found to have been reported as a result of Hydroxychloroquine and Azithromycin use in peer-reviewed literature. HCQ should not be restricted in use for COVID-19 patients.*"
>
> A copy of this study is available at the URL:
> https://www.sciencedirect.com/science/article/pii/S2052297520300998

The CPSO Complaints

84. In this litigation, I am taking the legal position that s. 36(3) of the *Regulated Health Professions Act*, provides that no record of a proceeding conducted by the CPSO is admissible. Attaran has referred to the CPSO complaints (and reporting on the CPSO complaints) as part of his case. As such, if this Court were to admit that evidence, there is important context relating to these complaints, which I have outlined below.

85. In 2020, I had been the subject of several public complaints filed to the CPSO by members of the pubic (not patients) following a public campaign on Twitter, because they opposed the views I expressed in my tweets.

86. In his affidavit, Attaran falsely asserts that the CPSO had cautioned me due to my tweets on HCQ. To the contrary, CPSO's Investigations Complaints and Resolutions Committee (the "Committee") had dismissed the public complaints regarding my HCQ tweets. The Committee stated as follows:

> "*HCQ was at least worthy of consideration. If a relatively safe drug can be effective in reducing the progression from mild to severe disease by early use, that would be considered a major development. It is now known that there are other alternatives that may be more effective, but at the time much of the focus was on HCQ, including some research done by prominent experts in relation to other coronavirus diseases in the past. Statements by professors at Yale and Harvard universities outline convincing evidence for the use of the medication in early treatment of Covid-19.*"

87. The Committee concluded that this fact lends support to my views with respect to HCQ and therefore my views were not misleading or without evidence at that time. The CPSO's decision dismissing the public complaint me regarding HCQ found that:

> "*There was reasonable evidence at that time [i.e. early August 2020] that hydroxychloroquine (HCQ) may be effective in prophylaxis and/or early treatment.. a fairly large retrospective study from Detroit, Michigan, USA, published in the International Journal of Infectious Diseases on August 1, 2020, did show a 50% reduction in mortality in patients who received early treatment with HCQ. Thus, it would be unfair to characterize the Respondent's HCQ comment as outright misinformation."*
>
> **A copy of the Detroit study is attached as Exhibit PP.**

88. The Committee declined to act on the public complaint about my tweet in August 2020 which had stated: "*Humanity's existing effective defenses against Covid-19 to safely return to normal now: The Truth, T-cell immunity; Hydroxychloroquine*". The Committee found that nothing in my tweet constituted "*misinformation*" i.e. was verifiably false. The Committee again cited the retrospective study from Detroit finding that my comment on HCQ was not misinformation. **A copy of the CPSO Decision is attached as Exhibit QQ.**

Available Evidence

89. The evidence, even at the time of my lockdown tweet in August 2020, showed that lockdowns achieved little benefit (today, we have many more studies about their harms). This study, entitled: "*A country level analysis measuring the impact of government actions, country preparedness and socioeconomic factors on COVID-19 mortality and related health outcome*" in

August of 2020, and published in the Lancet, found that rapid border closures, full lockdowns, and wide-spread testing were not associated with COVID-19 mortality per million people. In other words, they did not make a positive difference. A copy of this study is available at the following URL: https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(20)30208-X/fulltext

90. An academic paper published on May 1, 2020, entitled "*Full lockdown policies in Western Europe countries have no evident impacts on the COVID-19 epidemic*" concluded that there was no evidence supporting full lockdown strategies. A copy of this study is available at the following URL: https://www.medrxiv.org/content/10.1101/2020.04.24.20078717v1

91. On May 13, 2020, a publication in UK's The Telegraph warned of increased global child mortality from lockdowns, entitled: "*Unicef warns lockdown could kill more than Covid-19 as model predicts 1.2 million child deaths*". A copy of the article is available at the following URL: https://www.telegraph.co.uk/global-health/science-and-disease/unicef-warns-lockdown-could-kill-covid-19-model-predicts-12/

92. On July 27, 2020, international press reported on how lockdowns and covid restrictions were resulting in supply change shortages in the developing world that would lead to an increase in poverty and deaths. A copy of Associated Press article is available at the following URL: https://apnews.com/article/virus-outbreak-africa-ap-top-news-understanding-the-outbreak-hunger-5cbee9693c52728a3808f4e7b4965cbd.

93. A peer-reviewed paper published by Cambridge University Press in Disaster Medicine and Public Health Preparedness in August 2020, entitled "Public Health Lessons Learned from Biases in Coronavirus Mortality Overestimation" authored by Canadian Professor Emeritus of Public Health, Dr. Ronald Brown raised concerns similar to those I was discussing on social media with respect to the scientific approach about responding to the pandemic. A copy of this paper is available at the following URL: https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/public-health-lessons-learned-from-biases-in-coronavirus-mortality-overestimation/7ACD87D8FD2237285EB667BB28DCC6E9)

94. A peer-reviewed paper in the International Journal of Forecast in August 2020 entitled "Forecasting for Covid-19 has failed" highlighted the serious flaws in the subjective models being used by governments to impose harmful measures, including lockdowns. A copy of this

study is available at the following URL: https://www.sciencedirect.com/science/article/pii/S0169207020301199?via%3Dihub

95. Also on October 12, 2020, The Standard in the UK published a news piece entitled "Three million missed out on cancer checks after coronavirus put screening on hold" in which Sara, Bainbridge, head of policy at Macmillian Cancer Support, stated, "Disruption to cancer diagnosis and treatment is having a traumatic impact on cancer patients' lives. The backlog of patients continues to grow. The implications of this are extremely worrying." A copy of this article is available at the following URL: https://www.standard.co.uk/news/health/cancer-checks-three-million-miss-out-coronavirus-a4568771.html.

96. Similarly, a CBC News piece on December 17, 2020 was entitled "Oncologist fears 'tsunami of cancer' after Covid-19 lockdowns limited screening" in which cancer specialists expressed their worry that the "drop in cancer diagnoses means cases are going undetected and untreated." A copy of this article is available at the following URL: https://www.cbc.ca/news/health/cancer-tsunami-screening-delays-covid-1.5844708.

97. On November 6, 2020, BBC reported on an increase in young children being harmed as a result of lockdowns: "*Toxic lockdown sees huge rise in babies harmed or killed*". A copy of the article is available at the URL: https://www.bbc.com/news/education-54827702.

98. On November 13, 2020, the Editor-in-Chief of the British Medical Journal, Dr. Kamran Abbasi, a physician and professor of public health at Imperial College in London, England, and the Editor of the Royal Society of Medicine, published a paper in the British Medical Journal entitled: "Covid-19: politicization, 'corruption,' and suppression of science" raising the same concerns I was discussing on social media. A copy of the paper is available at the URL: https://www.bmj.com/content/371/bmj.m4425.

99. A peer-reviewed study on the efficacy of lockdowns authored by Stanford epidemiologists and physicians was published in the European Journal of Clinical Investigation in January 2021 and was entitled, "Assessing Mandatory Stay-at-Home and Business Closures Effects on the Spread of Covid-19." The study had failed to find strong evidence supporting a role for more restrictive non-pharmaceutical interventions (NPIs) in control of Covid-19. A copy of the article is available at the URL: https://onlinelibrary.wiley.com/doi/10.1111/eci.13484.

100. In January 2021, Dr. Richard Schabas, a retired physician with specialty training in internal medicine and public health, and who had served as the Chief Medical Officer of Health for the Province of Ontario for a decade (1987-1997) and was Chief of Staff at York Central Hospital during the SARS crisis, penned an open letter opposing lockdowns which was published by the National Post: “Ontario lockdown ‘not supported by strong science’ says former chief medical officer of health”. A copy of the letter is available at the URL: https://nationalpost.com/news/canada/ontario-lockdown-not-supported-by-strong-science-says-former-chief-medical-officer-of-health.

101. In February 2021, a peer-reviewed paper was published in Frontiers Public Health by Canadian physician, Dr. Ari R. Joffe, a staff pediatrician in pediatric infectious diseases and pediatric critical care medicine at Alberta’s Stollery Children’s Hospital and a clinical professor in pediatrics at the University of Alberta, entitled: “Covid-19: Rethinking the Lockdown Groupthink” in which he explained why he changed his mind about supporting lockdowns and warned of lockdown harms. A copy of this paper is available at the URL: https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2021.625778/full.

102. In February 2021, there was also a peer-reviewed paper entitled “Covid-19 and the Political Economy of Mass Hysteria” published in the International Journal of Environmental Research and Public Health commenting on the “collective hysteria” during the COVID-19 pandemic, the ineffectiveness of lockdowns and their detrimental effects to public health. A copy of this article is available at the URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7913136/.

103. In March 2021, Dr. Jay Bhattacharya, MD, PhD, Stanford professor of medicine and infectious disease epidemiologist, and co-author of the Great Barrington Declaration, spoke about the harms of lockdowns during an interview:

> “*Lockdowns are the biggest public health mistake we've ever made.. The harm to people is catastrophic.. Lockdowns are producing devastating effects on short and long-term public health.. People who are older have a much higher risk from dying from Covid than people who are younger...and that's a really important fact because we know who his most vulnerable, it's people that are older.. People who are poor face much more hardship from the lockdowns than people who are rich.*"
>
> A copy of the interview is available at the URL: https://www.newsweek.com/stanford-doctor-calls-lockdowns-biggest-public-health-mistake-weve-ever-made-1574540.

104. There was also a Canadian analysis done of lockdown harms from Simon Fraser University which was initially published in April 2021 entitled: "Covid Lockdown Cost/Benefits: A Critical Assessment of the Literature" examining more than 80 covid studies; it was then peer-reviewed and published in September 2021 examining more than 100 covid studies and concluding that:

> "*by late April (2020) it was already known that i) the empirical predictions of the SIRS based models were wrong, ii) that the models made a number of questionable assumptions, iii) that the deaths were highly skewed to the elderly, and iv) that the costs were large. The progression of understanding about the virus has improved over time, but it has not fundamentally changed. By August 2020 there was enough information available to show that any reasonable cost/benefit analysis would show that lockdown was creating more harm than good*."
>
> A copy of the initial paper is available at the following URL: https://www.sfu.ca/~allen/LockdownReport.pdf
>
> A copy of the peer-reviewed study is available at the following URL: https://www.tandfonline.com/doi/abs/10.1080/13571516.2021.1976051.

105. In September 2022, Monash Bioethics Review, a prominent bioethics peer-reviewed publication, published an entire journal series on the harms of lockdowns and its ethical implications, including a peer-reviewed paper entitled: "Public health ethics: critiques of the 'new normal'". A copy of the study is available at the following URL: https://link.springer.com/article/10.1007/s40592-022-00163-7.

106. A Canadian peer-reviewed study published in The Lancet on March 9, 2023, with co-authorship by physicians and scientists from Toronto, Ottawa, and Calgary, entitled "Comparison of paediatric emergency department visits for attempted suicide, self-harm, and suicidal ideation before and during the Covid-19 pandemic: a systematic review and meta-analysis" had analyzed data from 42 published studies from 18 countries involving more than eleven million emergency room visits and concluded that there was a 22% increase in pediatric suicide attempts during the lockdown. A copy of this study is available at the following URL: https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366(23)00036-6/.

107. Similarly, a Canadian peer-reviewed study published in Pediatric Emergency Medicine in July 2023 entitled "Visits to Alberta Emergency Departments for Child Mental Health Concerns During the Covid-19 Pandemic: an examination of visit trends in relation to school closures and reopenings" concluded that "the greatest changes, across all ages, in visits for child mental health

care to Alberta's emergency departments occurred when schools closed during the first months of the covid pandemic." A copy of this study is available at the following URL: https://journals.lww.com/pec-online/fulltext/2023/07000/visits_to_alberta_emergency_departments_for_child.15.aspx.

108. In May 2023, a Canadian professor Dr. Bardosh, now at the Universities of Edinburg and Washington, published a study entitled: "How Did the COVID Pandemic Response Harm Society? A Global Evaluation and State of Knowledge Review (2020-21)" and concluded: "*This cumulative academic research shows that the collateral damage of the pandemic response was substantial, wide-ranging and will leave behind a legacy of harm for hundreds of millions of people in the years ahead*." A copy of this study is available at the following URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4447806.

109. In June 2023, a landmark 220-page study was published by researchers at Johns Hopkins University and Sweden's Lund University who examined 19,646 potentially relevant studies, selecting 22 within standardized measures for meta-analysis and concluded that covid lockdowns were "a global policy failure of gigantic proportions". A copy of the study is available at the URL: https://iea.org.uk/publications/did-lockdowns-work-the-verdict-on-covid-restrictions/.

110. As noted in the synopsis of references, attached as Exhibit A, there were safety signals reported in peer-reviewed studies in regards to concerns about the risk of myocarditis in children as a result of the Covid-19 vaccine, especially in young boys, as early as 2021.

Attaran's Activities on Social Media

111. The covid era is not the first time Attaran has been hyperbolic and alarmist regarding a circulating virus.

112. In 2016, there was international media attention around the Zika virus in the lead up to the 2016 Olympics in Rio (August 5-21, 2016). Beginning in May 2016, Attaran was making national and international headlines demanding that the WHO call upon the Olympics Committee to either cancel or change the location of the 2016 Olympics; Attaran was proclaiming that failure to do so would cause deadly international spread of the Zika virus and a pandemic resulting in birth defects, and neurological complications with possible paralysis in adults. Below is a brief sampling of Attaran's "expert" warnings at the time:

a) A copy of the May 11, 2016 BBC article titled “Olympics 2016: IOC insists Games will go ahead despite Zika”, is attached as **Exhibit RR**.

b) A copy of the May 12, 2016 CTV News article titled: “WHO issues Zika reminders after professor calls for relocation of Rio Olympics”, is attached as **Exhibit SS.**

c) A copy of the May 12, 2016 The Guardian article titled: “Zika virus makes Rio Olympics a threat in Brazil and abroad, health expert says”, is attached as **Exhibit TT**.

d) A copy of the May 13, 2016, The Verge article titled: “Health expert recommends moving Rio Olympics due to Zika virus threat”, is attached as **Exhibit UU**.

e) A copy of the May 27, 2016 CBC article titled: “Consider moving Rio Olympics, health experts urge WHO”, is attached as **Exhibit VV**.

113. Attaran’s alarmist Zika commentary was rejected by the WHO (https://www.bmj.com/content/353/bmj.i2899 and https://www.theguardian.com/sport/2016/may/28/rio-olympics-zika-virus-expert-no-postpone), the CDC (https://www.bbc.com/news/world-latin-america-36401150), and several leading physicians and scientists both in Canada and internationally in the printed press (https://www.theglobeandmail.com/opinion/why-zika-shouldnt-derail-the-rio-olympics/article30067968/) and in peer-reviewed publications (https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)30842-X/, https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)31228-4/, https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)31204-1/, https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(16)30266-3/). The 2016 Olympics went on as scheduled in Rio and none of Attaran’s alarmist warnings nor any Zika pandemic resulted.

114. On November 3, 2021, Attaran was suspended from Twitter for tweeting that "Trudeau (the Prime Minister of Canada) should be tarred and feathered for putting child lives in danger” because Attaran claimed the Covid-19 vaccine authorization for children was being delayed by the Canadian government. Attaran was reinstated on Twitter sometime later.

115. Attaran also has a very disturbing pattern of aggressive misogynistic, classist and racist behaviour online: he has previously targeted young women of colour. In August 2020, Attaran had

attacked several young First Nations women online, including Ms Melissa Mbarki, a young Cree and French analyst in the energy sector in Alberta and an advocate for her Indigenous community.

116. On August 22, 2020, Attaran tweeted at her stating: "You've been caught lying again, I'm afraid.. If you're looking for lying and lazy, look in the mirror." Attaran then blocked both Indigenous women engaging with him on twitter after they brought his conduct to the attention of their followers. Ms Mbarki (@MelissaMbarki) had responded to her followers in a series of tweets on August 22, 2020 addressing Attaran's behaviour. **A copy of Ms. Mbarki's tweet is attached as Exhibit WW.**

117. Subsequently on June 18, 2022, Attaran made international headlines for posting a series of tweets publicly berating a young black female flight attendant, on a United Airlines flight from Ottawa to Chicago, for not masking. Attaran had posted several photographs identifying the young woman on twitter while tagging her employer United Airlines (and various media). Unlike Canada, the US no longer required passengers or crew to mask. **A copy of four articles reporting on this issue are attached as Exhibit 400.**

118. I make this affidavit in support of this motion, and for no other improper purpose.

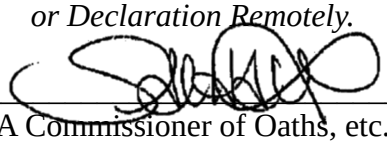
SWORN REMOTELY by Kulvinder Gill stated as being in the City of Brampton, in the Province of Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8, 2024 in accordance with *O. Reg 431/20, Administering Oath or Declaration Remotely.*

(Commissioner for taking Affidavits, etc.)

DR. KULVINDER GILL

Sacha Lucille Van Loon,
a Commissioner, etc., Province of Ontario,
for Caza Saikaley s.r.l/LLP,
Barristers and Solicitors.
Expires December 13, 2025.

This is **Exhibit « A »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



A Commissioner of Oaths, etc.

SYNOPSIS OF REFERENCES

** All References may be found in Brief of Supplemental Resources, as marked

A. Lockdowns

TAB 1

Fredrik Andersson et al, **The Covid-19 lesson from Sweden: Don't lock down**, Economic Affairs, Volume 44, February 11, 2024, Pages 3-16
https://onlinelibrary.wiley.com/doi/full/10.1111/ecaf.12611
"Prior to the coronavirus outbreak in early 2020, there were virtually no plans for the locking down of society in the event of a pandemic... Despite a lack of evidence, many countries adopted sweeping restrictions in response to the outbreak of the pandemic in the spring of 2020. At that time, this step might have been justified by the scant knowledge of the characteristics of the virus and by the risk of major negative health effects. However, the restrictions did not remain temporary. They were extended for almost two years, despite growing evidence that draconian lockdown policies did little to reduce the excess death rate. Democratic countries failed to protect the civil rights of their citizens. To mitigate the effects of the economic downturn induced by lockdowns, expansionary fiscal and monetary measures were adopted. These uniquely large fiscal and monetary policy measures probably represented an overreaction as well.. Countries such as Finland and Norway, with the lowest aver-age lockdown rate show the lowest excess mortality, actually displaying a negative excess mortality rate. Sweden, which lagged behind other countries in March 2020 in introducing lockdown measures and then largely had an average lockdown rate, has one of the lowest cumulative excess mortality rates towards the end of the pandemic.. Countries with more stringent lockdown measures did not experience a lower death rate.. Perhaps the main lesson from the pandemic is the importance of not panicking during a crisis. Although policymakers face difficult challenges during an emergency, policies should have their basis in scientific evidence and a focus on the long run. Short-term decisions should not be allowed to jeopardise balanced long-run development.. Autocratic countries such as China should not serve as a role model in limiting citizens' rights.. It is essential that crisis policies do not cause more harm than good."

TAB 2

Jonas Herby et al, **Did lockdown work? The verdict on Covid restrictions**, Institute of Economic Affairs, June 5, 2023
https://iea.org.uk/publications/did-lockdowns-work-the-verdict-on-covid-restrictions/
"This study is the first all-encompassing evaluation of the research on the effectiveness of mandatory restrictions on mortality.. It demonstrates that lockdowns were a failed promise. They had negligible health effects but disastrous economic, social and political costs to society. Most likely lockdowns represent the biggest policy mistake in modern times."

TAB 3

Kevin Bardosh, **How Did the COVID Pandemic Response Harm Society? A Global Evaluation and State of Knowledge Review (2020-21),** May 14, 2023
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4447806
"The analysis synthesizes 600 publications with a focus on meta-analyses, systematic reviews, global reports and multi-country studies. This cumulative academic research shows that the

collateral damage of the pandemic response was substantial, wide-ranging and will leave behind a legacy of harm for hundreds of millions of people in the years ahead."

TAB 4

AlexBroadbent et al, **Can you lock down in a slum? And who would benefit if you tried? Difficult questions about epidemiology's commitment to global health inequalities during Covid-19**, Global Epidemiology, Volume 4, December 2022, 100074.
https://www.sciencedirect.com/science/article/pii/S2590113322000049
"Lockdowns were foreseeably harmful to the global poor.. In view of widespread commitment to reducing global health inequalities within profession, this should prompt reflection within epidemiological community."

TAB 5

Andreas Schleicher et al**, Education recovery after COVID-19: Better, stronger & collaborative**, OECD Education and Skills Today, July 1, 2022.
https://oecdedutoday.com/education-recovery-after-covid/
"The data from the OECD, UNESCO, UNICEF & World Bank survey show no relationship between the extent of school closures and Covid-19 infection rates across countries. This shows that school closures were not inevitable but, rather, a policy choice, often framed by a lack of institutional capacity to reconcile educational provision with health and safety."

TAB 6

Marcelo Cardona et al, **Estimated impact of the 2020 economic downturn on under-5 mortality for 129 countries**, PLoS One, 2022, 17(2): e0263245.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8865697/
"For the scenarios of 10% and 15% GDP reductions, there is an estimated under-5 loss of life of 19.8 and 20.2 million, which corresponds to an additional 585,802 (95% CI: 579,184–592,799) and 911,026 (95% CI: 900,804–921,825) lives lost, respectively. Moreover, we estimate that 49% of the total under-5 lives lost would occur in Sub-Saharan Africa, a pattern that is observed across the four scenarios, where the total number of lives lost in this region increased up to over 470,000 between a no downturn scenario and a 15% reduction in GDP per capita.. The economic downturns of 2020 have also been projected to reverse a sustained trend of decline in global poverty, with an estimated 42–66 million additional children falling into extreme poverty on top of the estimated 386 million children in extreme poverty in 2019.. The economic downturns of 2020 significantly increased loss of life among children younger than five years old in (129) low- and middle-income countries. The health of these children is highly susceptible to reductions in the economic well-being of their families."

TAB 7

Jonas Herby et al, **A Literature Review and Meta-Analysis of the Effects of Lockdowns on COVID-19 Mortality**, Johns Hopkins Institute for Applied Economics, Global Health, January 2022.
https://sites.krieger.jhu.edu/iae/files/2022/01/A-Literature-Review-and-Meta-Analysis-of-the-Effects-of-Lockdowns-on-COVID-19-Mortality.pdf
"This systematic review and meta-analysis are designed to determine whether there is empirical evidence to support the belief that 'lockdowns' reduce COVID-19 mortality. Lockdowns are defined as the imposition of at least one compulsory, non-pharmaceutical intervention (NPI). NPIs

are any government mandate that directly restrict peoples' possibilities, such as policies that limit internal movement, close schools and businesses, and ban international travel. This study employed a systematic search and screening procedure in which 18,590 studies are identified that could potentially address the belief posed. After three levels of screening, 34 studies ultimately qualified. Of those 34 eligible studies, 24 qualified for inclusion in the meta-analysis. They were separated into three groups: lockdown stringency index studies, shelter-in-place- order (SIPO) studies, and specific NPI studies. An analysis of each of these three groups support the conclusion that lockdowns have had little to no effect on COVID-19 mortality."

TAB 8

Douglas W. Allen, **Covid-19 Lockdown Cost/Benefits: A Critical Assessment of the Literature**, International Journal of the Economics of Business, Volume 29, Issue 1, 2022.
https://www.tandfonline.com/doi/abs/10.1080/13571516.2021.1976051
"An examination of over 100 Covid-19 studies reveals that many relied on false assumptions that over-estimated the benefits and under-estimated the costs of lockdown… The limited effectiveness of lockdowns explains why, after more than one year, the unconditional cumulative Covid-19 deaths per million is not negatively correlated with the stringency of lockdown across countries. Using a method proposed by Professor Bryan Caplan along with estimates of lockdown benefits based on the econometric evidence, I calculate a number of cost/benefit ratios of lockdowns in terms of life-years saved. Using a mid-point estimate for costs and benefits, the reasonable estimate for Canada is a cost/benefit ratio of 141. It is possible that lockdown will go down as one of the greatest peacetime policy failures in modern history."

TAB 9

Christian Bjørnskov, **Did Lockdown Work? An Economist's Cross-Country Comparison**, CESifo Economic Studies, Volume 67, Issue 3, September 2021, Pages 318–331.
https://academic.oup.com/cesifo/article/67/3/318/6199605
"Comparing weekly mortality in 24 European countries: more severe lockdown policies have not been associated with lower mortality.. The lockdowns have not worked as intended.. Lockdowns.. have thrown world into most severe recession since WWII.. Also caused erosion of fundamental rights and separation of powers in large part of world as both democratic and autocratic regimes have misused emergency powers and ignored constitutional limits to policy making."

TAB 10

Eran Bendavid et al, **Assessing mandatory stay-at home and business closure effects on spread of COVID-19**, European Journal of Clinical Investigation, December 2021, e13484.
https://onlinelibrary.wiley.com/doi/epdf/10.1111/eci.13484
"There is no evidence that more restrictive nonpharmaceutical interventions ('lock-downs') contributed substantially to bending the curve of new cases in England, France, Germany, Iran, Italy, the Netherlands, Spain or the United States in early 2020.. Some evidence also suggests that sometimes under more restrictive measures, infections may be more frequent in settings where vulnerable populations reside relative to the general population. In summary, we fail to find strong evidence supporting a role for more restrictive NPIs in the control of COVID in early 2020.. We do not find significant benefits on case growth of more restrictive NPIs. Similar reductions in case growth may be achievable with less- restrictive interventions."

TAB 11

Simon N. Wood, **Inferring UK COVID-19 fatal infection trajectories from daily mortality data: Were infections already in decline before the UK lockdowns?** Biometrics Journal of The International Biometric Society, March 30, 2021, Pages 1-14.
https://onlinelibrary.wiley.com/doi/10.1111/biom.13462
"What the results show is that, in the absence of strong assumptions, the currently most reliable openly available data strongly suggest that the decline in infections in the United Kingdom began before the first full lockdown, suggesting that the measures preceding lockdown may have been sufficient to bring the epidemic under control, and that community infections, unlike deaths, were probably at a low level well before the first lockdown was eased. Such a scenario would be consistent with the infection profile in Sweden, which began its decline in fatal infections shortly after the United Kingdom, but did so on the basis of measures well short of full lockdown."

TAB 12

Ari R. Joffe, **COVID-19: Rethinking the Lockdown Groupthink**, Frontiers in Public Health, February 26, 2021, 9:625778.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7952324/
"The cost-benefit analysis is shown.. finding on balance the lockdowns cost a minimum of 5X more WELLBY than they save, and more realistically, cost 50–87X more. Importantly, this cost does *not* include the collateral damage discussed above (from disrupted healthcare services, disrupted education, famine, social unrest, violence, and suicide) nor the major effect of loneliness and unemployment on lifespan and disease… A similar cost-benefit analysis for Canada is shown.. with the cost at least 10X higher for lockdowns than the benefit.. ockdowns cause severe adverse effects for many millions of people, disproportionately for those already disadvantaged among us. The collateral damage included severe losses to current and future wellbeing from unemployment, poverty, food insecurity, interrupted preventive, diagnostic, and therapeutic healthcare, interrupted education, loneliness and deterioration of mental health, and intimate partner violence. The economic recession has been framed as the economy vs. saving lives from COVID-19, but this is a false dichotomy. The economic recession, through austerity in government spending on the social determinants of health, can be expected to cause far more loss of life and wellbeing over the long-run than COVID-19 can. We must open up society to save many more lives than we can by attempting to avoid every case (or even most cases) of COVID-19. It is past time to take an effortful pause, calibrate our response to the true risk, make rational cost-benefit analyses of the trade-offs, and end the lockdown groupthink."

TAB 13

John P. A. Ioannidis, **Global perspective of COVID-19 epidemiology for a full-cycle pandemic**, European Journal of Clinical Investigation, October 7, 2020, e13423.
https://onlinelibrary.wiley.com/doi/10.1111/eci.13423#eci13423-bib-0043
"Infection fatality rate in different locations can be inferred from seroprevalence studies. Median IFR across 51 locations is 0.23% for the overall population and 0.05% for people <70 years old. IFR is larger in locations with higher overall fatalities. Given that these 82 studies are predominantly from hard-hit epicentres, IFR on a global level may be modestly lower. Average values of 0.15%-0.20% for the whole global population and 0.03%-0.04% for people <70 years old as of October 2020 are plausible.. Targeted and precise management of pandemic and avoiding past mistakes would minimize mortality.. Finally, both COVID-19 and the response measures (especially if they are too aggressive) can disrupt life, economy, civilization and society at large. A catastrophic impact on mental health is already well documented.. Many measures

taken to halt the pandemic may be seriously destabilizing, adding hundreds of millions of people at the brink of starvation, skyrocketing unemployment and resulting in recrudescence of other infectious diseases such as tuberculosis and childhood diseases from disrupted vaccination schedules. Learning to live with Covid-19 and using effective, precise, least disruptive measures is essential to avoid such disasters and to help minimize the adverse impact of the pandemic."

TAB 14

Rebail Chaudhry et al, **A country level analysis measuring the impact of government actions, country preparedness and socioeconomic factors on COVID-19 mortality and related health outcomes**, EClinicalMedicine, The Lancet Discovery Science, August 25, 2020, 100464.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7372278/
"Increased mortality per million was significantly associated with higher obesity prevalence (RR=1.12; 95%CI: 1.06–1.19) and per capita gross domestic product (GDP) (RR=1.03; 95%CI: 1.00–1.06). Reduced income dispersion reduced mortality (RR=0.88; 95%CI: 0.83–0.93) and the number of critical cases (RR=0.92; 95% CI: 0.87–0.97). Rapid border closures, full lockdowns, and wide-spread testing were not associated with COVID-19 mortality per million people."

B. Vaccine Safety

TAB 15

Tracy Beth Hoeg et al, **Pitfalls of using observational studies in harm-benefit analyses of BNT161b2 vaccination of 5-11-year-olds**, Epidemiology and Infection, February 16, 2024
https://www.cambridge.org/core/journals/epidemiology-and-infection/article/pitfalls-of-using-observational-studies-in-harmbenefit-analyses-of-bnt161b2-vaccination-of-511yearolds/6C289FA37CD35F17C42FF27C1E113965
"In the absence of demonstrably non-confounded analyses of relevant endpoints, we argue the benefit of mRNA vaccination against severe disease, hospitalization or death in 5-11-year-olds remained uncertain in the review by Watanabe et al. Meanwhile, adverse event rates were significantly higher among the vaccinate, as demonstrated in randomized studies. To our knowledge, a net benefit of vaccinating this demographic using demonstrably unconfounded data has not to date been demonstrated."

TAB 16

Vladimir Uversky et al, IgG4 Antibodies Induced by Repeated Vaccination May Generate Immune Tolerance to the SARS-CoV-2 Spike Protein**, Volume 11, Issue 991, May 17, 2023**
https://www.mdpi.com/2076-393X/11/5/991
"Emerging evidence suggests that the reported increase in IgG4 levels detected after repeated vaccination with the mRNA vaccines may not be a protective mechanism; rather, it constitutes an immune tolerance mechanism to the spike protein that could promote unopposed SARS-CoV2 infection and replication by suppressing natural antiviral responses. Increased IgG4 synthesis due to repeated mRNA vaccination with high antigen concentrations may also cause autoimmune diseases, and promote cancer growth and autoimmune myocarditis in susceptible individuals."

TAB 17

Lael M. Yonker et al**, Circulating Spike Protein Detected in Post–COVID-19 mRNA Vaccine Myocarditis,** Volume 147, Issue 11, January 4, 2023, Pages 867-876
https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.122.061025
"A notable finding was that markedly elevated levels of full-length spike protein (33.9±22.4 pg/mL), unbound by antibodies, were detected in the plasma of individuals with postvaccine myocarditis, whereas no free spike was detected in asymptomatic vaccinated control subjects (unpaired t test; P<0.0001)… Free spike antigen was detected in the blood of adolescents and young adults who developed post-mRNA vaccine myocarditis, advancing insight into its potential underlying cause."

TAB 18

Kevin Bardosh et al, **Covid-19 vaccine boosters for young adults: a risk benefit assessment and ethical analysis of mandate policies at universities**, British Medical Journal, Journal of Medical Ethics, Issue 50, December 5, 2022, Pages 126-138
https://jme.bmj.com/content/50/2/126
"Booster (Covid) mandates in young adults are expected to cause a net harm: per COVID-19 hospitalisation prevented, we anticipate at least 18.5 serious adverse events from mRNA vaccines, including 1.5–4.6 booster-associated myopericarditis cases in males (typically requiring hospitalisation). We also anticipate 1430–4626 cases of grade ≥3 reactogenicity interfering with daily activities (although typically not requiring hospitalisation). University booster mandates are unethical because they: (1) are not based on an updated (Omicron era) stratified risk-benefit assessment for this age group; (2) may result in a net harm to healthy young adults; (3) are not proportionate: expected harms are not outweighed by public health benefits given modest and transient effectiveness of vaccines against transmission; (4) violate the reciprocity principle because serious vaccine-related harms are not reliably compensated due to gaps in vaccine injury schemes; and (5) may result in wider social harms."

TAB 19

Kristin Goddard et al, **Risk of Myocarditis and Pericarditis Following BNT162b2 and mRNA-1273 COVID-19 Vaccination**, Vaccine, July 12, 2022.
https://www.sciencedirect.com/science/article/pii/S0264410X2200860X
"Both (Pfizer and Moderna mRNA) vaccines were associated with increased risk of myocarditis and pericarditis in 18-39-year-olds. Risk estimates were modestly higher after mRNA-1273 than after BNT162b2."

TAB 20

Stephane Le Vu et al, **Age and sex-specific risks of myocarditis and pericarditis following Covid-19 messenger RNA vaccines**, Nature Communications, Volume 13, June 25, 2022, 3633.
https://www.nature.com/articles/s41467-022-31401-5
"We perform matched case-control studies and find increased risks of myocarditis and pericarditis during the first week following vaccination, and particularly after the second dose, with adjusted odds ratios of myocarditis of 8.1 (95% confidence interval [CI], 6.7 to 9.9) for the BNT162b2 and 30 (95% CI, 21 to 43) for the mRNA-1273 vaccine. The largest associations are observed for myocarditis following mRNA-1273 vaccination in persons aged 18 to 24 years. Estimates of

excess cases attributable to vaccination also reveal a substantial burden of both myocarditis and pericarditis across other age groups and in both males and females."

TAB 21

Sarah A. Buchan et al, **Epidemiology of Myocarditis and Pericarditis Following mRNA Vaccination by Vaccine Product, Schedule, and Interdose Interval Among Adolescents and Adults in Ontario, Canada**, JAMA Network Open, June 24, 2022, 5(6):e2218505.
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2793551
"This population-based cohort study was conducted in Ontario, Canada (population: 14.7 million) from December 2020 to September 2021 and used data from Ontario's COVID-19 vaccine registry and passive vaccine-safety surveillance system. Among 19 740 741 doses of mRNA vaccines administered, there were 297 reports of myocarditis or pericarditis meeting the inclusion criteria; 228 (76.8%) occurred in male individuals, and the median age of individuals with a reported event was 24 years (range, 12-81 years). Of the reported cases, 207 (69.7%) occurred following the second dose of the COVID-19 mRNA vaccine. When restricted to individuals who received their second dose during the period of enhanced passive surveillance (on or after June 1, 2021), the highest rate of myocarditis or pericarditis was observed in male individuals aged 18 to 24 years following mRNA-1273 as the second dose (299.5 cases per 1 000 000 doses; 95% CI, 171.2-486.4 cases per 1 000 000 doses); the rate following BNT162b2 as the second dose was 59.2 cases per 1 000 000 doses (95% CI, 19.2-138.1 cases per 1 000 000 doses). Overall rates for both vaccine products were significantly higher when the interdose interval was 30 or fewer days (BNT162b2: 52.1 cases per 1 000 000 doses [95% CI, 31.8-80.5 cases per 1 000 000 doses]; mRNA-1273: 83.9 cases per 1 000 000 doses [95% CI, 47.0-138.4 cases per 1 000 000 doses]) compared with 56 or more days (BNT162b2: 9.6 cases per 1 000 000 doses [95% CI, 6.5-13.6 cases per 1 000 000 doses]; mRNA-1273: 16.2 cases per 1 000 000 doses [95% CI, 10.2-24.6 cases per 1 000 000 doses])."

TAB 22

Jenna Schauer et al, **Persistent Cardiac Magnetic Resonance Imaging Findings in a Cohort of Adolescents with Post-Coronavirus Disease 2019 mRNA Vaccine Myopericarditis**, The Journal of Pediatrics, Volume 245, June 1, 2022, Pages 233-237.
https://www.jpeds.com/article/S0022-3476(22)00282-7/fulltext
"In a cohort of adolescents with Covid-19 mRNA vaccine-related myopericarditis, a large portion have persistent LGE abnormalities, raising concerns for potential longer-term effects."

TAB 23

Sivan Gazit et al, **Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Naturally Acquired Immunity versus Vaccine-induced Immunity, Reinfections versus Breakthrough Infections: A Retrospective Cohort Study**, Clinical Infectious Diseases, April 5, 2022, ciac262.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac262/6563799
"Although antibody levels might be useful to assess short- term protection on a population level, to date, there is still no consensus on an evidence-based, long-term measurement to assess immune correlate of protection [1]. This lack of correlate of protection has led to different approaches in terms of vaccine resource allocation, such as the need for vaccine administration in recovered patients.. After adjusting for comorbidities, we found a statistically significant 13.06-fold (95% CI: 8.08 to 21.11) increased risk for break- through infection as opposed to reinfection ($P < .001$). Apart from age ≥ 60 years, there was no statistical evidence that any of the assessed

comorbidities significantly affected the risk of an infection during the follow-up period.. This is the largest real-world observational study comparing naturally acquired immunity, gained through previous SARS- CoV-2 infection, to vaccine-induced immunity, afforded by the BNT162b2 mRNA vaccine. Our large cohort, enabled by Israel's rapid rollout of the mass-vaccination campaign, allowed us to investigate the risk for additional infection—either a break- through infection in vaccinated individuals or reinfection in previously infected ones—over a longer period than thus far described. Our analysis demonstrates that SARS-CoV-2-naïve vaccinees had a 13.06-fold increased risk for breakthrough infection with the Delta variant compared to those previously infected, when the first event (infection or vaccination) occurred during January and February of 2021. The increased risk was signifi- cant for a symptomatic disease as well. . This analysis demonstrated that naturally acquired immunity affords longer lasting and stronger protection against infection and symptomatic disease due to the Delta variant of SARS-CoV-2, compared to the BNT162b2 2-dose vaccine- induced immunity."

TAB 24

Ortal Tuvali et al, **The Incidence of Myocarditis and Pericarditis in Post COVID-19 Unvaccinated Patients—A Large Population-Based Study**, Journal of Clinical Medicine, Volume 11, Issue 8, April 2022, 2219.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9025013/
"Post Covid-19 infection was not associated with either myocarditis (aHR 1.08; 95% CI 0.45to2.56) or pericarditis (aHR 0.53; 95% CI 0.25to1.13). We did not observe an increased incidence of neither pericarditis nor myocarditis in adult patients recovering from Covid-19 infection."

TAB 25

Steven R. Kraaijeveld et al, **Against COVID-19 vaccination of healthy children**, Bioethics, Volume 26, Issue 6, March 25, 2022, Pages 687-698.
https://onlinelibrary.wiley.com/doi/10.1111/bioe.13015
"We have presented three of the most compelling arguments that might justify routine vaccination of healthy children against Covid-19: an argument from paternalism or the best interests of children, an argument from indirect protection or the best interests of vulnerable others, and an argument from global eradication or the best interests of a global Covid-19 public health endgame. Through sustained objections to each respective argument, we have shown that, given the present evidence regarding the disease and the available vaccines, none is ultimately sufficient to justify routine Covid-19 vaccination of healthy children. We also elaborated two further objections specifically against mandating Covid-19 vaccination for children: one based on ethical issues surrounding coercion and parental autonomy, and the other based on the idea that mandates would undermine potentially altruistic decisions of autonomous children to get vaccinated for the sake of others. All things considered, neither routine nor mandatory vaccination of healthy children against Covid-19 is currently ethically justified."

TAB 26

Fiona Godlee et al, **Open letter from The BMJ too Mark Zuckerberg**, The British Medical Journal, December 17, 2021.
https://www.bmj.com/content/375/bmj.n2635/rr-80
"We are Fiona Godlee and Kamran Abbasi, editors of The BMJ, one of the world's oldest and most influential general medical journals. We are writing to raise serious concerns about the "fact checking" being undertaken by third party providers on behalf of Facebook/Meta. In September, a

former employee of Ventavia, a contract research company helping carry out the main Pfizer covid-19 vaccine trial, began providing The BMJ with dozens of internal company documents, photos, audio recordings, and emails. These materials revealed a host of poor clinical trial research practices occurring at Ventavia that could impact data integrity and patient safety. We also discovered that, despite receiving a direct complaint about these problems over a year ago, the FDA did not inspect Ventavia's trial sites. The BMJ commissioned an investigative reporter to write up the story for our journal. The article was published on 2 November, following legal review, external peer review and subject to The BMJ's usual high level editorial oversight and review."

TAB 27

Gilbert T Chua et al, **Epidemiology of Acute Myocarditis/Pericarditis in Hong Kong Adolescents Following Comirnaty Vaccination**, Clinical Infectious Diseases, November 28, 2021, ciab989.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab989/6445179
"This is a population cohort study in Hong Kong that monitored adverse events following immunization through a pharmacovigilance system for COVID-19 vaccines.. There is a significant increase in the risk of acute myocarditis/pericarditis following Comirnaty vaccination among Chinese male adolescents, especially after the second dose."

TAB 28

Paul D Thacker, **Covid-19: Researcher blows the whistle on data integrity issues in Pfizer's vaccine trial**, The British Medical Journal, BMJ Investigation, Volume 375, November 2, 2021, n2635.
https://www.bmj.com/content/375/bmj.n2635
"Covid-19: Researcher blows the whistle on data integrity issues in Pfizer's vaccine trial. Revelations of poor practices at a contract research company helping to carry out Pfizer's pivotal covid-19 vaccine trial raise questions about data integrity and regulatory oversight."

TAB 29

Philip Krause et al, **Considerations in boosting Covid-19 vaccine immune responses**, Volume 398, Issue 10308, October 9, 2021, Pages 1377-1380
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)02046-8/
"There could be risks if boosters are widely introduced too soon, or too frequently, especially with vaccines that can have immune-mediated side-effects (such as myocarditis, which is more common after the second dose of some mRNA vaccines, or Guillain-Barre syndrome, which has been associated with adenovirus-vectored COVID-19 vaccines). If unnecessary boosting causes significant adverse reactions, there could be implications for vaccine acceptance that go beyond COVID-19 vaccines. Thus, widespread boosting should be undertaken only if there is clear evidence that it is appropriate."

TAB 30

UK Government, Department of Health and Social Care, **Joint Committee on Vaccination and Immunisation statement on COVID-19 vaccination of children aged 12 to 15 years**, September 3, 2021.

https://www.gov.uk/government/publications/jcvi-statement-september-2021-covid-19-vaccination-of-children-aged-12-to-15-years/jcvi-statement-on-covid-19-vaccination-of-children-aged-12-to-15-years-3-september-2021
"The margin of benefit, based primarily on a health perspective, is considered too small to support advice on a universal programme of vaccination of otherwise healthy 12 to 15-year-old children at this time. As longer-term data on potential adverse reactions accrue, greater certainty may allow for a reconsideration of the benefits and harms… Joint Committee on Vaccination and Immunisation (JCVI) met, in collaboration with experts from overseas, to review updated evidence relating to the epidemiology of COVID-19 in the UK and safety data related to myocarditis following COVID-19 vaccination in the UK, US and Canada. There is increasingly robust evidence of an association between vaccination with mRNA COVID-19 vaccines and myocarditis. This is a very rare adverse event. Available data from the US and Canada indicate the reporting rate of myocarditis is higher following a second dose of mRNA vaccine, compared with the first dose. No association with prior SARS-CoV2 infection and myocarditis following vaccination has been identified.. The clinical picture is atypical and the medium to long-term (months to years) prognosis, including the possibility of persistence of tissue damage resulting from inflammation, is currently uncertain as sufficient follow-up time has not yet occurred."

