Review of “Contact tracing assessment of COVID-19 transmission dynamics in Taiwan and risk at different exposure periods before and after symptom onset”


**One-Minute Summary**

- This study examined the transmission dynamics of coronavirus disease 2019 (COVID-19) among confirmed cases (n=100) and contacts (n=2,761) in Taiwan from January 15 to March 18, 2020.
- The authors categorized close contacts by exposure: household (151/2,761; 5.5%), non-household family (76/2,761; 2.8%), health care (698/2,761; 25.3%) and other (1,836/2,761; 66.5%).
- 22 (18 symptomatic) secondary cases were identified out of the 2,761 contacts:
  - Overall infection risk = 0.8% (95% confidence interval [CI]: 0.5-1.2)
  - Overall secondary clinical attack rate = 0.7% (95% CI: 0.4-1.0)
  - Median incubation period = 4.1 days (95% credible interval [CrI]: 0.4-15.8)
  - Median serial interval = 4.1 days (95% CrI: 0.1-27.8)
- All secondary cases' initial exposure occurred within 6 days of symptom onset in the index cases, compared to only 68% of all non-case contacts. The secondary clinical attack rates were similar in several exposure windows from symptom onset:
  - <0 days: 1.0% (95% CI: 0.5-2.0) (7 cases/735 contacts)
  - 0-3 days: 0.9% (95% CI: 0.5-1.8) (8 cases/867 contacts)
  - 4-5 days: 1.4% (95% CI: 0.5-4.0) (3 cases/216 contacts)
- For the 299 contacts exposed exclusively to presymptomatic index cases, the secondary attack rate = 0.7% (95% CI: 0.2-2.4).
- Secondary clinical attack rates were highest in non-household family (5.3%, 95% CI: 2.1-12.8), household (4.6%, 95% CI: 2.3-9.3) contacts, and when index cases had severe pneumonia (1.4%, 95% CI: 0.7-2.8) or acute respiratory distress/sepsis (1.5%, 95% CI: 0.6-3.7).
- The authors conclude that transmission of COVID-19 is highest before and soon after symptom onset, and that isolation of symptomatic patients is not a sufficient mitigation strategy when used alone. Aggressive contact tracing (starting at 4 days prior to symptom onset) and social distancing are vital to interrupting COVID-19 transmission chains.
**Additional Information**

- 100 confirmed cases (positive RT-PCR test) were prospectively identified from Jan 15 to Mar 18, 2020, along with all their close contacts. A close contact was a person who had face-to-face contact with a confirmed case for at least 15 minutes without using appropriate personal protective equipment (PPE). In health care settings, a close contact was anyone within 2 m of a confirmed case and without appropriate PPE regardless of duration of contact.
- Contacts were followed for 14 days of home quarantine after last exposure to a confirmed case (last follow-up performed on Apr 2). Close contacts were tested for COVID-19 by RT-PCR if relevant symptoms developed during follow-up. In addition, household and hospital contacts were tested regardless of symptoms when first identified as contacts.
- For asymptomatic cases, date of COVID-19 diagnosis was used instead of date of onset.
- Among the 100 confirmed cases, nine were asymptomatic with 91 contacts linked to them and none became secondary cases.

**PHO Reviewer’s Comments**

- The findings of presymptomatic transmission of COVID-19 in this study parallel those in Arons MM, et al. who isolated viable virus in specimens obtained before symptom onset.

**Citation**


**Disclaimer**

This document was developed by Public Health Ontario (PHO). PHO provides scientific and technical advice to Ontario’s government, public health organizations and health care providers. PHO’s work is guided by the current best available evidence at the time of publication.

The application and use of this document is the responsibility of the user. PHO assumes no liability resulting from any such application or use.

This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to PHO. No changes and/or modifications may be made to this document without express written permission from PHO.

**Public Health Ontario**

Public Health Ontario is a Crown corporation dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, frontline health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information about PHO, visit publichealthontario.ca.