



Commentary

Tuberculosis and COVID-19 in Canada

Richard Long^{a,*}, Malcolm King^b, Alexander Doroshenko^a, Courtney Heffernan^a^a The Department of Medicine, Faculty of Medicine and Dentistry, University of Alberta, Room 8334A, Aberhart Centre, 11402, Alberta T6G 2J3, Canada^b The Department of Community Health and Epidemiology, College of Medicine, University of Saskatchewan, Canada

ARTICLE INFO

Article History:

Received 8 September 2020

Revised 17 September 2020

Accepted 22 September 2020

Available online 10 October 2020

Viewed from the perspective of tuberculosis (TB) programs and underserved communities across Canada, the response to COVID-19 has been both instructive and frustrating. Instructive, because without effective treatments or vaccines, the most successful COVID-19 containment responses have demanded the early and rigorous application of basic public health principles. These include timely surveillance, widespread testing, contact tracing and population-based infection control measures such as promoting physical distancing, working or studying remotely using on-line technologies, limiting social gathering outside of immediate households, emphasizing respiratory and hand hygiene and recommending or mandating wearing masks by members of the public. They also include transparent messaging and consistent public education, proper resourcing of health care services and research, sharing of data across jurisdictions and sectors, and proactive Federal/Provincial/Territorial collaboration and cooperation. Frustrating, because TB programs have known the importance of each of these responses for the better part of a century and yet TB persists. In fact, the incidence of TB in Canada has remained unchanged for 15 years [1]. Like COVID-19, pulmonary TB is not, as yet, vaccine preventable with existing trials showing substantial variability in the protective efficacy of BCG vaccine ranging from substantial protection (78% [95% CI 69 to 84%]) to an absence of clinically important benefit (−5% [95% CI −25 to 12%]) [2]. Unlike COVID-19, it is both preventable and treatable with pharmacologic agents. Why, then, is Canada not making progress on TB elimination? Which of the aforementioned public health responses to COVID-19 are not being applied to TB prevention and care in Canada? What are the broader implications of COVID-19 on TB in Canada?

TB and COVID-19 are both pandemics – diseases that spread across whole countries or the world. The first is slow moving and has been present for millennia; the other rapidly spreading and new. Early on, both of these pandemics affected all population groups,

including mainstream society, a fact attributable to their ability to reproduce well within particular contexts. The R_0 – the expected number of cases directly generated by one case in a susceptible population – of TB at the end of the nineteenth century was about 3; the R_0 of COVID-19 is 2–4, making both tenacious, if not explosive, diseases [3,4].

With regard to TB in Canada, a series of ecologic and programmatic events served to reduce the incidence of the disease well before the discovery of anti-tuberculosis drugs. These measures included: economic and social development particularly in nutrition and housing [5], the sanatoria movement, and early detection (mass x-ray screening). The discovery of anti-tuberculosis drugs in the 1940s–50s dramatically reduced mortality and came close to eliminating the disease in all but a few marginalized groups – Indigenous peoples, the inner city poor and homeless, and now the foreign-born whose latent infection is largely imported. In these marginalized groups, it is the complacent, almost indifferent application of certain of the aforementioned public health principles (see Table) [6,7], together with Indigenous and other group-specific social inequities that have sustained the infection [8].

The greatest human cost of pandemics is often due to their impact on the response to other diseases. Globally, since 2018, TB has been the leading cause of death due to an infectious disease, killing 3–4000 persons per day. Although its impact in high-income countries is likely to be less pronounced, modelling by the Stop TB Partnership estimates that without counter measures to maintain TB services, a 3-month COVID-19 lockdown followed by a 10-month recovery period in low- and middle-income countries could lead to an additional 6.3 million cases of TB between 2020 and 2025 and an additional 1.4 million deaths [9]. While on the one hand there is, for Indigenous peoples and many of the foreign-born, an inherent elitism/cultural inequity to “social distancing” measures, there is on the other hand, a real danger that the diagnosis of TB will be delayed, transmission facilitated, and contact tracing and treatment of latent infection disrupted by the restricted movement and diversion of healthcare resources introduced to combat COVID-19. Indigenous peoples’ fear of viral contagion, which has deep historical roots, not surprising given that smallpox decimated healthy populations post-contact [10], could inadvertently heighten these dangers. Responding to the threat of COVID-19 should not come at the expense of essential TB services.

The application of well-established public health principles in the fight against COVID-19 also offers a unique opportunity for Canada to

* Corresponding author.

E-mail addresses: richard.long@ualberta.ca, richard.long@ualberta.ca (R. Long).

Practical changes to TB programming in Canada based on the COVID-19 experience

Proper resourcing of healthcare services and research

Promote greater access to GeneXpert technology for TB in rural and remote communities such as was done for COVID-19 testing.

Promote greater access to interferon- γ release assays in rural and remote communities in lieu of the tuberculin skin test, which in the time of COVID-19, would have reduced by half the amount of interaction/personal protective equipment necessary.

Use the national COVID-19 R&D funding model, including its impressive breadth and rapid implementation, as an example for TB R&D funding [6].

Surveillance; sharing data access across jurisdictions and sectors; community engagement

Modernize TB surveillance in Canada to serve as “information for action” rather than a time-lagging statistical count of historical cases.

Implement a dashboard for rapid dissemination of TB information such as was developed for COVID-19, recognizing that there are no technological barriers to its development.

Develop robust community-driven data, such as on latent TB infection – a treatable asymptomatic state with some parallels to asymptomatic COVID-19 infection – to inform TB program performance [7].

Proactive federal, provincial, and territorial coordination and cooperation

Prioritize the creation of a national committee to foster collaboration and cooperation and collective public health decision making across national, provincial and territorial TB programs in Canada.

Promote a national forum that allows representation/gives voice to members of vulnerable sub-groups affected (Indigenous Canadians and foreign-born) who now account for the vast majority of TB cases in Canada.

Urge governments, through collaboration between TB programs, communities, academia, and patient groups to facilitate the cross-sectoral discussions necessary to address upstream social determinants of TB.

particular, investing in building a more respectful nation-to-nation relationship with Indigenous peoples in Canada should occur. Recent experience suggests that we must be adaptive and shift our thinking from “me” to “we”. The societal failures exposed by COVID-19 have long been known to those in the TB community. It was, after all, over 100 years ago that Osler declared TB to be “a social disease with a medical aspect”. The social ills we have failed to address include the inability to grant all the right to health, and to make improvements in health equity and matters of social justice. Going forward, we must take ‘preparedness’, in the broadest sense of the word, seriously.

Declaration of Competing Interest

None declared.

Contributors

All authors made substantial contributions to the conception or design of the work; drafted parts of the work and revised it critically for important intellectual content; gave final approval of the version to be published; and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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improve TB services. This could be achieved by developing a collaborative Federal, Provincial, and Territorial TB strategy; one that promotes digital platforms and virtual clinic models for remote communities, the development of end-to-end partnerships and data sharing from communities through all levels of government. In