TAB 31

Ronald B. Brown, **Outcome Reporting Bias in COVID-19 mRNA Vaccine Clinical Trials**, Medicina, Volume 57, Issue 3, February 26, 2021, 199.
https://www.mdpi.com/1648-9144/57/3/199
"Relative risk reduction and absolute risk reduction measures in the evaluation of clinical trial data are poorly understood by health professionals and the public. The absence of reported absolute risk reduction in COVID-19 vaccine clinical trials can lead to outcome reporting bias that affects the interpretation of vaccine efficacy. The present article uses clinical epidemiologic tools to critically appraise reports of efficacy in Pfzier/BioNTech and Moderna COVID-19 mRNA vaccine clinical trials. Based on data reported by the manufacturer for Pfzier/BioNTech vaccine BNT162b2, this critical appraisal shows: relative risk reduction, 95.1%; 95% CI, 90.0% to 97.6%; $p = 0.016$; absolute risk reduction, 0.7%; 95% CI, 0.59% to 0.83%; $p < 0.000$. For the Moderna vaccine mRNA-1273, the appraisal shows: relative risk reduction, 94.1%; 95% CI, 89.1% to 96.8%; $p = 0.004$; absolute risk reduction, 1.1%; 95% CI, 0.97% to 1.32%; $p < 0.000$. Unreported absolute risk reduction measures of 0.7% and 1.1% for the Pfzier/BioNTech and Moderna vaccines, respectively, are very much lower than the reported relative risk reduction measures. Reporting absolute risk reduction measures is essential to prevent outcome reporting bias in evaluation of COVID-19 vaccine efficacy.. Such examples of outcome reporting bias mislead and distort the public's interpretation of COVID-19 mRNA vaccine efficacy and violate the ethical and legal obligations of informed consent."

C. Natural Immunity to SARS-CoV-2, including Innate and Adaptive (B-cell and T-cell) Immunity

Tab 32

Nina Le Bert et al, **Silent battles: immune responses in asymptomatic SARS-CoV-2 infection**, Volume 21, Pages 159-170, January 15, 2024
https://www.nature.com/articles/s41423-024-01127-z
"Asymptomatic infections are characterized by an early and robust innate immune response,

particularly a swift type 1 IFN reaction, alongside a rapid and broad induction of SARS-CoV-2-specific T-cells. Often, antibody levels tend to be lower or undetectable after asymptomatic infections, suggesting that the rapid control of viral replication by innate and cellular responses might impede the full triggering of humoral immunity. Even if antibody levels are present in the early convalescent phase, they wane rapidly below serological detection limits, particularly following asymptomatic infection. Consequently, prevalence studies reliant solely on serological assays likely underestimate the extent of community exposure to the virus."

TAB 33

Vassiliki C. Pitiriga et al, **Persistence of T-Cell Immunity Responses against SARS-CoV-2 for over 12 Months Post COVID-19 Infection in Unvaccinated Individuals with No Detectable IgG Antibodies,** Volume 11, Issue 1764, November 27, 2023
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10747023/pdf/vaccines-11-01764.pdf
“Understanding the long-term adaptive humoral and cellular responses in the unvaccinated COVID-19-convalescent population is an essential key in estimating the longevity of the developed natural SARS-CoV-2 immunity.. Accordingly, our results suggest that adaptive T-cellular immunity following COVID-19 infection maintains for at least one year, even in the absence of humoral immunity.. Our results are in line with several studies demonstrating that humoral responses wane over time, while T-cell immunity persists in unvaccinated COVID-19-convalescent individuals.. Our results increase the evidence of the presence of long-term adaptive cellular immunity in unvaccinated Covid-convalescent individuals."

TAB 34

Latouche et al, **Frequency and burden of disease for SARS-CoV-2 and otherviral respiratory tract infections in children under the age of 2 months,** Volume 59, October 5, 2023, Pages 101-110.
https://onlinelibrary.wiley.com/doi/10.1002/ppul.26718
“In this young population of children, SARSCoV2 infection was less frequent and less severe than other viral respiratory infections.”

TAB 35

Kristin Mohn et al**, SARS-CoV-2 infection induces long-lived B and T-cell responses up to 15 months post-infection, irrespective of disease severity,** Volume 87, Issue 4, June 7, 2023, Pages 346-349
https://www.journalofinfection.com/article/S0163-4453(23)00302-X/fulltext
“The strength of our study is the longitudinal follow-up of two matched, unvaccinated cohorts, with differing disease severity following natural infection. Our findings of durable SARS-CoV-2 antibodies, memory B-cells and T-cellular protective immune responses more than one year post-infection”

TAB 36

Kristin Mohn et al**, SARS-CoV-2 infection induces long-lived B and T-cell responses up to 15 months post-infection, irrespective of disease severity,** Volume 87, Issue 4, June 7, 2023, Pages 346-349
https://www.journalofinfection.com/article/S0163-4453(23)00302-X/fulltext

“The strength of our study is the longitudinal follow-up of two matched, unvaccinated cohorts, with differing disease severity following natural infection. Our findings of durable SARS-CoV-2 antibodies, memory B-cells and T-cellular protective immune responses more than one year post-infection”

TAB 37

Caroline Stein et al, **Past SARS-CoV-2 infection protection against re-infection: systematic review and meta-analysis**, Volume 401, Issue 10379, February 16, 2023, Pages 833-842
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)02465-5/fulltext
“Our analysis of the available data suggests that the level of protection afforded by previous infection is at least as high, if not higher than that provided by two-dose vaccination using high-quality mRNA vaccines (Moderna and Pfizer-BioNTech).. The immunity conferred by past infection should be weighed alongside protection from vaccination when assessing future disease burden from COVID-19, providing guidance on when individuals should be vaccinated, and designing policies that mandate vaccination for workers or restrict access, on the basis of immune status, to settings where the risk of transmission is high, such as travel and high-occupancy indoor settings.”

TAB 38

Patricia Almendro-Vazquez, **Defending against SARS-CoV-2: The T-cell perspective**, Volume 14, January 26, 2023
https://www.frontiersin.org/journals/immunology/articles/10.3389/fimmu.2023.1107803/full
“SARS-CoV-2-specific T cell response has been proven essential for viral clearance, COVID-19 outcome and long-term memory. “Tcell response conserved against emerging variants of concern while variants are mostly able to evade humoral (antibody) responses.. Furthermore, T cell responses are conserved against the emerging variants of concern (VoCs) while these variants

TAB 39

Ksenia V. Zornikova et al, **Clonal diversity predicts persistence of SARS-CoV-2 epitope-specific T-cell response, Volume 5, Issue** 1351, December 9, 2022
https://www.nature.com/articles/s42003-022-04250-7
“T-cells play a pivotal role in reducing disease severity during SARS-CoV-2 infection and formation of long-term immune memory. We studied 50 COVID-19 convalescent patients and found that T cell response was induced more frequently and persisted longer than circulating antibodies”

TAB 40

Leo Swadling et al, **Can T-cells Abort SARS-CoV-2 and Other Viral Infections?** Volume 25, Issue 5, February 22, 2023, Page 4371
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10002440/
“In particular, expansion of virus-specific T cells in seronegative individuals suggests abortive infections occur not only after exposure to SARS-CoV-2, but for other coronaviridae, and diverse viral infections of global health importance (e.g., HIV, HCV, HBV).. The data we have reviewed argue for a refinement of the immunological paradigm implicating T cells solely in limiting and controlling established infections, highlighting that these T cells can also contribute to termination of viral replication in its earliest stages.”

TAB 41

Costanza Di Chiara et al, **Long-term Immune Response to SARS-CoV-2 Infection Among Children and Adults After Mild Infection**, JAMA Network Open, Volume 5, Issue 7, July 13, 2022, e2221616.
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794167
"Long-term immune response to SARSCoV2 infection among children and adults after mild infection.. The findings suggest that anti–SARS-CoV-2 S-RBD IgG may persist more than a year from infection in all age groups, with antibody titers that inversely correlate with age.. This work provides further evidence of sustained immune response in children.. Although we focused on the antibody responses to infection in this analysis, cellular immune responses are also likely to play an important role in protection against SARS-CoV-2 subsequent infection, as we and others have previously reported. Children had a higher absolute number of circulating T cells and a high proportion of naive T cells than adults, thus enabling an efficient adaptive immune response to previously unrecognized microbial antigens"

TAB 42

Eran Mick et al, **Upper airway gene expression shows a more robust adaptive immune response to SARS-CoV-2 in children**, Nature Communications, Volume 13, July 8, 2022, 3937.
https://www.nature.com/articles/s41467-022-31600-0
"These findings demonstrate that children elicit a more robust innate and especially adaptive immune response to SARS-CoV-2 in the upper airway that likely contributes to their protection from severe disease in the lower airway.. Specifically, we observed elevated gene expression markers of B-cell and T-cell activation, as well as cytokine production typically associated with T-cell activation (such as IFNγ), in the upper airway of children."

TAB 43

Valtyr Thors et al, **SARS-CoV-2 Infections in Icelandic Children: Close Follow-Up of All Confirmed Cases in a Nationwide Study**, The Pediatric Infectious Disease Journal, July 8, 2022.
https://journals.lww.com/pidj/Fulltext/9900/SARS_CoV_2_Infections_in_Icelandic_Children__Close.124.aspx
Children are less likely to acquire SARS-CoV-2 infections than adults and when infected, usually have milder disease.. Overall, the age-standardized incidence was 21.5/1000 children. The overall annual incidence was 10.9/1000, 21.5/1000 and 31.8/1000 children for children younger than 4 years old, 4–13 and 14–17-year-olds, respectively. Nineteen (1.1%) patients needed clinical assessment at the Children's Hospital Emergency Department. No patient required specific treatment (antiviral treatment, corticosteroids or monoclonal antibodies) and there were no hospital admissions. Three were treated with a course of oral antibiotics for a presumed bacterial infection. No child was diagnosed with MIS-C.. Asymptomatic infection was common in 4–7- and 8–13-year-olds where 31% and 24.4% respectively had no symptoms of infection (Fig. 3). Mild symptoms were reported in 1287 (73.9%) children whereas 81 (4.6%) had moderate symptoms. No child had severe symptoms. Of the 81 children with moderate symptoms, 7 (8.6%) had underlying illness. Underlying medical conditions were not associated with risk of moderate symptoms where 7/96 (7.3%) children with a medical condition had moderate symptoms compared with 74/1646 (4.5%) previously healthy children (P = 0.45). Infants <6 months of age were few (n = 19) and were asymptomatic or had mild disease.. In this nationwide study of all children infected in Iceland during the first 18 months of the COVID-19 pandemic (until August 31st, 2021), we found that overall, the symptoms were relatively mild, of short duration and with

few complications. No child was admitted to hospital and only 19 needed medical assessment at the Children's Hospital.. This study helps shed light on the true frequency of complications in pediatric SARS-CoV-2 infections and supports the observation that COVID-19 disease in children generally causes nonsevere symptoms and despite around half the cases were during a delta variant of SARS-CoV-2, no hospital admissions were needed although transmission was clearly more potent than in previous variants."

TAB 44

Heba N. Altarawneh et al, **Effects of Previous Infection and Vaccination on Symptomatic Omicron Infections**, The New England Journal of Medicine, Volume 387, July 7, 2022, Pages 21-34.
https://www.nejm.org/doi/full/10.1056/NEJMoa2203965
"Protection from previous infection with variants other than omicron against reinfection was moderate and durable, but protection of primary-series vaccination against infection was negligible by 6 months after the second dose.. Previous infection with a variant other than omicron was associated with an approximately 50% reduced risk of infection. No difference in the protection of previous infection against BA.1 and BA.2 was discernable. Two-dose vaccination and no previous infection had negligible effectiveness against BA.1 and BA.2, but most persons received their second dose more than 8 months earlier. These findings are explained by the short-lived protection of primary-series vaccination against omicron infections and the more durable protection from natural infection, as confirmed by the additional analysis of protection as a function of time after previous infection or vaccination."

TAB 45

Hiam Chemaitelly et al, **Duration of immune protection of SARS-CoV-2 natural infection against reinfection in Qatar**, medRxiv, Infectious Disease Epidemiology Group, Cornell University, Qatar and World Health Organization Collaborating Centre for Disease Epidemiology Analytics, Cornell University, USA, July 6, 2022.
https://www.medrxiv.org/content/10.1101/2022.07.06.22277306v1.full-text
"Protection against severe reinfection is very strong with no evidence for waning, regardless of variant, for more than 14mths after primary infection.. Effectiveness of primary infection against severe, critical, or fatal Covid reinfection was 97.3% (95%CI: 94.9-98.6%), irrespective of variant of primary infection or reinfection, and with no evidence for waning.. This remained at approximately 100%, even 14 months after the primary infection.. The matched cohorts each included 290,638 individuals. The study was conducted on the total population of Qatar, and thus the study population is representative of the internationally diverse.. Additional analyses restricting the matched cohorts to those ≥50 years of age showed findings resembling those for total population"

TAB 46

Yari Goldberg et al, **Protection and Waning of Natural and Hybrid Immunity to SARS-CoV-2**, The New England Journal of Medicine, Volume 386, June 9, 2022, Pages 2201-2212.
https://www.nejm.org/doi/full/10.1056/NEJMoa2118946
"Among persons who had been previously infected with SARS-CoV-2.. protection was higher than that conferred after the same time had elapsed since receipt of a second dose of vaccine among previously uninfected persons."

TAB 47

Dragan Primorac et al, **Adaptive Immune Responses and Immunity to SARS-CoV-2**, Frontiers in Immunology, Volume 13, May 4, 2022, 848582.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9114812/
"SARS-CoV cellular immunity has been shown to persist 17 years after infection, despite the undetectable humoral component. Similar has been demonstrated for SARS-CoV-2 T-cell memory.. T-cells also play an irreplaceable part in humoral immunity."

TAB 48

Yang Li et al, **A 1-year longitudinal study on COVID-19 convalescents reveals persistence of anti-SARS-CoV-2 humoral and cellular immunity**, Emerging Microbes and Infections, Volume 11, Issue 1, March 30, 2022, Pages 902-913.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8975172/
"One year longitudinal study on Covid-19 convalescents reveals persistence of anti-SARS-CoV-2 humoral and cellular immunity… At 1-year after infection, more than 90% of the convalescents generated memory CD4 or CD8 T memory responses, preferably against the SARS-CoV-2 M peptide pool. The convalescents also have polyfunctional and central memory T cells that could provide rapid and efficient response to SARS-CoV-2 re-infection.. We found at least RBD IgG levels are likely to reach a stable plateau at around 6 months after infection for most of the convalescents. In contrast to short-lived declining antibodies that are produced within the 6 months after infection, the stably level of antibodies produced by long-lived memory plasma cells that have experienced affinity maturation is more effective against re-infection [3,5]. Moreover, the T cell immunity, particularly the effector memory T cells would also provide effective immune protection against re-infection."

TAB 49

Aneesh Chandran et al, **Rapid synchronous type 1 IFN and virus-specific T cell responses characterize first wave non-severe SARS-CoV-2 infections**, Cell Reports Medicine, Volume 3, Issue 3, March 15, 2022, 100557.
https://www.cell.com/cell-reports-medicine/fulltext/S2666-3791(22)00064-7
"Rapid synchronous type1 IFN & T-cell responses characterize first wave non-severe SARS-CoV-2 infections.. Cell proliferation most evident in CD8+ T-cells.. with expansion of SARS-CoV-2-reactive TCRs, in contrast to antibodies, which lag by one to two weeks.. To the best of our knowledge, we report the earliest *in vivo* immune responses to natural SARS-CoV-2 infection available to date, enabled by serial sampling of individuals at risk of infection during the peak of the first epidemic wave in London. The general paradigm for early antiviral host defense is dominated by induction of type 1 IFNs."

TAB 50

Li-na Yan et al, **Neutralizing Antibodies and Cellular Immune Responses Against SARS-CoV-2 Sustained One and a Half Years After Natural Infection**, Frontiers in Microbiology, Volume 12, March 3, 2022, 803031.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8928406/
"We concluded that SARS-CoV-2 infection induced robust and persistent neutralizing antibody response and SARSCoV2-specific T-cell responses at least one and a half years post-symptom onset in both mild and severe Covid-19 patients.. More than 80% neutralizing antibody-negative patients had SARS-CoV-2-specific T-cell response… protective immunity independent of disease

severity, sex, age… Natural Covid-19 infection elicits a massive T-cell immune response.. More than 90% of patients develop SARS-CoV-2-specific T-cell response in one and a half years post-infection"

TAB 51

Anna H. E. Roukens et al, **Prolonged activation of nasal immune cell populations and development of tissue-resident SARS-CoV-2-specific CD8+ T cell responses following COVID-19**, Nature Immunology, Volume 23, December 22, 2021, Pages 23-32.
https://www.nature.com/articles/s41590-021-01095-w
"Prolonged activation of nasal immune cell populations and development of tissue-resident SARS-CoV-2-specific CD8+ T-cell responses following Covid.. we demonstrated that SARS-CoV-2-specific CD8+ T-cells in the nasal mucosa can persist for months after viral clearance. This suggests the establishment of local protective immune memory responses that could rapidly control and attenuate reinfections by SARS-CoV-2… In conclusion, we provide an in-depth analysis of how COVID-19 affects nasal mucosal immunity during acute infection, early recovery and convalescence.. Altogether, this study provides unique insights into mucosal and systemic immune cell dynamics both during acute infection and recovery of COVID-19."

TAB 52

Alexander C Dowell et al, **Children develop robust and sustained cross-reactive spike-specific immune responses to SARS-CoV-2 infection**, Nature Immunology, Volume 23, December 22, 2021, Pages 40-49.
https://www.nature.com/articles/s41590-021-01089-8
"Antibody responses against spike protein were high in children and seroconversion boosted responses against seasonal Beta-coronaviruses through cross-recognition of the S2 domain. Neutralization of viral variants was comparable between children and adults. Spike-specific T cell responses were more than twice as high in children and were also detected in many seronegative children, indicating pre-existing cross-reactive responses to seasonal coronaviruses… Spike-specific responses were also broadly stable beyond 12 months. Therefore, children generate robust, cross-reactive and sustained immune responses to SARS-CoV-2 with focused specificity for the spike protein.. In conclusion, we showed that children display a characteristically robust and sustained adaptive immune response against SARS-CoV-2 with substantial cross-reactivity against other human coronaviruses"

TAB 53

Jie Zhang et al, **One-Year Sustained Cellular and Humoral Immunities in Coronavirus Disease 2019 (COVID-19) Convalescents**, Clinical Infectious Diseases, October 5, 2021, ciiab884.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab884/6381561
"One year sustained cellular and humoral immunities of Covid-19 convalescents (post infection).. SARS-CoV-2–specific IgG antibodies, and NAb, can persist among >95% of COVID-19 convalescents from 6 to 12 months after disease onset. .. Notably, numbers of convalescents with positive SARS-CoV-2–specific T-cell responses (≥1 of the SARS-CoV-2 antigen S1, S2, M, and N proteins) were 71/76 (93%) and 67/73 (92%) at 6 and 12 months, respectively.. Our data demonstrate that SARS-CoV-2–specific humoral immunity is present within approximately 95% of convalescents and T-cell memory against at least 1 viral antigen is measurable among approximately 90% of subjects at 12m postinfection.. SARS-CoV-2–specific cellular and humoral immunities are durable at least until 1 year after disease onset."

TAB 54

Julia Niessl et al, **Identification of resident memory CD8+ T cells with functional specificity for SARS-CoV-2 in unexposed oropharyngeal lymphoid tissue**, Science Immunology, Volume 6, Issue 64, September 14, 2021.
https://www.science.org/doi/10.1126/sciimmunol.abk0894
“Identification of resident memory CD8+ T-cells against SARS-CoV-2 (collected pre-pandemic) in unexposed oropharyngeal lymphoid tissue.. Pre-exisiting cross-reactive CD8+ T-cells found in tissues, not in blood.. We found that SARS-CoV-2-specific memory CD4+ T-cells could be found at similar frequencies in the tonsils and peripheral blood in unexposed individuals, whereas functional SARS-CoV-2-specific memory CD8+ T-cells were almost only detectable in the tonsils.. We detected SARS-CoV-2-reactive mCD4+ and/or mCD8+ Tcell responses in 49% of (unexposed) tonsil samples.. These data also suggest SARS-CoV-2-unexposed children harbored higher frequencies of polyfunctional SARS-CoV-2-reactive mCD8+ T-cells in tonsils compared with unexposed adults"

TAB 55

Puya Dehgani-Mobaraki et al, **Longitudinal observation of antibody responses for 14 months after SARS-CoV-2 infection**, Clinical Immunology, Volume 230, September 2021, 108814.
https://www.sciencedirect.com/science/article/pii/S1521661621001510
“In conclusion**,** our study findings are consistent with recent studies reporting antibody persistency suggesting that induced SARS-CoV-2 immunity through natural infection, might be very efficacious against re-infection (>90%) and could persist for more than six months. Our study followed up patients up to 14 months demonstrating the presence of anti-S-RBD IgG in 96.8% of recovered COVID-19 subjects.”

TAB 56

J. Loske et al, **Pre-activated antiviral innate immunity in the upper airways controls early SARS-CoV-2 infection in children**, Nature Biotechnology, Volume 40, August 18, 2021, Pages 319-324.
https://www.nature.com/articles/s41587-021-01037-9
“Pre-activated antiviral innate immunity in upper airways controls early SARS-CoV-2 infection in children. The enhanced innate antiviral capacity in children together with the high IFN sensitivity of SARS-CoV-2 may explain why children are better able to control early-stage infection compared to adults & have lower risk of severe Covid-19.. Children displayed higher basal expression of pattern recognition receptors: stronger innate antiviral responses We detected distinct immune cell subpopulations including KLRC1 (NKG2A)+ cytotoxic T-cells and CD8+ T-cell population with a memory phenotype occurring predominantly in children.. Our data provide clear evidence that the epithelial and immune cells of the upper airways of children are pre-activated and primed for virus sensing.. resulting in a stronger early innate antiviral response to SARS-CoV-2 infection than in adults.”

TAB 57

David S. Y. Ong et al, H**ow to interpret and use COVID-19 serology and immunology tests**, Clinical Microbiology and Infection, Volume 27, Issue 7, July 1, 2021, Pages 981-986.
https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(21)00221-4/fulltext

"Presence of cross-reactive SARS-CoV-2-specific T-cells in never exposed pts suggests cellular immunity induced by other coronaviruses. T-cell responses against SARS-CoV-2 also detected in recovered Covid-19 patients with no detectable antibodies.. Cellular immunity is of paramount imp in containing SARS-CoV-2 infection.. and could be maintained independent of antibody responses. Previously infected individuals develop much stronger T-cell responses against spike protein peptides in comparison to infection-naïve ppl after mRNA vaccine."

TAB 58

Irene Cassanitii et al, **SARS-CoV-2 specific T-cell immunity in COVID-19 convalescent patients and unexposed controls measured by *ex vivo* ELISpot assay**, Clinical Microbiology and Infection, Volume 27, Issue 7, July 1, 2021, Pages 1029-1034.
https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(21)00145-2/fulltext
"SARS-CoV-2 T-cell immune response was detectable in more than 97% of convalescent Covid-19 positive subjects and in approximately 40% of unexposed donors sampled before the pandemic period, in agreement with previous studies.. The data obtained in healthy population could reflect the endemic circulation of common cold coronaviruses (HCoVs), since they account for approximately 20% of common cold cases and are ubiquitous; thus possible cross-reactivity between HCoVs might be due to recognition of conserved epitopes"

TAB 59

Swapnil Mahajan et al, **Immunodominant T-cell epitopes from the SARS-CoV-2 spike antigen reveal robust pre-existing T-cell immunity in unexposed individuals**, Scientific Reports, Volume 11, June 23, 2021, 13164.
https://www.nature.com/articles/s41598-021-92521-4
“Study reveals robust pre-existing T-cell immunity to SARS-CoV-2 in unexposed individuals.. Demonstrates strong pre-existing CD8+ T-cell immunity in many unexposed individuals contributed by engagement of cross-reactive TCRs against CMV and Flu antigens.. By using.. donors from two different regions of globe, USA and India, our findings confirm existence of robust T-cell immunity to SARS-CoV-2 in unexposed individuals.. Presence of high-quality cross-reactive TCRs can protect ppl by mounting an early CD8+ T-cell response and clearing the virus"

TAB 60

Elizabeth Fraley et al, **Cross-reactive antibody immunity against SARS-CoV-2 in children and adults**, Cellular and Molecular Immunology, Nature, Volume 18, May 21, 2021, Pages 1826-1828.
https://www.nature.com/articles/s41423-021-00700-0
“We determined that children and adults without SARS-CoV-2 infection history had pre-existing cross-reactive humoral immunity.. High frequencies of uninfected individuals also mount pre-existing cross-reactive T-cell immune responses to SARS-CoV-2"

TAB 61

Katie E. Liineburg et al, **CD8+ T cells specific for an immunodominant SARS-CoV-2 nucleocapsid epitope cross-react with selective seasonal coronaviruses**, Immunity, Volume 54, Issue 5, May 11, 2021, Pages 1055-1065.
https://www.cell.com/immunity/fulltext/S1074-7613(21)00168-0
"Our findings demonstrate the basis of selective Tcell cross-reactivity for an immunodominant SARSCoV2 epitope and its homologs from seasonal coronaviruses, suggesting long-lasting

protective immunity.. We also identified SPR-specific CD8+ T-cells in more than 90% of tested unexposed HLA-B7+ individuals who had not been exposed to SARS-CoV-2.. Detailed analysis revealed that T-cell responses in unexposed volunteers were driven by cross-reactive CD8+ T-cells specific for the LPR peptide from the OC43 and HKU-1 seasonal coronaviruses."

TAB 62

Arbor G. Dykema et al, **Functional characterization of CD4+ T cell receptors crossreactive for SARS-CoV-2 and endemic coronaviruses**, The Journal of Clinical Investigation, Volume 131, Issue 10, April 8, 2021, e146922.
https://www.jci.org/articles/view/146922
"Our data show that CD4+ T-cells that cross-recognize common cold coronaviruses (CCC) and SARS-CoV-2 S peptides existed as memory T-cell clones prior to the Covid-19 pandemic.. Our data confirm, for what we believe is the first time, the existence of unique memory CD4+ T-cell clonotypes crossrecognizing SARS-CoV-2 and CCCs."

TAB 63

Gustavo Echeverria et al, **Pre-existing T-cell immunity to SARS-CoV-2 in unexposed healthy controls in Ecuador, as detected with a COVID-19 Interferon-Gamma Release Assay**, International Journal of Infectious Diseases, Volume 105, 2021, Pages 21-25.
https://www.ijidonline.com/article/S1201-9712(21)00120-X/fulltext
"Pre-existing T-cell immunity to SARS-CoV-2 in unexposed healthy controls in Ecuador.. 80% of convalescent Covid-19 patients had reactive T-cells to SARS-CoV-2 antigen. 44% of unexposed controls also had a strong T-cell response to SARS-CoV-2."

TAB 64

Andrew D Redd et al, **CD8+ T-Cell Responses in COVID-19 Convalescent Individuals Target Conserved Epitopes From Multiple Prominent SARS-CoV-2 Circulating Variants**, Open Forum Infectious Diseases, Volume 8, Issue 7, March 30, 2021, ofab143.
https://academic.oup.com/ofid/article/8/7/ofab143/6189113
"These data highlight the potential significant role of a multi-epitope T-cell response in limiting viral escape and partly mediating protection from disease caused by SARS-CoV-2 variants."

TAB 65

National Institutes of Health, **T cells recognize recent SARS-CoV-2 variants**, US Department of Health and Human Sciences, March 30, 2021.
https://www.nih.gov/news-events/news-releases/t-cells-recognize-recent-sars-cov-2-variants
"T-cells recognize recent SARS-CoV-2 variants.. Researchers determined SARS-CoV-2-specific CD8+ T-cell responses remained largely intact and could recognize virtually all mutations in variants studied."

TAB 66

Quan-Xin Long et al, **Immune memory in convalescent patients with asymptomatic or mild COVID-19**, Cell Discovery, Nature, Volume 7, March 25, 2021, 18.
https://www.nature.com/articles/s41421-021-00250-9
"Immune memory in convalescent patients with asymptomatic or mild Covid-19.. T-cell responses induced by S, membrane (M), and nucleocapsid (N) peptide libraries from SARS-CoV-2 were

observed in individuals recovered from coronavirus disease 2019 (COVID-19), and cross-reactive T-cell responses to SARS-CoV-2 were also detected in healthy controls.. SARS-CoV-2-specific T cell responses were detected in the majority of individuals recovered from SARS-CoV-2 infection 6 months prior."

TAB 67

Zhongfang Wang et al, **Exposure to SARS-CoV-2 generates T-cell memory in the absence of a detectable viral infection**, Nature Communications, Volume 12, March 19, 2021, 1724.
https://www.nature.com/articles/s41467-021-22036-z
"Exposure to SARS-CoV-2 generates T-cell memory in the absence of a detectable viral infection.. Asymptomatic and symptomatic Covid-19 patients contain similar levels of SARS-CoV-2-specific T-cell memory.. T-cell immunity is important for recovery from Covid-19 and provides heightened immunity for re-infection.. Overall, this study demonstrates the versatility and potential of memory T-cells from Covid-19 patients and close contacts, which may be important for host protection."

TAB 68

Abdelilah Majdoubi et al, **A majority of uninfected adults show preexisting antibody reactivity against SARS-CoV-2**, The Journal of Clinical Investigation Insight, Volume 6, Issue 6, March 15, 2021, e146316.
https://insight.jci.org/articles/view/146316
"Majority of uninfected adults show pre-existing antibody reactivity against SARS-CoV-2.. Pre-existing cross-reactivity to SARS-CoV-2 occurs in absence of prior viral exposure.. More than 90% of uninfected adults showed antibody reactivity against SARS-CoV-2. This seroreactivity was evenly distributed across age and sex, correlated with circulating coronaviruses' reactivity.. We conclude most adults display pre-existing antibody cross-reactivity against SARS-CoV-2.. The presence of pre-existing SARS-CoV-2 antibody reactivity in uninfected individuals in the current study is consistent with the detection of T-cell reactivity against SARS-CoV-2 in about 40% of uninfected individuals."

TAB 69

Asgar Ansari et al, **Immune Memory in Mild COVID-19 Patients and Unexposed Donors Reveals Persistent T Cell Responses After SARS-CoV-2 Infection**, Frontiers in Immunology, Volume 12, March 11, 2021, 636768.
https://www.frontiersin.org/articles/10.3389/fimmu.2021.636768/full
"Immune memory in mild Covid-19 patients and unexposed donors reveals persistent T-cell responses after SARS-CoV-2 infection.. This study provides the evidence of both high magnitude pre-existing and persistent T-cell immune memory in Indian population.. Our work provides the evidence of pre-existing reactivity and immune memory detectable in mild COVID-19 patients from the geographical location that is experiencing high burden of SARS-CoV-2 pandemic with an extremely low case fatality."

TAB 70

Alison Tarke et al, **Comprehensive analysis of T cell immunodominance and immunoprevalence of SARS-CoV-2 epitopes in COVID-19 cases**, Cell Reports Medicine, Volume 2, Issue 2, February 16, 2021, 100204.
https://www.cell.com/cell-reports-medicine/fulltext/S2666-3791(21)00015-X#%20

“T-cells are involved in control of SARS-CoV-2 infection… Overall, T cell responses in SARS-CoV-2 are estimated to recognize even more epitopes per donor than seen in the context of other RNA viruses.. This analysis should allay concerns over potential for SARS-CoV-2 to escape T-cell recognition by mutation of a few key viral epitopes.”

TAB 71

Agnes Boniifacius et al, **COVID-19 immune signatures reveal stable antiviral T cell function despite declining humoral responses, Immunity**, Volume 54, Issue 2, February 9, 2021, Pages 340-354.
https://www.cell.com/immunity/fulltext/S1074-7613(21)00031-5
“The level of protection against re-infection, symptomatic disease, and severe disease appears to be at least as durable, if not more so, than that provided by two-dose vaccination with the mRNA vaccines for ancestral, alpha, delta, and omicron BA.1 variants, which is also seen from studies directly comparing natural immunity to vaccine-induced protection. Immunity conferred by infection includes both humoral and cellular responses, and there is evidence of diverse T-cell immunity and memory B-cell response to COVID-19 spike-protein antigens, in addition to other protein targets, that could lead to a more sustained immunity with increased protection against the various COVID-19 variants. This mechanism operates alongside the valuable role of mucosal immunity as a barrier protection. Covid immune signatures reveal stable T-cell function despite declining humoral responses.. Immune responses toward coronaviruses in patients with mild Covid-19 and strong cellular SARS-CoV-2 T-cell reactivity imply protective pre-existing immunity”

D. Authoritarian response to pandemic is unethical and harmful

TAB 72

Kevin Barosh et al, **The unintended consequences of COVID-19 vaccine policy: why mandates, passports and restrictions may cause more harm than good**, Volume 7, Issue 5, May 2022
https://gh.bmj.com/content/7/5/e008684
"The unintended consequences of COVID-19 vaccine policy: why mandates, passports and restrictions may cause more harm than good”
Summary:

- Mandatory COVID-19 vaccine policies have been used around the world during the COVID-19 pandemic to increase vaccination rates. But these policies have provoked considerable social and political resistance, suggesting that they have unintended harmful consequences and may not be ethical, scientifically justified, and effective.

- We outline a comprehensive set of hypotheses for why current COVID-19 vaccine policies may prove to be both counterproductive and damaging to public health. Our framework synthesizes insights from behavioural psychology (reactance, cognitive dissonance, stigma, and distrust), politics and law (effects on civil liberties, polarization, and global governance), socio-economics (effects on inequality, health system capacity and social wellbeing) and the integrity of science and public health (the erosion of public health ethics and regulatory oversight).

- Our analysis strongly suggests that mandatory COVID-19 vaccine policies have had damaging effects on public trust, vaccine confidence, political polarization, human

rights, inequities and social wellbeing. We question the effectiveness and consequences of coercive vaccination policy in pandemic response and urge the public health community and policymakers to return to non-discriminatory, trust-based public health approaches.

TAB 73

Els Maeckelberghe, **Covid-19: Opportunities for Public Health Ethics?** Journal of the Royal College of Physicians of Edinburgh, Volume 51, December 1, 2021, Pages 47-52.
https://journals.sagepub.com/doi/10.4997/jrcpe.2021.241
“Public health ethics is the discipline that ensures that public health professionals and policy makers explain what they do, and why. During the COVID-19 pandemic, ethical deliberations often did not feature explicitly in public health decisions, thus reducing transparency and consistency in decision-making processes, and resulting in loss of trust by the general public. A public health ethics framework based on principles would add to transparency and consistency in public health decision-making.”

TAB 74

Kamran Abbasi, **Covid-19: politicisation, “corruption,” and suppression of science**. The British Medical Journal, Issue 371, November 13, 2020, m4425.
https://www.bmj.com/content/371/bmj.m4425.long
“When good science is suppressed by the medical-political complex, people die. Politicians and governments are suppressing science. They do so in the public interest, they say, to accelerate availability of diagnostics and treatments. They do so to support innovation, to bring products to market at unprecedented speed. Both of these reasons are partly plausible; the greatest deceptions are founded in a grain of truth. But the underlying behaviour is troubling. Science is being suppressed for political and financial gain. Covid-19 has unleashed state corruption on a grand scale, and it is harmful to public health.1 Politicians and industry are responsible for this opportunistic embezzlement. So too are scientists and health experts. The pandemic has revealed how the medical-political complex can be manipulated in an emergency—a time when it is even more important to safeguard science... Politicisation of science was enthusiastically deployed by some of history’s worst autocrats and dictators, and it is now regrettably commonplace in democracies. The medical-political complex tends towards suppression of science to aggrandise and enrich those in power. And, as the powerful become more successful, richer, and further intoxicated with power, the inconvenient truths of science are suppressed. When good science is suppressed, people die.”

TAB 75

Stephen Thomson, **COVID-19 emergency measures and the impending authoritarian pandemic**, Journal of Law and the Biosciences, Volume 7, Issue 1, September 29, 2020, lsaa064.
https://academic.oup.com/jlb/article/7/1/lsaa064/5912724
"Authoritarian response to a biomedical pandemic is not, and never will be, a humanitarian solution.. There are unmistakable regressions into authoritarianism in governmental efforts to contain the virus. Despite the unprecedented nature of this challenge, there is no sound justification for systemic erosion of rights-protective democratic ideals and institutions beyond that which is strictly demanded by the exigencies of the pandemic. A Wuhan-inspired all-or-nothing approach to viral containment sets a dangerous precedent for future pandemics and disasters, with the global copycat response indicating an impending ‘pandemic’ of a different sort, that of

authoritarianization… Most abhorrent and deplorable of all.. have been denying family members access to patients dying from COVID-19 and other terminal conditions in their final moments of life.. It represents a tyrannical and inhumane approach to medical ethics that is fundamentally degrading to both patient and family… With a gratuitous toll being inflicted on democracy, civil liberties, fundamental freedoms, healthcare ethics, and human dignity, this has the potential to unleash humanitarian crises no less devastating than COVID-19 in the long run."

TAB 76

Ronald B. Brown, **Public Health Lessons Learned From Biases in Coronavirus Mortality Overestimation**, Medicine and Public Health Preparedness, Volume 14, Issue 3, August 12, 2020, Pages 364-371.
https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/public-health-lessons-learned-from-biases-in-coronavirus-mortality-overestimation/7ACD87D8FD2237285EB667BB28DCC6E9
"Results of this critical appraisal reveal information bias and selection bias in coronavirus mortality overestimation, most likely caused by misclassifying an influenza infection fatality rate as a case fatality rate. Public health lessons learned for future infectious disease pandemics include: safeguarding against research biases that may underestimate or overestimate an associated risk of disease and mortality; reassessing the ethics of fear-based public health campaigns; and providing full public disclosure of adverse effects from severe mitigation measures to contain viral transmission… Psychological adverse effects, such as anxiety, anger, and posttraumatic stress, have been linked to restrictive public health mitigation measures due to isolation, frustration, financial loss, and fear of infection… Fear, in contrast to moral civic duty and political orientation, was shown to be a more powerful predictor of compliance with mitigating behaviour in response to a viral pandemic, but with decreasing wellbeing and poorer decision making. Studies have shown that fear impairs performance of cognitive tasks through debilitating anxiety and worry. Even if a threat ceases to exist, prolonged fearful avoidance of threats is maladaptive and restricts a return to normal. For example, after the outbreak of severe acute respiratory syndrome (SARS) had ended in 2004, avoidance behavior continued to restrict people's social social interaction and prevented people from returning to work… Exaggerated levels of fear were driven by sensationalist media coverage during the COVID-19. And yet, while the public was ordered to lockdown, overall costs and benefits to society from severe mitigation measures had not been assessed. Fear of infection also prevented people from seeking needed healthcare services in hospitals during the pandemic. The ethics of implementing fear-based public health campaigns needs to be assessed. In addition, legal and ethical violations associated with mitigation of pandemic diseases reevaluated for the potential harm these strategies can cause. Dissemination of vital information to the public should employ emotionally persuasive messaging without exploiting and encouraging overreactions based on fear. Public health campaigns based on fear can have harmful effects, and the ethics of such campaigns should be reevaluated. People need to have a greater voice in a transparent process that influences public health policy during an outbreak, and educational curricula should include basic research methods to teach people how to be better consumers of public health information. The public should also be fully informed of the adverse impacts on psychological well-being, human rights issues, social disruption, and economic costs associated with restrictive public health interventions during a pandemic… In addition, legal and ethical violations associated with mitigation of pandemic diseases were previously investigated by the Institute of Medicine in 2007. People should have the right to full disclosure of all information pertinent to adverse impacts of mitigation measures during a pandemic, including information on legal and constitutional human rights issues, and the public should be guaranteed a voice in a transparent process as authorities establish public health policy. Last, severe mitigating measures during the

COVID-19 pandemic caused considerable global social and economic disruption. Enforced lockdowns increased domestic violence, closed businesses and schools, laid off workers, restricted travel, affected capital markets, threatened the security of low-income families, and saddled governments with massive debt. Between February and April 2020, US unemployment rose from 3.5%, the lowest in 50 years, to 14.7%. A recession in the United States was also officially declared in June 2020 by the National Bureau of Economic Research, ending 128 months of historic economic expansion. Of relevance, economic downturns are associated with higher suicide rates compared with times of prosperity, and increased suicide risk may be associated with economic stress as a consequence of severe mitigation measures during a pandemic. Relapses and newly diagnosed cases of alcohol use disorder were also predicted to increase due to social isolation, and harmful drinking in China increased 2-fold following the COVID-19 outbreak. As a global natural experiment, psychological outcomes from restrictive interventions in the COVID-19 pandemic require further investigations. Public health lessons learned during the COVID-19 pandemic contribute knowledge and insights that can be applied to prevent future public health crises shows a flow chart that summarizes biases and potential effects of viral mortality overestimation observed in a pandemic. Failure to intervene at the source of the problem, at the upstream levels of information bias and sampling bias, can allow fear to rapidly escalate and may cause an overactive response that produces severely harmful collateral damage to society."

TAB 77

Bruce Jennings, **Ethics codes and reflective practice in public health**, Journal of Public Health, Volume 42, Issue 1, March 2020, Pages 188-193.
https://academic.oup.com/jpubhealth/article/42/1/188/5077245
"Here are the concepts and brief formulations used to articulate public health's core values: *Fidelity and responsibility*: The effectiveness of public health policies, practices and actions depends upon public trust gained through decisions based on the highest ethical, scientific and professional standards. *Health and safety*: Public health personnel and organizations have an ethical responsibility to prevent, minimize and mitigate health harms, and promote and protect public safety, health and well-being. *Health justice and equity*: Public health personnel and organizations have an ethical obligation to use their knowledge, skills, experience and influence to promote an equitable distribution of burdens, benefits and opportunities for health, regardless of an individual's or a group's relative position in social hierarchies. *Interdependence and solidarity*: Public health personnel and organizations have an ethical obligation to foster positive—and to reduce or minimize negative—relationships among individuals, societies and environments in ways that protect and promote the flourishing of humans, communities, non-human animals and the ecologies in which they live. *Liberty*: Public health personnel and organizations have an ethical responsibility to protect and promote a free and open society and respect the basic liberties of individuals. *Inclusivity*. Public health personnel and organizations have an ethical responsibility to be inclusive of, transparent to and accountable to the public at large."

TAB 78

World Medical Association's International Code of Medical Ethics
https://www.wma.net/policies-post/wma-international-code-of-medical-ethics/

TAB 79

World Medical Association's Declaration of Geneva (Hippocratic Oath)
https://www.wma.net/policies-post/wma-declaration-of-geneva/

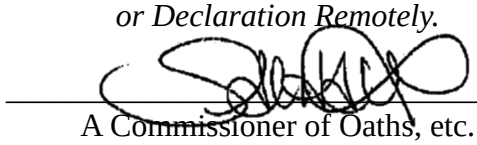
TAB 80

Peter Schroder-Back, **Teaching seven principles for public health ethics: towards a curriculum for a short course on ethics in public health programmes**, BMC Medical Ethics, Volume 73, October 7, 2014.
https://bmcmedethics.biomedcentral.com/articles/10.1186/1472-6939-15-73
"Seven principles framework of public health ethics: non-maleficence, beneficence, health maximisation, efficiency, respect for autonomy, justice, proportionality… The principle of respect for autonomy extends, however, beyond the confines of individual health care; it is crucially important within the public health context. The frequent focus of public health on benefit for populations holds the potential for concern with individual welfare to be side- lined. Embedding respect for autonomy firmly within public health ethics teaching and learning provides a fundamental reminder that every person has a high value – qua her or his autonomy – and cannot merely be treated as a means to the end of others' good."

TAB 81

United Nations' Universal Declaration on Bioethics and Human Rights, 2005
http://portal.unesco.org/en/ev.php-URL_ID=31058&URL_DO=DO_TOPIC&URL_SECTION=201.html

This is **Exhibit « B »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



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CORONAVIRUS

Covid-19 Vaccine Protocols Reveal That Trials Are Designed To Succeed

William A. Haseltine Contributor ⓘ

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Sep 23, 2020, 01:11pm EDT

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MOSCOW, RUSSIA - SEPTEMBER 9, 2020: A gloved medical worker prepares to give a volunteer a trial ... [+] SERGEI BOBYLEV/TASS

Moderna, Pfizer, AstraZeneca, and Johnson & Johnson are leading candidates for the completion of a Covid-19 vaccine likely to be released in the coming months. These companies have published their vaccine trial

protocols. This unusually transparent action during a major drug trial deserves praise, close inspection of the protocols raises surprising concerns. These trials seem designed to prove their vaccines work, even if the measured effects are minimal.

What would a normal vaccine trial look like?

Prevention of infection must be a critical endpoint. Any vaccine trial should include regular antigen testing every three days to test contagiousness to pick up early signs of infection and PCR testing once a week to confirm infection by SARS-CoV-2 test the ability of the vaccines to stave off infection. Prevention of infection is *not* a criterion for success for any of these vaccines. In fact, their endpoints all require confirmed infections and all those they will include in the analysis for success, the only difference being the severity of symptoms between the vaccinated and unvaccinated. Measuring differences amongst only those infected by SARS-CoV-2 underscores the implicit conclusion that the vaccines are not expected to prevent infection, only modify symptoms of those infected.

We all expect an effective vaccine to prevent serious illness if infected. Three of the vaccine protocols—Moderna, Pfizer, and AstraZeneca—do *not* require that their vaccine prevent serious disease only that they prevent moderate symptoms which may be as mild as cough, or headache.

The greatest fear people have is dying from this disease. A vaccine must significantly or entirely reduce deaths from Covid-19. Over two hundred thousand people have died in the United States and nearly a million worldwide. None list mortality as a critical endpoint.

