Table 1. Transmission model parameters

	Units	Default value	Range examined in sensitivity analyses (uniform distribution)	Reference and Notes
Epidemiological				
Population size of Greater Toronto Area	Number	6,196,731	N/A	Projected estimate from 2016 census (1, 2) and a 1% annual change as per the United Nations Urbanization Prospects (3), and using the Census Metropolitan Area of Toronto (4).
R_0	Number	2.4	1.4-3.0	Range of estimates from modeling studies of outbreaks within and outside China, and on the diamond princess cruise ship (5-9). The lower bound was based on the lower bound estimate of R_0 from the WHO report of outbreaks in China (10). Systematic review and meta-analysis of studies of R_0 suggest that R_0 estimates have stablied in the range of 2-3 in more recent studies (11). Our default estimate of 2.4 was consistent with the assumption used in other modeling studies (12).
Incubation period	Days	5.2	3-9	Pooled analysis of 181 confirmed cases with identifiable exposure and symptom onset estimated an median incubation of 5.2 days.(13) We further extracted point (mean or median) estimates of incubation period from a list identified of studies in China and Singapore to inform the range estimates (5, 14-23)
Duration of latent infection	Days	2	1-3	Assumption based on the relatively short incubation period (5.2 days) and serial interval (4.4 days) of COVID-19; other models have used latent period of 3 days (24)
Duration of subclinical infectiousness	Days	3	2-6	Calculated based on the incubation period and the assumption on the duration of latent infection.
Duration of symptomatic	Days	7	5-10	Based on duration of upper respiratory tract viral

infectiousness				shedding among individuals with symptoms (25)
Serial interval	Days	NA	3.1-7.5	(5, 23, 26, 27). No default estimate was used, as serial interval was not used as an input parameter; only the range estimates were used for internal parameter validation (detailed in the Methods section).
Initial seeding	% of total population	0.0032%	0.0011-0.0048%	Assumption
Clinical				
Proportion diagnosed with COVID-19 who required hospitalization	%	10	6-20	As of March 23rd, 10% of confirmed cases in Canada were hospitalized (28) Data on 55,924 confirmed cases in China suggested that 19.9% of confirmed cases were severe including 6.1% in critical conditions (19). We therefore assumed that a range of 6%-20% of detected cases would require hospitalization in GTA. Indeed, the Toronto Public Health has reported 18 (6.4%) hospitalized cases out of 280 confirmed cases of COVID-19 as of March 24th (29).
Proportion infected with COVID-19 who were diagnosed	%	NA	41-69	Proportion infected who were diagnosed was not directly used as an input parameter; but indirectly – to calculate the proportion infected who required hospitalization (detailed below). Analyses on data from China as well as on Japan citizens returning from the repatriation flights revealed that 31%-59% of infected cases may not be detected due to asymptomatic infections or mild symptoms (30-32). We therefore assumed a default estimate of 55% (midpoint of the range) for proportion of infected cases that were detected.
Proportion infected with COVID-19 who required hospitalization	%	5.5	2.4-14	We calculated the proportion of infected individuals who require hospitalization using the proportion of detected cases which require hospitalization, and multiply by the proportion of infected cases which may be detected.
Proportion hospitalized who require ICU care	%	33	30-52	As of March 25th, 33% of hospitalized cases in the Toronto Public Health Unit required ICU (29). Similarly, as of March 23rd, 40% of hospitalized cases in Canada required ICU care (28). Based on data of 55,924 confirmed cases in China, cases

				with critical conditions and thus may require ICU care comprise 30% of confirmed cases with severe or critical conditions (19). Of 1590 hospitalized patients across 575 hospitals in China, 254 were of severe conditions, of whom 52% required ICU care or invasive ventilation (15). We did not estimate proportion of ICU patients among all hospitalized patients in China as many patients were hospitalized for isolation purpose only rather than due to disease severity in the settings of China.
Duration of hospital stay	days	12	10-13	Among 1032 hospitalized patients who did not require ICU care acoss 552 hospitals in China, their median length of hospital stay at the end of study follow-up was 12 (IQR: 10-13) days (16). This estimate was consistent with the estimates on length of hospital stay among discharged COVID patients (regardless of ICU stay) in China and Europe (14, 16, 17, 33-35).(refs)
Duration of ICU stay	days	8	5-13	There is limited data on length of ICU stay prior to transfer to to the medicine ward for post-ICU recovery. Of 23 ICU patients in Wuhan, who have been discharged to the medicine ward from the ICU, their median length of stay in ICU was 8 (IQR: 5-13) days (36).
Case-fatality proportion among those in ICU care	%	38%	17-62	Of 1590 hospitalized patients across 575 hospitals in China, 131 patients required ICU care or invasive ventilation, of whom 50 (38%) died (15). We also extracted estimates from several studies in China and in Europe regarding the crude mortality among ICU patients which ranged from 17-62% (16, 19, 34, 35, 37-40).
Case-fatality proportion among those diagnosed	%	NA	0.8-4.24	No default estimate was used, as case-fatality proportion among diagnosed was not used as an input parameter; only the range estimates were used for internal parameter validation (detailed in the Methods section). Our estimates of the case-fatality proportion among those diagnosed were informed by a range of evidence as shown below, taken into consideration of the uncertainty

				and heterogeneity in the estimates by geographic location and age: As of March 23rd, 2091 cases were reported in Canada with 23 death, indicating a crude case fatality of 1.1% (28). Using crude age-specific case-fatality among all confirmed cases in China (41), and adjusted for the age distribution of confirmed cases in Canada as of March 23rd (28), we obtained an overall crude case fatality of 2.5% in Canada. Estimates of case-fatality rate amomg confirmed cases after adjusting for time-lag to death ranged from 0.8% in China excluding Hubei province, 3.48% in China overall, and 4.24% in other countries and regions (42). Analyses using data of cases on Diamond Prince ship estimated an infection fatality rate of 0.5% and case fatality rate of 1.1% after adjusting for time lag to death, and standardizing the age to approximate the age distribution among confirmed cases in China (43).

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