

SYNOPSIS

05/06/2020

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

Article citation: Cheng HY, Jian SW, Liu DP, Ng TC, Huang WT, Lin HH. Contact tracing assessment of COVID-19 transmission dynamics in Taiwan and risk at different exposure periods before and after symptom onset. JAMA Intern Med. 2020 May 1 [Epub ahead of print]. Available from:

<https://doi.org/10.1001/jamainternmed.2020.2020>

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

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of “Contact tracing assessment of COVID-19 transmission dynamics in Taiwan and risk at different exposure periods before and after symptom onset”. Toronto, ON: Queen’s Printer for Ontario; 2020.

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