We recognize that the influenza vaccine does not prevent infection with that virus, but does have a measurable impact on hospitalization and death. The moderate protections from the influenza virus can potentially be replicated and improved on with Covid-19, but only with extensive trials that ensure the efficacy of a future vaccine.

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Samsung Just Gave Millions Of Galaxy Users A Reason To Buy An iPhone

Vaccine efficacy is typically proved by large clinical trials over several years. The pharmaceutical companies intend to do trials ranging from thirty thousand to sixty thousand participants. This scale of study would be sufficient for testing vaccine efficacy. The first surprise found upon a closer reading of the protocols reveals that each study intends to complete interim and primary analyses that at most include 164 participants.

These companies likely intend to apply for an emergency use authorization (EUA) from the Food and Drug Administration (FDA) with just their limited preliminary results.

Interim analysis success requires a seventy percent efficacy. The vaccine or placebo will be given to thousands of people in each trial. For Moderna, the initial interim analysis will be based on the results of infection of only 53 people. The judgment reached in interim analysis is dependent upon the difference in the number of people with symptoms, which may be mild, in the vaccinated group versus the unvaccinated group.

Moderna's success margin is for 13 or less of those 53 to develop symptoms compared to 40 or more in their control group. For Johnson & Johnson, their interim analysis includes 77 vaccine recipients, with a

success margin of 18 or less developing symptoms compared to 59 in the control group. For AstraZeneca, their interim analysis includes 50 vaccine recipients, with a success margin of 12 or less developing symptoms compared to 19 in the 25 person control group. Pfizer is even smaller in its success requirements. Their initial group includes 32 vaccine recipients, with a success margin of 7 or less developing symptoms compared to 25 in the control group.

The primary analyses are a bit more expanded, but need to be less efficacious for success: about sixty percent. AstraZeneca, Moderna, Johnson & Johnson, and Pfizer have primary analyses that distribute the vaccine to only 100, 151, 154, and 164 participants respectively. These companies state that they do not “intend” to stop trials after the primary analyses, but there is every chance that they intend to pursue an EUA and focus on manufacturing the vaccine rather than further thorough testing.

The second surprise from these protocols is how mild the requirements for contracted Covid-19 symptoms are. A careful reading reveals that the minimum qualification for a case of Covid-19 is a positive PCR test and one or two mild symptoms. These include headache, fever, cough, or mild nausea. This is far from adequate. These vaccine trials are testing to prevent common cold symptoms.

These trials certainly do not give assurance that the vaccine will protect from the serious consequences of Covid-19. Johnson & Johnson is the only trial that requires the inclusion of severe Covid-19 cases, at least 5 for the 75 participant interim analysis.

One of the more immediate questions a trial needs to answer is whether a vaccine prevents infection. If someone takes this vaccine, are they far less likely to become infected with the virus? These trials all clearly focus on eliminating symptoms of Covid-19, and not infections themselves. Asymptomatic infection is listed as a secondary objective in these trials when they should be of critical importance.

It appears that all the pharmaceutical companies assume that the vaccine will never prevent infection. Their criteria for approval is the difference in symptoms between an infected control group and an infected vaccine group. They do not measure the difference between infection and noninfection as a primary motivation.

A greater concern for the millions of older people and those with preexisting conditions is whether these trials test the vaccine's ability to prevent severe illness and death. Again we find that severe illness and death are only secondary objectives in these trials. None list the prevention of death and hospitalization as a critically important barrier.

If total infections, hospitalizations, and death are going to be ignored in the preliminary trials of the vaccines, then there must be phase four testing to monitor their safety and efficacy. This would be long term massive scale monitoring of the vaccine. There must be an indication that the authorized vaccines are reducing infection, hospitalization, and death, or else they will not be able to stop this pandemic.

These protocols do not emphasize the most important ramifications of Covid-19 that people are most interested in preventing: overall infection, hospitalization, and death. It boggles the mind and defies common sense that the National Institute of Health, the Center for Disease Control, the National Institute of Allergy and Infectious Disease, and the rest would consider the approval of a vaccine that would be distributed to hundreds of millions on such slender threads of success.

It appears that these trials are intended to pass the lowest possible barrier of success. As this is being written, the FDA is poised to announce tougher standards for a Covid-19 vaccine in the near future. It is my hope that these new standards for an EUA will at a minimum include requirements for protections from infection itself, protections from severe virus-related disease leading to hospitalization, and a significant improvement in Covid-19 related mortality.

It is clear from these studies that the vaccines currently under trial will not be the silver bullet needed to end the pandemic. We must do all we can public health measures to control Covid-19 as China and other Asian countries have successfully done.

Correction (10/7/20): A former version of the article stated that 53 people received a vaccination for interim analysis in the Moderna trial. The vaccine was in fact given to thousands of people, with 53 being the number of people who must be infected with Covid-19 to run the analysis.

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I am a scientist, businessman, author, and philanthropist. For nearly two decades, I was a professor at Harvard Medical School and Harvard School of... **Read More**

This is **Exhibit « C »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

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Will covid-19 vaccines save lives? Current trials aren't designed to tell us

The world has bet the farm on vaccines as the solution to the pandemic, but the trials are not focused on answering the questions many might assume they are. Peter Doshi reports

Peter Doshi *associate editor*

As phase III trials of covid-19 vaccines reach their target enrolments, officials have been trying to project calm. The US coronavirus czar Anthony Fauci and the Food and Drug Administration leadership have offered public assurances that established procedures will be followed.[1-4] Only a "safe and effective" vaccine will be approved, they say, and nine vaccine manufacturers issued a rare joint statement pledging not to prematurely seek regulatory review.[5]

But what will it mean exactly when a vaccine is declared "effective"? To the public this seems fairly obvious. "The primary goal of a covid-19 vaccine is to keep people from getting very sick and dying," a National Public Radio broadcast said bluntly.[6] Peter Hotez, dean of the National School of Tropical Medicine at Baylor College of Medicine in Houston, said, "Ideally, you want an antiviral vaccine to do two things . . . first, reduce the likelihood you will get severely ill and go to the hospital, and two, prevent infection and therefore interrupt disease transmission."[7]

Yet the current phase III trials are not actually set up to prove either (table 1). None of the trials currently under way are designed to detect a reduction in any serious outcome such as hospital admissions, use of intensive care, or deaths. Nor are the vaccines being studied to determine whether they can interrupt transmission of the virus.

Table 1 | Characteristics of ongoing phase III covid-19 vaccine trials

	Moderna	Pfizer	AstraZeneca (US)	AstraZeneca (UK)	Janssen	Sinopharm*	Sinovac
Vaccine name	mRNA-1273	BNT162	AZD1222	AZD1222	Ad26.COV2.S	Sinopharm vaccine	Sinovac CoronaVac
Registration No	NCT04470427	NCT04368728	NCT04516746	NCT04400838 (UK), NCT04536051 (Brazil), NCT04444674 (South Africa)	NCT04505722	NCT04510207	NCT04456595
Target enrolment	30 000	43 998	30 000	19 330	60 000	45 000	8870
Ages eligible	18+	12+	18+	5-12, 18+	18+	18+	18+
Protocol publicly available	Y	Y	Y	N†	Y	N	N
Notable excluded populations:							
Children and adolescents	Excluded	Many excluded	Excluded	13-17 excluded	Excluded	Excluded	Excluded
Immunocompromised patients	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
Pregnant or breastfeeding women	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
Endpoints undergoing formal study‡:							
Prevention of symptomatic disease in vaccine recipient	Y	Y	Y	Y	Y	Presumably§	Y
Reduction in severe covid-19 (hospital admission, ICU, or death)	N	N	N	N¶	N	N	N
Interruption of transmission (person to person spread)	N	N	N	N	N	N	N

* This trial is separately randomising an inactivated SARS-CoV-2 vaccine (Vero cell) manufactured by Wuhan Institute of Biological Products Co and Beijing Institute of Biological Products Co.

† AstraZeneca has released the protocol for its stalled US trial but not its trial in UK, Brazil, and South Africa.

‡ Endpoints "undergoing formal study" include those listed as primary outcomes in ClinicalTrials.gov, publicly available study protocols, or those not listed as primary outcomes, but the company has confirmed that the study is powered sufficiently to find an effect (if one exists).

§ Sinopharm lists "incidence of COVID-19 cases" as a primary efficacy endpoint in its ClinicalTrials.gov entry.

¶ Trial registration (NCT04444674) lists the following primary endpoint: "Determine if there is a reduction of severe and non-severe COVID-19 disease in HIV-negative adults." This suggests a composite outcome that includes non-severe disease.

Evaluating mild, not severe, disease

In a September interview Medscape editor in chief Eric Topol pondered what counts as a recorded "event" in the vaccine trials. "We're not talking about just a PCR [polymerase chain reaction test]-positive mild infection. It has to be moderate to severe illness to qualify as an event, correct?" he asked.[8]

"That's right," concurred his guest, Paul Offit, a vaccinologist who sits on the FDA advisory committee that may ultimately recommend the vaccines for licence or emergency use authorisation.

But that's not right. In all the ongoing phase III trials for which details have been released, laboratory confirmed infections even with only mild symptoms qualify as meeting the primary endpoint definition.[9-12] In Pfizer and Moderna's trials, for example, people with only a cough and positive laboratory test would bring those trials one event closer to their completion. (If AstraZeneca's ongoing UK trial is designed similarly to its "paused" US trial for which the company has released details, a cough and fever with positive PCR test would suffice.)

Part of the reason may be numbers. Severe illness requiring hospital admission, which happens in only a small fraction of symptomatic covid-19 cases, would be unlikely to occur in significant numbers in trials. Data published by the US Centers for Disease Control and Prevention in late April reported a symptomatic case hospitalisation ratio of 3.4% overall, varying from 1.7% in 0-49 year olds and 4.5% in 50-64 year olds to 7.4% in those 65 and over.[13] Because most people with symptomatic covid-19 experience only mild symptoms,[14] even trials involving 30 000 or more patients would turn up relatively few cases of severe disease.

In the trials, final efficacy analyses are planned after just 150 to 160 "events,"—that is, a positive indication of symptomatic covid-19, regardless of severity of the illness.

Yet until vaccine manufacturers began to release their study protocols in mid-September, trial registries and other publicly released information did little to dispel the notion that it was severe covid-19 that the trials were assessing. Moderna, for example, called hospital admissions a "key secondary endpoint" in statements to the media.[15] And a press release from the US National Institutes of Health reinforced this impression, stating that Moderna's trial "aims to study whether the vaccine can prevent severe covid-19" and "seeks to answer if the vaccine can prevent death caused by covid-19."[16]

But Tal Zaks, chief medical officer at Moderna, told *The BMJ* that the company's trial lacks adequate statistical power to assess those

outcomes. "The trial is precluded from judging [hospital admissions], based on what is a reasonable size and duration to serve the public good here," he said.

Hospital admissions and deaths from covid-19 are simply too uncommon in the population being studied for an effective vaccine to demonstrate statistically significant differences in a trial of 30 000 people. The same is true of its ability to save lives or prevent transmission: the trials are not designed to find out.

Zaks said, "Would I like to know that this prevents mortality? Sure, because I believe it does. I just don't think it's feasible within the timeframe [of the trial]—too many would die waiting for the results before we ever knew that."

Stopping transmission

What about Hotez's second criterion, interrupting virus transmission, which some experts have argued[17] should be the most important test in phase III studies?

"Our trial will not demonstrate prevention of transmission," Zaks said, "because in order to do that you have to swab people twice a week for very long periods, and that becomes operationally untenable."

He repeatedly emphasised these "operational realities" of running a vaccine trial. "Every trial design, especially phase III, is always a balancing act between different needs," he said. "If you wanted to have an answer on an endpoint that happens at a frequency of one 10th or one fifth the frequency of the primary endpoint, you would need a trial that is either 5 or 10 times larger or you'd need a trial that is 5 or 10 times longer to collect those events. Neither of these, I think, are acceptable in the current public need for knowing expeditiously that a vaccine works."

Zaks added, "A 30 000 [participant] trial is already a fairly large trial. If you're asking for a 300 000 trial then you need to talk to the people who are paying for it, because now you're talking about not a $500m to $1bn trial, you're talking about something 10 times the size. And I think the public purse and operational capabilities and capacities we have are rightly spent not betting the farm on one vaccine but, as Operation Warp Speed [the US government's covid-19 vaccine plan] is trying to do, making sure that we're funding several vaccines in parallel."

Debating endpoints

Still, it's fair to say that most of the general public assumes that the whole point of the current trials, besides testing safety (box 1), is to see whether the vaccine can prevent bad outcomes. "How do you reconcile that?" *The BMJ* asked Zaks.

Box 1: Safety and side effects

History shows many examples of serious adverse events from vaccines brought to market in periods of enormous pressure and expectation. There were contaminated polio vaccines in 1955, cases of Guillain-Barré syndrome in recipients of flu vaccines in 1976, and narcolepsy linked to one brand of influenza vaccine in 2009.[18 19]

"Finding severe rare adverse events will require the study of tens of thousands of patients, but this requirement will not be met by early adoption of a product that has not completed its full trial evaluation," Harvard drug policy researchers Jerry Avorn and Aaron Kesselheim recently wrote in *JAMA*.[20]

Covid-19 vaccine trials are currently designed to tabulate final efficacy results once 150 to 160 trial participants develop symptomatic covid-19—and most trials have specified at least one interim analysis allowing for the trials to end with even fewer data accrued.

Medscape's Eric Topol has been a vocal critic of the trials' many interim analyses. "These numbers seem totally out of line with what would be considered stopping rules," he says. "I mean, you're talking about giving a vaccine with any of these programmes to tens of millions of people. And you're going to base that on 100 events?"[8]

Great uncertainty remains over how long a randomised trial of a vaccine will be allowed to proceed. If efficacy is declared, one possibility is that the thousands of volunteers who received a saline placebo would be offered the active vaccine, in effect ending the period of randomised follow-up. Such a move would have far reaching implications for our understanding of vaccines' benefits and harms, rendering uncertain our knowledge of whether the vaccines can reduce the risk of serious covid-19 disease and precluding any further ability to compare adverse events in the experimental versus the placebo arm.

"It'll be a decision we'll have to take at that time. We have not committed one way or another," Moderna's Tal Zaks told *The BMJ*. "It will be a decision where FDA and NIH will also weigh in. And it will be probably a very difficult decision, because you will be weighing the benefit to the public in continuing to understand the longer term safety by keeping people on placebo and the expectation of the people who have received placebo to be crossed over now that it has been proved effective."

"Very simply," he replied. "Number one, we have a bad outcome as our endpoint. It's covid-19 disease." Moderna, like Pfizer and Janssen, has designed its study to detect a relative risk reduction of at least 30% in participants developing laboratory confirmed covid-19, consistent with FDA and international guidance.[21 22]

Number two, Zaks pointed to influenza vaccines, saying they protect against severe disease better than mild disease. To Moderna, it's the same for covid-19: if its vaccine is shown to reduce symptomatic covid-19, it will be confident it also protects against serious outcomes.

But the truth is that the science remains far from clear cut, even for influenza vaccines that have been used for decades. Although randomised trials have shown an effect in reducing the risk of symptomatic influenza, such trials have never been conducted in elderly people living in the community to see whether they save lives.

Only two placebo controlled trials in this population have ever been conducted, and neither was designed to detect any difference in hospital admissions or deaths.[23] Moreover, dramatic increases in use of influenza vaccines has not been associated with a decline in mortality (box 2).[26]

Box 2: Not enrolling enough elderly people or minorities

A vaccine that has been proved to reduce the risk of symptomatic disease by a certain proportion should, you might think, reduce serious outcomes such as hospital admissions and deaths in equal proportion.

Peter Marks, an FDA official with responsibility over vaccine approvals, recently stated as much about influenza vaccination, which "only prevents flu in about half the people who get it. And yet that's very important because that means that it leads to half as many deaths related to influenza each year."[24]

But when vaccines are not equally effective in all populations the theory breaks down.

If frail elderly people, who are understood to die in disproportionate numbers from both influenza[25] and covid-19, are not enrolled into vaccine trials in sufficient numbers to determine whether case numbers are reduced in this group, there can be little basis for assuming any benefit in terms of hospital admissions or mortality. Whatever reduction in cases is seen in the overall study population (most of which may be among healthy adults), this benefit may not apply to the frail elderly subpopulation, and few lives may be saved.

This is hard to evaluate in the current trials because there are large gaps in the types of people being enrolled in the phase III trials (table 1). Despite recruiting tens of thousands, only two trials are enrolling children less than 18 years old. All exclude immunocompromised people and pregnant or breastfeeding women, and though the trials are enrolling elderly people, few or perhaps none of the studies would seem to be designed to conclusively answer whether there is a benefit in this population, despite their obvious vulnerability to covid-19.

"Adults over 65 will be an important subgroup that we will be looking at," Moderna's Zaks told *The BMJ*. "That said . . . any given study is powered for its primary endpoint—in our case covid-19 disease irrespective of age."

Al Sommer, dean emeritus of the Johns Hopkins School of Public Health, told *The BMJ*, "If they have not powered for evidence of benefit in the elderly, I would find that a significant, unfortunate shortcoming." He emphasised the need for "innovative follow-up studies that will enable us to better determine the direct level of protection immunisation has on the young and, separately, the elderly, in addition to those at the highest risk of severe disease and hospitalisation."

One view is that trial data should be there for all target populations. "If we don't have adequate data in the greater than 65 year old group, then the greater than 65 year old person shouldn't get this vaccine, which would be a shame because they're the ones who are most likely to die from this infection," said vaccinologist Paul Offit.[8] "We have to generate those data," he said. "I can't see how anybody—the Data and Safety Monitoring Board or the FDA Vaccine Advisory Committee, or FDA decision-makers—would ever allow a vaccine to be recommended for that group without having adequate data."

"I feel the same way about minorities," Offit added. "You can't convince minority populations to get this vaccine unless they are represented in these trials. Otherwise, they're going to feel like they're guinea pigs, and understandably so."

Competing interests: I co-wrote an op-ed on this topic with Eric Topol, who is quoted in this article, I have been pursuing the public release of vaccine trial protocols, and I co-signed an open letter to the FDA calling for independence and transparency in covid-19 vaccine related decision making.

Provenance and peer review: Commissioned; externally peer reviewed.

Sarah Tanveer helped research the design of studies and identify quotations, and Ulrich Keil provided comments on an early draft of this article.

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This is **Exhibit « D »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Peter Doshi: Pfizer and Moderna's "95% effective" vaccines—let's be cautious and first see the full data

November 26, 2020

Only full transparency and rigorous scrutiny of the data will allow for informed decision making, argues Peter Doshi

In the United States, all eyes are on Pfizer and Moderna. The topline efficacy results from their experimental covid-19 vaccine trials are astounding at first glance. Pfizer says it recorded 170 covid-19 cases (in 44,000 volunteers), with a remarkable split: 162 in the placebo group versus 8 in the vaccine group. Meanwhile Moderna says 95 of 30,000 volunteers in its ongoing trial got covid-19: 90 on placebo versus 5 receiving the vaccine, leading both companies to claim around 95% efficacy.

Let's put this in perspective. First, a relative risk reduction is being reported, not absolute risk reduction, which appears to be less than 1%. Second, these results refer to the trials' primary endpoint of covid-19 of essentially any severity, and importantly not the vaccine's ability to save lives, nor the ability to prevent infection, nor the efficacy in important subgroups (e.g. frail elderly). Those still remain unknown. Third, these results reflect a time point relatively soon after vaccination, and we know nothing about vaccine performance at 3, 6, or 12 months, so cannot compare these efficacy numbers against other vaccines like influenza vaccines (which are judged over a season). Fourth, children, adolescents, and immunocompromised individuals were largely excluded from the trials, so we still lack any data on these important populations.

I previously argued that the trials are studying the wrong endpoint, and for an urgent need to correct course and study more important endpoints like prevention of severe disease and transmission in high risk people. Yet, despite the existence of regulatory mechanisms for ensuring vaccine access while keeping the authorization bar high (which would allow placebo-controlled trials to continue long enough to answer the important question), it's hard to avoid the impression that sponsors are claiming victory and wrapping up their trials (Pfizer

has already sent trial participants a letter discussing "crossing over" from placebo to vaccine), and the FDA will now be under enormous pressure to rapidly authorize the vaccines.

But as conversation shifts to vaccine distribution, let's not lose sight of the evidence. Independent scrutiny of the underlying trial data will increase trust and credibility of the results. There also might be important limitations to the trial findings we need to be aware of.

Most crucially, we need data-driven assurances that the studies were not inadvertently unblinded, by which I mean investigators or volunteers could make reasonable guesses as to which group they were in. Blinding is most important when measuring subjective endpoints like symptomatic covid-19, and differences in post-injection side-effects between vaccine and placebo might have allowed for educated guessing. Past placebo-controlled trials of influenza vaccine were not able to fully maintain blinding of vaccine status, and the recent "half dose" mishap in the Oxford covid-19 vaccine trial was apparently only noticed because of milder-than-expected side-effects. (And that is just one of many concerns with the Oxford trial.)

In contrast to a normal saline placebo, early phase trials suggested that systemic and local adverse events are common in those receiving vaccine. In one Pfizer trial, for example, more than half of the vaccinated participants experienced headache, muscle pain and chills—but the early phase trials were small, with large margins of error around the data. Few details from the large phase 3 studies have been released thus far. Moderna's press release states that 9% experienced grade 3 myalgia and 10% grade 3 fatigue; Pfizer's statement reported 3.8% experienced grade 3 fatigue and 2% grade 3 headache. Grade 3 adverse events are considered severe, defined as preventing daily activity. Mild and moderate severity reactions are bound to be far more common.

One way the trial's raw data could facilitate an informed judgment as to whether any potential unblinding might have affected the results is by analyzing how often people with symptoms of covid-19 were referred for confirmatory SARS-CoV-2 testing. Without a referral for testing, a suspected covid-19 case could not become a confirmed covid-19 case, and thus is a crucial step in order to be counted as a primary event: lab-confirmed, symptomatic covid-19. Because some of the adverse reactions to the vaccine are themselves also

symptoms of covid-19 (e.g. fever, muscle pain), one might expect a far larger proportion of people receiving vaccine to have been swabbed and tested for SARS-CoV-2 than those receiving placebo.

This assumes all people with symptoms would be tested, as one might expect would be the case. However the trial protocols for Moderna and Pfizer's studies contain explicit language instructing investigators to use their clinical judgment to decide whether to refer people for testing. Moderna puts it this way:

"*It is important to note that some of the symptoms of COVID-19 overlap with solicited systemic ARs that are expected after vaccination with mRNA-1273 (eg, myalgia, headache, fever, and chills). During the first 7 days after vaccination, when these solicited ARs are common, Investigators should use their clinical judgement to decide if an NP swab should be collected.*"

This amounts to asking investigators to make guesses as to which intervention group patients were in. But when the disease and the vaccine side-effects overlap, how is a clinician to judge the cause without a test? And why were they asked, anyway?

Importantly, the instructions only refer to the first seven days following vaccination, leaving unclear what role clinician judgment could play in the key days afterward, when cases of covid-19 could begin counting towards the primary endpoint. (For Pfizer, 7 days after the 2nd dose. For Moderna, 14 days.)

In a proper trial, all cases of covid-19 should have been recorded, no matter which arm of the trial the case occurred in. (In epidemiology terms, there should be no ascertainment bias, or differential measurement error). It's even become common sense in the Covid era: "test, test, test." But if referrals for testing were not provided to all individuals with symptoms of covid-19—for example because an assumption was made that the symptoms were due to side-effects of the vaccine—cases could go uncounted.

Data on pain and fever reducing medicines also deserve scrutiny. Symptoms resulting from a SARS-CoV-2 infection (e.g. fever or body aches) can be suppressed by pain and fever reducing medicines. If people in the vaccine arm took such medicines prophylactically, more often, or for a longer duration of time than those in the placebo arm, this could have led to greater suppression of covid-19 symptoms following SARS-CoV-2 infection in the vaccine arm,

translating into a reduced likelihood of being suspected for covid-19, reduced likelihood of testing, and therefore reduced likelihood of meeting the primary endpoint. But in such a scenario, the effect was driven by the medicines, not the vaccine.

Neither Moderna nor Pfizer have released any samples of written materials provided to patients, so it is unclear what, if any, instructions patients were given regarding the use of medicines to treat side effects following vaccination, but the informed consent form for Johnson and Johnson's vaccine trial provides such a recommendation:

"Following administration of Ad26.COV2.S, fever, muscle aches and headache appear to be more common in younger adults and can be severe. For this reason, we recommend you take a fever reducer or pain reliever if symptoms appear after receiving the vaccination, or upon your study doctor's recommendation."

There may be much more complexity to the "95% effective" announcement than meets the eye—or perhaps not. Only full transparency and rigorous scrutiny of the data will allow for informed decision making. The data must be made public.

Spanish translation of this article

German translation of this article

***Peter Doshi**, associate editor,* The BMJ.

***Competing interests:** I have been pursuing the public release of vaccine trial protocols, and have co-signed open letters calling for independence and transparency in covid-19 vaccine related decision making.*

Editors at large

« America's public health experts must engage communities in the covid-19 response

Covid-19 could prompt an end to our continued betrayal of childhood »

73 Comments

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E **Eduardo Gonçalves**

2 years ago

Interesting article. But to be fair, the relative risk reduction (RRR) is the metric that matters most in this case. The infection rate of covid is not relevant, people whant to know: if i get covid, how much less at risk am I. Obviously if you avoid social gatherings, your risk of getting covid will be lower and the vaccine will be the smaller factor in reducing risk of infection. If I never go out, the vaccine will be less useful

0 0 Reply

F **fightbxxxh**

3 years ago

China has two or three vaccines that are approved officially or in the latter stages of the trial. Why do you ignore them? It seems that more population were given the Chinese vaccines around the world currently. Now, Chinese media widely cite this article to attack Pfizer and Moderna vaccines. It is really hard for you to argue that the opinions reflect your scientific stances rather than political stances by ignoring those vaccines. Be consistent with all Covid vaccines, and we can discuss from there.

1 0 Reply

Dicky Struik

3 years ago

I agree that vaccinations is ultimately about reducing hospital admissions and deaths. However, these effects are now closely monitored by looking at the real world

data (https://www.ema.europa.eu/e... vaccines). We must also remember that even 'simple' symptomatic COVID is associated with long-term health complications.
In addition, I find it reassuring that 3 different vaccines (AZD1222, BTN162b2, mRNA-1273), made by 3 independent research groups/companies (Oxford/Astrazeneca, Biontech/Pfizer, Moderna), have been shown to reduce both symptomatic and severe COVID (including hospitalization) after vaccination. If you add up the data from those 3 trials we have placebo: 497 COVID cases (of which 49 serious cases, 2 deaths) and vaccine: 49 cases (of which 1 serious case).

1 3 Reply

P.K. Hunter → Dicky Struik

3 years ago

There's no meaningful data on "long term complications". Likely very little. Long term in this case is a few months at best. As for a tiny portion of those infected getting truly lasting complications, yes that happens with all respiratory viruses.

1 0 Reply

Bill In Montgomey

3 years ago

Does anyone know anything about the number of cycles used in the PCR tests that were administered to "confirm" a COVID diagnosis? Fewer cycles (say 25 or 30) produces fewer "positive" cases; more cycles (say 40 or 35) produces many more "positive cases." Is it possible that the trials used PCR tests that used lower cycles - thus producing fewer positive "end results"? I haven't seen this information published anywhere, and it would seem to be very significant.

2 0 Reply

P

PS → Bill In Montgomey

3 years ago

The participants weren't systematically tested with PCR. Instructions were: "Investigators should use their clinical judgement to decide if an NP swab should be collected." As stated, the company has not released the raw data and as some have said, requests to see the data have been denied.

1 0 Reply

Theodore Petrou

PS

3 years ago edited

Hi PS, we need the number of tests in each group and the PCR cycle threshold. This is absolutely imperative and UNBELIEVABLE that this data was not provided. Do you know how to make an FOI request, and if more of these FOI requests have been done?

0 0 Reply

elizabethjlondon

Bill In Montgomey

3 years ago

Fauci here in the states admitted in an interview that more than 35 cycles was most certainly picking up on dead virus particles that were no longer infectious (in response to what it means to keep getting PCR numbers that won't go to undetectable). However, he also admits that you have to directly contact the lab running your test to figure this out. I've seen PCR cycle data for other illnesses (one of which makes me wonder how much false-positive inflation is going on with it as well) that has been published. I found one paper listing 31 as the cutoff for cycles and 80 as the viral load at which you should not fiddle with the number in the equation given to determine load. Fauci mentioned that tests were being cycled more than 35 times, hence the persistent viral loads in people who'd long been without symptoms post-illness. You get more labwork from people who think they need more tests, imo. https://journals.lww.com/jo...

0 0 Reply

Curlew Club

3 years ago edited

Two pieces of unexpected data i noticed in the Pfizer results in Table 8 were: (i) a greater proportion (89%, i.e., 150 from 169) of the <65yo group (in relation to their overall trial proportion of 80%) caught Covid-19; (ii) 63% (i.e., 12 from 19) of 65+ age who caught Covid were not obese; and (iii) strangely, the 12 'at risk' 65+ who caught

Covid equaled in number the 12 'not obese' 65+ participants who caught Covid. Ignoring the strange 3rd piece of data, the first two pieces of data leads me to speculate these lower risk participants engaged in higher risk or ordinary behavior while the higher risk participants engaged in less risky or isolationist behaviour thus skewing/tainting the data. Is there any information in the Pfizer paper that says all participants engaged in a similar environmental exposure after receiving the second dose?

2 0 Reply

Avata This comment was deleted.

Bill In Montgomey Guest

3 years ago

Can you expound on this? Does this mean that for the vaccine to be "effective" a whole lot of other people also have to be vaccinated?

0 0 Reply

Faigel Katz

Bill In Montgomey

3 years ago

No, it does not mean that, not at all.

0 0 Reply

S **Sky**

3 years ago edited

One of the things i'm most puzzled by are the reporting of adverse events that overlap with the symptoms of covid.

Both trials have the line "Potential COVID-19 illnesses and their sequelae were not to be reported as AE", but "potential covid" is never defined.

The pfizer trial also has a line that says "Among 3410 total cases of suspected but unconfirmed COVID-19 in the overall study population, 1594 occurred in the vaccine group vs. 1816 in the placebo group. Suspected COVID-19 cases that occurred within 7 days after any vaccination were 409 in the vaccine group vs. 287 in the placebo group"

These cases are ranked as either serious or not, but non serious cases are not further broken down into mild, moderate, and severe.

The moderna trial doesn't report a number of suspected covid cases at all.

Do the trial protocols allow investigators to attribute AEs to covid without a covid test (and therefor without meeting endpoint criteria), then subsequently not record the symptoms as AEs?

1 0 Reply

Jean-Luc Mommaerts

3 years ago

Blindness breach powered by inadvertent placebo proneness may confound COVID-19 vaccination study results.

Dr. Jean-Luc Mommaerts, M.D., M.A.I., - Ph.D. Jean-Luc.Mommaerts@vub.be - Vrije Universiteit Brussel (Free University Brussels)
Prof. Dr. Anne-Mieke Vandamme, Ph.D. - annemie.vandamme@kuleuven.be - KU Leuven - Clinical and Epidemiological Virology - Rega Institute for Medical Research

COVID-19 vaccination studies are currently being conducted under time pressure. Thus, many subjects are enrolled in order to quickly get to a sufficient, a priori determined number of COVID-19 diagnosed subjects. We hypothesize that a possible confounding of reported efficacy could result from blindness breach (BB), in this case powered by the high number of included subjects

see more

1 0 Reply

guest

3 years ago

Does this study provide the Raw Data that scientist are asking for?

Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine:

Original Article from The New England Journal of Medicine — Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine

NEJM

0 0 Reply

Andrew Mills

3 years ago

My current search for information on the C-19 vaccine topic is focusing on the preclinical development work contained within the Pfizer-Biontech regulatory submission. Specifically, did the toxicology include any animal testing? If so, which animal models were used?

0 0 Reply

A

Alan Thorpe

3 years ago

The trials conducted for this vaccine seem a complete sham to me. How is it possible to have a trial to test a vaccine when the volunteers on the trial are sent out to try to catch it? I imagine they were following the social distancing rules and mask wearing, which we are told repeatedly prevent the transmission and infection by the virus. So how do we know whether it was the masks or the vaccine that worked? We also have no idea about the virus exposure any of them received. They should have been isolated like the common cold unit and both the vaccine and control group exposed to a controlled amount of the virus. I wonder how many volunteers they would have had if a proper trial had been conducted. I regularly read that the coronavirus has not been isolated and so it has not been cultured in a laboratory. Who do we believe?

16 1 Reply

sail → Alan Thorpe

3 years ago

Totally agree with you.moreover it seems to me more an interpretation of a conclusion to make it fit our expectation, that is 95% efficacy based on a more or less biased trial. 95% a relative efficacy but taking into considertion that 162 covid cases in the placebo group of 22000 volunteers it means that 0.74% , consequently one can understand that 99.3% did not have the covid 19. statistical interpretation will be tiricky in this situation.

1 0 Reply

Heidi → Alan Thorpe

3 years ago

When running a clinical trial, the placebo group is compared to the group that received the vaccine.

It is assumed both groups wear masks and social distance at the same rate because the study is blinded (nobody knows if they received placebo or vaccine).

And it is unethical do experiments on humans as you detail above as a "proper trial". That would never be approved by an IRB. Just because you don't understand the science doesn't mean it's a sham.

0 1 Reply

A **Alan Thorpe** → Heidi

3 years ago edited

What do you think I mean by a proper trial? You described what such a trial involves. But where are the papers describing the outcomes? I have not seen any. The entire point of vaccines is surely that we get back to normal and should not have to wear masks and observe social distancing, so surely trials of the vaccine should not involve people on the trial following those rules. Also, we are constantly told that masks and distancing protects us and if that is true and the people on the trial are mixing with people following the rules, how can the trial test the effectiveness of the vaccine. We must know the details.

3 1 Reply

TeeJae → Alan Thorpe

3 years ago

All great questions. And ones more people should be asking. My method has always been to believe those who are completely independent and free of any conflicts of interest.

6 1 Reply

J **Joe**

3 years ago edited

The relative vs absolute risk is a really important point. Assuming the vaccine-placebo split was 50:50, for the Pfizer trial:

Placebo group: 162/22,000 = 0.00736% got covid
Vaccine group: 8/22,000 = 0.00036% got covid

So that's a difference of 0.007% for primary endpoints such as symptoms of cough and fever plus PCR positive.

I am not a statistician, so perhaps someone can explain to me where I've gone wrong - because I don't understand how this could ever be statistically significant. Even the slightest change in mean age between the groups would totally invalidate the study.

6 2 Reply

Claus R → Joe

3 years ago

Hi Joe, your percentages are off by two decimals, though I personally still agree with your implicit concerns. I am not a medical expert but just wrote about it from the perspective of decision risk, see https://gis.blog.ryerson.ca... (skip to second half).

6 0 Reply

C

Clara Castro → Claus R

3 years ago

Very well explained concepts. However, public health measures, in my view, must target a group of individuals - in this case, society - and not individuals themselves. And vaccination campaigns is more about group protection than individual protection. And so, even if these two views are worth discussing, i can't fully disagree with the 95% risk reduction that media referred.

0 0 Reply

2nephi32 → Claus R

3 years ago

Your article was very helpful; thanks!

0 0 Reply

J

Joe → Claus R

3 years ago

Thanks for your reply Claus. Of course, yes - I see now! Thank you. You're article was really interesting and helped me to understand better the idea of relative vs absolute risk. It really underlined for me the danger of presenting these numbers as they have been presented in the media. 95% efficacy seems untouchable, even if there are slight flaws in the study - a few percent give or take is not going to be an issue. But if considering the absolute reduction of 0.7%, well this could be explained away not only by small differences in mean age but also blood group, genetics, vitamin D status etc. I wonder if Pfizer controlled for these variables? Thanks and all the best

2 0 Reply

coleenrowley

3 years ago

The CDC recently reported and then the U.S. Surgeon General repeated (in an interview on FOX Sunday News on Nov 29: https://www.foxnews.com/tra... that over 50% of all Covid19 cases are "asymptomatic." (The Surgeon General was kind of on the defensive explaining why lockdowns, masks, and other such health precautions had not been implemented sooner and said they did not know there would be so many asymptomatic cases that could still transmit disease to others.)

But the vaccine results apparently only involve/reveal symptomatic cases. So at this point it's not even known if the vaccine will reduce transmission; if "effective" the vaccines may only reduce disease symptoms, not actual viral infection transmission. Can you comment on how "50% or more asymptomatic cases" would affect the vaccine makers' findings of 95% effectiveness?

2 0 Reply

D

Drew → coleenrowley

3 years ago

This is something that is a little murky for me. Are the so-called asymptomatic cases actually the false positive cases, re: overly high cycle

threshold in many of the PCR tests?

1 0 Reply

Bill In Montgomey

coleenrowley

3 years ago

The link you provided won't open on my computer. It caught my attention because you say the CDC now says that "over 50 percent of the all COVID cases are 'asymptomatic.' " Per my research, the CDC had previously said that "40 percent" of positive cases were "asymptomatic." If you go back several months, the CDC estimated that "20 to 40 percent" of positive cases were "asymptomatic." Note the trend ... The "experts' estimates seem to have gone from 20 percent or more several months ago to "50 percent or more" today. BTW, I've found plenty of studies that state that the percentage of "asymptomatic" cases might be as high as 80 percent. So I'm a little skeptical of these CDC experts and their pronouncements.

2 0 Reply

M

Matthew Sadler

Bill In Montgomey

3 years ago

Are you sceptical because they have amended their advice based upon test data? As more and more testing is carried out on those without symptoms, then a better idea of the numbers who have the disease but no symptoms.

0 0 Reply

elizabethjlondon

Matthew Sadler

3 years ago

edited

I'm personally skeptical because this data potentially reflects artificially boosting positivity and current infection rates by ramping up the CT

over 31. Fauci mentions CT over 35 being the reason for persistent viral loads that won't go away for weeks and even months. The more you amplify past a certain point, the more the numbers are artificially inflated.

Every CT doubles the amount of viral snips (not even full virion or virus) in a sample; 31, the limit mentioned in this

see more

0 0 Reply

TeeJae coleenrowley

3 years ago

This is where the nuance gets a bit tricky. The vaccines are not designed to prevent transmission. They are designed to prevent infection in the event of exposure; while others may lessen the severity of the disease in the event of infection, as you said.

1 0 Reply

J

Joe coleenrowley

3 years ago

There is debate as to how much the asymptomatic people can transmit, but in any case you are right - there is nothing in the study to assess the effect on transmission, and nothing published in the initial findings that refers to transmission. The 95% effectiveness claim is relative, not absolute, and refers to the number of people that came back reporting symptoms and were subsequently positive PCR, so asymptomatic cases would have been completely ignored, unless there had been mass PCR testing of all subjects at the end, which I'm not aware of.

One could say that if the vaccine reduces symptoms then it could potentially turn mildly symptomatic people into asymptomatic people, which may even increase transmission as people continue daily life unaware of the possibility of

being a spreader. Of course, that is unknown, but we won't know until we test it.

0 1 Reply

coleenrowley → Joe

3 years ago

If the vaccine is only effective (or has been shown to be effective) on the symptoms of infection and not on reducing transmission of the virus, than it should really only be given to the vulnerable segments of the population, the elderly, obese and those with pre-existing health conditions. Otherwise the vaccine might actually increase transmission as you say.

1 0 Reply

L

Lobkowitz

3 years ago

I see a pile of accumulating FOI requests to MHRA is building up, I am having to refer all mine to the ICO as complaints for failing to supply a satisfactory reply, these vaccines are most certainly in the public interest, I have no commercial interests in them at all! I am very concerned this is being rushed.

They need to seek for informed consent for care home folk, many of whom will have relatives with Power of Attorney! The UK government is pursuing a very bad policy. It made a balls of controlling cov-19 from March onwards, PPE, test, track and trace all at sea, outsourcing to Serco and other firms with links to MPs etc. A judicial review is already looming on PPE contracts. Given this shambles, why would anyone agree to vaccination without full information and the clinical trial data published in peer reviewed journals.

The manufacturer cannot confirm how long immunity will last, nor what unforeseen side effects, adverse reactions might occur, especially to frail elderly folk with underlying conditions, who are sensitive to medication, nor can they confirm when the vaccine prevents transmission of sars-cov-2.

Imagine going to your VW dealer to buy a new Golf and they told you in the show room, you can have any colour and engine size, however we cannot say whether the

brakes work or how long you can drive it on a full gas tank. You would not buy one.

18 1 Reply

J **Joe** Lobkowitz

3 years ago

Very true. I really don't know why there is so much trust in the government approval process

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This is **Exhibit « E »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

April 14, 2020

Sent via Email
justin.trudeau@parl.gc.ca
doug.fordco@pc.ola.org

Dear Prime Minister Justin Trudeau and Premier Doug Ford:

We write to you today on behalf of frontline physicians in Canada. Concerned Ontario Doctors (COD) represents approximately 10,000 frontline physicians in family medicine and all specialties throughout the province of Ontario. COD advocates on healthcare issues of provincial and national importance to frontline physicians and our patients.

For the past several months, frontline physicians in Canada have been sounding the alarm about the threat of the COVID-19 pandemic to Canadians and imploring the Governments of Ontario and Canada to take prompt and decisive action. Thus far, the measures enacted by both the provincial and federal governments have been slow, reactive, non-transparent and often contradictory. Much valuable time has been lost but there are still concrete measures our governments can immediately undertake to save lives. Canada must learn from other countries which have successfully navigated COVID-19, including Taiwan, South Korea and Singapore.

Since no one is immune to the novel coronavirus, SARS-CoV-2 (which causes COVID-19), experts predicted that with no interventions approximately 30-70% of Canada's 37,500,000 citizens may become infected. There is currently no vaccine. Assuming a minimum infection rate of 30%, at minimum 11,250,000 Canadians would acquire COVID-19. We know that at least 10% of those Canadians infected (1,125,000) will require hospitalization for assistive breathing measures and at least 5% of infected Canadians (562,500) will require intensive care with mechanical ventilation. Even prior to the COVID-19 pandemic, Ontario and Canada have been mired in a historic healthcare crisis due to years of deep frontline cuts and heavy rationing of essential care. Amongst the wealthiest countries in the world, Canada consistently ranks last or second last for accessibility to care. More than five million Canadians do not have a family doctor and multi-year specialist waitlists were the norm in Ontario even prior to this pandemic. Our healthcare system also has fewer hospital beds, intensive care unit (ICU) beds and physicians per capita when compared to other Organisation for Economic Co-operation and Development (OECD) countries. OECD is a group of 34 member nations that discuss and develop economic and social policy.

COVID-19 has led to widespread devastation and suffering around the world. Italy, United States of America (USA) and Spain report the highest number of known deaths from COVID-19 globally. Comparatively, our healthcare systems in Canada are not equipped with the healthcare frontline and infrastructure capacity of other OECD nations. Canada has fewer hospital beds per capita (OECD 5.4 hospital beds per 1000 people, Italy 3.2, Spain 3.0, USA 2.9, Canada 2.5, Ontario 2.3, Brampton 0.9), fewer ICU beds per capita (OECD 3.60 per 1000 people, USA 3.42, Spain 2.69, Italy 2.62, Canada 1.95, Ontario 1.30, Brampton 0.04) and fewer physicians per capita (OECD 3.4 per 1000 people, Italy 4.1, Spain 3.9, USA 2.7, Canada 2.4, Ontario 2.2). Prior to building capacity in our overburdened healthcare system through the cancellation of elective surgeries and ambulatory clinics, the majority of hospitals in Ontario were operating well over 100% capacity and the majority of Ontario ICUs were operating at more than 90% capacity. As of April 1, 2020, Ontario was operating at 80% of its ICU capacity. With the expansion of ICU capacity over the past week, there has been a temporary increase in the availability of ventilators in unconventional ICU spaces; however, the frontline physicians, nurses and respiratory therapists in Ontario and Canada with the medical training required to manage and treat patients in an acute intensive care setting remain finite.

Social distancing slows the spread of COVID-19 transmission within the community in hopes of not overwhelming our already overburdened healthcare system beyond its resource capacity. However, social distancing alone is not sufficient in Canada's war against COVID-19. Thus far, each province has been independently enacting its own measures to varying degrees to combat COVID-19. Canada must learn from the failures and successes of other jurisdictions globally, enact policies based on science and act as a sovereign nation to protect the health and safety of all Canadians. Canada must have a robust, collective approach with federal leadership to ensure national success in our country's war against COVID-19 by prioritizing and acting upon the following:

1. **Personal Protective Equipment (PPE):** Failure of the Government of Canada to follow its own playbook created in 2006 for health sector pandemic preparedness and failure of the Government of Ontario to maintain its PPE stockpile are endangering the lives of frontline doctors, nurses, healthcare workers and our patients. All Canadian medical suppliers of PPE have been indefinitely out of stock since January 2020. Many frontline family doctors and specialists are practicing within community clinics across Canada with little to no PPE. The PPE in Ontario hospitals is either rationed, locked up, or sorely inadequate; frontline physicians and nurses who have brought in their own have been reprimanded by hospital administrators. Some Ontario physicians and nurses who have publicly raised concerns about their hospital or medical institutions' lack of PPE, have faced threats of termination or loss of privileges from hospital administrators.

