

COVID-19 Economic Costs and the Implicit Value of a Life-Year in Canada

Description

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Abstract

Governments around the world use health technology assessment (HTA) to inform price negotiations between publicly funded drug plans and pharmaceutical manufacturers. HTA relies on pharmacoeconomic concepts like incremental cost effectiveness ratios (ICERs) which are derived from statistics like disability-adjusted life-years (DALYs) or quality-adjusted life-years (QALYs). The Canadian Agency for Drugs and Technology in Health (CADTH) conducts HTA of new medicines on behalf of federal, provincial and territorial publicly funded drug plans using such pharmacoeconomic methods. The federal government's drug price regulator known as the Patented Medicine Prices Review Board (PMPRB) also intends to introduce pharmacoeconomic factors into its price control guidelines later this year. The cost effectiveness thresholds used by CADTH and intended for use by the PMPRB are calculated from life-year valuations that are lower than the values assigned by other countries. Medications priced above the threshold are not eligible for reimbursement. CADTH and PMPRB have justified the cost effectiveness thresholds on the basis of their respective mandates to consider the affordability constraints of public payers. Yet, as of June 12, 2020, the total cost of COVID-19 pandemic related spending by the federal government and associated GDP losses resulting from public health measures imposed by Canadian governments could exceed \$391 billion. This raises an important question about how many potential deaths were avoided by imposing mass quarantine on Canadians. The cost per life saved has implications for the economic value of a life-year when used as a tool to set Canadian public policies like the PMPRB's new price control guidelines. This brief analysis calculates the economic value of a life-year implied by the costs of the federal government's policy response to COVID-19 and compares this to the cost effectiveness thresholds used by CADTH and PMPRB.

References

1. CADTH (2017). Guidelines for the economic evaluation of health technologies: Canada. 4th ed. Appendix — worked example. Ottawa: CADTH; 2017 Jul.
https://www.cadth.ca/sites/default/files/pdf/economic_guidelines_worked_example.pdf
2. Cameron, David et al (2018). On what basis are medical cost-effectiveness thresholds set? Clashing opinions and an absence of data: a systematic review. *GLOBAL HEALTH ACTION*, 2018. VOL. 11, 1447828. <https://doi.org/10.1080/16549716.2018.1447828>.
3. Ferguson, Neil M et al (2020). Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-

- 19 mortality and healthcare demand. Imperial College COVID-19 Response Team. WHO Collaborating Centre for Infectious Disease Modelling MRC Centre for Global Infectious Disease Analysis Abdul Latif Jameel Institute for Disease and Emergency Analytics Imperial College London. 16 March 2020. <https://doi.org/10.25561/77482>
4. Fine, Paul et al (2011). “Herd Immunity”: A Rough Guide, *Clinical Infectious Diseases*, Volume 52, Issue 7, 1 April 2011, Pages 911–916, <https://doi.org/10.1093/cid/cir007>
5. Johns Hopkins University (2020). COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE). <https://coronavirus.jhu.edu/data/mortality>
6. Parliamentary Budget Officer (2020). Scenario Analysis Update: COVID-19 Pandemic and Oil Price Shocks. June 18, 2020. https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-2021-009-S/RP-2021-009-S_en.pdf
7. PMPRB (2019). Guidelines. <https://www.canada.ca/content/dam/pmprb-cepmr/documents/consultations/draft-guidelines/draft-guidelines-en.pdf>
8. Public Health Agency of Canada (2020). Coronavirus Disease 2019 (COVID-19). Weekly Epidemiology Update (4-10 June, 2020). Published: 12 June 2020. <https://www.canada.ca/content/dam/phac-aspc/documents/services/diseases/2019-novel-coronavirus-infection/surv-covid19-epi-update-eng-20200406.pdf>
9. Rawson, Nigel SB; Lawrence, Donna (2020). New Patented Medicine Regulations in Canada: Updated Case Study of a Manufacturer’s Decision-Making about a Regulatory Submission for a Rare Disorder Treatment. *Canadian Health Policy*, January 2020. <https://fko.wzo.mybluehost.me/products/new-patented-medicine-regulations-in-canada–updated-case-study—en-fr-.html>
10. Sanche S et al (2020). High contagiousness and rapid spread of severe acute respiratory syndrome coronavirus 2. *Emerg Infect Dis*. 2020 July. <https://doi.org/10.3201/eid2607.200282>
11. Skinner, Brett J (2018). Consequences of over-regulating the prices of new drugs in Canada. *Canadian Health Policy*, March 27, 2018. <https://fko.wzo.mybluehost.me/products/consequences-of-over-regulating-the-prices-of-new-drugs-in-canada.html>
12. Skinner, Brett J (2019). Patented drug prices and clinical trials in 31 OECD countries 2017: implications for Canada’s PMPRB. *Canadian Health Policy*, August 2019. <https://fko.wzo.mybluehost.me/products/patented-drug-prices-and-clinical-trials-in-31-oecd-countries-2017–implications-for-canada—s-pmprb-.html>
13. Statistics Canada (2020a). Table 17-10-0005-01. Population estimates on July 1st, by age and sex. National population at July 1, 2019. <https://doi.org/10.25318/1710000501-eng>.
14. Statistics Canada (2020b). Life tables, Canada, provinces and territories, catalogue no. 84-537-X. 2016/18. <https://www150.statcan.gc.ca/n1/en/catalogue/84-537-X>

15. Statistics Canada (2020c). Table 13-10-0394-01. Leading causes of death, total population, by age group. <https://doi.org/10.25318/1310039401-eng>
16. Statistics Sweden SCB (2020). National population at June 30, 2019. <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-composition/population-statistics/pong/tables-and-graphs/quarterly-population-statistics-municipalities-counties-and-the-whole-country/quarter-2-2019/>
17. UK Office for National Statistics (2020). National population at June 30, 2019. <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>
18. US Census Bureau (2020). National population at June 30, 2019. <https://www.census.gov/popclock/>