PPE is critical for the protection of frontline doctors, nurses, healthcare workers and essential frontline custodial staff. It is unclear to frontline Canadian physicians why the Governments of Canada and Ontario ignored all warnings from frontline physicians. The first Canadian case of COVID-19 was in Ontario on January 25, 2020. The Government of Canada did not start the federal PPE procurement process until March 11, 2020, well after shipping 16 tonnes of PPE to China on February 4, 2020, and several months after physicians had started sounding alarms. As of April 13, 2020, there were 813 known frontline healthcare workers in Ontario alone who had tested positive for COVID-19, representing approximately 11% of all known Ontario cases. There has already been one frontline hospital death from COVID-19 in Ontario. Given the heavy rationing of COVID-19 testing in Ontario due to a shortage of viral swabs, we know the number of COVID-19 infected healthcare workers is immensely higher. A large portion of frontline healthcare workers in Ontario who have been suspected of having COVID-19 are not being tested and have been told to simply self-isolate for 14 days, thereby placing undue strain on a healthcare system that was at its breaking point before the pandemic began.

With international supply chains fractured, and our provincial and national PPE stockpiles grossly insufficient in the face of growing PPE demand, it is critical for Ontario and Canada to have immediate PPE domestic production. Recently some Canadian companies have started domestic production of some basic PPE; however, there is currently no domestic production of N95 respirators. Provincial and federal governments have provided no details or timelines regarding timing for retooling and commencement of domestic PPE manufacturing lines or, more importantly, when the urgently needed PPE will actually be on the frontlines and how it will be distributed.

Canada cannot fight a war against COVID-19 without the protection of its frontline doctors, nurses and healthcare workers. Protection of our healthcare frontlines ensures protection of their patients, families and communities. COD recommends:

- Urgent, robust and sustained robust domestic production of all personal protective equipment required by healthcare frontlines, N95 respirators, L3 medical grade surgical masks, face shields, goggles, hair caps, medical grade nitrile, latex and vinyl gloves, isolation gowns, hazmat suits and coveralls.
- Transparent public reporting from all provincial and federal governments regarding timelines for commencement of PPE manufacturing, timelines for PPE to be on frontlines and capacity of PPE production (with quantity and timelines).
- Equitable distribution of PPE to frontline doctors, nurses, healthcare workers (including custodial staff) in hospitals, physicians' community clinics, long-term care homes and nursing homes.

2. **Full Data Transparency:** There is a significant lack of transparency in data reporting from both the Governments of Ontario and Canada. Over the past several months, there has consistently been an under-reporting of known cases, hospital admissions, ICU admissions and even deaths wherein known COVID-19 data from provincial agencies, such as Critical Care Services Ontario and local Public Health agencies, has not been fully captured in the data reported by governments provincially or nationally. Shortage of viral testing swabs and testing reagents have also resulted in significant rationing of COVID-19 tests in Ontario leading to grave under-reporting of COVID-19 cases. This poor-quality data has then been utilized by provincial and federal governments for modelling the incidence and mortality of COVID-19. Ontario and Canada are making crucial public health policy decisions with a blindfold.

   Canada cannot fight what it cannot see. COD recommends:
   - Transparent public reporting of all known and suspected COVID-19 cases, hospitalizations, ICU admissions and deaths in real-time with non-identifying demographics on provincial and federal government websites.
   - Transparent public reporting of all known and suspected COVID-19 cases, hospitalizations, ICU admissions and deaths amongst frontline physicians, nurses and healthcare workers in real-time with non-identifying demographics on provincial and federal government websites.

3. **Mass Testing:** Ontario has the lowest per capita testing in Canada and although the Government of Ontario has increased its laboratory capacity, COVID-19 testing remains heavily rationed in Ontario due to a long-standing shortage of viral swabs (which were imported from Italy). The key to Taiwan and South Korea's success against COVID-19 is mass testing of everyone, contact tracing via public health and a mandatory 14-day isolation of infected people.

   As of April 12, 2020, the Province of Ontario has 86 reported outbreaks of COVID-19 in long-term care homes and 16 reported outbreaks of COVID-19 in hospitals. Nearly half of all COVID-19 deaths in Ontario and Canada have been in long-term care homes. Asymptomatic frontline healthcare workers without adequate PPE are unknowingly acting as vectors for COVID-19 transmission. Many seniors at long-term care homes and nursing homes have dementia, mobility issues or are unable to vocalize their symptoms. Fever is often a late-onset clinical sign. It is alarming that following these institutional outbreaks, there have been no universal testing measures instituted. This has resulted in unchecked and rampant spread through institutions leading to significant fatality rates.

Many frontline physicians who have clinically exhibited symptoms of COVID-19, after caring for patients who tested positive for COVID-19, have been refused testing by the province and were instead advised to self-isolate for 14 days. The province has also refused testing for immediate family members living in the same household as patients who have tested positive for COVID-19. There have been many instances in Ontario where frontline physicians have clinically and/or radiologically suspected patients of having COVID-19, but the province has refused testing. In other instances, the province did not agree to test some patients until after their deaths, if at all, with some of these results not being processed as positive until nearly one week after a patient's death from COVID-19.

Extrapolating the data from the known number of COVID-19 ICU admissions in Ontario, the province is likely capturing only 10% of COVID-19 positive cases. Without robust testing, Canada's response to COVID-19 will continue to be reactive.

There is rapid community transmission of COVID-19 in Ontario and Canada attributed to asymptomatic transmission. Other jurisdictions in the world are conducting 100,000 to 150,000 COVID-19 tests daily. In order to shift Canada's response from being reactive to proactive, the first step must be mass testing. Early detection of people carrying the virus is crucial to containing the virus. Health Canada's approval of rapid point-of-care testing on April 11, 2020 with handheld DNA analyzers is a step in the right direction; however, there has been no data publicly published regarding the sensitivity and specificity of this test to determine its diagnostic accuracy. COD recommends:

- Canada must quickly aim to achieve mass COVID-19 testing of everyone. A safe and efficient means for the public and healthcare workers is via drive-thru tests, as initially implemented by South Korea.
- Prioritization of testing for ALL physicians, nurses and frontline healthcare workers.
- Prioritization of testing for ALL staff, inpatients and residents in locations of COVID-19 outbreaks, including hospitals, long-term care homes, nursing homes, retirement homes, physicians' clinics, homeless shelters, group homes, women's shelters, correctional facilities, prisons and remote northern communities.
- Prioritization of rapid point-of-care testing kits for physicians' clinics, long-term care homes, nursing homes, retirement homes, homeless shelters, group homes, women's shelters, correctional facilities, prisons, remote northern communities and airports. Strict public health measures in all long-term care homes, nursing homes, retirement homes, women's shelters, homeless shelters, correctional facilities and prisons to restrict non-essential visitors and halt communal meal and socializing areas.

- Isolation and treatment of patients who are COVID-19 positive in independent patient facilities.
- Contact tracing by public health for all known COVID-19 positive patients with subsequent prioritized testing of contacts and a mandatory 14-day self-isolation.
- Increase testing capacity through domestic manufacturing of supplies essential for COVID-19 testing, including viral swabs, diagnostic testing kits and laboratory reagents.
- Increase testing capacity through utilization of academic laboratories and individual point-of-care diagnostic testing kits.

4. **Large-Scale Domestic Production:** The COVID-19 pandemic has exposed significant vulnerabilities in our supply chains and has left Canadians vulnerable to the political whim of other nations and supply chain warfare. Canada's fight against COVID-19 will likely be a marathon with multiple waves. Canada must create a means for rapid and sustained domestic production of all critical medical supplies and equipment required against COVID-19. The private business sector has been eager to assist in retooling to manufacture medical supplies and equipment required in Canada, but requires firm government commitments and assistance.

   Canada pandemic response must include made in Canada solutions. COD recommends urgent and sustained domestic production of:
   - All Personal Protective Equipment
   - COVID-19 Diagnostic Supplies, Diagnostic Kits and Serology Kits
   - Pharmaceuticals including Palliative Medications
   - Ventilators
   - Medical Equipment to Set-up Independent Patient Facilities

5. **Independent COVID-19 Patient Facilities:** South Korea was able to quickly flatten its curve with robust mass testing combined with independent patient facilities for COVID-19 patients. At least 10% of COVID-19 patients will require hospitalization.

   Independent patient facilities allow for virus containment which is crucial to reduce COVID-19 transmission. A few Canadian cities, including Vancouver and Burlington, have already created independent patient facilities. COD recommends:
   - All jurisdictions in Canada create independent patient facilities to treat COVID-19 patients requiring hospitalized care.

6. **Facial Cloth Masks for Everyone:** home-made cloth masks should be encouraged for everyone to decrease symptomatic and asymptomatic community transmission.

7. **Shut Down of all Domestic and International Passenger Flights:** It is unclear to frontline physicians why international flights to Canada were not shut down months ago. Simply banning symptomatic passengers from entering Canada or travelling within Canada via train is insufficient. There are no effective means to "screen" passengers at airports in Canada as there is currently no rapid point-of-care test available at airports in Canada, fever is often a late-onset sign and the majority of patients with COVID-19 are asymptomatic. Domestic and international flights remain operational in and to Canada with flights filled with Canadians, permanent residents, diplomats, temporary migrant/foreign workers and airline crews arriving daily to the Toronto, Vancouver, Montreal and Calgary Airports from COVID-19 hot-spots with only advice to self-isolate for 14 days. Self-isolation for 14 days is still voluntary for repatriated Canadians despite there being COVID-19 outbreaks on flights, trains and buses over the past several months.

   Canada will not be successful in flattening the curve and getting ahead of the SARS-CoV-2 if international airports and domestic transportation hubs remain entry points for new infections with subsequent community transmission. COD recommends:
   - Shut down of all domestic passenger flights in Canada.
   - Shut down of all international passenger flights to Canada.
   - Shut down of all inter-city and inter-provincial trains, buses and ferries in Canada.
   - Any Canadians awaiting repatriation must have a mandatory 14-day quarantine in a military facility or dedicated hotel under government supervision immediately upon arrival in Canada.

8. **Closure of all Non-Essential Services, Social Distancing & Ban All Public Gatherings:** for at least the next one month, it is crucial that all non-essential services be closed nationally. When Ontario had announced closure of non-essential services, the province simply classified many non-essential services as being "essential"; this must be urgently rectified to aggressively flatten the curve in the coming two weeks. It is also crucial for provinces to regularly reassess the status of our fight against COVID-19 to determine when such restrictions can be safely lifted.

   Successful mass diagnostic testing, contact tracing, mandatory 14-day isolation of infected individuals and serology testing will all be crucial in eventually allowing for social distancing measures to be eased and lifted. COD recommends:

- Closure of all non-essential services nationally with reassessment at 2-4 week intervals.
- No public gatherings nationally of larger than five people with reassessment at 2-4 week intervals.

9. **Pharmacological Treatment & Vaccine Development:** There are currently clinical trials underway in Canada exploring various pharmacological treatments for COVID-19. Dr. Anthony Fauci, an Infectious Disease expert and long-time Director of the United States' National Institute of Health and the Centers for Disease Control, has stated that vaccine development against Sars-CoV-2 (the coronavirus that causes COVID-19) will take at least 12-18 months. The Public Health Agency of Canada continues with vaccine research in collaboration with other nations. In the interim, Canada must approve and increase mass capacity for serology testing to identify immune Canadians. The treatment for COVID-19 is currently supportive. The fatality rate of COVID-19 in Canada is currently 1.2%. Aside from increasing healthcare capacity and resources, including ICU and ventilator capacity, Canada must also ensure adequate supply of all palliative care medications. Approximately 80% of the active ingredients used to produce finished medication in North America come from China. With the pandemic creating increasing strains on global supply chains, it is crucial for Canada to ensure domestic production of these active ingredients. COD recommends:
    - Procurement and domestic production of crucial palliative care medications.
    - Domestic production of active starting ingredients and essential pharmaceuticals in Canada.

10. **Serological Tests to Detect Immunity:** Detection of Canadians who have had COVID-19 infection with little or no symptoms and are now immune is crucial in order to ease social distancing measures. Germany already conducts approximately 100,000 COVID-19 tests daily and is now the first European country to begin large-scale coronavirus antibody testing in an effort to help researchers assess infection rates and monitor the spread of the COVID-19 more effectively. In determining infection rates, Ontario and Canada are currently using models based on incomplete data. Randomized tests can provide a more accurate real-time assessment. A national SARS-CoV-2 antibody testing program in Canada would determine how many Canadians are immune to the coronavirus, accurately quantify the large portion of asymptomatic cases and allow for the determination of an accurate mortality rate.

    The United States' Centers for Disease Control (CDC) is also carrying out antibody testing; one of the serology testing kits the CDC is utilizing is manufactured by a Canadian company in Ontario. The CDC is conducting serology tests on blood samples from three

population groups: people not diagnosed with the virus in coronavirus hotspots, people from different parts of the country, and healthcare workers. Finland, India and several other countries have also started national serology testing programs. Identification of Canadians who unknowingly had COVID-19 with mild or no symptoms through serology testing could then allow for these individuals to return to work and aid in our country's war against COVID-19.

The SARS-CoV-2 antibody tests are a crucial stepping stone to relaxing some of the harsher lockdown measures introduced throughout Canada and the world. It is unclear why despite these tests being manufactured by a Canadian company in Ontario, Health Canada has not yet approved its use by healthcare professionals. Just last week Health Canada stated that "These tests are also being accepted for review; however, the World Health Organization (WHO) does not currently recommend serological tests for clinical diagnosis, and Health Canada is following this advice," adding that Health Canada officials are giving the traditional PCR (polymerase chain reaction) testing kits priority under the interim order. It is unclear to frontline physicians in Canada why the Governments and Public Health Agencies in Canada, and Health Canada continue to blindly act upon WHO directives, instead of basing its policies on scientific evidence.

The crucial role of serological tests goes far beyond establishing a clinical diagnosis and a robust public health response to COVID-19 pandemic would employ both PCR testing and serological testing; each of these testing modalities serves a distinctly different purpose. COD recommends:

- Immediate Health Canada approval of laboratory and rapid point-of-care coronavirus serology testing to detect SARS-CoV-2 antibodies.
- Large scale serology testing nationally.

11. **Support of Canada's Frontline Physicians and Healthcare Workers:** Even prior to the COVID-19 pandemic, the burnout rate amongst Ontario physicians was already at 63% (with a 50% burnout rate for physicians in Canada). Physicians also already had the highest suicide rate of any profession with male physicians killing themselves at a rate 40% higher than males in general and female physicians killing themselves at a rate 130% higher than females in general. Amidst the COVID-19 pandemic, frontlines physicians and nurses are experiencing pre traumatic stress disorder: anxiety from awareness of what awaits with the path of devastation and human suffering COVID-19 has caused in other parts of the world. During and following the pandemic, Canadian physicians and nurses are at risk of experiencing high levels of compassion fatigue, anxiety, depression, addiction, PTSD, burnout and suicide. The greatest barrier for Canadian physicians to

receive the mental health care they desperately need is mandatory reporting to provincial and territorial regulatory and licensing bodies that do not recognize mental health and physical health as being equal; as a result, physicians in Canada suffer in silence fearing implications to their medical licenses and livelihoods.

The majority of Canadian physicians are small business owners. As an essential service, physicians have steep overhead expenses to provide essential patient care through virtual clinics to continue to manage acute and chronic patients and alleviate pressures on hospital emergency departments. Surgeons whose elective operating time have been cancelled, physicians providing home care, and office-based family physician and specialists have seen marked drops in income, but still have to meet steep overhead expenses, including clinic rent, nurse and secretarial staff salaries and other clinic operating costs. Their disability insurance would not cover them and they do not qualify for many of the federal financial assistance program already announced. Additionally, in Ontario, physicians' pay is being withheld by the Ontario government for essential virtual patient care already provided for at least four months due to the province's supposed inability to program a simple fee code. Ontario physicians are an essential service and are working tirelessly to care for their patients during the COVID-19 pandemic, but are not being paid by the Ontario government for months; this is placing undue stress and financial hardship on physicians and their staff with many clinics on the brink of closure. If these community physician clinics close, patients will be left with no choice but to seek medical care at already overburdened hospital emergency departments. In June 2003, Ontario had the highest number of SARS deaths outside of Asia; Canada has already surpassed that number nationally by 15-fold. Ontario agreed to the "SARS Income Stabilization Program" in 2003 and eventually paid approximately $190 million to physicians, nurses, and paramedics. The Government of Canada must support a similar program nationally in partnership with provinces now for COVID-19. Financial support for health professionals is needed and needed now to protect our healthcare system. In addition, there should be government-funded life insurance, at least for physicians, nurses, respiratory therapists and healthcare workers who succumb to COVID-19.

The majority of Ontario frontline physicians either have no PPE or are facing rationing of their PPE by hospital administrators. Many Ontario physicians have already faced reprimand from hospital administrators for wearing their own PPE (when the hospital failed to provide PPE) and for publicly speaking about the lack of PPE. Some physicians and nurses have been threatened with termination. It is crucial that frontline physicians and nurses are protected.

Canada's war against COVID-19 is only as strong as its healthcare frontlines. Canada must ensure the protection of frontline physicians, nurses and healthcare workers. COD Recommends:

- Federal funding for mental health supports for frontline physicians, nurses and healthcare workers.
- All jurisdictions in Canada treat mental health as physical health by following the lead of other jurisdictions globally to remove the mandatory reporting of mental illness to medical provincial and territorial licensing and regulatory bodies. Frontline physicians need to be supported, not punished, for seeking desperately needed mental health care.
- The Government of Ontario immediately stop withholding physicians' pay. The Ontario Ministry of Health must immediately pay all Ontario physicians' outstanding billings for virtual care. Ontario should follow the lead of other provinces and pay physicians' OHIP billings every two weeks during the duration of the pandemic.
- Nationally legislated whistleblower protection for all frontline physicians, nurses and healthcare workers to protect against unfair reprimand and termination when advocating in the best interest of their wellbeing, their profession and their patients.
- Hazard pay for frontline physicians, nurses, respiratory therapists and healthcare workers risking their lives to provide essential patient care during the COVID-19 pandemic.
- Government-funded life insurance for physicians, nurses, respiratory therapists, and healthcare workers who succumb to COVID-19.
- A national federal government COVID-19 Income Stabilization in partnership with provinces for frontline physicians, nurses and paramedics.

12. **Pandemic Triage Ethics:** Ontario has already drafted a pandemic triage policy which would serve to ration ventilators. There was no public consultation. It is absolutely crucial that Ontario and any other Canadian jurisdictions developing such policies consult with Canadians to ensure fair and equitable access to healthcare resources for marginalized groups, especially Canadians living with disabilities. COD recommends:
    - Consultation with Canadians from marginalized groups, especially Canadians living with disabilities.
    - Any government pandemic triage policies must be fair, equitable and without any form of systemic discrimination, including ageism, racism, sexism or ableism.

13. **Protection of Canadians' Civil Liberties:** The Canadian Charter of Rights and Freedoms enshrine the protection of basic human rights and fundamental freedoms for all Canadians. Canadians are privileged with rights, liberties and freedoms due to the ultimate sacrifice paid by our brave Canadian soldiers. Canadians have no greater task than to stand on guard for one another's liberties. All federal and provincial governments must ensure that all public health measures enacted to date are temporary and the need for existing measures is regularly reassessed. There are many powers at the federal government's disposal in the Quarantine Act which it has not yet utilized. It is prudent that our governments not over exert their powers upon civilians during a pandemic, especially when the numerous aforementioned non-intrusive public health measures contained in this letter have yet to be enacted. COD recommends:
    - Federal and provincial governments prioritize effective public health policies against COVID-19 that are least intrusive to Canadians' civil liberties.
    - Federal and provincial governments ensure that all public health measures enacted to date are temporary and the need for existing measures is regularly reassessed at 2-4 week intervals.

14. **Legislation to Protect Privacy & Health Data of all Canadians:** In December 2019, the massive LifeLabs privacy breach was the largest medical privacy preach in Canada's history and the third largest ever globally, victimizing approximately 15 million Canadians (nearly 90% of all Ontario residents). The lack of Ontario government safeguards and accountability has been distressing for patients. The ethical ramifications of this breach underscore the downside to digitally accessible health data, especially in light of Canada's outdated privacy legislation and inadequate government oversight of public and private corporations that manage health information. Canada's Office of the Privacy Commissioner (COPC) has been calling for reforms to Canada's privacy laws for years, but the Canadian government has failed to adequately regulate the activities of health information custodians, thereby enabling the careless handling of personal health information. The COPC has stated that: "We must reject the notion that rights-based laws impede economic growth or other important societal objectives. Fundamental rights are not an impediment to innovation or the delivery of government services in the digital age. In fact, a rights-based statute would serve to support responsible innovation by promoting trust in government and commercial activities."

    The recent LifeLabs breach and rampant ransomware attacks against Ontario hospitals (fuelled by the provincial government's healthcare system reforms without adequate cybersecurity) demonstrate the epidemic scope of privacy violations. Our governments' inaction, despite a pressing need, may result from financial conflict of interest inherent in government's relationships with the private sector.

It is troubling that on April 12, 2020, the Ontario government announced its plan to create the Pandemic Threat Response (PANTHR). This platform will allow researchers access to the health data, including physician, pharmacy, hospital, laboratory and long-term care patient data, of 14 million Ontarians. The province has stated it will anonymize the information shared with researchers and industry, but no other protection has been provided to Ontarians.

To prevent Ontarians and Canadians from becoming pawns in a billion-dollar industry that sells their health data to the highest global bidders, COD recommends:

- The Governments of Canada must immediately pass robust legislation to protect the health data and privacy of all Canadians. Technical rules in place to protect personal data, such as consent, access and transparency, are important mechanisms for the protection of privacy, but they do not define the right itself. Legislation should define privacy in its broadest and true sense, by describing it as freedom from unjustified surveillance. Legislation should recognize and protect Canadians' freedom to live without surveillance of state or commercial enterprises.

15. **Non-Partisan Government Leadership with Frontline Representation:** The Government of Canada has a "COVID-19 Cabinet Committee" made up entirely of government Cabinet Ministers and bureaucrats; similarly, the Government of Ontario has a "COVID-19 Command Table" made up entirely of its Cabinet Ministers and bureaucrats. The response to the COVID-19 pandemic must be non-partisan with representation and voices from all opposition parties at the table. There is also a deeply troubling void of voices from the healthcare frontlines both provincially and federally; governments are making critical decisions directly impacting the lives of frontline physicians, nurses, healthcare workers and our patients without knowledge of the frontline reality in real-time. This has consistently led to slow and reactive government policies endangering lives of healthcare frontlines and Canadians. We need voices of healthcare frontlines who are on the ground and who understand the complexity and nuances of what is actually happening. COD recommends:
    - Representation from all opposition political parties on the federal and provincial governments' COVID-19 Committees and Command Tables.
    - Representation from frontline physicians, nurses and paramedics on the federal and provincial governments' COVID-19 Committees and Command Tables.

Concerned Ontario Doctors urges the Governments of Ontario and Canada to heed the ongoing warnings of frontline physicians; be fully transparent with Canadians; proactively enact policies based on science, protect frontline physicians, nurses and healthcare workers; protect the privacy and liberties of Canadians; and act as a sovereign nation to protect the lives of all Canadians.

Sincerely,

Board of Directors of Concerned Ontario Doctors:

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Health Minister of Ontario, PC MPP Christine Elliott: christine.elliott@pc.ola.org
Ontario Deputy Minister of Health and Long-Term Care, Chair of Ontairo's COVID-19 Command Table, Helen Angus: helen.angus@ontario.ca
Ontario Chief Medical Officier of Health Dr. David Williams: dr.david.williams@ontario.ca
Ontario Associate Chief Medical Officer of Health Dr. Barbara Yafee: barbara.yaffe@ontario.ca
Leader of Official Opposition of Ontario, Leader of Ontario NDP, NDP MPP Andrea Horwath: horwatha-qp@ndp.on.ca
Ontario NDP Health Critic France Gelinas: fgelinas-qp@ndp.on.ca
Ontario Liberal Leader, Steven Del Duca: leader.info@ontarioliberal.ca
Green Party of Ontario Leader, MPP Mike Schreiner: mschreiner@ola.org

This is **Exhibit « F »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

SCIENCE

The CDC Is Breaking Trust in Childhood Vaccination

With its unscientific push to vaccinate all infants and toddlers against COVID, the agency will harm vaccine uptake for more significant diseases

BY LESLIE BIENEN AND TRACY BETH HØEG

JULY 05, 2022

On June 18, the U.S. Centers for Disease Control and Prevention (CDC) officially recommended Pfizer and Moderna COVID-19 vaccines for all children between the ages of 6 months and 5 years. While the Food and Drug Administration (FDA) is the agency responsible for authorizing emergency use of vaccines, it's the CDC that crafts subsequent messaging, makes specific recommendations, and prioritizes who can, should, or should not get vaccinated. In her briefing, CDC Director Rochelle Walensky strongly urged all parents of the nearly 20 million American children in this age group to vaccinate them as soon as possible.

For some parents, Walensky's briefing came as a huge relief. But if polling from May is anything to go by, a larger number of parents likely greeted the recommendation with skepticism. Even before the underwhelming trial results came out, only 18% of surveyed parents reported that they planned to vaccinate their babies and toddlers.

Nationally, uptake in minors between the ages of 5 and 11 as of June 22, 2022, was 29% receiving two doses, and 36% receiving one, but vaccine requirements for sports, camps, and other activities likely drove an unknown percentage of vaccination in this age group. [102]

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BY CLAYTON FOX

There remains, moreover, no solid consensus among physicians about the importance of vaccinating healthy children against COVID-19. A survey from December 2021 indicates that as many as 30%-40% may not be recommending COVID vaccination for children ages 5 to 17, to say nothing of infants. A recent editorial in *The Lancet* expressed uncertainty about whether the benefits of vaccinating healthy 5- to 11-year-olds outweigh the risks, especially in those with a history of infection.

The gap between the CDC's enthusiasm for vaccinating all children against COVID and that of parents and health care providers is

unlikely to be bridged by approval under Emergency Use Authorization. Approval for the COVID vaccines in infants and toddlers is based on two trials that used changes in antibody levels as an estimate of efficacy, but did not assess protection from severe disease, hospitalization, or multisystem inflammatory syndrome in children (MIS-C), important outcomes that parents worry about. In a Food and Drug Administration (FDA) meeting on June 28, Pfizer Vice President for Viral Vaccines Kena Swanson even acknowledged that "there is no established correlate" between antibody levels and protection from disease.

In the Pfizer trial, the confidence interval—which shows the possible range of protection level—was alarmingly wide, with the lower bound suggesting the possibility of a 380% *increase* in the chance of infection after the third dose. Additionally, neither trial met the 50% efficacy requirement established by the FDA for approval of adult COVID vaccines. Peter Marks, the FDA's top vaccine official, told Congress in May that the efficacy requirement would be *lowered* for the pediatric vaccine simply because vaccine efficacy against the omicron variant was lower in general.

With rates of severe disease now much lower in children than at the start of the pandemic—due to higher levels of natural immunity and lower rates of severe disease caused by omicron—trials would have needed to enroll hundreds of thousands of children, if not over a million, in order to detect a significant impact of the pediatric vaccine against severe disease. Vaccine companies could have conducted such time-consuming and costly trials, especially if there had been interest in international collaboration. But there was no economic incentive to do so, and every economic incentive not to: Speed, not providing meaningful information to parents and physicians about safety and efficacy, was the priority of U.S. regulatory agencies.

Because Pfizer and Moderna were permitted to seek approval for pediatric COVID vaccines under the emergency use pathway,

Moderna only enrolled 6,300 total children in trials (4,700 in the vaccine group and 1,600 in the placebo group), and Pfizer only enrolled 4,526 total (2,750 in the vaccine group and 1,776 in the placebo), with two-thirds dropping out before the third dose. The trials, in other words, enrolled only a fraction of the number of participants that would have been required to determine efficacy against end points like severe disease, hospitalization, and rare adverse events such as myocarditis, which has been linked to COVID vaccination in males in the 12- to 17-year-old age group at a rate of up to 1 in 2,700.

Furthermore, the follow-up time after the second dose of Moderna and the third dose of Pfizer was only 1-3 months. Data from adults show protection against infection is transient, though protection against severe disease so far seems longer lasting. For the Moderna vaccine, efficacy against infection was not statistically significant for children between 6 months and 2 years, according to one of the company's two analyses. In the Pfizer trial, there was no evidence of efficacy for the first two doses against omicron for this age group; the "effect" seen after the third dose was so uncertain that it is impossible to draw firm conclusions about how well the vaccine worked to prevent cases.

Still more puzzling is the fact that neither Pfizer nor Moderna—despite continued assurances that mRNA vaccines are uniquely flexible, allowing manufacturers to quickly tweak vaccines to match new variants—has released an updated version of their product: The pediatric vaccines now being administered target an outdated variant. In addition, the infant and toddler trials were mostly limited to children who had not been previously infected with COVID (estimates based on blood work showed less than 15% of children enrolled had previously been infected). With 75% of children nationally having already been infected by February 2022, the immune-naive children enrolled in the trial were not representative of their age group at large.

“The general trust deficit is more troubling than skepticism toward this particular vaccine.”

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Even in the already troubled context of the last two years, the CDC’s unqualified recommendation to vaccinate every young child against COVID may further contribute to the profound chasm of trust between U.S. citizens and their public health agencies. In January, a Hart poll found that only 44% of respondents said they believe what the CDC says; a March Gallup poll put it at 32%. Evidence of trust slippage can be seen even in highly vaccinated places like Portland, Oregon, where CDC recommendations were for the most part embraced unquestioningly during the pandemic. Despite the CDC’s recommendation that all children 5 and up should receive a booster, as of June 26 only 8.7% of children ages 5-11 in the Portland area are boosted, compared to 3.9% in the entire state of Oregon. (The CDC and American Academy of Pediatrics have not made nationwide data available.)

The general trust deficit is more troubling than skepticism toward this particular vaccine, because it could conceivably drive down uptake of other childhood vaccines that we know are more important to children’s health, such as those against measles, mumps, rubella, diphtheria, polio, and Haemophilus influenza type b (Hib). This is not

an alarmist or trivial concern, as vaccinations are one of the most lifesaving medical interventions in human history, rivaled perhaps only by antibiotics. In 1800, 46% of American children did not make it to age 5, and the majority died from what are now vaccine-preventable diseases. The smallpox vaccine alone is estimated to have saved 150 million to 200 million lives. Rates of diseases such as tetanus, rubella, polio, Haemophilus influenza type b (Hib) have declined by 99% since widespread childhood vaccination became commonplace in the 20th century.

It is therefore worth our attention when, for example, a recent letter in the *New England Journal of Medicine* noted that flu shot uptake has decreased over the pandemic, which the authors suspect may be due to growing vaccine hesitancy in general. The CDC published a study in April showing that childhood vaccination rates fell by only 1% in 2021, a small proportion of the total when spread over 70 million children. But given that many of these vaccines require two or three doses for full coverage, this still translates to several million missing doses, and could threaten herd immunity for diseases such as measles, which require very high percentages of the population to be vaccinated. It is also difficult to separate out the factors behind this drop in coverage, because schools and local clinics—where many low-income children receive vaccines—were closed for much of the last two years. But it is reasonable to at least assume that low trust in the CDC, the agency responsible for making evidence-based recommendations about vaccines, is not helping.

Compare the CDC's response to vaccine hesitancy during COVID to a similar challenge in the late 1990s and early 2000s: rotavirus. Only a year after Andrew Wakefield's false claims in 1998 that the MMR vaccines caused autism—leading to one of the most disastrous setbacks for vaccination uptake in history—Wyeth's RotaShield

vaccine was pulled off the market due to evidence it caused a rare and serious intestinal malfunction (intussusception) in babies.[107] The effect of the RotaShield withdrawal so hard on the heels of the Wakefield disaster is hard to isolate, but CDC officials acknowledged that the combined events led to "a particularly turbulent period" for U.S. vaccine programs. Referring to vaccine hesitancy that might result from the RotaShield adverse events, the CDC's Dr. John Livengood remarked at the time that the CDC "shouldn't be seen as withholding information right now."

The original trial for RotaShield had enrolled 10,054 vaccine recipients and 4,633 placebo recipients. During a February 1998 meeting of the CDC's Advisory Committee on Immunization Practices (the same body that recently met to discuss the pediatric COVID vaccines), an FDA panel member, Dr. Margaret Rennels, noted that more babies in the vaccine group experienced intestinal intussusception than in the placebo group by about 2.5-fold, with a rate of 1/2011 (0.05%) in the vaccine group compared with 1/4633 (0.02%) in the placebo. But because the absolute numbers were small, and the trial was also relatively small, intestinal intussusception did not achieve statistical significance. RotaShield was licensed by the FDA in 1998, widely rolled out, and championed by the CDC in the spring of 1999. Intussusception was not mentioned further, and the issue was buried in a 19-page document where it was listed as a side effect that did not occur significantly more often in vaccinated babies than in the control group.

By summer, however, officials at the CDC grew concerned about a growing number of intussusception reports from the Vaccine Adverse Event Reporting System (VAERS), and were anxious not to lose gains made during the Carter and Clinton administrations in raising general childhood vaccination rates. By the end of President Clinton's first term, toddler immunization rates had achieved what was then an all-time high, thanks to Vaccines for Children, a program that expanded access to free and low-cost vaccination.

The CDC was also cognizant that Wakefield's false claims were continuing to spur a growing movement of vaccine hesitancy. As a result, the CDC—then under the direction of Dr. Jeffrey Koplan—immediately launched a large-scale investigation into the RotaShield VAERS reports. The investigation concluded that one additional case of intussusception was attributable to the vaccine for every 5,000-10,000 infants vaccinated—lower than rates of myocarditis due to vaccine injury in COVID-vaccinated adolescent males age 12-17.

RotaShield was pulled off the market that October. To justify the decision to pull a vaccine that was 85% effective at preventing hospitalization from a viral infection that had killed hundreds of thousands of infants worldwide, CDC personnel wrote the following:

> At a time when many parents express concerns about the safety of vaccines and vaccine adverse events are the focus of increasing attention by the public, media, and U.S. Congress, the wisdom of recommending a vaccine that causes a severe adverse reaction in an estimated 1 in 10,000 infants must be considered.

The next vaccine against rotavirus—RotaTeq, made by Merck and released in 2004—was only released after the Rotavirus Efficacy and Safety Trial (REST) trial, which was notable for its "[randomized] design, large sample size, detailed execution, continuous safety monitoring, and lengthy duration," and was undertaken in direct response to the perceived failures of the RotaShield trial. The authors of a paper describing its execution wrote, "The design and conduct of this study may serve as a useful tool for planning other future clinical trials, especially those evaluating uncommon adverse events." The REST trial was conducted in 11 countries at more than 500 study sites and enrolled 70,000 subjects (including over 35,000 infants from the United States), making it one of the largest vaccine clinical trials ever conducted pre-approval. Post-approval, Merck conducted an additional study enrolling more than 85,000 infants.

The obvious drawback of a trial like REST is that it took four years to complete (though today it could almost certainly be completed faster due to advances in recruitment methods). A multiyear trial was simply not an option during COVID, which is why the notably small and short COVID vaccine trials were allowed to serve as the basis for approval under the emergency use provision. But because COVID so rarely causes severe disease in children, and current COVID vaccines do not reliably prevent transmission, especially after a few months, it is difficult to understand how such small trials could be justified without meaningful endpoints for this age group.[109]

Consider the case of rotavirus again. Prior to vaccination, rotavirus was a significant cause of morbidity and mortality in infants in the United States (and still is globally). Until 15 years ago, it was the leading cause of gastrointestinal hospitalization in babies in the United States and, prior to rotavirus vaccines, caused an estimated 50,000-70,000 hospitalizations per year in infants. Compare this figure with the number of children age 0-4 hospitalized with COVID: The CDC places the *cumulative* total during the entire pandemic at approximately 130 in 100,000, or about 26,000 children. The CDC estimates that during omicron, at least 14% of COVID hospitalizations for children ages 6 months to 4 years were incidental (meaning the need for hospitalization was due to something other than COVID itself), though this is likely an underestimate, as 63% of current COVID hospitalizations in the U.K. for all ages are "incidental." Thus, at the time rotavirus vaccines were being trialed, there were 2-4 times more hospitalizations for rotavirus in this age group than there have been for COVID since the pandemic began. (The CDC estimates the death rate from COVID in 6-month- to 4-year-olds to be 86 per year, compared with 20-60 per year from rotavirus, but the COVID estimate does not separate out deaths primarily due to another cause, nor does it adjust for the reduction in severity associated with omicron for children in this age group.)

The rotavirus experience taught the CDC a hard-earned lesson: Speaking in absolutes about vaccine safety and efficacy regardless of trial standards can backfire. In nearly every dimension by which trial data are measured—proper endpoints, size, rigorous randomization, and other factors—the RotaShield trial was far more robust than the Pfizer and Moderna infant and toddler COVID vaccine trials. Furthermore, if the identification of safety signals is not quickly acknowledged, it becomes even harder to recover trust. More and more Americans are wondering, for example, why Canada and several European countries have advised against the Moderna vaccine for people under 30 due to myocarditis risks, while the U.S. government still won't even acknowledge the higher risk of myocarditis.

Clinical trial data expert and Tablet contributor Dr. Vinay Prasad has pointed out many times that "expedited pathways do not always benefit people, but they always benefit companies." This might help explain why no other country in the world has started vaccinating infants against COVID, and only a handful have vaccinated toddlers. (In addition to the United States, the only countries vaccinating 2- to 3-year-olds against COVID right now are Cuba, China, Argentina, Bahrain, Venezuela, Colombia, Hong Kong, and Chile, none of which are using mRNA vaccines.) It is perhaps especially damning that no other country collaborated with the United States on the mRNA COVID-19 vaccine trials for infants and toddlers, which could have quickly enabled enough trial participation to study effects of the vaccines against severe disease, as was done in the RotaTeq trial. Tellingly, the Danish minister of health recently claimed that it was a "mistake" to vaccinate children under 16 against COVID at all, saying, "we've gotten smarter and would not recommend the same today."

In June, the CDC had the chance to help rebuild public trust: In the absence of trials and data that would have met the gold standard for scientific rigor, the CDC could have made a softer recommendation

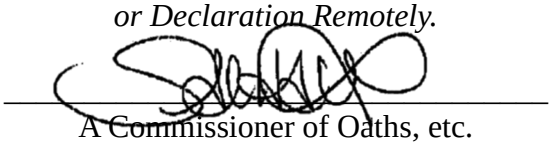
based on the data it does have. It could have been honest about the trials' shortcomings and what these data do and do not show. It could have told the public that the data are preliminary, do not establish efficacy against severe disease or long COVID, and do not rule out the possibility of a rare adverse event. Perhaps it could have recommended COVID vaccines for high-risk children, and remained cautious about the benefits for healthy children who have already had COVID infections. The CDC and FDA together could have insisted that blanket approval and recommendations would only come after a properly conducted vaccination trial—one that would give pediatricians and public health officials the confidence to make the evidence-based recommendations parents are seeking.

In 1999, the CDC, working closely with the FDA, took such steps to shore up parents' confidence in their recommendations. After the RotaShield withdrawal, the FDA requested that future trials of any rotavirus vaccine enroll at least 60,000 children. This level of accountability and collaboration between the two agencies responsible for vaccines in the United States resulted in the delivery of a widely trusted vaccine against a virus that posed a similar or greater danger to young children than COVID-19. This level of accountability was what the American public reasonably expected of its public health agencies two decades ago. It's not too much to expect today.

Leslie Bienen is Professor of Public Health of the OHSU-Portland State School of Public Health, a veterinarian, and a mother of two.

Tracy Beth Høeg, M.D., Ph.D. is an epidemiologist currently doing COVID-19 vaccine research with the Florida Department of Health and a physician in private practice in California. She is a Danish American double citizen and mother of four.

This is **Exhibit « G »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



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Kulvinder Kaur MD ✓
@dockaurG

”Cases” are meaningless.
“Cases” don’t equal infections.
“Cases” drive harmful lockdowns.
“Cases” are a tool for irrational fear.

> **Kulvinder Kaur MD** ✓ @dockaurG · Oct 4, 2020
> Never-ending loop of societal harm
> •Elevated PCR cycle thresholds
> ↪ False positive “casedemic”
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> ↪ Catastrophic lockdowns...
> Show more

6:03 PM · Oct 20, 2020

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A Commissioner of Oaths, etc.

Amir Attaran (@AmirAt @ · Dec 20, 2020 •••

This idiot is a doctor in Ontario. Sort of a female version of Dr. Scott Atlas.

>  **Kulvinder Kau** @do · Oct 20, 2020
>
> ”Cases” are meaningless.
> “Cases” don’t equal infections.
> “Cases” drive harmful lockdowns.
> “Cases” are a tool for irrational fear.
> x.com/dockaurG/statu...

49 7 10

Amir Attaran (@AmirAttarar Follow •••

@profamirattaran

Looks like the flying monkeys are out today for Dr. Gill.

Research shows that Russian military intelligence (the GRU) is behind anti-science, COVID conspiracy social media.

So with love from Canada: Да пошла ты.
google.ca/amp/s/www.nyti.

2:30 PM · Dec 20, 2020

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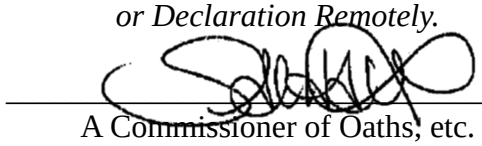


A Commissioner of Oaths, etc.

Amir Attaran (@AmirAt @ · Aug 29, 2022 ···

Remember when I was sued by those anti-vax idiots Dr. Kulvinder Gill and her lawyer Rocco Galati?

Well, Galati abandoned her, and now Gill wants to drop the suit, but asks that I agree not to disparage her.

My answer: You're an ANTI-VAXXER and deserve disparagement only. 🖕

7 29 193

Amir Attaran (@AmirAttarar Follow ···
@profamirattaran

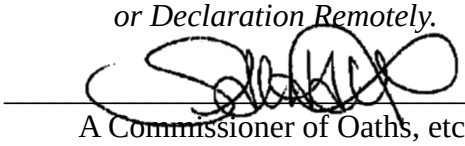
My goal: to make Galati and Gill regretful to the end of time.

No compromise with anti-vaxxers whose beliefs killed thousands, and who arrogantly tried to weaponize the law against ethical scientists.

NEVER AND 🖕.
END OF NEGOTIATION.
@dockaurg @roccogalatilaw

4:43 PM · Aug 29, 2022

This is **Exhibit « J »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



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Vaccine-doubting doctor ordered to pay $1M in legal costs after her libel suit quashed

Gill accused her detractors of being a 'pack of hyenas' bent on destroying her reputation, but it proved to be a very expensive counter-attack

Tom Blackwell

Published Nov 03, 2022 • Last updated Nov 04, 2022 • 4 minute read

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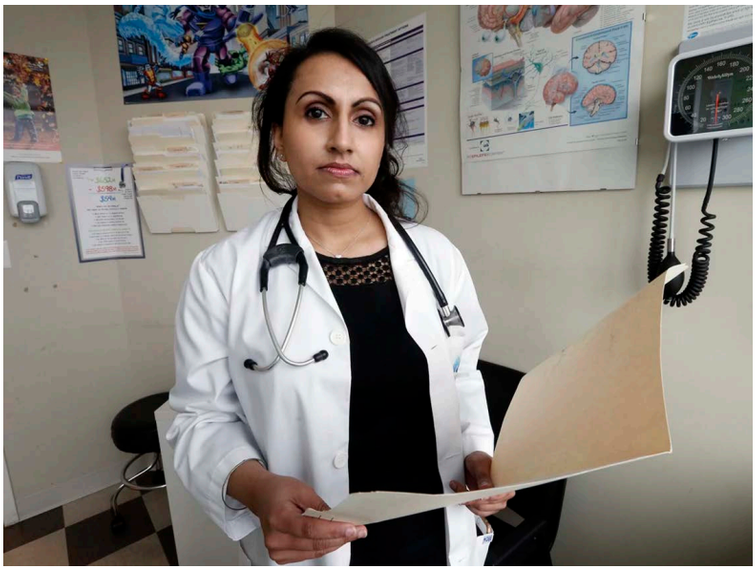
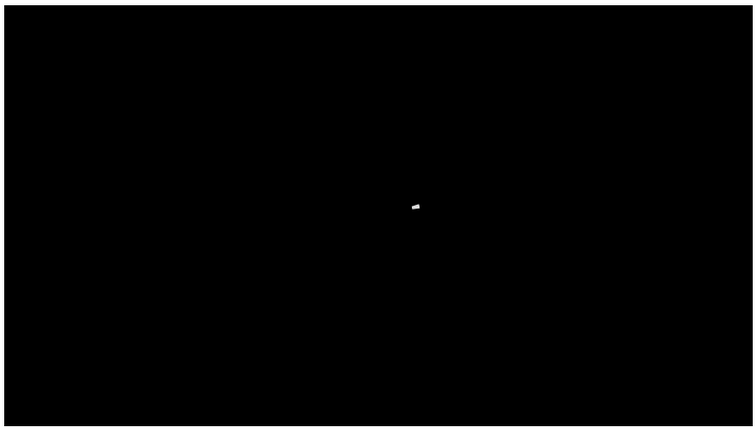


Dr. Kulvinder Kaur Gill, above in her clinic in Brampton in 2017, said a vaccine was not needed against the virus, that most people had natural immunity to COVID-19 and there was no scientific rationale for keeping people at home to short-circuit its spread. PHOTO BY MICHAEL PEAKE/POSTMEDIA/FILE

When a host of doctors, academics and journalists criticized her COVID vaccine-doubting, anti-lockdown views, Dr. Kulvinder Kaur Gill struck back, filing a $12-million libel suit against them.



Amongst other charges, she accused her detractors of being a “pack of hyenas” bent on destroying her reputation. It has proven to be a very expensive counter-attack.

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A judge this week ordered the pediatrician in Brampton, west of Toronto, to pay the defendants as much as $1.1 million in legal costs after her lawsuit was struck down earlier this year as a potential curb on important public debate.

Part of the costs were assigned to a fellow plaintiff, Dr. Ashvinder Kaur Lamba, who sued only two of the 23 defendants, but Gill is on the hook for the bulk of the hefty award.

Justice Elizabeth Stewart said the cost sum was appropriate, noting that the damages sought by the two physicians in their suit was “a considerable sum by any calculation and of understandably great concern” to the people they sued.

“Although the individual … plaintiffs are not substantial corporations or institutions, they are educated persons who were represented by counsel throughout,” she added.

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Jeff Saikaley, Gill’s lawyer, said neither he nor his client would comment as she is appealing both this week’s decision on costs, and the ruling in February that dismissed the lawsuit.

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Meanwhile, the doctor faces more legal trouble at Ontario’s College of Physicians and Surgeons. After cautioning Gill last year over some of her COVID statements, the regulator ordered her earlier this month to appear on similar charges before a discipline tribunal, a sort of trial where a guilty verdict could lead to revocation of her licence.

Dr. Terry Polevoy, a retired Waterloo, Ont., family physician and crusader against bogus health-care products and practices, said Wednesday he welcomed the cost ruling.

Unlike some of the defendants, Polevoy had to pay his lawyer out of pocket because he's no longer practising, with bills already coming to over $51,000.

"It's a lot of stress, a lot of pent-up frustration at the legal system," he said.

Another person familiar with the file, who asked not to be named because it's still before the courts, said it was not so much one suit as 23 different ones rolled into a single case, with separate allegations against each defendant.

"You have to mount a very serious defence," said the person. "While it's an unprecedented cost award, it's also an unprecedented lawsuit."

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The Canadian Medical Protective Association — which covers most professionally related legal costs for doctors — had initially refused to underwrite the expense of defending the suit for any of the physicians, but relented after an appeal to its board, said the source.

Gill filed her lawsuit in December 2020, accusing doctors, a former president of the Ontario Medical Association, university professors, media outlets and newspaper journalists of libelling her. Most of the remarks she singled out were comments on Twitter responding to her rejection of widely accepted science around COVID-19.

Among other things, Gill said a vaccine was not needed against the virus, that most people had natural immunity to COVID and there was no scientific rationale for keeping people at home to short-circuit its spread.

But the defendants filed an anti-SLAPP motion, a legal manoeuvre designed to put a stop early on to lawsuits that curb discussion in the public interest.

Justice Stewart ruled in their favour, saying that if the suit went ahead "its chilling effects would have an impact well beyond the parties to this case," deterring experts and the media from calling out potential misinformation. "Dr. Gill herself is the most obvious cause of damage to her reputation," the judge added.

STORY CONTINUES BELOW

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In her decision this week, she rejected the plaintiffs' arguments that the costs award was excessive because the various lawyers essentially duplicated each other's work. Every person named in the suit had to argue the case based on separate facts, and the issues were of "great importance" to them, said the judge.

Gill was originally represented by Rocco Galati, the firebrand Toronto lawyer who has called public-health measures to combat the virus a “vicious fraud” and protective face coverings “slave-trade masks.”

But against the wishes of clients Gill and Lamda, an Ontario judge allowed him to withdraw from the case in May, saying “he had a lengthy hospitalization and was in a coma, from which he is still recovering,” a court order posted by the CanuckLaw.ca blog indicates. In the meantime, Galati had made “superficial” submissions to the judge on the legal-costs issue without the consent of his clients, Saikaley said in a July letter to Stewart.

As the larger case rolls on, Gill is also suing University of Ottawa health law professor Amir Attaran for $7 million over Tweets in which he called her an idiot, among other comments.

Attaran said Wednesday he has also filed a SLAPP motion, but has been holding off to see if the doctor would settle the case. He said he wants her to apologize for suing and admit she was wrong about COVID, but so far Gill has declined to do so.

“She now has 1.1 million reasons to reconsider her position,” said Attaran. “We are prepared to go to court.”

(Nov. 4 – corrects spelling of Dr. Lamba’s name.)

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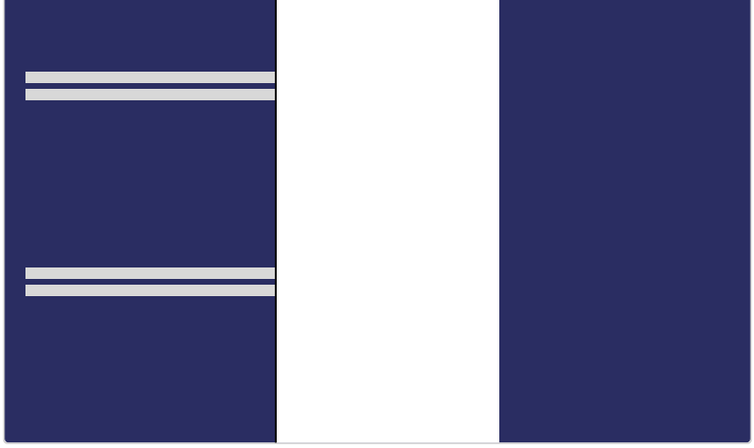

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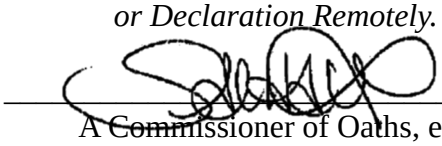

A Commissioner of Oaths, etc.

Amir Attaran (@AmirAttarar
@profamirattaran

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I think I know who's next for this: Kulvinder Kaur, another COVID disinfo doc who filed absurd lawsuits against the real experts. She's already lost and owes them $1.1 million in costs, but she keeps digging. See you in court, Doc.

Michelle Cohen, M @DocMCol · Apr 15, 2023

Two @cpso_ca investigations into doctors who promoted COVID disinfo recently concluded, with both doctors agreeing to resign their licences.

...
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10:30 PM · Apr 15, 2023 · **2,657** Views

Amir Attaran (@AmirAttarar
@profamirattaran

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Let’s just say I’ve only once been sued, and it’s by these two half-wits whose only notable feature is a losing streak of embarrassingly generous proportions.

10:41 PM · Apr 15, 2023 · **588** Views

This is **Exhibit « L »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Amir Attaran (@AmirAttaran@mstdn.social)
@profamirattaran

That anti-vax loser Dr Gill is still suing me, helped by Rocco “bad beyond argument” Galati.

See you in court, lady. 🔥

Rick Thomas @Rick7homas · Feb 16 ·

🔥⚖️💰 Heads up press release. Rocco Galati, lawyer for A4C and many others in the Freedom Movement is being sued for $600,000 by his former client, Dr. Ashvinder Kaur Lamba, for professional malpractice after he ditched her and left her hanging. Lamba and Kulvinder Gill were...
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11:58 AM · Feb 17, 2024 · **797** Views

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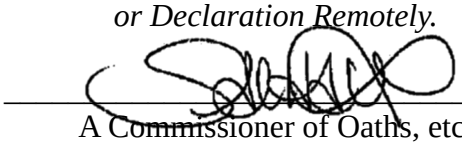

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Amir Attaran (@AmirAt @ · Aug 29, 2022 ···

Remember when I was sued by those anti-vax idiots Dr. Kulvinder Gill and her lawyer Rocco Galati?

Well, Galati abandoned her, and now Gill wants to drop the suit, but asks that I agree not to disparage her.

My answer: You're an ANTI-VAXXER and deserve disparagement only. 👆

7 29 193

justice and human values
@wicaks_kun

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Anti vaxxers shouldn't breed and shouldn't vote. They are cretinous scums of society that barely deserve human consideration.

4:43 PM · Aug 29, 2022

This is **Exhibit « N »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Amir Attaran (@AmirAt @ · Aug 29, 2022 ···

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Well, Galati abandoned her, and now Gill wants to drop the suit, but asks that I agree not to disparage her.

My answer: You're an ANTI-VAXXER and deserve disparagement only. 🖕

7 29 193

Amir Attaran (@AmirAt @ · Aug 29, 2022 ···

My goal: to make Galati and Gill regretful to the end of time.

No compromise with anti-vaxxers whose beliefs killed thousands, and who arrogantly tried to weaponize the law against ethical scientists.

...

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4 6 102

Dusti Rosem @DustyRose · Aug 29, 2022 ···

That sounds like a threat. You good with this @OttawaU ?

3 2

Amir Attaran (@AmirAttarar Follow ···

@profamirattaran

Oh yes, it is, I assure you. I will litigate this to the end and I NEVER give in to anti-vaxxer intimidation.

5:27 PM · Aug 29, 2022

Dusti Rosem @DustyRose · Aug 29, 20

You sound completely unhinged.

This is **Exhibit « O »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

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Law professor Amir Attaran files private criminal prosecution against Ford for removing mask while in quarantine

Elizabeth Payne

Published May 18, 2022 • 3 minute read

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Premier Doug Ford makes a funding announcement for the new Ottawa Hospital Civic campus, March 25, 2022. PHOTO BY JEAN LEVAC /Postmedia

An Ottawa law professor has filed a private criminal prosecution against Progressive Conservative leader Doug Ford for breaking federal quarantine law during a press conference at The Ottawa Hospital in March.

The private prosecution went before a justice of the peace in Ottawa Tuesday morning. She approved the charge after asking a series of questions and set a court date for September, said uOttawa professor Amir Attaran, who filed the private prosecution.

Ford, in his capacity as Ontario premier, was at the Civic campus of The Ottawa Hospital on March 25 to make a hospital-funding announcement. He took off his mask to speak at a microphone and defend his government's decision to end most mask mandates, among other things.

By doing so, Ford broke the law, according to Attaran and Jacob Shelley, who are health law professors at uOttawa and Western University, respectively.

Since the premier had met with officials in Washington D.C. on March 21, he was required to wear a mask whenever in a public place for 14 days after returning to Canada, according to an emergency order under the federal Quarantine Act.

Attaran noted that 5,000 Ontario residents were charged for violating quarantine laws during six months of 2021 alone. The law, he said, applies to everyone.

"There is a single law for the small and the big, the weak and the powerful and it is completely unacceptable that the most powerful man in Ontario thinks himself above the law," said Attaran Tuesday. "He will have to answer to justice for that."

Ford was not the only public official who publicly broke federal quarantine rules this year, according to Attaran and Shelley.

In an op-ed last month in the Citizen, they argued that Prime Minister Justin Trudeau and Ontario's Chief Medical Officer of Health Dr. Kieran Moore also failed to wear masks while in public during a period when they were required to under the Quarantine Act.

"As professors of health law, we have no doubt these three acted illegally," Attaran and Shelley wrote.

Trudeau, having travelled to Belgium on March 24, removed his mask while making a keynote speech at the GLOBE Forum 2022 in Vancouver on March 29, according to Attaran and Shelley.

And Moore, after vacationing in the Caribbean, spoke at a press conference without his mask. He later said he was more than six feet away from anyone else and put his mask back on immediately after the press conference. He also noted that the press conference was not a public setting.

Attaran said complaints about the actions were filed with police in Ottawa, Toronto and Vancouver. He received responses from police in Vancouver and Toronto, but not in Ottawa. He said he filed the private prosecution against Ford because the alleged offence took place in Ottawa and he was able to do so in person.

STORY CONTINUES BELOW

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Attaran said police in both Vancouver and Toronto had jurisdictional issues with the complaints — meaning they thought he should go to another agency.

Private criminal prosecutions are rare but not unheard of. The Crown attorney's office has the discretion to stay such charges if they feel they are not warranted. Attaran said he would find such action "flagrantly wrong."

"This is serious on so many levels," wrote Attaran and Shelley in their op-ed. "When (topmost officials) break the law, why should anyone else obey?"

A spokesperson for Ford declined to comment.

Earlier this year, Attaran gained access to Moderna COVID-19 vaccine for his children after filing a human rights complaint against Ottawa Public Health which had initially only offered Pfizer doses to children. Moderna, which is approved by Health Canada, has since been made available to children 6-11 in Ontario, on the informed consent of their parents. Pfizer is still considered the preferred vaccine for children in that age group.

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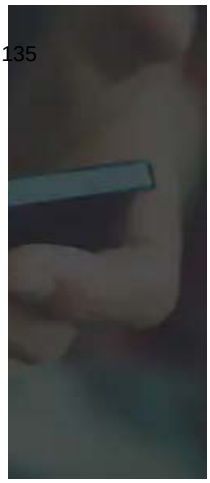

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'Expensive brunette' is one of the top hair trends of 2024

Encompassing a wide array of brunette shades — from warm hazelnut to deep, dark chocolate — the underlying emphasis of the trend is a high-gloss finish and overall hair health.

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A Commissioner of Oaths, etc.

Kulvinder Kaur MD @dockaurG · Sep 2, 2020

NYT finally acknowledging some facts, while 🇨🇦 media continues fear-mongering

"Up to 90% of people testing #COVID19+ carried barely any virus" b/c PCR tests too sensitive & "detect.. genetic fragments—leftovers from infection that pose no particular risk"
nytimes.com/2020/08/29/hea...

58 951 1.4K

Kulvinder Kaur MD
@dockaurG

2/First NYT, now BBC also acknowledging some facts.
🇨🇦media continues fear-mongering

PCR "test to diagnose #COVID19 is so sensitive it could be picking up fragments of dead virus from old infections.. leading to over-estimate of current scale of pandemic"
bbc.com/news/health-54...

8:02 AM · Sep 5, 2020

This is **Exhibit « Q »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

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Your Ontario Doctors
@OnCall4ON

British Medical Assoc Journal

#COVID19: Problems With Case Counting & Asymptomatic Testing

shorturl.at/eIST2

“We’re moving into biotech world—norms of clinical reasoning going out of window. PCR test does not equal COVID19—it should not but in some definitions it does”

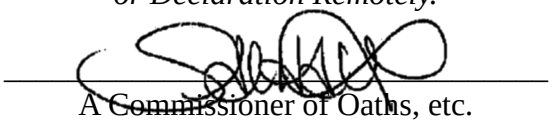
Covid-19: the problems with case counting
bmj.com

Doug Ford and 8 others

https://www.bbc.com/news/health-54000629

8:35 AM · Sep 7, 2020

This is **Exhibit « R »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



A Commissioner of Oaths, etc.

Kulvinder Kaur MD
@dockaurG

"PCR test does not equal #COVID19.. As soon as we see an outbreak—tends to be panic & over-reacting. This is a huge problem b/c politicians are operating in a non-evidence-based way."
—Dr @carlheneghan, Oxford Univ Prof, Dir of Centre for Evidence Based Medicine & @BMJ_EBM Editor

> **Your Ontario Doctors** @OnCall4ON · Sep 7, 2020
> British Medical Assoc Journal
>
> #COVID19: Problems With Case Counting & Asymptomatic Testing
>
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Covid-19: the problems with case counting
bmj.com

10:03 AM · Sep 7, 2020

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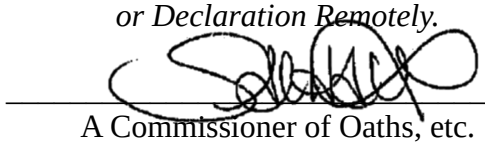

A Commissioner of Oaths, etc.

Kulvinder Kaur MD
@dockaurG

Oxford Prof @carlheneghan, Dir @CebmOxford & Editor @BMJ_EBM, & Dr Jefferson @CebmOxford warn:
non-infectious, inactive virus particles can lead to positive #COVID19 PCR tests

Meaningless PCR “cases” can then lead to lockdowns/harm for groups of ppl who don’t pose infection risk

> **Your Ontario Doctors** @OnCall4ON · Sep 15, 2020
> “Harms of ‘cases’ from
> false-positive PCR tests..substantial
> -operations delayed/cancelled
> -patients kept in hospital
> -further testing...
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SPECTATOR.CO.UK
Could mass testing for Covid-19 do more harm than good? | The Spectator

8:48 PM · Sep 15, 2020

This is **Exhibit « T »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

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Your Ontario Doctors
@OnCall4ON

"Harms of 'cases' from
false-positive PCR tests..substantial
-operations delayed/cancelled
-patients kept in hospital
-further testing
-it can drive local lockdowns"

▶ shorturl.at/guvG3

—Oxford Prof @carlheneghan, Dir @CebmOxford, @BMJ_EBM Editor
—Dr Jefferson @CebmOxford

SPECTATOR.CO.UK

Could mass testing for Covid-19 do more harm than good? | The Spectator

Doug Ford and 8 others

7:32 PM · Sep 15, 2020

https://www.spectator.co.uk/article/could-mass-testing-for-covid-19-do-more-harm-than-good/

This is **Exhibit « U »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

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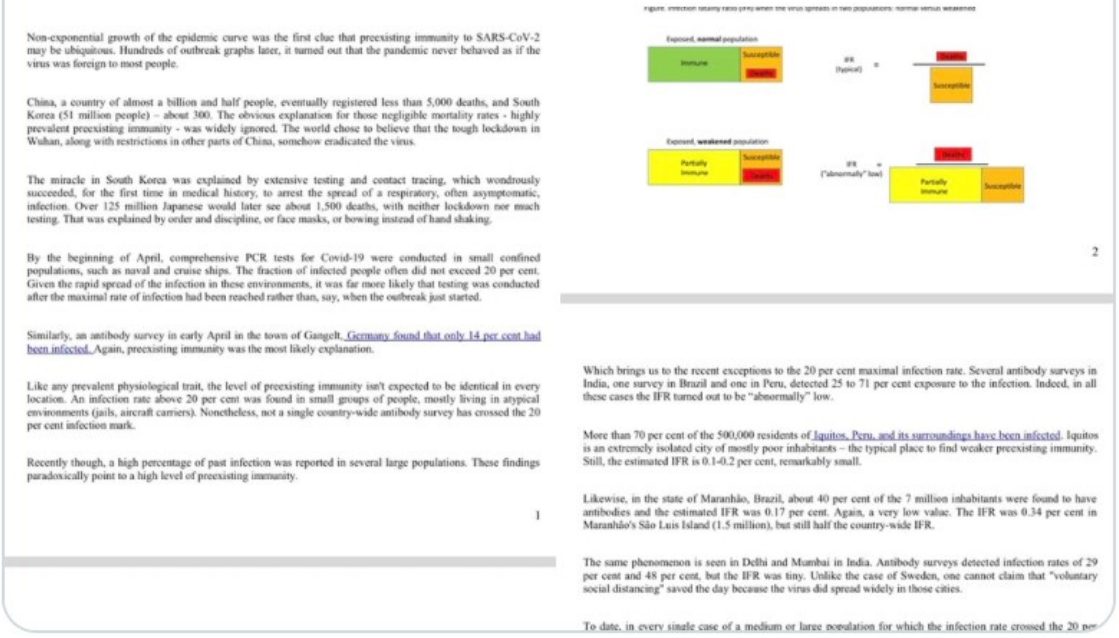
Kulvinder Kaur MD @dockaurG · Sep 18, 2020

T-cells are the unsung heroes of the #COVID19 pandemic

Brilliant piece by Professors @UdiQimron @prof_shahar @MLevitt_NP2013 et al

“Panic aside, if most immune systems can recognize #SARSCoV2, it makes no sense for any govt to treat or model the virus as a new infection” 1/...

> **Michael Levitt** @MLevitt_NP2013 · Sep 18, 2020
>
> This is a very important Opinion Piece. One by one the pieces fall into place as the puzzle that is COVID19 slowly moves towards its solution.
>
> Uri Gavish, @prof_shahar, Ifat Korek-Abadi & @UdiQimron comprise an amazing team of super-smart, brave Israeli scientists. ...
> Show more



Non-exponential growth of the epidemic curve was the first clue that preexisting immunity to SARS-CoV-2 may be ubiquitous. Hundreds of outbreak graphs later, it turned out that the pandemic never behaved as if the virus was foreign to most people.

China, a country of almost a billion and half people, eventually registered less than 5,000 deaths, and South Korea (51 million people) – about 300. The obvious explanation for those negligible mortality rates - highly prevalent preexisting immunity - was widely ignored. The world chose to believe that the tough lockdown in Wuhan, along with restrictions in other parts of China, somehow eradicated the virus.

The miracle in South Korea was explained by extensive testing and contact tracing, which wondrously succeeded, for the first time in medical history, to arrest the spread of a respiratory, often asymptomatic, infection. Over 125 million Japanese would later see about 1,500 deaths, with neither lockdown nor much testing. That was explained by order and discipline, or face masks, or bowing instead of hand shaking.

By the beginning of April, comprehensive PCR tests for Covid-19 were conducted in small confined populations, such as naval and cruise ships. The fraction of infected people often did not exceed 20 per cent. Given the rapid spread of the infection in these environments, it was far more likely that testing was conducted after the maximal rate of infection had been reached rather than, say, when the outbreak just started.

Similarly, an antibody survey in early April in the town of Gangelt, Germany found that only 14 per cent had been infected. Again, preexisting immunity was the most likely explanation.

Like any prevalent physiological trait, the level of preexisting immunity isn't expected to be identical in every location. An infection rate above 20 per cent was found in small groups of people, mostly living in atypical environments (jails, aircraft carriers). Nonetheless, not a single country-wide antibody survey has crossed the 20 per cent infection mark.

Recently though, a high percentage of past infection was reported in several large populations. These findings paradoxically point to a high level of preexisting immunity.

1

Figure. Infection fatality ratio (IFR) when the virus spreads in two populations: normal versus weakened

Exposed, **normal** population

Immune | Susceptible | Deaths

IFR (typical) =

Deaths / Susceptible

Exposed, **weakened** population

Partially Immune | Susceptible | Deaths

IFR ("abnormally" low) =

Deaths / Partially Immune | Susceptible

2

Which brings us to the recent exceptions to the 20 per cent maximal infection rate. Several antibody surveys in India, one survey in Brazil and one in Peru, detected 25 to 71 per cent exposure to the infection. Indeed, in all these cases the IFR turned out to be “abnormally” low.

More than 70 per cent of the 500,000 residents of Iquitos, Peru, and its surroundings have been infected. Iquitos is an extremely isolated city of mostly poor inhabitants – the typical place to find weaker preexisting immunity. Still, the estimated IFR is 0.1-0.2 per cent, remarkably small.

Likewise, in the state of Maranhão, Brazil, about 40 per cent of the 7 million inhabitants were found to have antibodies and the estimated IFR was 0.17 per cent. Again, a very low value. The IFR was 0.34 per cent in Maranhão's São Luis Island (1.5 million), but still half the country-wide IFR.

The same phenomenon is seen in Delhi and Mumbai in India. Antibody surveys detected infection rates of 29 per cent and 48 per cent, but the IFR was tiny. Unlike the case of Sweden, one cannot claim that “voluntary social distancing” saved the day because the virus did spread widely in those cities.

To date, in every single case of a medium or large population for which the infection rate crossed the 20 per

16 267 412

Kulvinder Kaur MD
@dockaurG

2/“Any rational govt should urgently invest effort in conducting surveys of cross immunity & other types of pre-existing cellular immunity, which cost next-to-nothing compared to $ spent on PCR testing, contact tracing & lockdowns. Continued self-destruction is a bad alternative”

5:09 PM · Sep 18, 2020

https://www.telegraph.co.uk/politics/2020/09/17/stop-continued-self-destruction-test-covid-immunity/

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Kulvinder Kaur MD
@dockaurG

.@BonnieCrombie @patrickbrownont @Caledon_Mayor Meaningless "cases" based on deeply flawed test—high PCR cycle threshold w/out clinical evaluation: known to result in up to 90% false+

"Case" does NOT equal infection. Now these healthy ppl will be confined in "isolation centres"?

> **Your Ontario Doctors** @OnCall4ON · Sep 18, 2020
> "When you are picking up asymptomatic people, you have no idea if they have active #SARSCoV2 infection or if they had it 2mths ago" b/c PCR test being "deployed in a sort of rag bag way" w/ PCR cycle threshold >25
>
> —Oxford Prof @carlheneghan, @CebmOxford Director, @BMJ_EBM Editor

11:53 AM · Nov 10, 2020

https://x.com/OnCall4ON/status/1307145292177985541

This is **Exhibit « W »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

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"Real-time PCR-based #SARSCoV2 detection in Canadian laboratories" in Journal of Clinical Virology

Public Health Agency of 🇨🇦's NML & key provincial PH/Hospital Labs

PCR cycle threshold (Ct) across Canada: 33-45

False positives known to ⏫
with Ct>25

▶ncbi.nlm.nih.gov/pmc/articles/P...

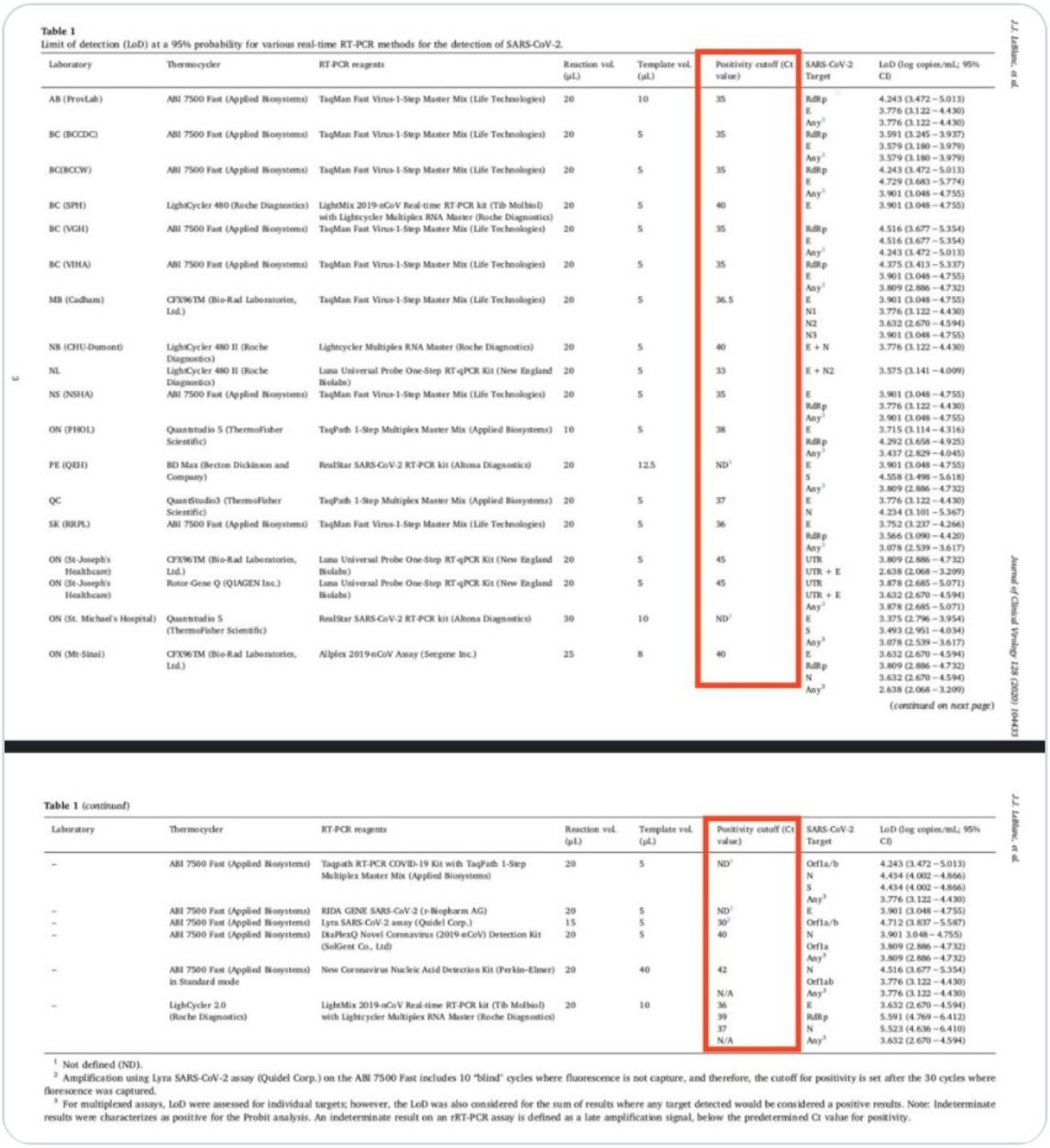


Table 1
Limit of detection (LoD) at a 95% probability for various real-time RT-PCR methods for the detection of SARS-CoV-2.

Laboratory	Thermocycler	RT-PCR reagents	Reaction vol. (µL)	Template vol. (µL)	Positivity cutoff (Ct value)	SARS-CoV-2 Target	LoD (log copies/mL; 95% CI)
AB (ProvLab)	ABI 7500 Fast (Applied Biosystems)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	10	35	RdRp	4.243 (3.472 – 5.013)
						E	3.776 (3.122 – 4.430)
						Any[3]	3.776 (3.122 – 4.430)
BC (BCCDC)	ABI 7500 Fast (Applied Biosystems)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	5	35	RdRp	3.591 (3.245 – 3.937)
						E	3.579 (3.180 – 3.979)
						Any[3]	3.579 (3.180 – 3.979)
BC(BCCW)	ABI 7500 Fast (Applied Biosystems)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	5	35	RdRp	4.243 (3.472 – 5.013)
						E	4.729 (3.683 – 5.774)
						Any[3]	3.901 (3.048 – 4.755)
BC (SPH)	LightCycler 480 (Roche Diagnostics)	LightMix 2019-nCoV Real-time RT-PCR kit (Tib Molbiol) with Lightcycler Multiplex RNA Master (Roche Diagnostics)	20	5	40	E	3.901 (3.048 – 4.755)
BC (VGH)	ABI 7500 Fast (Applied Biosystems)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	5	35	RdRp	4.516 (3.677 – 5.354)
						E	4.516 (3.677 – 5.354)
						Any[3]	4.243 (3.472 – 5.013)
BC (VIHA)	ABI 7500 Fast (Applied Biosystems)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	5	35	RdRp	4.375 (3.413 – 5.337)
						E	3.901 (3.048 – 4.755)
						Any[3]	3.809 (2.886 – 4.732)
MB (Cadham)	CFX96TM (Bio-Rad Laboratories, Ltd.)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	5	36.5	E	3.901 (3.048 – 4.755)
						N1	3.776 (3.122 – 4.430)
						N2	3.632 (2.670 – 4.594)
						N3	3.901 (3.048 – 4.755)
NB (CHU-Dumont)	LightCycler 480 II (Roche Diagnostics)	Lightcycler Multiplex RNA Master (Roche Diagnostics)	20	5	40	E + N	3.776 (3.122 – 4.430)
NL	LightCycler 480 II (Roche Diagnostics)	Luna Universal Probe One-Step RT-qPCR Kit (New England Biolabs)	20	5	33	E + N2	3.575 (3.141 – 4.009)
NS (NSHA)	ABI 7500 Fast (Applied Biosystems)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	5	35	E	3.901 (3.048 – 4.755)
						RdRp	3.776 (3.122 – 4.430)
						Any[3]	3.901 (3.048 – 4.755)
ON (PHOL)	Quantstudio 5 (ThermoFisher Scientific)	TaqPath 1-Step Multiplex Master Mix (Applied Biosystems)	10	5	38	E	3.715 (3.114 – 4.316)
						RdRp	4.292 (3.658 – 4.925)
						Any[3]	3.437 (2.829 – 4.045)
PE (QEH)	BD Max (Becton Dickinson and Company)	RealStar SARS-CoV-2 RT-PCR kit (Altona Diagnostics)	20	12.5	ND[1]	E	3.901 (3.048 – 4.755)
						S	4.558 (3.498 – 5.618)
						Any[3]	3.809 (2.886 – 4.732)
QC	QuantStudio3 (ThermoFisher Scientific)	TaqPath 1-Step Multiplex Master Mix (Applied Biosystems)	20	5	37	E	3.776 (3.122 – 4.430)
						N	4.234 (3.101 – 5.367)
SK (RRPL)	ABI 7500 Fast (Applied Biosystems)	TaqMan Fast Virus-1-Step Master Mix (Life Technologies)	20	5	36	E	3.752 (3.237 – 4.266)
						RdRp	3.566 (3.090 – 4.420)
						Any[3]	3.078 (2.539 – 3.617)
ON (St-Joseph's Healthcare)	CFX96TM (Bio-Rad Laboratories, Ltd.)	Luna Universal Probe One-Step RT-qPCR Kit (New England Biolabs)	20	5	45	UTR	3.809 (2.886 – 4.732)
ON (St-Joseph's Healthcare)	Rotor-Gene Q (QIAGEN Inc.)	Luna Universal Probe One-Step RT-qPCR Kit (New England Biolabs)	20	5	45	UTR + E	2.638 (2.068 – 3.209)
						UTR	3.878 (2.685 – 5.071)
						UTR + E	3.632 (2.670 – 4.594)
						Any[3]	3.878 (2.685 – 5.071)
ON (St. Michael's Hospital)	Quantstudio 5 (ThermoFisher Scientific)	RealStar SARS-CoV-2 RT-PCR kit (Altona Diagnostics)	30	10	ND[1]	E	3.375 (2.796 – 3.954)
						S	3.493 (2.951 – 4.034)
						Any[3]	3.078 (2.539 – 3.617)
ON (Mt-Sinai)	CFX96TM (Bio-Rad Laboratories, Ltd.)	Allplex 2019-nCoV Assay (Seegene Inc.)	25	8	40	E	3.632 (2.670 – 4.594)
						RdRp	3.809 (2.886 – 4.732)
						N	3.632 (2.670 – 4.594)
						Any[3]	2.638 (2.068 – 3.209)

(continued on next page)

Table 1 (continued)

Laboratory	Thermocycler	RT-PCR reagents	Reaction vol. (µL)	Template vol. (µL)	Positivity cutoff (Ct value)	SARS-CoV-2 Target	LoD (log copies/mL; 95% CI)
–	ABI 7500 Fast (Applied Biosystems)	Taqpath RT-PCR COVID-19 Kit with TaqPath 1-Step Multiplex Master Mix (Applied Biosystems)	20	5	ND[1]	Orf1a/b	4.243 (3.472 – 5.013)
						N	4.434 (4.002 – 4.866)
						S	4.434 (4.002 – 4.866)
						Any[3]	3.776 (3.122 – 4.430)
–	ABI 7500 Fast (Applied Biosystems)	RIDA GENE SARS-CoV-2 (r-Biopharm AG)	20	5	ND[1]	E	3.901 (3.048 – 4.755)
–	ABI 7500 Fast (Applied Biosystems)	Lyra SARS-CoV-2 assay (Quidel Corp.)	15	5	30[2]	Orf1a/b	4.712 (3.837 – 5.587)
–	ABI 7500 Fast (Applied Biosystems)	DiaPlexQ Novel Coronavirus (2019-nCoV) Detection Kit (SolGent Co., Ltd)	20	5	40	N	3.901 3.048 – 4.755)
						Orf1a	3.809 (2.886 – 4.732)
						Any[3]	3.809 (2.886 – 4.732)
–	ABI 7500 Fast (Applied Biosystems) in Standard mode	New Coronavirus Nucleic Acid Detection Kit (Perkin–Elmer)	20	40	42	N	4.516 (3.677 – 5.354)
						Orf1ab	3.776 (3.122 – 4.430)
					N/A	Any[3]	3.776 (3.122 – 4.430)
–	LighCycler 2.0 (Roche Diagnostics)	LightMix 2019-nCoV Real-time RT-PCR kit (Tib Molbiol) with Lightcycler Multiplex RNA Master (Roche Diagnostics)	20	10	36	E	3.632 (2.670 – 4.594)
					39	RdRp	5.591 (4.769 – 6.412)
					37	N	5.523 (4.636 – 6.410)
					N/A	Any[3]	3.632 (2.670 – 4.594)

[1] Not defined (ND).
[2] Amplification using Lyra SARS-CoV-2 assay (Quidel Corp.) on the ABI 7500 Fast includes 10 "blind" cycles where fluorescence is not capture, and therefore, the cutoff for positivity is set after the 30 cycles where floresence was captured.
[3] For multiplexed assays, LoD were assessed for individual targets; however, the LoD was also considered for the sum of results where any target detected would be considered a positive results. Note: Indeterminate results were characterizes as positive for the Probit analysis. An indeterminate result on an rRT-PCR assay is defined as a late amplification signal, below the predetermined Ct value for positivity.

Doug Ford and 8 others

6:07 AM · Sep 19, 2020

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7219382/pdf/main.pdf

This is **Exhibit « X »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

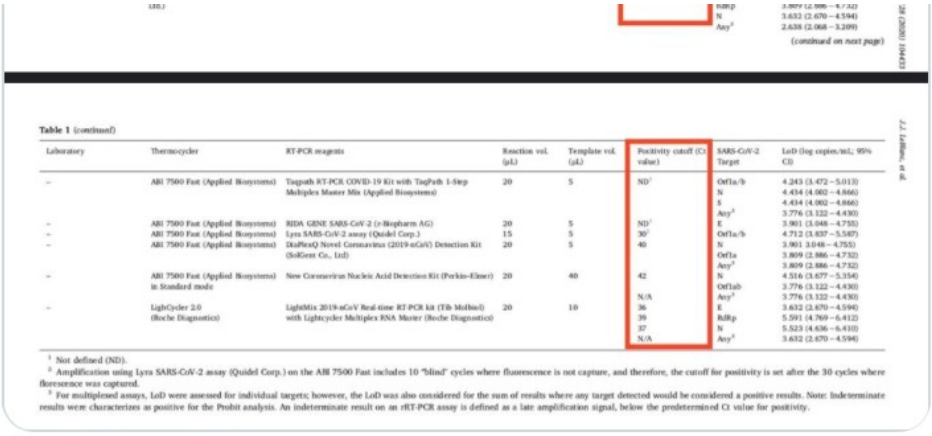


Table 1 (continued)

Laboratory	Thermocycler	RT-PCR reagents	Reaction vol. (µL)	Template vol. (µL)	Positivity cutoff (Ct value)	SARS-CoV-2 Target	LoD (log copies/mL; 95% CI)
–	ABI 7500 Fast (Applied Biosystems)	Taqpath RT-PCR COVID-19 Kit with TaqPath 1-Step Multiplex Master Mix (Applied Biosystems)	20	5	ND[1]	Orf1a/b	4.243 (3.472 – 5.013)
						N	4.434 (4.002 – 4.866)
						S	4.434 (4.002 – 4.866)
						Any[2]	3.776 (3.122 – 4.430)
–	ABI 7500 Fast (Applied Biosystems)	RIDA GENE SARS-CoV-2 (r-Biopharm AG)	20	5	ND[1]	E	3.901 (3.048 – 4.755)
–	ABI 7500 Fast (Applied Biosystems)	Lyra SARS-CoV-2 assay (Quidel Corp.)	15	5	30[1]	Orf1a/b	4.712 (3.837 – 5.587)
–	ABI 7500 Fast (Applied Biosystems)	DiaPlexQ Novel Coronavirus (2019-nCoV) Detection Kit (SolGent Co., Ltd)	20	5	40	N	3.901 3.048 – 4.755)
						Orf1a	3.809 (2.886 – 4.732)
						Any[2]	3.809 (2.886 – 4.732)
–	ABI 7500 Fast (Applied Biosystems) in Standard mode	New Coronavirus Nucleic Acid Detection Kit (Perkin-Elmer)	20	40	42	N	4.516 (3.677 – 5.354)
						Orf1ab	3.776 (3.122 – 4.430)
					N/A	Any[2]	3.776 (3.122 – 4.430)
–	LightCycler 2.0 (Roche Diagnostics)	LightMix 2019-nCoV Real-time RT-PCR kit (Tib Molbiol) with Lightcycler Multiplex RNA Master (Roche Diagnostics)	20	10	36	E	3.632 (2.670 – 4.594)
					39	RdRp	5.591 (4.769 – 6.412)
					37	N	5.523 (4.636 – 6.410)
					N/A	Any[2]	3.632 (2.670 – 4.594)

[1] Not defined (ND).
[2] Amplification using Lyra SARS-CoV-2 assay (Quidel Corp.) on the ABI 7500 Fast includes 10 "blind" cycles where fluorescence is not capture, and therefore, the cutoff for positivity is set after the 30 cycles where florescence was captured.
[3] For multiplexed assays, LoD were assessed for individual targets; however, the LoD was also considered for the sum of results where any target detected would be considered a positive results. Note: Indeterminate results were characterizes as positive for the Probit analysis. An indeterminate result on an rRT-PCR assay is defined as a late amplification signal, below the predetermined Ct value for positivity.

Doug Ford and 8 others

38 338 333

Your Ontario Doctors
@OnCall4ON

2/ 🚨13d after above May publication, PH Agency of 🇨🇦's NML published

"Predicting Infectious #SARSCoV2 From Diagnostic Samples" in Journal of CID

"SARSCoV2 cell infectivity only observed for RT-PCR Ct<24 & STT<8days"

▶ academic.oup.com/cid/advance-ar...

WHY didn't 🇨🇦 Labs adjust PCR Ct?

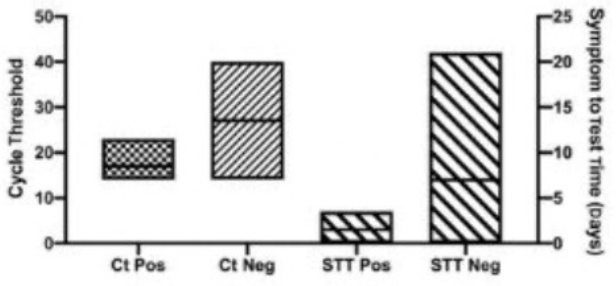


Figure 2. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) E gene reverse-transcription polymerase chain reaction cycle threshold (Ct) values and symptom to test time (STT) in samples that were culture positive or negative. Positive SARS-CoV-2 culture samples had a significantly lower Ct compared with culture-negative samples (17 [interquartile range {IQR}, 16–18] vs 27 [IQR, 22–33]; $P < .001$). STT was also significantly lower in culture-positive vs culture-negative samples (3 [IQR, 2–4] days vs 7 [IQR, 4–11] days; $P < .001$).

Patty Hajdu and 8 others

8:23 AM · Sep 19, 2020

This is **Exhibit « Y »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Your Ontario Doctors
@OnCall4ON

How Many COVID19 Diagnoses Are False+?

shorturl.at/rBP68

“Understanding accuracy of tests in popn..matters—going off current (inaccurate) testing practices/results, #COVID19 might never be shown to disappear”

—Oxford Prof @carlheneghan, Dir @CebmOxford, @BMJ_EBM Editor

SPECTATOR.CO.UK

How many Covid diagnoses are false positives? | The Spectator

Doug Ford and 8 others

9:44 AM · Sep 19, 2020

https://www.spectator.co.uk/article/how-many-covid-diagnoses-are-false-positives/

This is **Exhibit « Z »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Kulvinder Kaur MD
@dockaurG

Must Read by Univ of Oxford Professor @carlheneghan: physician, epidemiologist, Director of Oxford Centre for Evidence-Based Medicine & Editor-in-Chief of British Medical Journal's Evidence-Based Medicine

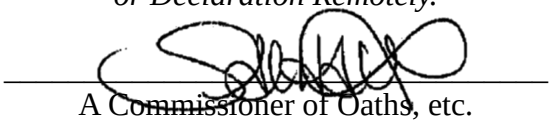
D/t deep flaws of PCR testing:
"COVID19 might never be shown to disappear"

> **Your Ontario Doctors** @OnCall4ON · Sep 19, 2020
> How Many COVID19 Diagnoses Are False+?
>
> ▶ shorturl.at/rBP68
>
> "Understanding accuracy of tests in popn..matters—going off current ...
> Show more

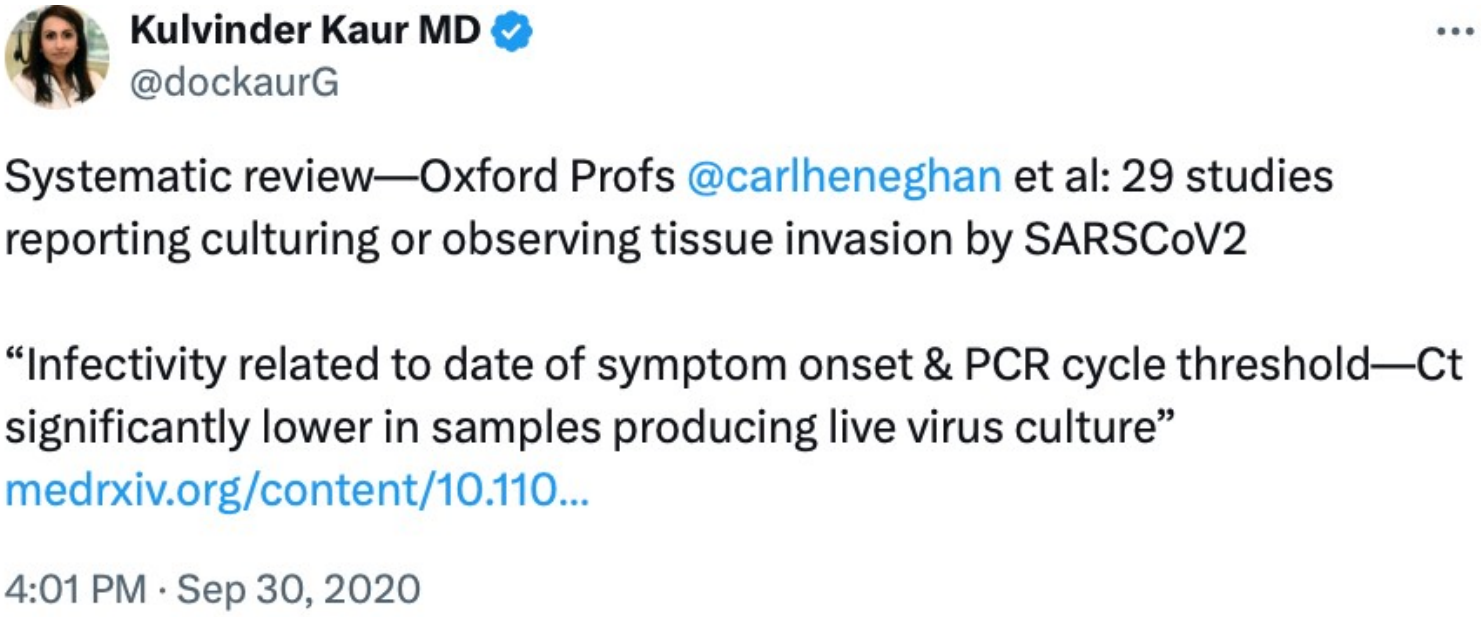
SPECTATOR.CO.UK
How many Covid diagnoses are false positives? | The Spectator

9:19 PM · Sep 20, 2020

This is **Exhibit « AA »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

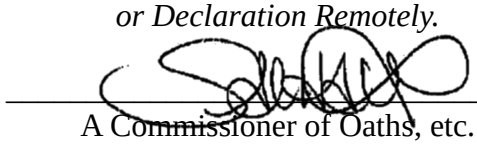


A Commissioner of Oaths, etc.



(Note: the above is now peer-reviewed and published in Clinical Infectious Diseases: https://academic.oup.com/cid/article/73/11/e3884/6018217)

This is **Exhibit « BB »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

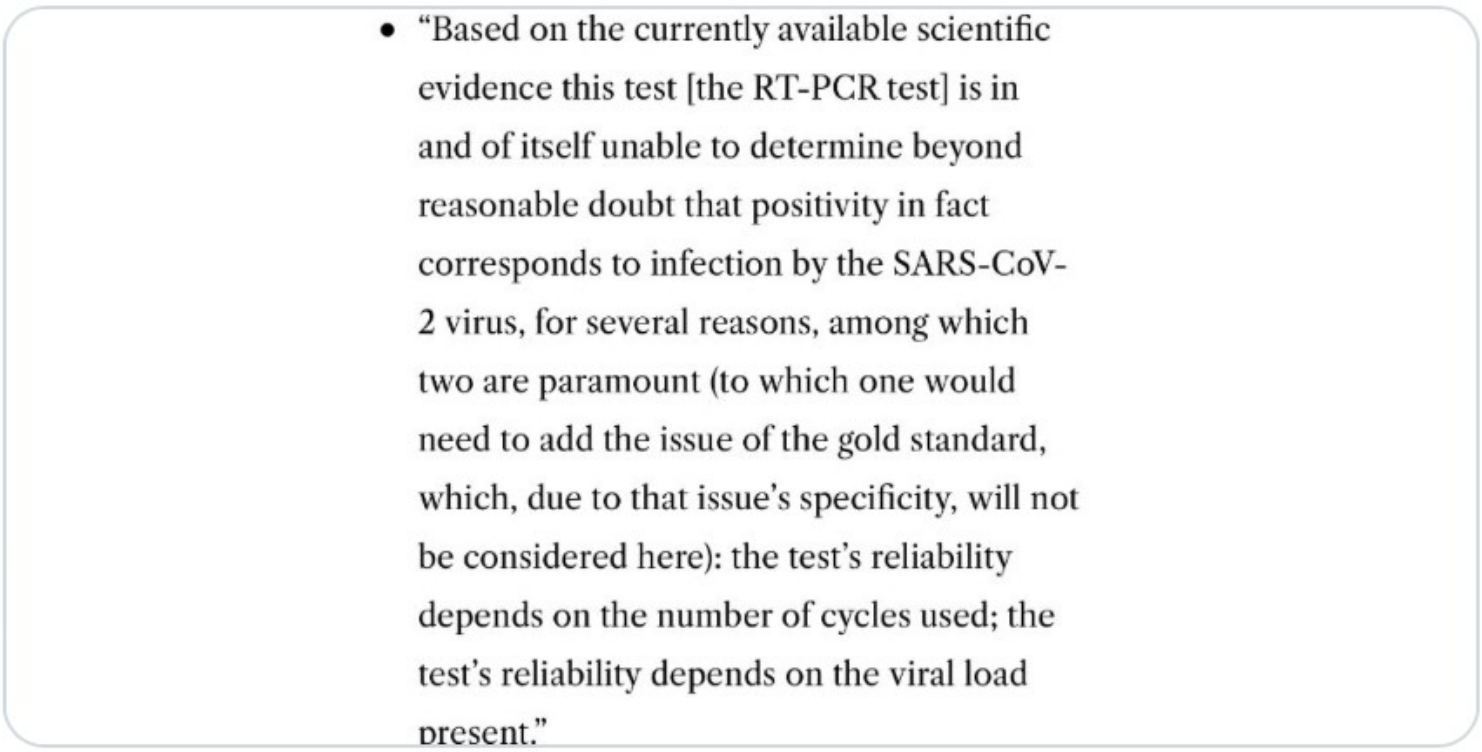


A Commissioner of Oaths, etc.

Kulvinder Kaur MD
@dockaurG

Another big win for the People & warning for all Western govts grossly abusing their powers without any scientific evidence

"Portuguese Appeals Court Deems PCR tests unreliable" & deemed the forced confinement of people in quarantine centres "unlawful"
lockdownsceptics.org/2020/11/16/lat...



- "Based on the currently available scientific evidence this test [the RT-PCR test] is in and of itself unable to determine beyond reasonable doubt that positivity in fact corresponds to infection by the SARS-CoV-2 virus, for several reasons, among which two are paramount (to which one would need to add the issue of the gold standard, which, due to that issue's specificity, will not be considered here): the test's reliability depends on the number of cycles used; the test's reliability depends on the viral load present."

3:59 PM · Nov 16, 2020

https://dailysceptic.org/2020/11/16/latest-news-195/

This is **Exhibit « CC »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

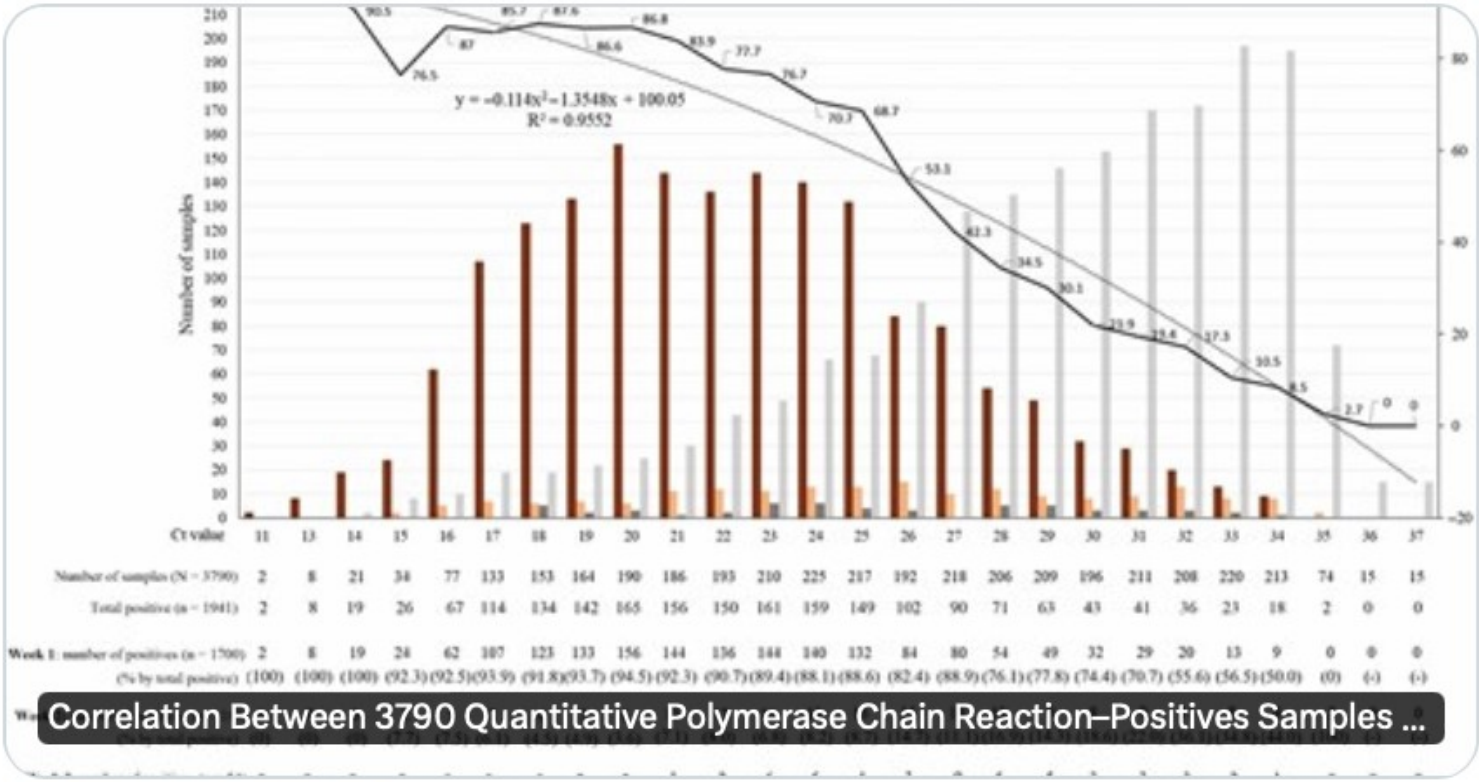
A Commissioner of Oaths, etc.

Kulvinder Kaur MD
@dockaurG

French peer-reviewed SARSCoV2 study—Clinical Infectious Diseases

“At PCR Ct=25, up to 70% of pts remain positive in culture, at Ct=30 this value drops to 20%. At Ct=35, <3% of viral cultures are positive”

Ontario Ct 38-45
“Cases” don’t equal infections



From academic.oup.com

10:31 PM · Nov 21, 2020

https://academic.oup.com/cid/article/72/11/e921/5912603

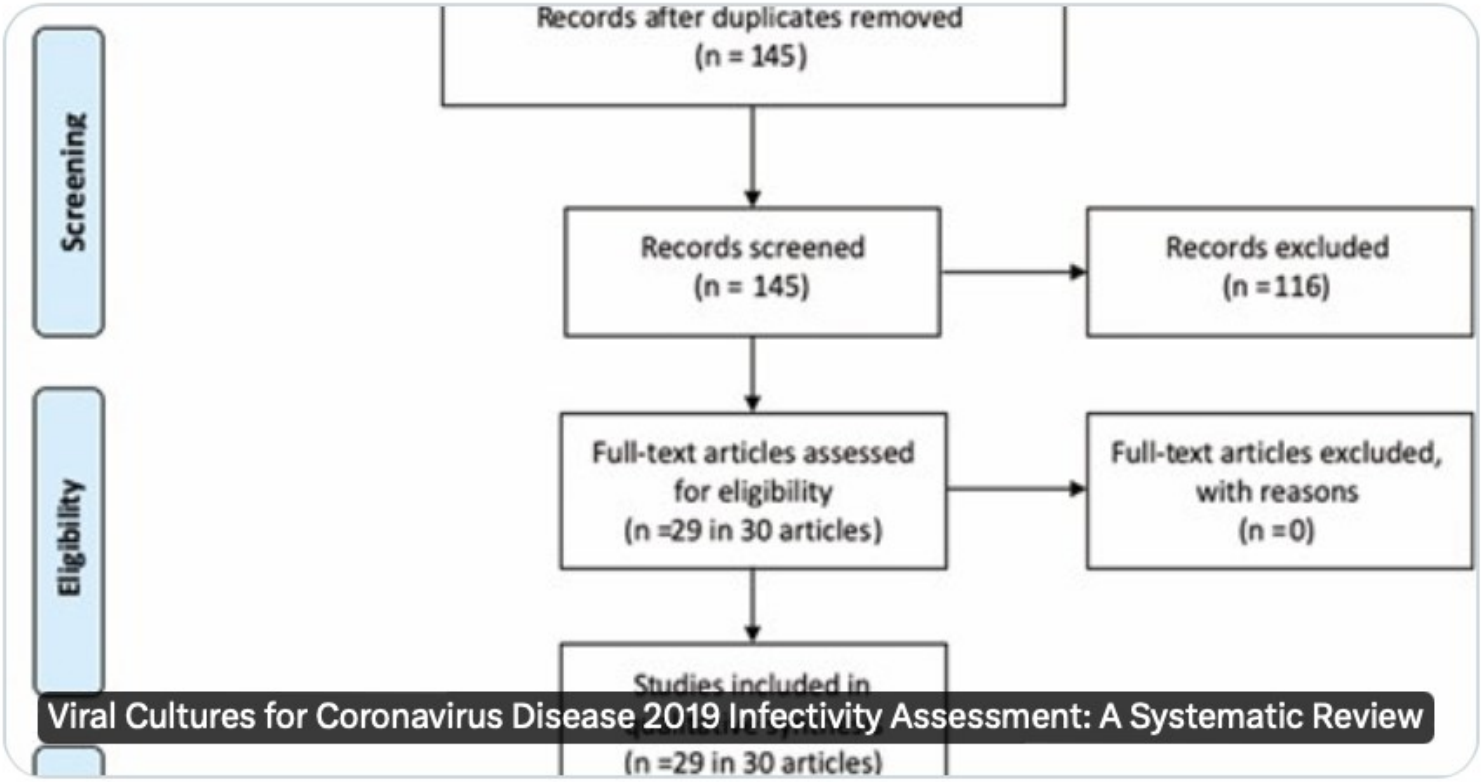
This is **Exhibit « DD »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Kulvinder Kaur MD
@dockaurG

Peer-reviewed: “Viral cultures for Covid-19 infectious potential assessment—systematic review”

“Complete live viruses are necessary for transmission, not fragments identified by PCR. Those with high cycle threshold unlikely to have infectious potential”

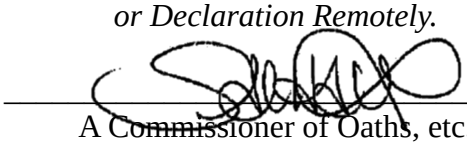


From academic.oup.com

1:08 PM · Dec 3, 2020

https://academic.oup.com/cid/article/73/11/e3884/6018217

This is **Exhibit « EE »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



A Commissioner of Oaths, etc.

Kulvinder Kaur MD @dockaurG · Dec 16, 2020

🚩On Dec 14, 2020, even the political WHO issued a public warning re "elevated risk for false SARSCoV2 results" with PCR tests used for detection of SARSCoV2. The WHO recommended "manually" adjusting "high Ct values" and providing "Ct value in the report".
who.int/news/item/14-1...

88 900 1.4K

Kulvinder Kaur MD
@dockaurG

🚩Today, political WHO released new Covid-19 testing guidance for detection of SARSCoV2

WHO now admits that PCR+ "case" alone doesn't equal infection

"PCR cycle threshold (Ct) needed to detect virus is inversely proportional to the patient's viral load"

who.int/news/item/20-0...

5:48 PM · Jan 20, 2021

This is **Exhibit « FF »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Kulvinder Kaur MD @dockaurG · Jan 19, 2021

Pre-print by Netherlands' Public Health et al: "First study to evaluate SARSCoV2 viral load distributions—clear relation btwn age & SARSCoV2 viral load, esp children <12yo showing lower viral loads than adults (p<0.001), indep of sex & symptom duration"

medrxiv.org/content/10.110...

8 78 160

Kulvinder Kaur MD
@dockaurG

2/ "Suggesting approximately 16 times difference in viral load (btwn children & adults)... While viral cultures are mostly positive in samples with high viral load (PCR Ct <27), samples with a low viral load hardly show any potential for viral cultivation (<3% at PCR Ct 35)..."

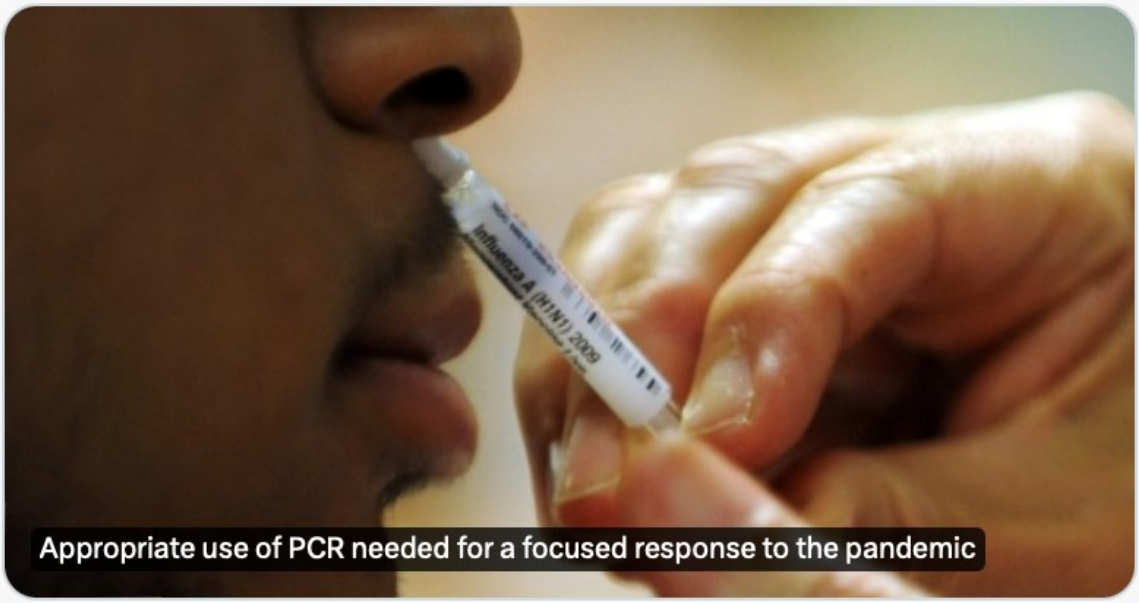
7:08 PM · Jan 19, 2021

This is **Exhibit « GG »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

Kulvinder Kaur MD @dockaurG · Feb 2, 2021

"Jan13 2021—WHO issued little-noticed report—calls into ques many of policies adopted to control spread of SARSCoV2. +PCR test doesn't necessarily mean someone has capacity of infecting someone else w/virus"
—Stanford Prof Bhattacharya
—Duke Prof Nicholson



From thehill.com

13 301 508

Kulvinder Kaur MD @dockaurG · Feb 2, 2021

2/ "Among Covid+ PCR 'cases' with a cycle count >35 (a common lab occurrence)—only 3% of samples showed viral replication. Simply put—cycle number next to the test is assoc with chances of infectiousness & should be available to patient/public. WHO now explicitly recommends this"

2 105 264

Kulvinder Kaur MD
@dockaurG

3/ "And since the falsely identified 'case' is not actually infectious, there is no corresponding benefit in slowing disease spread by a forced quarantine period for person & their contacts.. Other states should emulate Florida in requiring laboratories to report PCR cycle times"

8:13 AM · Feb 2, 2021

This is **Exhibit « HH »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

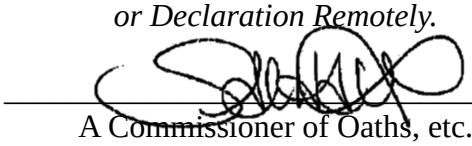
A Commissioner of Oaths, etc.

Kulvinder Kaur MD
@dockaurG

Peer-reviewed in Lancet
“Testing to help slow spread of SARSCoV2.. is a net loss to health, social &economic wellbeing of comm if post-infectious ppl test+ &isolate.. PCR testing is not the approp gold standard for evaluating a SARSCoV2 public health test”
thelancet.com/journals/lance...

6:59 PM · Feb 22, 2021

This is **Exhibit « II »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



A Commissioner of Oaths, etc.

Kulvinder Kaur MD @dockaurG · Jun 18, 2021

🚨1/Large peer-reviewed German study in Journal of Infection reiterates what I've said since May 2020 based on other peer-reviewed studies. PCR test deeply flawed: "cases" don't equal infections

PCR results are unsuitable as basis for any imposed measures

journalofinfection.com
The performance of the SARS-CoV-2 RT-PCR test as
Dear Editor,

62 1.3K 2.2K

Kulvinder Kaur MD @dockaurG · Jun 18, 2021

2/ "In light of our findings that >1/2 of individuals with +PCR test results are unlikely to have been infectious, RT-PCR test positivity should not be taken as an accurate measure of infectious SARSCoV2 incidence. Our results confirm findings of others that..."

3 107 357

Kulvinder Kaur MD @dockaurG · Jun 18, 2021

3/ "...the routine use of 'positive' RT-PCR test results as the gold standard for assessing and controlling infectiousness fails to reflect the fact 'that 50-75% of the time an individual is PCR positive, they are likely to be post-infectious'..."

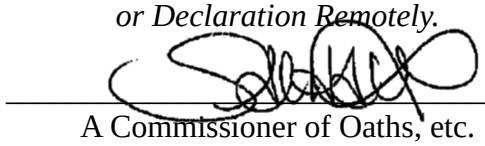
3 112 366

Kulvinder Kaur MD
@dockaurG

4/ "Although PCR Ct (cycle threshold) values have been shown to be inversely associated with viral load & infectivity, there is no international standardization across laboratories, rendering problematic the interpretation of RT-PCR tests when used as a tool for mass screening."

12:20 PM · Jun 18, 2021

This is **Exhibit « JJ »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



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Kulvinder Kaur MD
@dockaurG

Superior Court of Justice of Andalusia in Spain ruled presenting mandatory negative PCR/antigen tests or Covid vaccine certificate/passport to enter nightclubs “violate right to privacy & principle of non-discrimination & is neither suitable nor necessary”

From elpais.com

7:24 PM · Aug 8, 2021

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Bravo. Mass asymptomatic testing is unscientific, unconstitutional & harmful. The deeply flawed PCR test has been ruled “unfit” and “unreliable” by three international courts and counting...

“Heathrow calls for end to PCR tests as passenger numbers rise”

From thetimes.co.uk

8:57 AM · Aug 11, 2021

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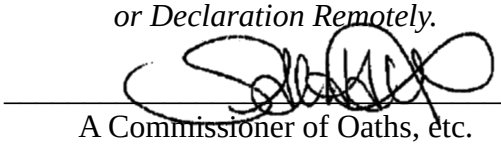

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Politics

Physical distancing, mask-wearing could be in place for 2-3 years even with vaccine, Tam warns

COVID-19 vaccine won't be a 'silver bullet,' chief public health officer says

Ryan Patrick Jones · CBC News · Posted: Aug 04, 2020 1:56 PM EDT | Last Updated: August 4, 2020

Dr. Tam cautions COVID-19 vaccines not a 'silver bullet'

▶ 4 years ago 2:09

Canada's chief public health officer Dr. Theresa Tam responds to reporter questions about the search for a vaccine for COVID-19.

Canadians shouldn't expect a COVID-19 vaccine to be a "silver bullet" that will bring a swift end to the coronavirus pandemic and a return to normal, according to the country's chief public health officer.

Dr. Theresa Tam used her briefing on Tuesday in Ottawa to temper expectations about the speed and effectiveness of a vaccine. She reiterated the importance of physical distancing, proper hand hygiene and mask-wearing, and attempted to dispel any notion that a vaccine will make life go back to the way it was in a couple of months.

"We can't at this stage just put all of our focus [on a vaccine] in the hopes that this is the silver bullet solution," said Tam.

"We're going to have to manage this pandemic certainly over the next year, but certainly [we are] planning for the longer term of the next two to three years during which the vaccine may play a role but we don't know yet."

Tam said it's unclear at this stage how effective a vaccine will be. She said key questions remain about the degree and duration of immunity a vaccine will provide, the dosage that will be needed and whether it will prevent people from getting infected altogether or simply prevent severe illness requiring hospitalization.

More than 150 under development

There are more than 166 vaccines at various stages of preclinical and clinical (human) testing across the globe right now, the World Health Organization says. U.S. and European experts say under an optimistic scenario, the first of those vaccines could complete testing and get approval for distribution next year.

Tam warned that even once a vaccine is tested and deemed to be both safe and effective, there will be challenges with distributing it widely to those who need it.

"It's likely that there won't be enough vaccines for the population," said Tam. "So there'll be prioritization and we're looking at that."

Tam said she agreed with Dr. Anthony Fauci, the top infectious disease specialist in the U.S., who told Congress last week that he was "cautiously optimistic" that a safe and effective vaccine will be available by the end of the year.

Despite that, she said public health officials are planning for a scenario in which measures that have been put in place thus far, including physical distancing to limiting crowd sizes, could be required even after a vaccine is found.

"[A vaccine] is one important layer of protection," said Tam. "It is a very important solution if we get a safe and effective vaccine, but I would say that the public health measures that we have in place — the sort of personal, daily measures that we take — is going to have to continue."

WATCH: Tam on how Canadians should psychologically prepare for the future:

Tam questioned about how Canadians should psychologically prepare for the future

▶ 4 years ago 2:20

Canada's chief public health officer Dr. Theresa Tam spoke with reporters, including the CBC's Tom Parry on Parliament Hill Tuesday. 187

Recommends masks for children over 10

Tam said one of the busiest areas of planning for officials is the reopening of schools in September, for which, she said, the Public Health Agency of Canada will be publishing detailed guidelines later this week.

The guidelines will include a recommendation that children over the age of 10 be required to wear masks, said Tam, in French. Extra consideration should be given for children under the age of 10, she said.

"The recommendations will undergo evolution as the evidence changes and we'll also have to see what happens as we understand transmission in different age groups and what happens in schools." said Tam. "We may have to adapt this recommendation as we go along."

- **Some countries may get faster access to a COVID-19 vaccine than others. Here's why**
- **When a COVID-19 vaccine arrives, which Canadians will get it first?**

Tam also addressed criticism of another layer of protection the federal government rolled out last week — the COVID Alert exposure notification app — which is meant to tell users if their phones have recently been close to a phone registered to someone who volunteers that they've tested positive for the coronavirus.

The app works only on phones released in the last five years or so because it needs a relatively recent operating system.

Critics say that will leave out poorer and older Canadians, who are more likely to use older devices and suffer worse effects from the virus.

Tam said the app is one of many tools available to fight the pandemic, and that people should use them even if they aren't perfect.

"Despite these gaps, we need to have a go at using it," said Tam. "As many people who can download it and use it as possible will make the app more successful."

The government said Monday that more than 1.1 million people had downloaded the app.

With files from The Canadian Press

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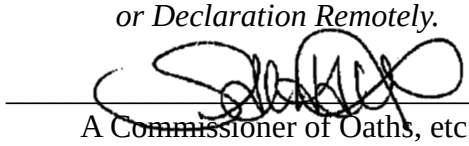

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CORONAVIRUS | News

Even if there's a vaccine, pandemic may persist for years to come: Tam

Rachel AielloSenior Digital Parliamentary Reporter
@rachaiello Contact

Published Tuesday, August 4, 2020 1:23PM EDT

OTTAWA -- Shooting down some of the optimism around a COVID-19 vaccine being discovered spelling the end of the pandemic, Canada's Chief Public Health Officer Dr. Theresa Tam says that vaccine or not, health officials are preparing to deal with the presence of the novel coronavirus and prevention of further spread for years to come.

While some heads of major pharmaceutical companies have said a vaccine could be ready before the end of the year, other experts have cautioned that even 2021 may be an unrealistic timetable.

Now, Canada's leading health officials are saying even that estimate may be too optimistic.

Full coverage at CTVNews.ca/Coronavirus
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Has your child experienced long-term COVID-19 symptoms? We want to hear from you
More than 1 billion students face 'generational catastrophe' due to COVID-19, UN warns
Even if there's a vaccine, pandemic may persist for years to come: Tam

Mental disorders affect more than half of COVID-19 survivors: study
Jails can spread coronavirus to nearby communities, study finds
Masks mandatory for staff, most students when Alberta school year begins
COVID Alert app a help even if it works only on newer phones: Tam
Social circles of 10 people will likely last until 2021, Ontario premier says
More than 1 billion students face 'generational catastrophe' due to COVID-19, UN warns
'Too many are selfish': U.S. nears 5 million virus cases
Australia imposes strict new virus measures in Victoria as early successes unravel
Court challenge of Newfoundland and Labrador's COVID-19 travel ban to begin

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“We're planning, as a public health community, that we're going to have to manage this pandemic certainly over the next year, but certainly it may be planning for the longer term on the next two to three years during which the vaccine may play a role. But we don't know yet,” Tam told reporters on Tuesday.

“People might think that if we get a vaccine then everything goes back to normal the way it was before. That's not the case… All of the measures we've put in place now will still have to continue with the new reality for quite some time,” Deputy Chief Public Health Officer Dr. Howard Njoo said.

“Certainly I think that we need to temper people's expectations, thinking that the vaccines can be that silver bullet that will take care of everything, and everything we've done up to now won't be necessary in the future,” said Njoo.

To be approved for use, any potential vaccine must move through a well-established testing process that involves three phases of human trials. The first and second phases focus on monitoring whether the drug produces the desired response from the human immune system. The third phase involves far more test subjects and aims to determine whether the vaccine candidate is actually able to stop the virus from infecting a body.

Several trials have already reached the third stage, and Tam said that while at that stage researchers will be able to characterize the vaccine's effects on the immune system and any potential adverse effects, there will be outstanding questions, including how long the vaccine lasts before a booster shot may be needed, and whether it actually prevents an infection or just mitigates the severity.

Tam said that while an effective vaccine would be a “very important aspect of the response,” it shouldn’t be seen as a way to end the pandemic. She said that regardless, some public health measures, such as hand-washing, will have to continue in the long-run.

- **Vaccine tracker: The top contenders to stop the novel coronavirus**

There are currently 55 COVID-19 drugs, including vaccine candidates, that are currently being investigated in clinical trials authorized by Health Canada. The federal government is funding research and development for various options, as well as for immunity research.

In a new Angus Reid survey, three in five Canadians who were asked said that they worry about the side effects of a potential COVID-19 vaccine, though half of respondents said they’d get a vaccine as soon as one becomes available. One in three said they would wait and see before going and getting vaccinated, citing side effects as a key concern.

Those surveyed also acknowledged that life will not go back to normal until people are vaccinated, with the majority saying they don’t expect a vaccine to be available until 2021. One-quarter of respondents were skeptical about a vaccine being effective.

Tam said there is also the question of how quickly there will be enough of an effective vaccine to go around.

“It’s likely that there won't be enough vaccines for the population, as the vaccine rolls out. So there'll be prioritization,” she said.

In anticipation of a vaccine, the federal government has begun procuring the supplies that will be essential for “mass vaccinations”, starting with ordering enough syringes and bandages to vaccinate the majority of the Canadian population, twice.

With files from CTV News’ Ryan Flanagan

RELATED IMAGES

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Chief Public Health Officer of Canada Dr. Theresa Tam speaks at a news conference on the COVID-19 pandemic on Parliament Hill in Ottawa, on Friday, July 31, 2020. THE CANADIAN PRESS/Justin Tang

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Kulvinder Kaur MD
@dockaurG

If you have not yet figured out that we don't need a vaccine, you are not paying attention. #FactsNotFear

1:15 PM · Aug 4, 2020

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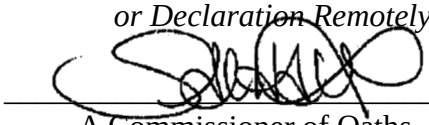

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Kulvinder Kaur MD
@dockaurG

There is absolutely no medical or scientific reason for this prolonged, harmful and illogical lockdown. #FactsNotFear

5:03 PM · Aug 4, 2020

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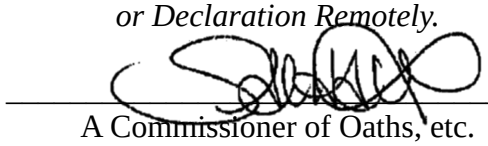

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Treatment with hydroxychloroquine, azithromycin, and combination in patients hospitalized with COVID-19

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ABSTRACT

Significance: The United States is in an acceleration phase of the COVID-19 pandemic. Currently there is no known effective therapy or vaccine for treatment of SARS-CoV-2, highlighting urgency around identifying effective therapies.
Objective: The purpose of this study was to evaluate the role of hydroxychloroquine therapy alone and in combination with azithromycin in hospitalized patients positive for COVID-19.
Design: Multi-center retrospective observational study.
Setting: The Henry Ford Health System (HFHS) in Southeast Michigan: large six hospital integrated health system; the largest of hospitals is an 802-bed quaternary academic teaching hospital in urban Detroit, Michigan.
Participants: Consecutive patients hospitalized with a COVID-related admission in the health system from March 10, 2020 to May 2, 2020 were included. Only the first admission was included for patients with multiple admissions. All patients evaluated were 18 years of age and older and were treated as inpatients for at least 48 h unless expired within 24 h.
Exposure: Receipt of hydroxychloroquine alone, hydroxychloroquine in combination with azithromycin, azithromycin alone, or neither.
Main outcome: The primary outcome was in-hospital mortality.
Results: Of 2,541 patients, with a median total hospitalization time of 6 days (IQR: 4–10 days), median age was 64 years (IQR:53–76 years), 51% male, 56% African American, with median time to follow-up of 28.5 days (IQR:3–53). Overall in-hospital mortality was 18.1% (95% CI:16.6%–19.7%); by treatment: hydroxychloroquine + azithromycin, 157/783 (20.1% [95% CI: 17.3%–23.0%]), hydroxychloroquine alone, 162/1202 (13.5% [95% CI: 11.6%–15.5%]), azithromycin alone, 33/147 (22.4% [95% CI: 16.0%–30.1%]), and neither drug, 108/409 (26.4% [95% CI: 22.2%–31.0%]). Primary cause of mortality was respiratory failure (88%); no patient had documented torsades de pointes. From Cox regression modeling, predictors of mortality were age≥65 years (HR:2.6 [95% CI:1.9–3.3]), white race (HR:1.7 [95% CI:1.4–2.1]), CKD (HR:1.7 [95%CI:1.4–2.1]), reduced O2 saturation level on admission (HR:1.5 [95%CI:1.1–2.1]), and ventilator use during admission (HR: 2.2 [95%CI:1.4–3.3]). Hydroxychloroquine provided a 66% hazard ratio reduction, and hydroxychloroquine + azithromycin 71% compared to neither treatment ($p < 0.001$).
Conclusions and relevance: In this multi-hospital assessment, when controlling for COVID-19 risk factors, treatment with hydroxychloroquine alone and in combination with azithromycin was associated with reduction in COVID-19 associated mortality. Prospective trials are needed to examine this impact.

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E-mail address: MZervos1@hfhs.org (M. Zervos).
[1] Henry Ford COVID-19 Task Force members and their affiliations are listed in Appendix A.

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1201-9712/

Introduction

As of May 27, 2020, there were over 1,678,843 confirmed cases of COVID-19 claiming more than 100,000 lives in the Unites States (CDC, 2020). Currently there is no known effective therapy or vaccine. The urgent need for therapeutic agents has resulted in repurposing and redeployment of experimental agents (McCreary and Pogue, 2020; Sanders et al., 2020).

Hydroxychloroquine, an antimalarial and immunomodulatory agent and a safer analogue of chloroquine, has demonstrated antiviral activity against SARS-CoV-2 (Wang et al., 2020a; Liu et al., 2020; Yao et al., 2020; WHO, 2017). It is postulated to exert a direct antiviral activity by increasing intracellular pH resulting in decreased phago-lysosome fusion, impairing viral receptor glycosylation. In addition, it has immune-modulating effect by inhibiting toll-like receptor signaling, decreasing production of cytokines especially IL-1 and IL-6 (Savarino et al., 2003). Prior data also suggests a potential anti-thrombotic effect (Jung et al., 2010). Azithromycin, a macrolide antibiotic, has *in vitro* antiviral properties such as decreased viral replication, blocking entrance into host cells, and a potential immunomodulating effect (Tran et al., 2019). An *in vitro* study demonstrated synergistic activity of the combination of hydroxychloroquine and azithromycin against SARS-CoV-2 (Andreani et al., 2020). A small non-randomized, open-label trial from France reported higher frequency of SARS-CoV-2 clearance after six days of treatment with hydroxychloroquine alone or hydroxychloroquine in combination with azithromycin versus untreated control group (70% vs 12.5%; $P < 0.001$) (Gautret et al., 2020a). Other early studies of hydroxychloroquine have reported conflicting results (Gao et al., 2020; Gautret et al., 2020b; Chen et al., 2020a; Tang et al., 2020; Chen et al., 2020b; Yu et al., 2020; Geleris et al., 2020; Rosenberg et al., 2020; Magagnoli et al., 2020; Million et al., 2020). The US FDA as of June 15, 2020 has revoked the prior emergency use authorization (EUA) to use hydroxychloroquine and chloroquine to treat COVID-19 in certain hospitalized patients when clinical trial data is unavailable or participation is not feasible (FDA, 2020).

Currently, randomized trials of hydroxychloroquine for treatment and chemoprophylaxis are underway (NIH, 2020a; NIH, 2020b; NIH, 2020c; Pagliano et al., 2020). Based on these early reports, hydroxychloroquine alone and in combination with azithromycin was incorporated into our institutional clinical guidelines for the treatment of hospitalized patients with COVID-19. We examined the association between hydroxychloroquine use and mortality in a large cohort of hospitalized COVID-19 patients.

Methods

Setting

This is a comparative retrospective cohort study evaluating clinical outcomes of all consecutive patients hospitalized at the Henry Ford Health System (HFHS) in Southeast Michigan being treated for COVID-19. The organization is a large six hospital integrated health system; the largest of hospitals is an 802-bed quaternary academic teaching hospital in urban Detroit, Michigan. Approval for this study was granted by the Henry Ford Hospital IRB (#13897).

Patients

Patients with a COVID-related admission in the health system from March 10, 2020 to May 2, 2020 were included. Only the first admission was included for patients with multiple admissions. All patients were hospitalized though our emergency department. A COVID-related admission was defined as hospitalization during which the patient had a positive SARS-CoV-2 test. Diagnosis with SARS-CoV-2 was confirmed by a positive reverse-transcriptase-polymerase-chain-reaction (RT-PCR) assay from a nasopharyngeal sample. All patients evaluated were 18 years of age and older and were treated as inpatients for at least 48 h unless they died within the time period. The primary objective was to assess treatment experience with hydroxychloroquine versus hydroxychloroquine + azithromycin, azithromycin alone, and other treatments for COVID-19. Treatments were protocol driven, uniform in all hospitals and established by a system-wide interdisciplinary COVID-19 Task Force. Hydroxychloroquine was dosed as 400 mg twice daily for 2 doses on day 1, followed by 200 mg twice daily on days 2–5. Azithromycin was dosed as 500 mg once daily on day 1 followed by 250 mg once daily for the next 4 days. The combination of hydroxychloroquine + azithromycin was reserved for selected patients with severe COVID-19 and with minimal cardiac risk factors. An electrocardiogram (ECK) based algorithm was utilized for hydroxychloroquine use. QTc > 500 ms was considered an elevated cardiac risk and consequently hydroxychloroquine was reserved for patients with severe disease with telemetry monitoring and serial QTc checks. The clinical guidelines included adjunctive immunomodulatory therapy with corticosteroids and tocilizumab.

Data sources

The data source for analysis of patient information was derived from electronic medical records in the Electronic Information System. Study variables collected on each patient included the following; (1) patient demographics: age, gender, race, body mass index (BMI) on admission, stratified into four categories: <18.5; 18.5–24.9; 25.0–29.9 and ≥30; (2) clinical characteristics: admission date, discharge date, length of stay (LOS), comorbidities including: cardiovascular disease (CVD), chronic lung disease, chronic kidney disease (CKD), hypertension, asthma, chronic obstructive pulmonary disease (COPD), diabetes mellitus, immunodeficiency, and cancer (defined as active or past/resolved). Additionally, intensive care unit (ICU) status and ventilator use at any point during admission, minimum O2 saturation level collected on day of admission in the emergency department, and the maximal modified Sequential Organ Failure Assessment (mSOFA) score on admission were also collected. The mSOFA score is predictive of ICU mortality utilizing similar accuracy to the full SOFA score without substantial lab testing (ABG, LFTs) to complete (Grissom et al., 2010). The duration and dosages of all therapies for COVID-19 were collected.

Study endpoint

The primary endpoint was in-patient hospital mortality in each treatment group. All deaths were reviewed in detail by the study team.

Statistical analysis

Demographic and clinical characteristics were descriptively summarized for all patients and subsets by treatment group, to test the null hypothesis that treatment course between hydroxychloroquine, hydroxychloroquine + azithromycin, azithromycin, and other (no hydroxychloroquine or azithromycin) were similar. Multivariable Cox regression models and Kaplan–Meier survival curves were used to compare survival among treatment groups while controlling for demographics (e.g., age, gender), preexisting medical conditions (e.g. CVD, lung disease) and clinical disease severity (mSOFA, O2 saturation). Bivariate comparisons of the 4

medication groups were made using analysis of variance or Kruskal–Wallis tests for continuous variables, and chi-square tests or Fisher exact tests for categorical variables. Additional analysis was performed using propensity score matching to compare outcomes in mortality across treatment groups. A propensity score was created for each patient based on the set of patient characteristics used in the Cox regression model. Subsequently, 1 to 1 matchups of patients given hydroxychloroquine (either hydroxychloroquine alone or in combination with azithromycin) and patients not given hydroxychloroquine based on the exact propensity score were observed. The resulting matched group status was placed into its own Cox regression model as a mortality predictor with a Kaplan–Meier plot summarizing the survival curves of the two matched groups. P values <0.05 were considered statistically significant. Additionally, median survival times by treatment strata were calculated to approximate prognosis. No imputations were made for missing data. All data were analyzed using SPSS software version 26 (IBM SPSS Statistics for Windows, version 26, IBM Corp., Armonk, N.Y., USA) and STATA (StataCorp. 2019. Stata Statistical Software: Release 16. College Station, TX: StataCorp LLC), and SAS version 9.4.

Results

The first COVID-19 case confirmed at HFHS by RT-PCR was on March 10, 2020, any patients admitted before March 10th and subsequently tested positive were also included in the analyses. There was a total of 2,948 COVID-19 admissions, of these, 267 (9%) patients had not been discharged, 15 (0.5%) left against medical advice, and four (0.1%) were transferred to another healthcare facility; these patients were excluded from analysis as we could not ascertain their outcome. In addition, there were 121 (4.1%) readmissions, which were also excluded.

Overall, 2,541 consecutive patients were included in the analyses with a median age of 64 years (IQR: 53–76 years), 51% male, 56% African American, median inpatient LOS was 6 days (IQR: 4–10 days). The median time to follow-up was 28.5 days (IQR 3–53). The majority of patients (52%, n = 1,250) had BMI $\geq$ 30. Additional underlying comorbidities are detailed in Table 1. On the day of admission, two variables predicting severity of disease and mortality, highest mSOFA score and lowest O2 saturation, were recorded. However, 25% of the population did not have mSOFA scores available, as recording of this metric became institutional standard one month after the index admission. Other indicators of severity were ICU admission and mechanical ventilation status. All baseline characteristics were further stratified by the four treatment groups (hydroxychloroquine alone, hydroxychloroquine + azithromycin, azithromycin alone, and neither treatment). Median time (IQR) from admission to receipt of hydroxychloroquine was 1 day (1–2). Overall crude mortality rates were 18.1% in the entire cohort, 13.5% in the hydroxychloroquine alone group, 20.1% among those receiving hydroxychloroquine + azithromycin, 22.4% among the azithromycin alone group, and 26.4% for neither drug ($p < 0.001$). Adjunct therapy with corticosteroids (methylprednisolone and/or prednisone) and anti-IL-6 tocilizumab was provided in 68% and 4.5% of patients, respectively.

Primary cause of mortality in the 460 patients was: 88% respiratory failure, 4% cardiac arrest (with mean QTc interval from last ECG reading 471 ms), 8% other cardiopulmonary arrest and multi-organ failure. No patient had documented torsades de pointes.

In the multivariable Cox regression model of mortality using the group receiving neither hydroxychloroquine or azithromycin as the reference, treatment with hydroxychloroquine alone decreased the mortality hazard ratio by 66% ($p < 0.001$), and hydroxychloroquine + azithromycin decreased the mortality hazard ratio by 71% ($p < 0.001$). We did not find statistical significance in the relative effect of adjunct therapy and mortality. Predictors of mortality were age $\geq$65 years (HR, 2.6 [95% CI: 1.9, 3.3]), white race (HR: 1.7 [95% CI: 1.4, 2.1]), CKD (HR, 1.7 [95%CI: 1.4, 2.1]), reduced O2 saturation level on admission (HR, 1.6 [95%CI: 1.1, 2.2]), and ventilator use during admission (HR, 2.2 [95%CI: 1.4, 3.0]), which were all significantly associated with mortality due to COVID-19 (Table 2).

Kaplan–Meier survival curves showed significantly improved survival among patients in the hydroxychloroquine alone and hydroxychloroquine + azithromycin group compared with groups not receiving hydroxychloroquine and those receiving azithromycin alone (Figure 1). The survival curves suggest that the enhanced survival in the hydroxychloroquine alone group persists all the way out to 28 days from admission.

Further, a total of 190 hydroxychloroquine patients exactly matched up with 190 corresponding non-hydroxychloroquine treated patients based on the exact underlying propensity score. Table 3 contains a descriptive summarization of these patients within both the unmatched and propensity matched settings, confirming that the propensity matched groups have identical underlying patient characteristics. The Cox regression result for the two propensity matched groups (Table 4) indicates that treatment with hydroxychloroquine resulted in a mortality hazard ratio decrease of 51% ($p = 0.009$). The resulting Kaplan–Meier survival curves within the propensity matched setting displayed significantly better survival in the hydroxychloroquine treated group, with the enhanced survival persisting all the way out to 28 days from admission (Figure 2).

Discussion

The results of this study demonstrate that in a strictly monitored protocol-driven in-hospital setting, treatment with hydroxychloroquine alone and hydroxychloroquine + azithromycin was associated with a significant reduction in mortality among patients hospitalized with COVID-19. In this study, among one of the largest COVID-19 hospital patient cohorts (n = 2,541) assembled in a single institution, overall in-hospital COVID-19 associated mortality was 18.1% reflecting a high prevalence of co-morbid conditions in COVID-19 patients admitted to our institution. The independent predictors of mortality in our study included age $\geq$65 years, CKD, and severe illness at initial presentation as measured by the oxygen saturation levels on admission, and ventilator use reflect findings similar to those reported in earlier studies (Rio and Malani, 2020). These predictors also underscore the high-risk for COVID-19 experienced by residents in our hospital catchment population in Metropolitan Detroit, Michigan. Michigan is among the states with the highest number of cases of COVID-19 and deaths. In Detroit, our residents suffer from substantial preexisting social and racial health disparities that place our patients at increased risk of severe disease and higher mortality (CDC, 2020).

In the present study, multivariate analysis performed using Cox regression modeling and propensity score matching to control for potential confounders affirmed that treatment with hydroxychloroquine alone and hydroxychloroquine in combination with azithromycin was associated with higher survival among patients with COVID-19. Patients that received neither medication or azithromycin alone had the highest cumulative hazard. The benefits of hydroxychloroquine in our cohort as compared to previous studies maybe related to its use early in the disease course with standardized, and safe dosing, inclusion criteria, comorbidities, or larger cohort. The postulated pathophysiology of COVID-19 of the initial viral infection phase followed by the hyperimmune response suggest potential benefit of early administration of hydroxychloroquine for its antiviral and antithrombotic

Table 1
Patient characteristics by treatment group.

Characteristics		Total (n = 2541)	Neither Med (n = 409)	HCQ alone (n = 1202)	AZM alone (n = 147)	HCQ + AZM (n = 783)	P-value
Mortality, n (%)		460 (18.1)	108 (26.4)	162 (13.5)	33 (22.4)	157 (20.1)	<0.001***
Hospital LOS in days,		8.3 ± 6.5,	5.6 ± 4.8,	8.0 ± 5.8,	5.3 ± 4.5,	10.7 ± 7.5,	<0.001***
Mean ± SD, median (IQR)		6 (4–10)	(4 (3–7)	6 (4–10)	4 (2–6)	8 (5–14)	
Age in years,		63.7 ± 16.5,	68.1 ± 18.9,	63.2 ± 15.6,	63.3 ± 17.3,	62.3 ± 15.9,	<0.001***
Mean ± SD, median (IQR)		64 (53–76)	71 (56–83)	64 (53–74)	64 (52–76)	62 (51–74)	
Age,	<65 years	1278 (50.3)	158 (38.6)	614 (51.1)	79 (53.7)	427 (54.5%)	<0.001***
n (%)	≥65 years	1263 (49.7)	251 (61.4)	588 (48.9)	68 (46.3)	356 (45.5%)	
Gender,	Male	1298 (51.1)	199 (48.7)	634 (52.8)	62 (42.2)	403 (51.5%)	0.072
n (%)	Female	1243 (48.9)	210 (51.3)	568 (47.2)	85 (57.8)	380 (48.5%)	
Race,	Black	1411 (55.5)	187 (45.7)	724 (60.2)	76 (51.7)	424 (54.2%)	<0.001***
n (%)	White	852 (33.5)	186 (45.5)	332 (27.6)	63 (42.9)	271 (34.6%)	
	Asian/Pacific Islander	47 (1.8)	6 (1.5)	24 (2.0)	0 (0.0)	17 (2.2%)	
	Other	231 (9.1)	30 (7.3)	122 (10.1)	8 (5.4)	71 (9.1%)	
BMI,		31.7 ± 8.5,	28.8 ± 7.6,	31.9 ± 8.6,	31.4 ± 8.7,	32.9 ± 8.4,	<0.001***
Mean ± SD, median (IQR)		30 (26–36)	28 (23–33)	30 (26–36)	29 (25–36)	32 (27–37)	
BMI,	<18.5	48 (2.0)	22 (5.7)	15 (1.4)	3 (2.1)	8 (1.1%)	<0.001***
n (%)	18.5–24.9	430 (18.0)	108 (28.2)	198 (17.9)	25 (17.5)	99 (13.1%)	
	25.0–29.9	662 (27.7)	104 (27.2)	314 (28.4)	49 (34.3)	195 (25.8%)	
	≥30.0	1250 (52.3)	149 (38.9)	580 (52.4	66 (46.2)	455 (60.1%)	
Chronic lung disease, n (%)		1619 (63.7)	195 (47.7)	806 (67.1)	93 (63.3)	525 (67.0)	<0.001***
Immunodeficiency, n (%)		30 (1.2)	2 (0.5)	15 (1.2)	2 (1.4)	11 (1.4)	0.502
Cardiovascular disease, n (%)		222 (8.7)	45 (11.0)	100 (8.3)	10 (6.8)	67 (8.6)	0.306
Chronic kidney disease, n (%)		1099 (43.3)	196 (47.9)	528 (43.9)	62 (42.2)	313 (40.0)	0.062
COPD, n (%)		325 (12.8)	58 (14.2)	144 (12.0)	24 (16.3)	99 (12.6)	0.380
Hypertension, n (%)		1663 (65.4)	256 (62.6)	807 (67.1)	93 (63.3)	507 (64.8)	0.324
Asthma, n (%)		251 (9.9)	28 (6.8)	130 (10.8)	19 (12.9)	74 (9.5)	0.069
Cancer, n (%)		380 (15.0)	78 (19.1)	165 (13.7)	17 (11.6)	120 (15.3)	0.041*
Diabetes mellitus, n (%)		955 (37.6)	130 (31.8)	484 (40.3)	45 (30.6)	296 (37.8)	0.006**
Max mSOFA score on admission,		3.7 ± 3.0,	4.0 ± 3.6,	3.2 ± 2.7,	5.0 ± 3.9,	4.2 ± 3.1,	<0.001***
Mean ± SD, median (IQR)		3 (1–5)	3 (1–6)	3 (1–5)	4 (2–6)	4 (2–6)	
mSOFA	≤1	497 (26.4)	92 (31.5)	295 (28.5)	12 (19.7)	98 (20.0%)	<0.001***
score,	2–4	799 (42.5)	95 (32.5)	481 (46.4)	19 (31.1)	204 (41.5%)	
n (%)	≥5	584 (31.1)	105 (36.0)	260 (25.1)	30 (49.2)	189 (38.5%)	
Max O2 saturation on admission,		90.0 ± 8.1,	89.8 ± 10.9,	90.5 ± 6.7,	90.7 ± 8.7,	89.2 ± 8.1,	<0.001***
Mean ± SD, median (IQR)		(92 (89–94)	93 (89–95)	92 (89–94)	92 (90–94)	91 (88–93)	
O2 saturation,	Normal (≥95%)	504 (19.8)	126 (30.8)	233 (19.4)	34 (23.1)	111 (14.2%)	<0.001***
n (%)	mild hypoxemia (90–94%)	1275 (50.2)	180 (44.0)	619 (51.5)	84 (57.1)	392 (50.1%)	
	Mod hypoxemia (86–89%)	408 (16.1)	38 (9.3)	202 (16.8)	13 (8.8)	155 (19.8%)	
	Severe hypoxemia (≤85%)	354 (13.9)	65 (15.9)	148 (12.3)	16 (10.9)	125 (16.0%)	
Ever in ICU, n (%)		614 (24.2%)	62 (15.2)	243 (20.2)	19 (12.9)	290 (37.0)	<0.001***
Total ICU days,		2.3 ± 5.3,	0.8 ± 2.9,	1.9 ± 4.7,	0.7 ± 2.3,	4.0 ± 6.9,	<0.001***
Mean ± SD, median (IQR)		0 (0–0)	0 (0–0)	0 (0–0)	0 (0–0)	0 (0–0)	
Ever mechanically ventilated, n (%)		448 (17.6%)	34 (8.3)	166 (13.8)	14 (9.5)	234 (29.9)	<0.001***
Total vent days,		1.6 ± 4.5,	0.5 ± 2.2,	1.2 ± 3.7,	0.5 ± 2.0,	3.1 ± 6.1,	<0.001***
Mean ± SD, median (IQR)		0 (0–0)	0 (0–0)	0 (0–0)	0 (0–0)	0 (0–0)	
Given steroid, n (%)		1733 (68.2)	146 (35.7)	948 (78.9)	57 (38.8)	582 (74.3)	<0.001***
Given tocilizumab, n (%)		114 (4.5)	5 (1.2)	32 (2.7)	5 (3.4)	72 (9.2)	<0.001***

* P-values between 0.01 and 0.05.
** P-values between 0.001 and 0.01.
*** P-values less than 0.001.

properties. Later therapy in patients that have already experienced hyperimmune response or critical illness is less likely to be of benefit. Others have shown that COVID-19 hospitalized patients are not diagnosed in the community and often rapidly deteriorate when hospitalized with fulminant illness (Mc McCullough and Arunthamakun, 2020).

Limitations to our analysis include the retrospective, non-randomized, non-blinded study design. Also, information on duration of symptoms prior to hospitalization was not available for analysis. However, our study is notable for use of a cohort of consecutive patients from a multi-hospital institution, regularly updated and standardized institutional clinical treatment guidelines and a QTc interval-based algorithm specifically designed to ensure the safe use of hydroxychloroquine. To mitigate potential limitations associated with missing or inaccurate documentation in electronic medical records, we manually reviewed all deaths to confirm the primary mortality outcome and ascertain the cause of death. A review of our COVID-19 mortality data demonstrated no major cardiac arrhythmias; specifically, no torsades de pointes that has been observed with hydroxychloroquine treatment. This finding may be explained in two ways. First, our patient population received aggressive early medical intervention, and were less prone to development of myocarditis, and cardiac inflammation commonly seen in later stages of COVID-19 disease. Second, and importantly, inpatient telemetry with established electrolyte protocols were stringently applied to our population and monitoring for cardiac dysrhythmias was effective in controlling for adverse events. Additional strengths were the inclusion of a multi-racial patient composition, confirmation of all patients for infection with PCR, and control for various confounding factors including patient characteristics such as severity of illness by propensity matching.

Recent observational retrospective studies and randomized trials of hydroxychloroquine have reported variable results (Gautret et al., 2020a; Gao et al., 2020; Gautret et al., 2020b; Chen et al., 2020a; Tang et al., 2020; Chen et al., 2020b; Yu et al., 2020; Geleris et al., 2020; Rosenberg et al., 2020; Magagnoli et al., 2020; Million et al., 2020). In a randomized controlled study of 62 patients from China with COVID-19, hydroxychloroquine was

Table 2
Multivariable cox regression model for mortality prediction.

Parameter	P-value	Hazard ratio	95% Hazard ratio confidence limits	
HCQ alone (vs. neither medication)	<0.001***	0.340	0.254	0.455
Azithromycin alone (vs. neither medication)	0.825	1.050	0.682	1.616
HCQ + AZM (vs. neither medication)	<0.001***	0.294	0.218	0.396
Age ≥ 65 years	<0.001***	2.579	1.989	3.345
M gender	0.155	1.157	0.946	1.414
White race	<0.001***	1.738	1.413	2.137
BMI ≥ 30	0.021*	0.775	0.624	0.962
Lung comorbidity	0.393	0.908	0.727	1.134
Immunodeficiency comorbidity	0.429	1.398	0.609	3.206
Cardiovascular comorbidity	0.678	1.062	0.800	1.410
Chronic kidney disease comorbidity	<0.001***	1.699	1.370	2.108
COPD comorbidity	0.170	1.202	0.924	1.563
Hypertension comorbidity	0.064	0.798	0.628	1.014
Asthma comorbidity	0.643	0.916	0.632	1.327
Cancer comorbidity	0.577	0.933	0.731	1.190
Diabetes comorbidity	0.822	0.975	0.786	1.211
Percent O2 saturation < 95	0.021*	1.488	1.063	2.084
Admitted to ICU	0.882	0.969	0.635	1.478
Ventilator	<0.001***	2.159	1.427	3.268
Given steroid	0.085	0.802	0.625	1.031
Given tocilizumab	0.490	0.894	0.651	1.228

* P-values between 0.01 and 0.05.
*** P-values less than 0.001.

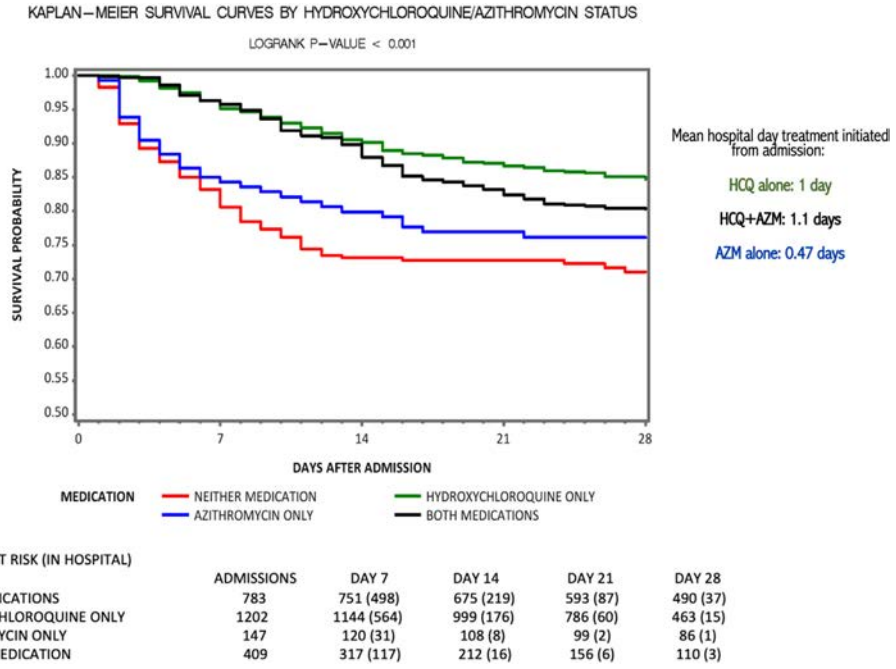


Figure 1. Kaplan-Meier survival curves among treatment groups.

associated with a shortened duration of fever and time to cough and pneumonia resolution (Chen et al., 2020b). In contrast, a study of 1376 consecutive hospitalized COVID-19 patients in New York that used respiratory failure as the primary endpoint found no significant reduction in the likelihood of death or intubation among those receiving hydroxychloroquine compared to those who did not (Geleris et al., 2020). In a separate multicenter cohort study of 1438 patients from 25 hospitals in New York, no reduction in hospitalized patient mortality was observed with hydroxychloroquine treatment (Rosenberg et al., 2020). Among a number of limitations, this study included patients who were initiated on hydroxychloroquine therapy at any time during their hospitalization. In contrast, in our patient population, 82% received hydroxychloroquine within the first 24 h of admission, and 91% within 48 h of admission. Because treatment regimens likely varied substantially (including delayed initiation) across the 25 hospitals that contributed patients to the study, it is not surprising that the case-fatality rate among the New York patients was significantly higher than in our study.

Globally, the overall crude mortality from SARS-COV-2 is estimated to be approximately 6–7% (CDC, 2020; WHO, 2020). Multiple descriptive studies report higher mortality in hospitalized COVID-19 patients from 10–30% (Huang et al., 2020; Zhou et al., 2020; Wu et al., 2020; Wang et al., 2020b; Guan et al., 2020; Richardson et al., 2020; Arentz et al., 2020; Cao et al., 2020; Grein et al., 2020). Not surprisingly, mortality as high as 58% was observed among patients requiring ICU care and mechanical ventilation (Guan et al., 2020; Richardson et al., 2020). This high

Table 3
Characteristics of patients given versus not given HCQ before and after propensity score matching.

Characteristics	Unmatched patients		Propensity-MATCHED patients	
	Given HCQ (N = 1985)	Not given HCQ (N = 556)	Given HCQ (N = 190)	Not given HCQ (N = 190)
Age ≥ 65 years	944 (47.6%)	319 (57.4%)	96 (50.5%)	96 (50.5%)
Male gender	1037 (52.2%)	261 (46.9%)	88 (46.3%)	88 (46.3%)
White race	603 (30.4%)	249 (44.8%)	67 (35.3%)	67 (35.3%)
BMI ≥ 30	1035 (55.5%)	215 (40.9%)	87 (45.8%)	87 (45.8%)
Lung comorbidity	1331 (67.1%)	288 (51.8%)	103 (54.2%)	103 (54.2%)
Immunodeficiency comorbidity	26 (1.3%)	4 (0.7%)	1 (0.5%)	1 (0.5%)
Cardiovascular comorbidity	167 (8.4%)	55 (9.9%)	7 (3.7%)	7 (3.7%)
Chronic kidney disease comorbidity	841 (42.4%)	258 (46.4%)	69 (36.3%)	69 (36.3%)
COPD comorbidity	243 (12.2%)	82 (14.7%)	10 (5.3%)	10 (5.3%)
Hypertension comorbidity	1314 (66.2%)	349 (62.8%)	118 (62.1%)	118 (62.1%)
Asthma comorbidity	204 (10.3%)	47 (8.5%)	6 (3.2%)	6 (3.2%)
Cancer comorbidity	285 (14.4%)	95 (17.1%)	8 (4.2%)	8 (4.2%)
Diabetes comorbidity	780 (39.3%)	175 (31.5%)	51 (26.8%)	51 (26.8%)
Percent O2 saturation ≤ 95	1641 (82.7%)	396 (71.2%)	141 (74.2%)	141 (74.2%)
Admitted to ICU	533 (26.9%)	81 (14.6%)	12 (6.3%)	12 (6.3%)
Ventilator	400 (20.2%)	48 (8.6%)	10 (5.3%)	10 (5.3%)
Given steroid	1530 (77.1%)	203 (36.5%)	84 (44.2%)	84 (44.2%)
Given tocilizumab	104 (5.2%)	10 (1.8%)	2 (1.1%)	2 (1.1%)

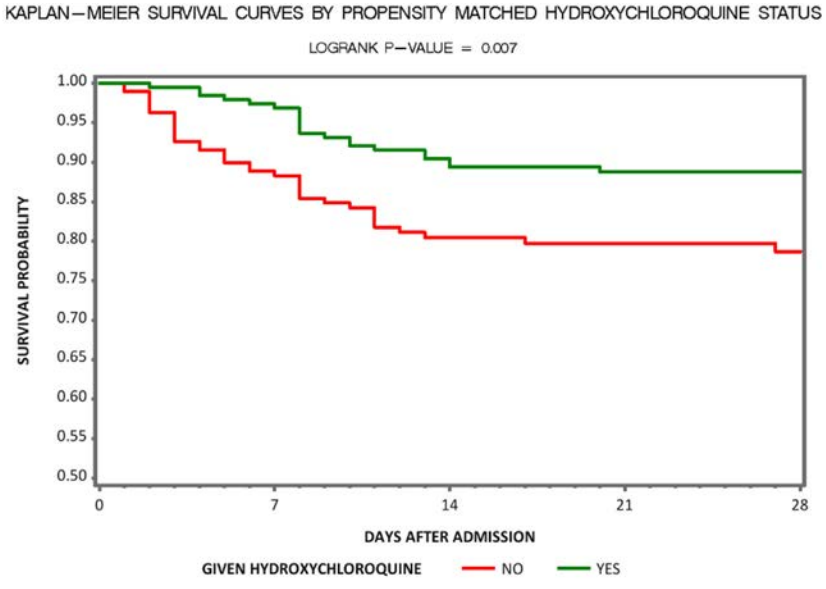
Table 4
Propensity matched cox regression result for mortality prediction.

Parameter	P-value	Hazard ratio	95% Hazard ratio confidence limits	
Given HCQ	0.009*	0.487	0.285	0.832

* P-value between 0.001 and 0.01.

mortality associated with COVID-19 in many populations has led to a search for effective drug therapies. The randomized controlled trial of lopinavir–ritonavir in COVID-19 hospitalized patients showed a mortality of 19.2% on lopinavir–ritonavir and 25% for standard of care; therapy had to be terminated in 13.8% patients due to adverse events (Arentz et al., 2020). In the compassionate use remdesivir trial, 13% mortality was observed in the cohort of 61 patients (Cao et al., 2020). The interim analysis randomized trial of remdesivir showed a mortality rate of 8.0% for the group receiving remdesivir versus 11.6% for the placebo group (p = 0.059) (Grein et al., 2020). In our study, overall mortality was 18.1% and in ICU patients 45%. Our cohort included patients with severe disease, with 24% and 18% requiring ICU care and mechanical ventilation at presentation, respectively.

Findings of this observational study provide crucial data on experience with hydroxychloroquine therapy, providing necessary interim guidance for COVID-19 therapeutic practice. These findings do support the recent NIH guidelines (NIH, 2020a), indicating a potential role for hydroxychloroquine in treatment of hospitalized COVID-19 patients without co-administration of azithromycin. However, our results should be interpreted with some caution and should not be applied to patients treated outside of hospital settings. Our results also require further confirmation in



NUMBER AT RISK (IN HOSPITAL)

	ADMISSIONS	DAY 7	DAY 14	DAY 21	DAY 28
GIVEN HYDROXYCHLOROQUINE	190	184 (84)	164 (16)	146 (8)	111 (2)
NOT GIVEN HYDROXYCHLOROQUINE	190	158 (49)	118 (7)	98 (2)	72 (1)

Figure 2. Kaplan-Meier survival curves within the propensity matched setting.

prospective, randomized controlled trials that rigorously evaluate the safety and efficacy of hydroxychloroquine therapy for COVID-19 in hospitalized patients. Considered in the context of current studies on the use of hydroxychloroquine for COVID-19, our results suggest that hydroxychloroquine may have an important role to play in reducing COVID-19 mortality.

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Conflict of interest

S.H. received speakers' bureau honoraria from Bayer. I.B. received speakers' bureau honoraria from Gilead, ViiV, and Jansssen, M.Z received consultation honoraria from contrafact. All others have no conflicts of interests.

Ethical approval

Approval for this study was granted by the Henry Ford Hospital Institutional Review Board (#13897).

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Appendix A

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This is **Exhibit « QQ »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

CPSO

INQUIRIES, COMPLAINTS AND REPORTS COMMITTEE
(the Committee)

DECISION AND REASONS

COMPLAINANT: [redacted]

RESPONDENT: Dr. Kulvinder Kaur Gill (CPSO# 84436)
Paediatrics

FILE NO.: [redacted]

INTRODUCTION

The Complainant contacted the College about comments the Respondent made via social media with respect to the COVID-19 pandemic.

The Complainant contacted the College of Physicians and Surgeons of Ontario (the College) to express concern about the Respondent's conduct, as follows:

The Complainant is concerned that the Respondent is making false claims about coronavirus publicly on the social media site, Twitter, creating a danger to public health and efforts to mitigate a global pandemic. In particular, the Complainant expressed concern that:

- **the Respondent has indicated repeatedly that hydroxychloroquine is an effective treatment for COVID-19 in spite of the retraction and discredit of the methodologies of studies that led to this conclusion**
- **the Respondent has indicated that a vaccine is unnecessary.**

The Committee considered this matter at its meeting of February 3, 2021. For the reasons set out below, the Committee will take no further action on this complaint.

CPSO

ROLE OF THE COMMITTEE

Physicians are accountable to members of the public for their care and conduct, and the College is responsible for responding to concerns and investigating complaints from members of the public. In the College's complaints process, the Committee, with the assistance of staff, conducts an investigation, then meets to review the written record of investigation and to reach a decision.

The Committee has a number of outcomes available to it and will consider the seriousness and context of the concerns raised, the physician's insight into his or her practice, capacity for remediation, and relevant College history when making a decision. The Committee seeks to protect the public and, where possible, to enhance the quality of physicians' care or conduct through education and remediation.

The Committee will, in rare instances, refer a matter to the Discipline Committee, for an oral hearing into allegations of professional misconduct or incompetence. This occurs only where the Committee determines that referral to the Discipline Committee is in the public interest, and that the available information has a reasonable chance of supporting a successful prosecution.

The Committee cannot award or recommend financial compensation. The Committee does not determine liability or causation and its function is not to punish physicians. The Committee appreciates the participation of the Complainant. Public engagement aids the College in protecting the public interest and improving the quality of physicians' care throughout the province. The Committee acknowledges the Respondent for demonstrating professional accountability in responding to the Complainant's concerns.

For more information about the role of the College and the Committee, please visit the College's website at www.cpso.on.ca.

INFORMATION BEFORE THE COMMITTEE

The Committee has considered the information obtained during its investigation, including documentation submitted by the Complainant and the Respondent.

The Committee applies legislation and regulations, and refers to policies that the College has developed, which reflect the College's professional expectations for physicians practising in Ontario. College policies may be accessed on the College's

website at www.cpso.on.ca, under the heading "Policies & Publications." The Committee will provide a copy of any policy it refers to in this decision.

The Committee always has before it the physician's history with the College, if any.

ANALYSIS

The Committee considered the following points in reaching its decision:

- In her complaint to the College, the Complainant stated that:

> At a time in which public trust in the medical community is of paramount importance to ensure the broader community is informed and motivated to practice essential safety measures including distancing and masking, it is unconscionable that a person with the title of Doctor is undermining this trust with disinformation, discredited studies, and conspiracy theories.
>
> Please see the Twitter timeline of this physician under her handle of @dockaurG for the multiple examples. These actions conflict directly with the CPSO's guidelines on medical professionalism...regarding the social contract for physicians and the requirement to act in the promotion of public good.
>
> I submit that disciplinary action and sanctions against this physician are warranted in response to her dangerous and irresponsible behaviour.

- Through counsel, the Respondent provided a detailed response to the complaint. Among other things, she maintained that:
    - Her tweets do not constitute "misinformation", and nor are they unscientific or unsupported by corroborating medical opinion and scientific evidence.
    - A difference of opinion does not constitute "unprofessional conduct."
    - Her tweets are sent from a personal Twitter account which has no affiliation with her practice.
    - She is entitled, albeit as a doctor, to exercise her constitutionally protected right, and her statutory duty, to advocate for public health.

- She has not breached any of the terms of the College's guidelines with respect to COVID-19 and the use of social media.
- She has never been anti-vaccination nor contradicted government policy on her professional medical practice website.
- She has never recommended nor prescribed any treatment in her posts.

- The CPSO document, *COVID-19 FAQs for Physicians,* which is posted on the CPSO website (www.cpso.on.ca), addresses issues related to professionalism and complaints, and specifically addresses the question, "What should I be thinking about as I engage on social media about issues relating to the pandemic?" That answer states:

> Physicians are reminded to be aware of how their actions on social media or other forms of communication could be viewed by others, especially during a pandemic. Your comments or actions can lead to patient/public harm if you are providing an opinion that does not align with information coming from public health or government. It is essential that the public receive a clear and consistent message. The College's statement on Social Media – Appropriate Use by Physicians outlines general recommendations for physicians including acting in a manner that upholds their reputation, the reputation of the profession, and maintains public trust.

- The issue before the Committee with respect to this specific complaint is whether statements the Respondent made via Twitter are verifiably false (and, as such, represent misinformation) and/or unprofessional. The Complaint referred to the Respondent's Twitter feed generally and did not quote specific comments (tweets). She did however reference the Respondent's position with respect to the use of hydroxychloroquine (HCQ) as an effective treatment for COVID-19 and her view that vaccines are unnecessary. In this regard, the Committee notes as follows:

  - There was reasonable evidence at certain points in 2020 that HCQ may be effective in prophylaxis and/or early treatment. Early in the course of a pandemic like COVID-19 such evidence is naturally limited, sometimes inconsistent, and constantly evolving. Scientists do not have large, prospective randomized controlled trials to rely upon. However, a fairly large retrospective study from Detroit, Michigan, USA, published in the *International Journal of Infectious Diseases* on August 1, 2020, did show about a 50% reduction in

CPSO

mortality in patients who received early treatment with HCQ. Thus, it would be unfair to characterize the Respondent's position with respect to HCQ as outright misinformation.

- As for the Respondent's position with respect to vaccines, her opinion that vaccines are unnecessary is an opinion that does not align with information coming from public health and government authorities.

- Taken as a whole, the Committee is of the view that the concerns raised by the Complainant are either not specific enough in this instance to warrant further action by the Committee, or have been addressed effectively through a parallel College investigation.

- The Complainant is one of several individuals who lodged complaints about the Respondent with respect to comments and opinions she posted on social media, and which the Committee considered concurrently. In one such parallel, broad investigation of the Respondent's social media comments, the Committee did have significant concerns about the Respondent's posts and opinions to the extent that it cautioned her in this regard. A caution is an outcome that is posted to the public register on the CPSO website.

DISPOSITION

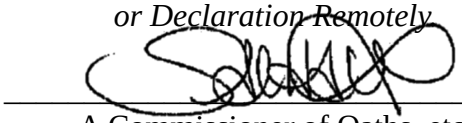
For the reasons set out above, the Committee takes no further action on this complaint.

OFFICIAL COPY

PANEL MEMBERS: February 3, 2021

[redacted]

This is **Exhibit « RR »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely*.



A Commissioner of Oaths, etc.

Olympics 2016: IOC insists Games will go ahead despite Zika

11 May 2016

The Olympic Games are due to begin in Brazil on 05 August

The International Olympic Committee (IOC) has said that it sees no need to cancel, delay or move the Rio Olympic Games because of the Zika virus threat.

However IOC medical director Richard Budgett said that it would continue to monitor the situation closely.

Dr Budgett was responding to a call by Canadian health Professor Amir Attaran for the Games to be postponed or moved.

Prof Attaran said that the influx of visitors to Brazil would result in the avoidable births of malformed babies.

"If the IOC and the World Health Organisation (WHO) do not have the generosity of heart to delay the games to prevent children being born and disabled their whole lives, then they're among the cruellest institutions in the world," Prof Attaran said in a telephone interview with the Associated Press news agency.

AP

The Brazilian authorities have made every effort to eradicate the Aedes aegypti mosquito that transmits the Zika virus

AP

Brazil is also taking measure against the H1N1 swine flu virus in addition to the Zika threat

"What I'm asking for is a bit of delayed gratification so that babies aren't born permanently disabled."

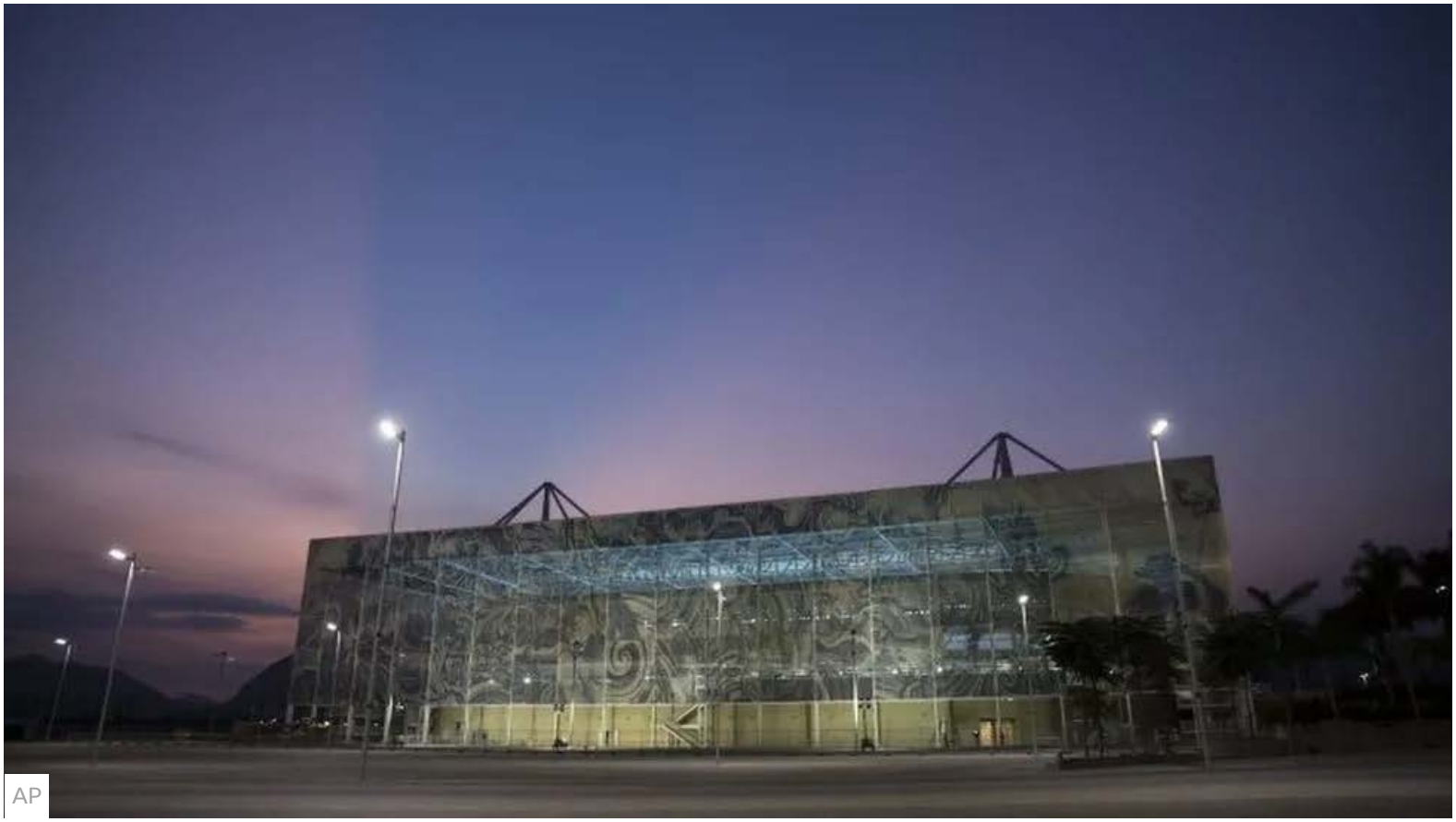
Prof Attaran - a public health specialist - argues that Zika is far worse than the IOC is willing to admit.

In an article for **the Harvard Public Review** he says that Rio de Janeiro is more affected by Zika than anyone expected and that all it takes is one infected traveller to start a process that could ultimately result in a "full-blown global health disaster".

He argues that if the Games go ahead, it would be especially unfair on countries like Nigeria, India and Indonesia, which do not have the same resources to fight Zika as Brazil.

But his point of view is hotly contested by Olympic and global health authorities including the WHO, who are adamant the 5-21 August Games will not be derailed by the virus.

The IOC - which adheres to the WHO's advice - insisted there were no plans to relocate or postpone the games.



AP

The IOC says that the mosquito threat will not be so great during Brazil's winter months

"The clear statements from WHO that there should be no restrictions on travel and trade means there is no justification for cancelling, delaying, postponing or moving the Rio Games," Dr Budgett said.

"The IOC will continue to monitor the situation very closely and work with the WHO, and we're confident as we've been advised by the experts that the situation will improve over the next three months."

A separate IOC statement said that plans were in place to target mosquitoes and deal with their stagnant water breeding grounds..

The statement said it was important to remember the Olympic and Paralympics Games are taking place in the winter months of August and September, when mosquitoes should not be so abundant.

The Olympics are expected to attract about 500,000 visitors from abroad.

More on this story

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11 May 2016

'Bugged mosquitoes' stop Zika spread

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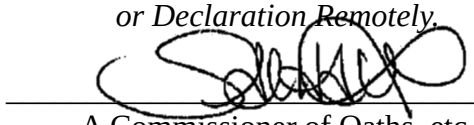

A Commissioner of Oaths, etc.

BREAKING NEWS

Mother, 4 children among Ottawa homicide victims: police

HEALTH

WHO issues Zika reminders after professor calls for relocation of Rio Olympics

CTVNews.ca Staff

Published Thursday, May 12, 2016 10:09PM EDT

The World Health Organization has once again issued a list of ways to avoid Zika virus while travelling to Rio de Janeiro, after a Canadian professor launched a campaign calling for the Summer Olympic Games to be relocated from Brazil.

Amir Attaran, a law professor and health policy expert at the University of Ottawa, published an explosive commentary in Harvard Public Health Review earlier this week, stating that the Games' events should be divided up among cities like London, Beijing, Athens and Sydney.

Attaran writes that an estimated half-million visitors going to the centre of the Zika crisis will certainly mean avoidable cases of microcephaly -- babies born with malformed brains – in other countries.

He points out there have been an estimated 7,000 cases of microcephaly in Brazil already, and

Related Stories

- **Rio Olympics should be postponed or moved due to Zika: professor**

that the incidence of the disease is higher in Rio than anywhere else in the country.

Although Zika is most commonly transmitted to humans by a species of mosquitoes that do not exist in Canada, there has been at least one sexually-transmitted case here.

"I love the Olympics. I'm an athlete. My family is Brazilian," Attaran told CTV News on Thursday. "I'm saying this because I don't want to see a global pandemic of children born with half brains."

"I'm putting forward a position that is widely held by the public health community," Attaran added.

However, International Olympic Committee medical director Dr. Richard Budgett told The Associated Press Wednesday that the Olympics will go ahead as planned, under advice from the WHO.

Dr. Budgett cited "clear statements from WHO that there should be no restrictions on travel and trade means there is no justification for canceling or delaying or postponing or moving the Rio Games," and said the situation is expected to improve in the next three months.

The WHO, meanwhile, said Thursday that visitors should follow guidelines, including wearing insect repellant, consulting a health care provider before travelling, and abstaining from sex or practicing safer sex for four weeks after returning from Brazil. Those are the same guidelines the WHO has issued for travel to other Zika-affected parts of the world.

The WHO also recommended avoiding "impoverished and over-crowded areas in cities and towns with no

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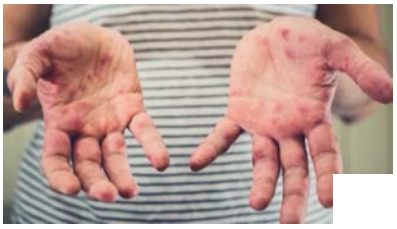
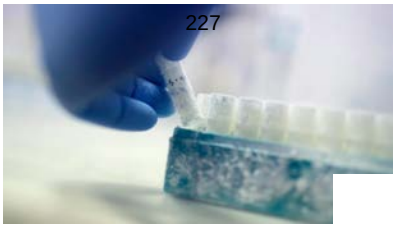


Growing concern over measles risk ahead of March break

Toronto General is ranked world's third best hospital

piped water and poor sanitation" – something Attaran said is simply not possible.



More Alabama clinics stopping IVF treatments after ruling

> **World Health Organization (WHO)**
> @WHO · **Follow**
>
> Athletes and visitors to Rio de Janeiro, and other areas where #ZikaVirus is circulating, are being encouraged to:
>
> 3:08 PM · May 12, 2016
>
> 140 Reply Share
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Doctor calls paper 'BS'

CTV News Infectious Diseases Expert Dr. Neil Rau sides with the IOC and WHO.

"(Attaran) has gone out on a limb with a recommendation that in my opinion is BS," he said.

Dr. Rau added that Zika virus is “relatively mild except in a small group of people” and that in a globalized world, “we already know the virus is spreading like wildfire.”

“It is a hugely disruptive decision to cancel a huge worldwide event,” he said, “when you’re dealing with a disease that’s not really that dangerous.”

With a report from CTV’s medical specialist Avis Favaro and producer Elizabeth St. Philip

RELATED IMAGES

In this Tuesday, Jan. 26, 2016 photo, a health workers stands in the Sambadrome spraying insecticide to combat the Aedes aegypti mosquito that transmits the Zika virus in Rio de Janeiro, Brazil. (AP / Leo Correa)

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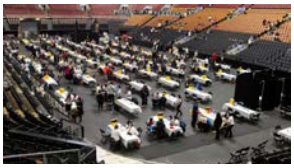

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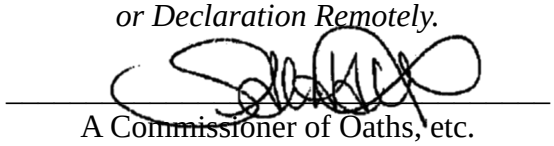

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This article is more than **7 years old**

Zika virus makes Rio Olympics a threat in Brazil and abroad, health expert says

Amir Attaran calls for postponement or moving of Games and says biggest risk is spreading the virus to countries without adequate healthcare infrastructure

The World Health Organization said the fact that the 2016 Games will take place during Brazil's winter lowers the risk of being bitten by mosquitoes. Photograph: Leo Correa/AP

Ashifa Kassam *in Toronto*

@ashifa_k

Thu 12 May 2016 21.54 BST

As Brazil reels from a spiraling political crisis and its deepest recession in decades, a public health specialist in Canada has added to the country's woes with a high-profile call for the 2016 summer Olympics - slated to kick off in Rio de Janeiro in early August - to be postponed or moved due to the Zika outbreak.

"But for the Games, would anyone recommend sending an extra half a million visitors into Brazil right now?" Canadian professor Amir Attaran, whose research areas include population health and global development

policy, asked this week in a commentary published in the Harvard Public Health Review.

First seen in Brazil last year, the Zika virus has now been detected in more than 50 countries. Brazil remains the country most-affected by the mosquito-borne virus, which has been proven to cause a severe birth defect that results in babies born with abnormally small heads and underdeveloped brains. The virus has also been linked to Guillain-Barré syndrome, a rare neurological disorder that can result in paralysis and death.

In February, the World Health Organization declared the Zika virus a public health emergency of international concern. Save for advising pregnant women not to travel to Zika-affected areas - including Rio de Janeiro - WHO has not issued any other travel restrictions on Zika-affected countries.

Speaking to the Guardian on Thursday, Attaran described the idea of going ahead with the games as both "indescribably foolish" and "monstrously unethical". The potential risks to visitors range from brain-damaged children to death in rare instances, he added. "Is this what the Olympics stand for?"

The state of Rio de Janeiro has recorded 26,000 suspected Zika cases - the highest of any state in Brazil - and has an incident rate of 157 per 100,000, the fourth highest in the country, he said. "What is proposed is to bring half a million Olympic visitors into the heart of the epidemic."

The deluge of athletes and visitors expected to pour into Rio from countries around the world could facilitate the virus's transmission in countries that to date have been unaffected, he said.

The risk is that the virus may land on the doorstep of countries that do not have adequate healthcare infrastructure to tackle the virus. "With all those skills and gifts that Brazil possesses, it has been unable to quell this catastrophe," said Attaran. "Are we seriously expecting that Nigeria, the Congo, and Indonesia will be able to do so?"

On Thursday, WHO responded to the claims, noting that the Zika virus usually results in mild symptoms - ranging from fever, body aches and rashes - with most of those affected not experiencing any symptoms at all.

The organisation said it has been working with the Brazilian government to mitigate the risk posed by Zika to athletes and visitors, and is

encouraging visitors to take precautions to protect themselves from mosquito bites and practice safer sex.

The timing of the Games may also prove help helpful. “The Games will take place during Brazil’s wintertime when there are fewer active mosquitoes and the risk of being bitten is lower,” the organisation said in a statement.

The International Olympic Committee said it has no plans to postpone or move the Games and instead has been in close contact with WHO to track the Zika virus in Brazil. “We are working with our partners in Rio on measures to deal with the pools of stagnant water around the Olympic venues, where the mosquitos breed, to minimise the risk of visitors coming into contact with them,” the IOC told the Guardian.

In recent weeks, the Zika outbreak has been eclipsed by the many challenges facing Brazil: Dilma Rousseff, the country’s president, has been stripped of her presidential duties and is facing impeachment; the economy has plunged into a deep recession; and uproar has been growing over a corruption scandal involving the state-controlled oil company, Petrobras, and politicians across the spectrum.

Rousseff was suspended early on Thursday, after the country’s senate voted to impeach her over charges she whitewashed government finances. Hours later the interim president, Michael Temer, named a politician with no medical background as the new health minister. The portfolio will be taken by Ricardo Barros, a civil engineer by training. He is the fourth health minister in little more than half a year.

The medical director of Australia’s Olympic team said he believed the risk of the Zika virus was minimal for Australian athletes. “The last couple of people that I have spoken to, who have been to Rio in the past month or two, haven’t seen a mosquito,” said David Hughes in a statement. “Given that there is no chance that the Games are going to be shifted to another venue, I believe we can proceed with confidence, knowing that we have appropriate guidelines and preventative measures in place.”

Canada’s Attaran is not the first academic to publicly question whether the games in Brazil should go on as planned. In February, New York University’s Arthur Caplan and Lee Igel, wrote in an article that “to host the Games at a site teeming with Zika … is, quite simply, irresponsible”.

Attaran pointed to the 1976 Winter Olympics - moved to Austria after mounting costs forced the American city of Denver to withdraw as host - as a precedent for allowing the Games to be changed in exceptional

circumstances. “I’m not the Olympic Grinch. I’m not calling for the games to be cancelled,” he said. “What I’m asking for is a bit of delayed gratification so that babies aren’t born permanently disabled.”

This is **Exhibit « UU »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*

A Commissioner of Oaths, etc.

SCIENCE / US & WORLD / HEALTH

Health expert recommends moving Rio Olympics due to Zika virus threat / The games may speed up the spread of the virus

By Nick Statt, is a Senior Producer on Decoder. Previously, he wrote about technology and gaming for Naavik, Protocol, and The Verge.

Source Harvard Public Health Review

May 13, 2016, 1:31 PM EDT

John Moore/Getty Images

If the Olympics in Rio de Janeiro proceed as planned this summer, the threat of the mosquito-born Zika virus may substantially increase, according to Canadian professor and biologist Amir Attaran. Writing in an article posted to the *Harvard Public Health Review* this week, Attaran argues for postponing or moving the Rio Olympics. He says the games, which are estimated to bring 500,000 foreign tourists to Brazil, could both speed up the spread of the virus and complicate the process of developing a vaccine or some other measure to fight it.

The Zika virus entered Brazil last year and has since spread to over 50 countries. Zika has been scientifically proven to cause microcephaly in unborn children, resulting in babies born with abnormally small heads and severe brain damage. It's also dangerous to adults, having been linked to Guillain-Barré syndrome, a neurological auto-immune disease that can cause paralysis and death. Late last month, the first Zika death in the US was reported in Puerto Rico, while Rio alone has 26,000 suspected Zika cases.

"Attaran says the Olympics could speed up the spread of the Zika virus"

Attaran lays out key reasons for why moving the Olympics out of Rio is a necessary precaution. He says Rio has the highest number of Zika cases of any state in Brazil, and the fourth highest incidence rate in the country. "According to the Brazil's official data, Rio is not on the fringes of the outbreak, but inside its heart," Attaran writes. He also explains how this strain of the virus is more dangerous than the strain of Zika first discovered nearly 70 years ago. Hosting the event, he adds, would violate the Olympics' commitment to social responsibility. "By spreading the virus faster and farther, the Games steal away the very thing — time — that scientists and public health professionals need to build such defenses."

Public officials' response to the Zika virus has also been steeped in denial, Attaran says. The World Health Organization, which in February declared Zika a public health emergency of international concern, says Zika usually results in mild symptoms and claims it's working with the Brazilian government to mitigate the risk to athletes and tourists. The organization also claims Brazil's winter season, beginning in July, should reduce the number of mosquitos in the country.

“"It is deplorable, incompetent, and dangerous."”

Meanwhile, the International Olympic Committee's highest-ranking member, Dick Pound, said in February the threat of the Zika virus is a "manufactured crisis" beyond requiring pregnant women to take necessary precautions. "It is deplorable, incompetent and dangerous that WHO, which has both public health expertise and the duty of health protection, is speechlessly deferring to the IOC, which has neither," Attaran writes.

He ends his article with a plea, saying his argument rests not on a lack of love for the Olympics, but on the potential health threat at hand. "But where is the love for the possible victims of a foreseeable global catastrophe: the damaged or dead adults, and the babies for whom — and mark these coldly clinical words carefully — fetal brain disruption

sequence is as terrible as it sounds, and extinguishes the hope of a normal life even before it has begun? " he writes. "With stakes like that, bluntly put, these Olympics are no game at all."

More from **Science**

Amazon — like SpaceX — claims the labor board is unconstitutional

How much electricity does AI consume?

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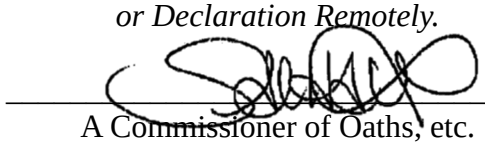
SpaceX successfully launches Odysseus in bid to return US to the lunar surface

RECOMMENDED

This is **Exhibit « VV »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



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World

Consider moving Rio Olympics, health experts urge WHO

WHO advises pregnant women not to go to Rio and says other travellers should avoid poor and overcrowded areas

The Associated Press · Posted: May 27, 2016 3:40 PM EDT | Last Updated: May 27, 2016

Continuing to stage the Olympics in Rio given the threat of the Zika virus would "throw more gasoline onto the fire," says Amir Attaran, a professor at the University of Ottawa. (Adrian Wyld/Canadian Press) 244

comments

Health experts on Friday urged the World Health Organization to consider whether the Rio de Janeiro Olympics should be postponed or moved because of the Zika outbreak.

The 150 experts — including former White House science adviser Dr. Philip Rubin — issued an open letter to the U.N. health agency, calling for the games to be delayed or relocated "in the name of public health."

The letter cited recent scientific evidence that the Zika virus causes severe birth defects, most notably babies born with abnormally small heads. In adults, it can cause neurological problems, including a rare syndrome that can be fatal or result in temporary paralysis. The authors also noted that despite increased efforts to wipe out the mosquitoes that spread Zika, infections in Rio have gone up rather than down.

Several public health academics have previously warned that having hundreds of thousands of people head to the Aug. 5-21 games in Brazil will inevitably lead to the births of more brain-damaged babies and speed up the global spread of the virus. Most people infected by Zika suffer only minor symptoms including fever, a rash and muscle or joint pain.

WHO declared the Zika epidemic to be a global emergency in February and in its latest assessment this week, said it "does not see an overall decline in the outbreak."

- **WHO chief says 'I'm going' to Rio Olympics despite increasing worry over Zika virus**
- **Zika concerns prompt call to 'postpone or move' Rio Olympic Games**

"The fire is already burning, but that is not a rationale not to do anything about the Olympics," said Amir Attaran, a professor at the University of Ottawa and one of the letter's authors. "It is not the time now to throw more gasoline onto the fire."

WHO has already advised pregnant women not to go to Rio and says other travellers should avoid poor and overcrowded parts of the city. The U.N. agency also predicted the Zika risk in August would drop since it will be the south American winter and there should be fewer mosquitoes.

Zika can also be spread via sex in some cases; WHO recommends that pregnant women abstain or practice safe sex with partners returning from Zika-affected areas.

"Based on current assessment, cancelling or changing the location of the 2016 Olympics will not significantly alter the international spread of Zika virus," WHO said Friday.

WHO Director-General Dr. Margaret Chan said earlier this month that the U.N. health agency is increasingly worried about Zika but stopped short of recommending the Rio Olympics be moved or postponed. Chan, who is not of child-bearing age, noted that she herself would be attending the games.

WHO, IOC 'overly close'

Among the letter's signatories are experts from more than two dozen countries in fields including public health, bioethics and pediatrics. The letter also noted a potential conflict of interest, highlighting the decades-long collaboration between WHO and the International Olympic Committee.

The authors said the "overly close" relationship "was last affirmed in 2010 at an event where the Director-General of WHO and president of the IOC signed a memorandum of understanding, which is secret because neither has disclosed it."

They also pointed to a group that WHO established to help cities not only with health advice, but to potentially help them bid for major events including the Olympics.

"WHO cannot credibly assess the public health risks of Zika and the Olympics when it sets neutrality aside," the letter stated.

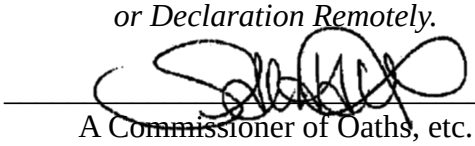
WHO did not immediately respond to a request for comment Friday.

In an email to the AP, the IOC said it would "always consult the WHO for guidance and advice on health matters."

Concerns over Zika have prompted USA Swimming to move its pre-Olympic training camp from Puerto Rico to Atlanta and Major League Baseball also scrapped a series of games that were going to be held in San Juan.

No Olympic Games have ever been moved from their host city due to medical concerns, but in 2003, FIFA decided to switch the Women's World Cup soccer tournament from China to the United States on short notice due to the threat posed by the respiratory virus SARS.

This is **Exhibit « WW »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



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Melissa Mba @MelissaM · Oct 1, 2020 248

It's an unfortunate situation and I'm just wondering why @uOttawa chose him to speak on this matter. You don't throw insults at an Indigenous woman and then speak as though you're an advocate for us.

Melissa Mb: @Melissa · Aug 22, 2020 ···

This my friends is a professor of Law and Medicine in Canada. He called me dumb in every reply to me and when a man responded, he was much more polite and called him naive. Do you think his dislike toward me has anything to do with the fact that I'm an Indigenous woman?

> You're unable to view this Post because this account owner limits who can view their Posts. Learn more

53 36 121

Amir Attaran (@AmirAt @ · Aug 22, 2020 ···

Nope. It has everything to do with you being unintelligent and lying to your readers about fossil fuels and climate change.

7

Melissa Mb: @Melissa · Aug 22, 2020 ···

There are 1000's more out there but you chose to specifically call me stupid amongst other things. Show me tweets where you've called anyone else stupid if this has nothing to do with my race.

2 1 10

Amir Attaran (@AmirAt @ · Aug 22, 2020 ···

Well Melissa, here's a tweet where I called Michael Binnion dumb. He's the same man you claim I treated well while allegedly calling you dumb because you're Indigenous.

You've been caught lying again, I'm afraid.

> **Amir Attaran (@Amir** @ · Jun 11, 2020
>
> Replying to @mrbinnion and @ConradMBlack
>
> Whoa Michael, you're so dumb that you don't know how to spell "dummies".

Melissa Mb: @Melissa · Aug 22, 2020 ···

Where's lying and lazy?

Amir Attaran (@AmirAt @ · Aug 22, 2020 •••

Well Melissa, here's a tweet where I called Michael Binnion dumb. He's the same man you claim I treated well while allegedly calling you dumb because you're Indigenous.

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>
> Whoa Michael, you're so dumb that you don't know how to spell "dummies".

1

Melissa Mb @MelissaM · Aug 22, 2020 •••

Where's lying and lazy?

2 5

Amir Attaran (@AmirAt @ · Aug 22, 2020 •••

If you're looking for lying and lazy, look in the mirror.

21 6

Teri Richards @Vancouver · Aug 22, 2020 •••

Wow. You are out of line Professor.

1 14

Gill Powell 🇨🇦
@GillPowell4

Follow •••

And he wonders why he was passed over for a promotion at the University he used to work at.

7:36 PM · Aug 22, 2020

Melissa Mbarki
@MelissaMbarki

Follow

😮 wow is all I can say!

You're unable to view this Post because this account owner limits who can view their Posts.
Learn more

11:35 AM · Aug 22, 2020

21 7 50

Melissa Mb @MelissaM · Aug 22, 2020

He blocked me but I saved his reply.

Melissa Mbarki @MelissaMbarki · 4h

😮 wow is all I can say!

Amir Attaran @profamiratt... · 4h

Replying to @MelissaMbarki

If you're looking for lying and lazy, look in the mirror.

19 13 23

themsteri @teririch · Aug 22, 2020

Can you post what he's said for those of us he's blocked?

2 2

Melissa Mb @MelissaM · Aug 22, 2020 ···

😮 wow is all I can say!

> **Amir Attaran (@Amir** · Aug 22, 2020
>
> Replying to @MelissaMbarki
>
> If you're looking for lying and lazy, look in the mirror.

21 7 50

worldof_home @Hom · Aug 22, 2020 ···

Hey, @uOttawa, do you claim this human as representative of your University?

> **Amir Attaran (@Amir** · Aug 22, 2020
>
> Replying to @MelissaMbarki
>
> If you're looking for lying and lazy, look in the mirror.

Captain Canac @BrokenH · Aug 22, 2020 ···

And this is a educator

> **Amir Attaran (@Amir** · Aug 22, 2020
>
> Replying to @MelissaMbarki
>
> If you're looking for lying and lazy, look in the mirror.

Melissa Mb @MelissaM · Aug 22, 2020

Where's lying and lazy?

2 5

Amir Attaran (@AmirAttarar

@profamirattaran

Follow

If you're looking for lying and lazy, look in the mirror.

11:34 AM · Aug 22, 2020

21 6

Melissa Mbarki
@MelissaMbarki

Follow

Because you're a woman who challenged him.

7:50 PM · Aug 22, 2020

1 1 6

Gill Powell @GillPowell · Aug 22, 2020

I wasnt going to let him get away with insulting women that I think are strong and intelligent. To bad he blocked me I was about to call him out for insulting Ali as well. Men like him are just toxic.

1 4

Melissa Mbarki
@MelissaMbarki

Follow

There's something off with him. He's not doing this to men and only seems to be targeting Indigenous women. There were many people who commented and he stalked you out?

4:27 PM · Aug 22, 2020

Melissa Mbarki

@MelissaMbarki

Follow

I said this earlier. It's only women he's being extremely rude to.

8:42 PM · Aug 22, 2020

Melissa Mba @MelissaM · Aug 22, 2020

Replying to @GillPowell4 @Quea_Ali and @profamirattaran

Of course he couldn't. He belittles then blocks.

2 2

Melissa Mba @MelissaM · Aug 22, 2020

I said this earlier. It's only women he's being extremely rude to.

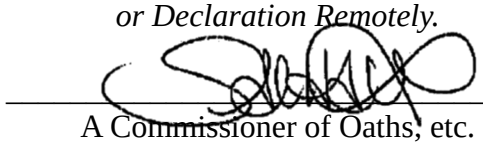
1

Melissa Mba @MelissaM · Oct 1, 2020

Replying to @privatecitizenn @VeldonCoburn and 2 others

It's an unfortunate situation and I'm just wondering why @uOttawa chose him to speak on this matter. You don't throw insults at an Indigenous woman and then speak as though you're an advocate for us.

This is **Exhibit « XX »** to the Affidavit of Kulvinder Gill, sworn remotely by Kulvinder Gill, stated as being located in the City of Brampton, Ontario, before me in the City of Ottawa, in the Province of Ontario, on March 8th, 2023, in accordance with O. Reg 431/20, *Administering Oath or Declaration Remotely.*



A Commissioner of Oaths, etc.

Professor ripped after trying to mask-shame flight attendant in unhinged Twitter rant

By
Social Links forDavid Propper
Published June 20, 2022
Updated June 28, 2022, 8:56 a.m. ET

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EXPLORE MORE

- **US ends free COVID test kit distribution — here's the last day to place an order**
- **US seeks collection on up to $20B in delinquent COVID loans to small businesses, nonprofits**
- **Professor ripped after trying to mask-shame flight attendant in unhinged Twitter rant**

A Canadian professor went on an unhinged Twitter rant as he attempted to get a flight attendant in trouble for not wearing a mask aboard the flight he was on.

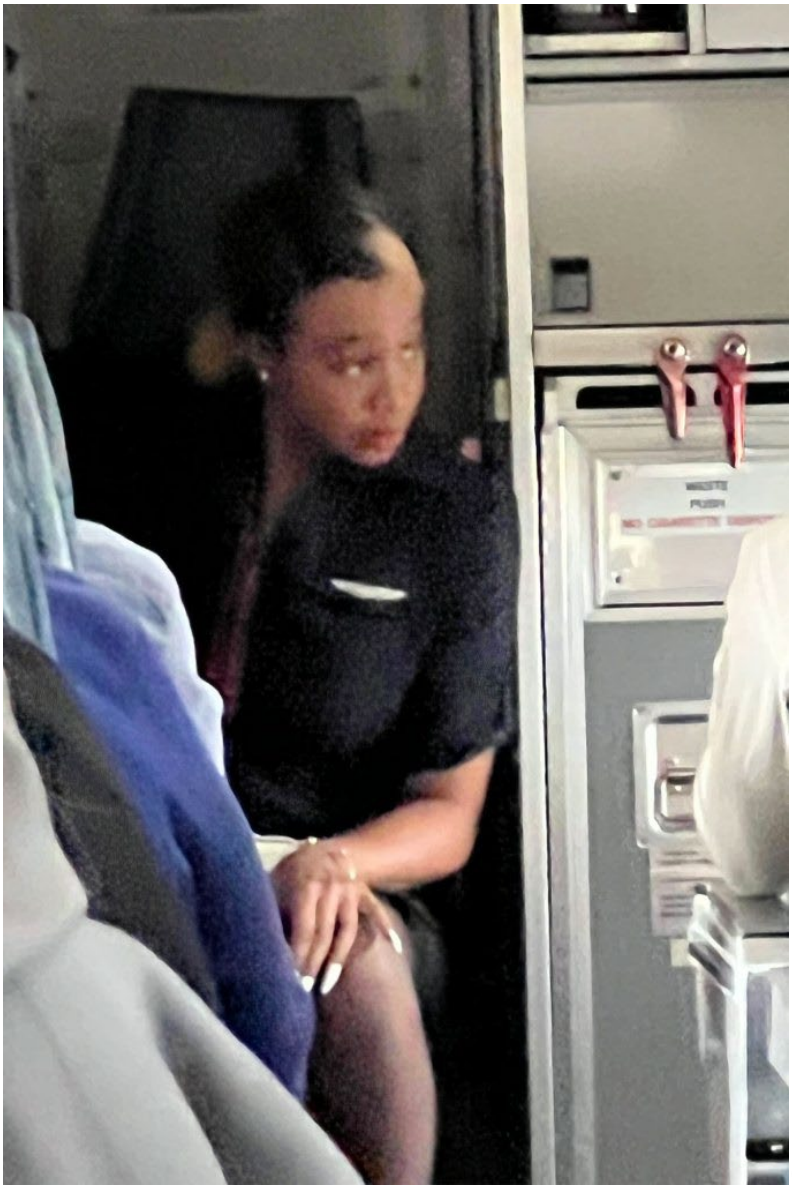
Amir Attaran, part of the University of Ottawa's Faculties of Law and School of Epidemiology and Public Health, called out the unsuspecting flight attendant, United Airlines and the United States over coronavirus policies in a series of social media posts over the weekend.

Attaran's first tweet posted photos of the United flight attendant without a mask, which is required for all flights out of Canada.

"Hey @United, why are you breaking the law? Masks are required on all flights out of Canada. Your flight attendant isn't wearing one!" he tweeted as he also included government agencies and Canadian news outlets.

United Airlines, in a tweet, replied, "Hi Amir, thanks for bringing this to our attention. We've informed the appropriate teams for further review."

University of Ottawa Professor Amir Attaran (right) lashed out at an unmasked flight attendant on Twitter.profamirattaran/Twitter; Wikimed

 Canadian Professor Amir Attaran posted photos of the unmasked flight attendant on social media.profamirattaran/Twitter

Later Attaran tweeted that he had a “friendly chat” with the previously unmasked flight attendant, “and found she is blameless because @United misinforms its crew.

“WTF, United? Look here: no flights leaving Canada, masks are mandatory the ‘entire travel journey’. FOLLOW THE LAW!”

The COVID-crazed professor wasn’t done yet.

“United should be forbidden from flying to Canada—immediately,” he tweeted, while tagging the country’s minister of transport. “Our country, our rules. Even the supervisor I

talked with in Chicago didn't understand Canadian rules apply to flights departing Canada."

The next day after an outpouring of critical tweets directed at him, he turned his ire to Americans and the Republican Party, mocking the country over its COVID death rate.

"Don't like Canada's laws? Then keep your American companies in your own country," he tweeted. "Our country, our rules. That's why your COVID death rate is triple ours, a–holes."

"See Americans, you get crazy mad about COVID safety and attack science—and then you die. You drank the GOP Kool Aid and it's mass suicide basically."

Then he took aim at America's gun policies.

"Oh, and if you Republican Reptiles dislike Canada's COVID safety laws, you'll TOTALLY HATE our gun safety laws—if you're not already shot and dead," he tweeted. "Cuz Yankees murder their own far more than Canadians. Even kids. It's awful. I'm so glad I emigrated from California to Canada."

Attaran was apparently undeterred by the cascade of criticism he received, pushing back against anyone who accused him of being a tattletale or being nasty to a service worker.

"Oh my god you were that kid in school weren't you?" one YouTuber tweeted at him.

Attaran's reply: "Sure was. Went to university and did great. You were that kid behind the McDonald's counter weren't you?"

Another account tweeted on Father's Day, "Your children are ashamed of you."

But Attaran quipped, "My father day's gift was lovely. Sorry, dude."

He was still tweeting out how the US dealt with COVID as recently as Monday night.

A pilot flying a plane in the US made an announcement mid-air about mask-wearing.

A professor has been blasted online for trying to shame an American airline by posting photos of a flight attendant who wasn't wearing a face mask aboard his flight.

"Hey United, why are you breaking the law? Masks are required on all flights out of Canada. Your flight attendant isn't wearing one!" he wrote, tagging

government agencies and Canadian news outlets

"Hi Amir, thanks for bringing this to our attention. We've informed the appropriate teams for further review," the airline said.

Hey @United, why are you breaking the law? Masks are required on all flights out of Canada. Your flight attendant isn't wearing one! This is UA3737 in Ottawa right now.
@rcmpgrcpolice @Transport_gc @AirPassRightsCA
@CBCPolitics @globeandmail @globalnews

More related stories

World

'Love of our lives': Grim MH370 milestone
The Australian government says it's 'ready to assist' in a search for MH370 as families mark again with the

Later, after landing in Chicago, Prof Attaran tweeted that he'd had a "friendly chat" with the flight attendant about the situation.

"In Chicago now. Had a friendly chat with the flight attendant, and found she is blameless because United misinforms its crew," he said.

Several Twitter users hit back at the professor, accusing him of being a tattletale.

Meghan's next move revealed

"Do you know what kind of hell flight attendants have been through during this pandemic? Dealing with harassment and bullying non-stop? And you post this poor woman's photo and target her? And then admit later she didn't even know?" wrote journalist Yashar Ali.

Trending now

"Leave her alone. This is beyond creepy. A professor taking photos of a young worker to shame her. Maybe don't fly if you can't handle seeing someone's face," said Christina Pushaw, secretary of Florida Governor DeSantis.

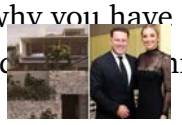
'Fun and games' to firestorm: New details of Lenu-Mam saga revealed

(Mr DeSantis, a Republican, was an outspoken opponent of Covid restrictions throughout most of the pandemic.)

Cop's impossible choice when confronting 'drugged dumb killer'

Ms Pushaw also accused United of throwing its flight attendant "under the bus".

Stefanovics await the outcome of court battle



"Seriously, United? You throw your employees under the bus like this in public and then wonder why you have to cancel so many flights due to staffing shortages? She did nothing wrong. This guy is a creep to post this."

Road chaos at scene of scooter rider tragedy

Airline staffing shortages led to [at least 14,000 domestic flights be cancelled or delayed] in the US over the weekend.

"Oh my god you were that kid at McDonald's weren't you?" quipped YouTuber and podcaster Donut Operator.

"Sure was. Went to university and did great. You were that kid be McDonald's counter weren't you?" Prof Attaran shot back.

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Women's stories are 'really f*ing important': Kate Winslet's message to Hollywood**

The key issue relegating women's sport to a 'second-tier novelty'

The woman behind this iconic slice explains how she did it

Meghan's next move revealed

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Lifestyle

5 fitness rules women should actually listen to

Amir Attaran (@mstdn.social) · Jun 18, 2022
@profamirattar
Hey @United, why are you breaking the law? Masks are require
all flights out of Canada. Your flight attendant isn't wearing on
is UA3737 in Ottawa right now. @rcmpgrcpolice @Transport_gc
@AirPassRightsCA @CBCPolitics @globeandmail @globalnews

Yashar Ali 🐘
@yashar · **Follow**

Do you know what kind of hell flight attendants have been through during this pandemic? Dealing with harassment and bullying nonstop? And you post this poor woman's photo and target her?

And then admit later she didn't even know?

11:17 AM · Jun 19, 2022

2.9K See the latest COVID-19 information on X

Read 29 replies

World

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Christina Pushaw · Jun 19, 2022
@ChristinaPushaw · **Follow**

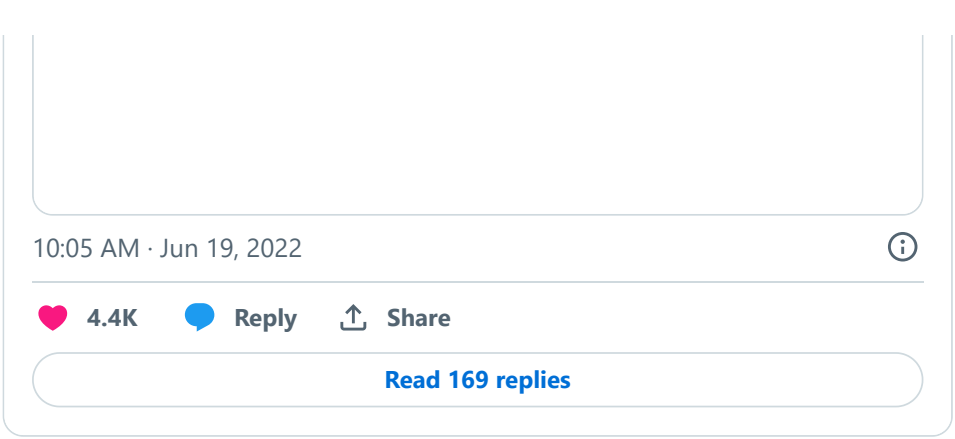
Leave her alone. This is beyond creepy. A professor taking photos of a young worker to shame her. Maybe don't fly if you can't handle seeing someone's face.

> **Amir Attaran (@AmirAttaran@mstdn.so...** @profamirattar...
>
> Hey @United, why are you breaking the law? Masks are required on all flights out of Canada. Your flight attendant isn't wearing one! This is UA3737 in Ottawa right now. @rcmpgrcpolice @Transport_gc @AirPassRightsCA @CBCPolitics @globeandmail @globalnews

Christina Pushaw
@ChristinaPushaw · **Follow**

Seriously, @united? You throw your employees under the bus like this in public and then wonder why you have to cancel so many flights due to staffing shortages???

She didn't do anything wrong. This guy is a creep to post this.



More broadly, Prof Attaran reacted to the backlash by calling out America's record during the pandemic. Its death toll stands at more than a million – easily the highest in the world – with more than 88 million infections recorded.

Meanwhile about 42,000 Canadians have died from Covid.

"Bunch of Yankees mad about this and trying to ratio. HAVE FUN," he tweeted.

"Don't like Canada's laws? Then keep your American companies in your own country. Our country, our rules. That's why your Covid death rate is triple ours, a**holes."

"Lots of mad Republican MAGA (Make America Great Again) Yankees want to ratio me for advocating Canada's Covid laws. OK, let's do it," he continued.

He pointed out that Canada had suffered 1097 Covid deaths per million people, about a third as bad as the US, with 3044 deaths per million people.

"THERE'S YOUR RATIO YANKS!" he added.

"The number of ignorant, whiny anti-vaxxers complaining to the university about my low opinion of them is very funny.

"See Americans, you get crazy mad about Covid safety and attack science – and then you die. You drank the (Republican Party) Kool Aid and it's mass suicide, basically."

Prof Attaran then brought up America's looser gun laws.

"If you Republican Reptiles dislike Canada's Covid safety laws, you'll TOTALLY HATE our gun safety laws – if you're not already shot and dead," he said.

“Cuz Yankees murder their own far more than Canadians. Even kids. It’s awful. I’m so glad I emigrated from California to Canada.”

The million dead is a tragic, shameful fact the ðŸ‡ºðŸ‡¸ is going to have to ov ercome. You did it to yourselves.

And for what? The FREEDOM to chow chicken wings in the sports bar as a kill er pandemic raged. I hope they were tasty.
— Amir Attaran (@profamirattaran) June 21, 2022

One exchange turned particularly bitter, as author and podcaster Michael Malice told Prof Attaran to “kindly stay in your s***hole country in the future”.

“Wanna talk s***hole countries, honey?” the professor responded, proceeding to list a number of unflattering American statistics.

“Shorter life expectancy. More homelessness. More gun murders. More hunger. Lower graduation rate. Higher teen pregnancies. Higher Covid death rate. Let’s not forget insurrections.

More Coverage

“From Canada with love, honey.”

At the time of writing, Prof Attaran was still responding to critics online, saying Canadians were “not interested in public health lessons from killers”.

Originally published as Plane passenger slammed for shaming maskless United Airlines flight attendant

Young child dies with Covid-19

Alert over new ‘sticky’ Omicron variant

University of Ottawa professor faces international backlash for shaming maskless flight attendant

By **Elie Cantin-Nantel** - June 20, 2022

University of Ottawa law and epidemiology professor Amir Attaran is facing international backlash for shaming a maskless United Airlines flight attendant on social media.

On Saturday, Attaran posted a picture of a flight attendant on a United flight from Ottawa to Chicago and accused the airline of breaking the law because "masks are required on all flights out of Canada."

Transport Canada says masks are mandatory on all flights to and from Canada, a policy that has created confusion given that masking is not required on planes in America.

"Canada is not the USA, you f***ers," said Attaran, who added that United should be banned from operating flights to Canada for not following the Trudeau government's mask mandates.

Attaran's online conduct was quickly criticized by Canadian and international figures from all sides of the political spectrum.

Florida Governor Ron DeSantis spokesperson Christina Pushaw called the University of Ottawa professor's actions creepy, and suggested he should not fly if he "can't handle seeing someone's face."

Pushaw also called out United's response to Attaran and accused the airline of throwing its employees under the bus. United had thanked Attaran for bringing the issue to their attention.

Fox News personality Greg Gutfeld and BlazeTv podcast host Elijah Schaffer also reacted to Attaran's tweets.

Progressive personalities including Huffington Post contributor Yashar Ali and former The Young Turks correspondent Emma Vigeland also criticized Attaran's actions.

Meanwhile, former University of Toronto professor Jordan Peterson reacted to Attaran's tweets by calling him a "pathetic ranfink" and a "horrible piece of work."

Attaran responded to Peterson's criticism by claiming he was a baby. He also challenged him to a public debate in Ottawa.

This is not the first time that the University of Ottawa professor has caused controversy for his conduct on social media.

Attaran, whose Twitter bio states that he "wrecks grifters, anti-vaxxers & scientific illiterates," has also come under fire for comments he made about unvaccinated people.

Attaran previously called those who do not believe in Covid vaccinations racist, low life trash, losers, stupid, villiage idiots, homophobic and anti-Semetic.

Author

Elie Cantin-Nantel

Ottawa based journalist.

'You the type of fella to remind the teacher she forgot to assign homework!' COVID-crazed epidemiology professor is blasted for tweet shaming United flight attendant for not wearing mask

- **Amir Attaran, a professor of law and epidemiology at the University of Ottawa, complained that his flight attendant was breaking the law**
- **'Hey United, why are you breaking the law? Masks are required on all flights out of Canada. Your flight attendant isn't wearing one!'**
- **United sent Attaran - who is often seen going to the extent of wearing an outlandish P100 mask in public - a response promising to take care of it**
- **However, the rest of Twitter was not so kind, slamming Attaran for what they felt was publicly shaming someone**
- **The controversy even got as far as Christina Pushaw, Governor Ron DeSantis' press secretary, who took a public whack at Attaran**

By STEPHEN M. LEPORE FOR DAILYMAIL.COM
PUBLISHED: 19:11 EST, 19 June 2022 | **UPDATED:** 22:08 EST, 19 June 2022

A Canadian professor has been branded a petty tattle-tale on social media after taking to Twitter to shame a flight attendant for not wearing amask.

Amir Attaran, a professor of law and epidemiology at the University of Ottawa, complained that his United flight attendant was breaking the law which requires masking on flights out of **Cana**da on a recent trip to Chicago.
'Hey United, why are you breaking the law? Masks are required on all flights out of Canada. Your flight attendant isn't wearing one! This is UA3737 in Ottawa right now,' he tweeted.

He later said that when his flight landed in **Chicago**, he spoke to the flight attendant who claimed they had been misinformed about the law and attacked United again, begging them to follow the law.
Passengers and crew are no longer forced to wear masks on planes entering and leaving US airspace.

United sent Attaran - who is often seen going to the extent of wearing an outlandish P100 mask in public - a response, saying: 'Hi Amir, thanks for bringing this to our attention. We've informed the appropriate teams for further review.'

Amir Attaran
@profamirattaran

Hey @United, why are you breaking the law? Masks are required on all flights out of Canada. Your flight attendant isn't wearing one! This is UA3737 in Ottawa right now. @rcmpgrcpolice @Transport_gc @AirPassRightsCA @CBCPolitics @globeandmail @globalnews

10:42 AM · 18 Jun 22 · Twitter for iPhone

32 Retweets **43** Quote Tweets **166** Likes

+10

View gallery

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View gallery

- **Amir Attaran, a professor of law and epidemiology at the University of Ottawa, complained that his flight attendant was breaking the law which requires masking on flights out of Canada**


Amir Attaran
@profamirattaran
Another flight on an American mask-free airline, another day for the P100 mask. It's actually more comfortable than a N95.
© twitter

+10

View gallery

- **Attaran is often seen going to the extent of wearing an outlandish P100 mask in public**

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View gallery

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View gallery

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TRENDING

Judge demands Biden's DHS hand over Prince Harry's immigration papers

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AMANDA PLATELL: Three cheers for Uncle Gary! He's spoken up for Kate

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Meghan Markle looking for new PR guru amid 'popularity problem' in UK

6.6k viewing now

However, the rest of Twitter was not so kind, slamming Attaran for what they felt was publicly shaming someone and in some cases, doing so to a person not following a rule they felt was unjust in the first place.

Daniela Jampal, who was at the forefront of the movement to end New York City's mask mandate for toddlers, immediately jumped on Attaran's complaints.

'Please do not use your social media platform to shame service workers who have worn a mask 8+ hrs a day for 5+ days a week for the past two years,' she tweeted.

Another social media user chimed in further: 'You the type of fella to remind the teacher she forgot to assign homework.'

The complaint even made it to officials in government, as Governor Ron DeSantis' press secretary Christina Pushaw had a whack at Attaran.


Christina Pushaw
@ChristinaPushaw
He wears this on a plane but he doesn't think it protects him?? So everyone else has to play along with his delusions?
Amir Attaran
@profamirattaran
Another flight on an American mask-free airline, another day for the P100 mask. It's actually more comfortable than a N95.
10:13 AM · Jun 19, 2022 · Twitter for iPhone
© Twitter

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View gallery

'Leave her alone. This is beyond creepy. A professor taking photos of a young worker to shame her. Maybe don’t fly if you can’t handle seeing someone’s face.'

She also hit out at United Airlines for responding to Attaran's gripe.

'Seriously, United? You throw your employees under the bus like this in public and then wonder why you have to cancel so many flights due to staffing shortages??? She didn’t do anything wrong. This guy is a creep to post this.'

Even entertainment reporter Yashar Ali got in on the gang up: 'Do you know what kind of hell flight attendants have been through during this pandemic? Dealing with harassment and bullying nonstop? And you post this poor woman's photo and target her? And then admit later she didn't even know?

Attaran, for his part, appeared to do a bit of pointing at the scoreboard during this deadly pandemic to further make his point.

© Twitter

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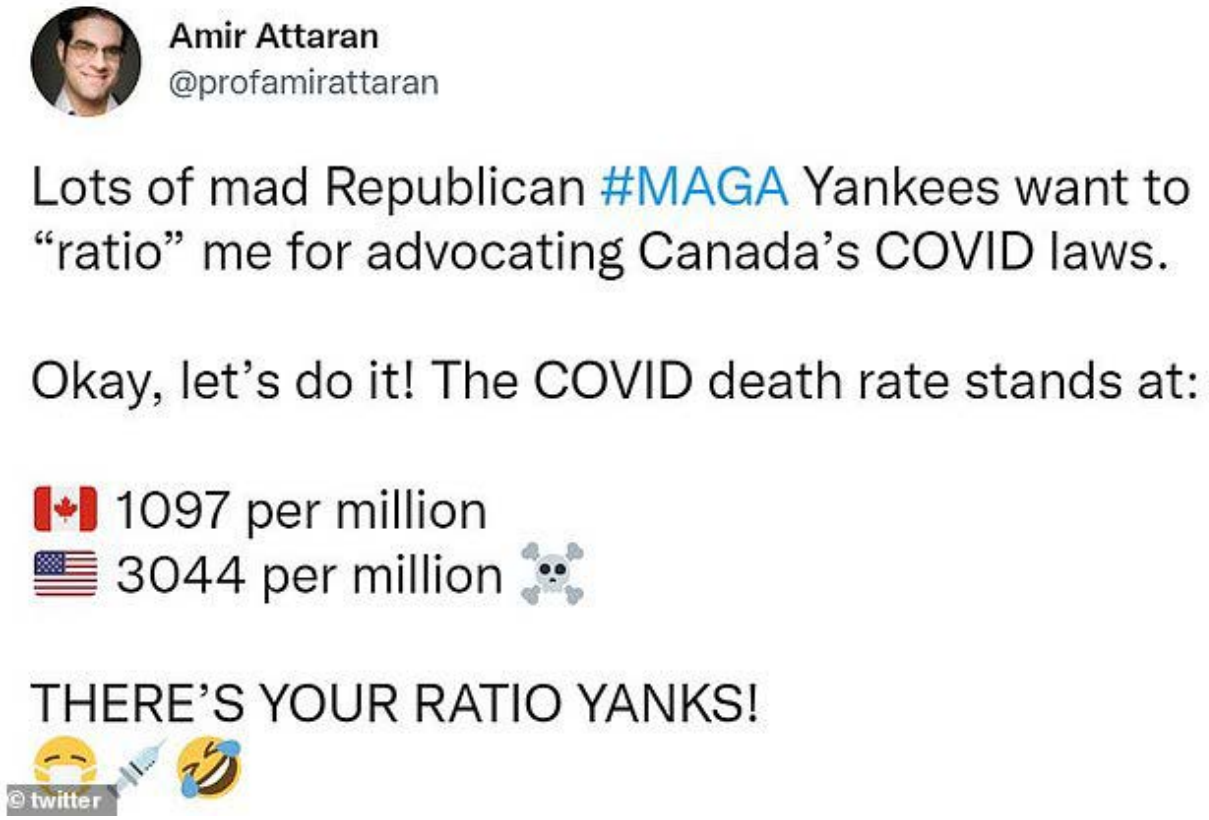

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View gallery

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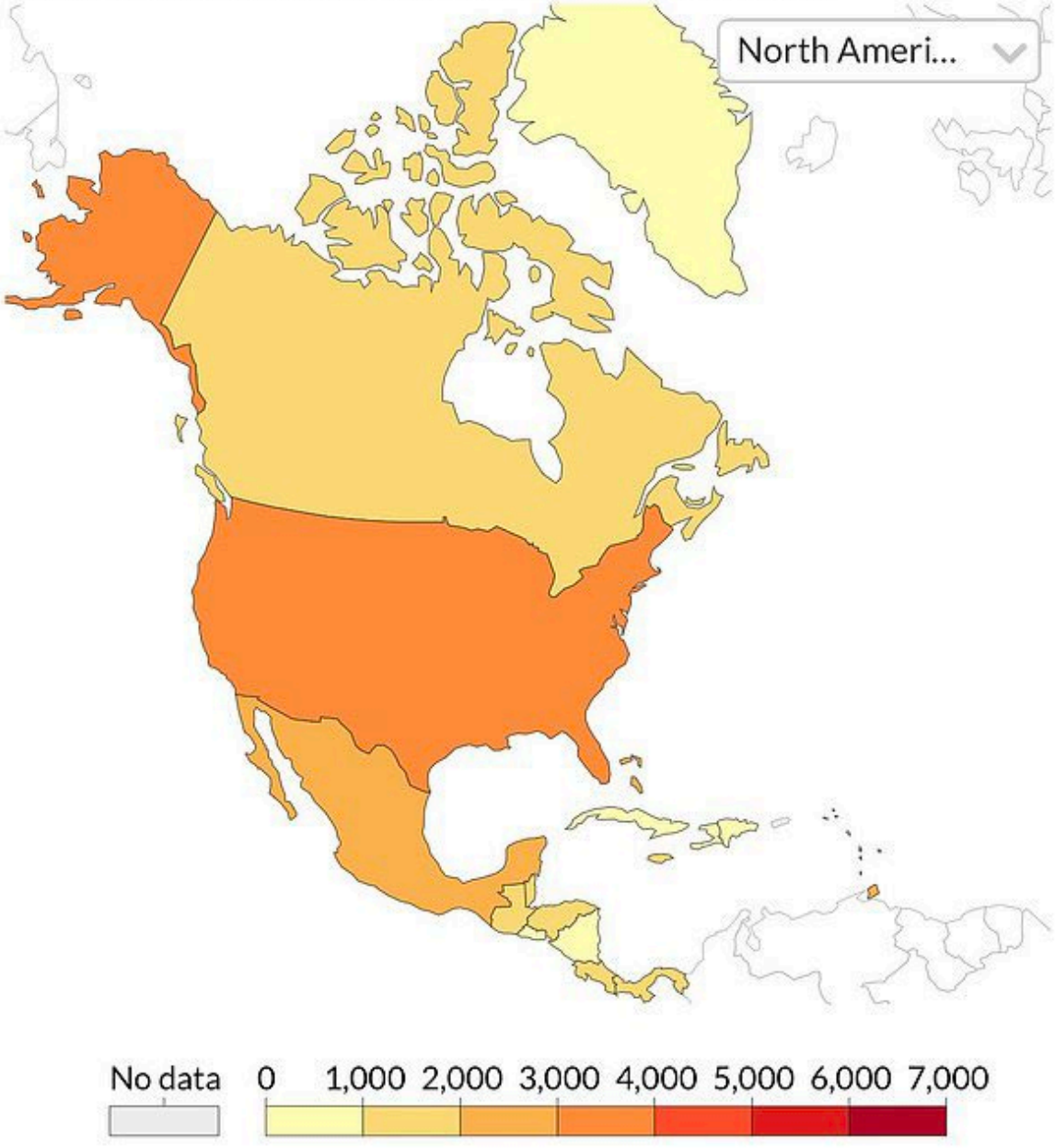
Cumulative confirmed COVID-19 deaths per million people, Jun 18, 2022

Our World in Data

Due to varying protocols and challenges in the attribution of the cause of death, the number of confirmed deaths may not accurately represent the true number of deaths caused by COVID-19.



Source: Johns Hopkins University CSSE COVID-19 Data

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'Lots of mad Republican #MAGA Yankees want to “ratio” me for advocating Canada’s COVID laws. Okay, let’s do it! The COVID death rate stands at: Canada - 1,097 per million; USA - 3,044 per million. THERE’S YOUR RATIO YANKS!'

Attaran was born and raised in California and holds dual citizenship between the United States and Canada.

Canadian law does, in fact, require all personnel on flights out of the country to be masked up, while American airlines have been allowed to unmask.

DR. KULVINDER GILL Plaintiff	-and-	**AMIR ATTARAN et al.** Defendant

Court File No.: CV-21-00658784-0000

ONTARIO
SUPERIOR COURT OF JUSTICE

Proceeding commenced in Toronto

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-and-

AMIR ATTARAN et al.
Defendant

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MOTION RECORD OF THE RESPONDING PARTY

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