Review of "Implications of shortened quarantine among household contacts of index patients with confirmed SARS-CoV-2 infection — Tennessee and Wisconsin, April–September 2020"

One-minute summary

- This study used data from an ongoing study of household Coronavirus Disease 2019 (COVID-19) transmission in Nashville, Tennessee and Marshfield, Wisconsin to determine the proportion of household contacts with detectable virus after a shortened quarantine period.
- **Findings from follow-up of household contacts with a positive reverse transcription polymerase chain reaction (RT-PCR) (n=109):**
  - Median time from index patient symptom-onset to first RT-PCR-positive specimen in a household contact: 5 days (interquartile range [IQR]: 3–7 days)
  - Infection detected in contacts ≤7 days of index patient symptom-onset: 76% (83/109)
  - Infection detected in contacts ≤10 days of index patient symptom-onset: 86% (94/109)
- **Approximately 19% of asymptomatic or RT-PCR-negative household contacts would become symptomatic or have a positive RT-PCR if released from quarantine after 7 days from symptom-onset in index cases; 7% if using a 10-day quarantine.**
  - The probability that an asymptomatic contact with a negative RT-PCR at 7 days (since index patient's symptom-onset) will remain asymptomatic with a negative RT-PCR at 14 days was 81% (95% confidence interval [CI]: 67–90). The probability increased to 93% (95% CI: 78–98) if the contact remained asymptomatic with a negative test at 10 days.
  - When excluding contacts with possible co-index patients (n=45) or with potential tertiary transmission (n=10), the probability that an asymptomatic and negative contact at 10 days will remain asymptomatic and negative at 14 days was 95% (95% CI: 91–99).
- The authors concluded that **"a 14-day quarantine of all close contacts who are exposed to a person with COVID-19, such as in the household, is the most effective strategy to reduce the spread of COVID-19."**

Additional information

- Eligibility for household contacts (April to September 2020) (n=105 index patients):
  - Index patient with symptoms for <7 days
  - Index patient has laboratory-confirmed infection
  - No symptoms present in contacts leading up to the date of the index patient's illness-onset
- Household contacts monitored their symptoms and self-collected respiratory specimens (nasal swab only or nasal swab and saliva) daily for 14 days; specimens were tested using RT-PCR.
- **Characteristics of household contacts (n=185):**
  - Median household contacts per index patient: 1 (IQR: 1–2)
  - Percent male household contacts: 45%
  - Median age of household contacts: 27 years (IQR: 15–45)
  - Median time from index patient symptom-onset to contact enrollment: 4 days (IQR: 2–4)
  - Median time from index patient symptom-onset to follow-up conclusion: 16 days (IQR: 15–17)
- **Limitations:**
  - The index patient's symptom-onset date was used as the latest possible exposure for household contacts, but there is potential for later exposures.
  - The exposure for positive household contacts was assumed to be the index patient; however, community exposure cannot be ruled out in some instances.
  - The results cannot be applied to instances using rapid point-of-care tests with lower sensitivity or where timely results from RT-PCR are not possible.

PHO reviewer's comments

- In this study, symptom-onset date of the case was used to assess the risk of transmission in household contacts. The results suggest that extending quarantine to start from last exposure to the case (end of infectious period) may not be required, and that quarantining for 14 days from the case's symptom-onset date and testing at day 10 of quarantine may be sufficient to identify secondary cases and prevent further transmission in household contacts with ongoing exposure to the case.
- The results do not describe whether the index case was self-isolating from their household contacts. Therefore, it is unknown when or whether the index case began self-isolating within their home or the adequacy of self-isolation, if it occurred. Therefore, the ongoing risk of transmission to household contacts once the case was identified is unknown. However, the median time to contact enrollment was 4 days from index patient symptom-onset, so ongoing exposure during the pre-symptomatic period and the initial few days of symptoms, when the case is most infectious, is likely.
- There was no information presented on risks to other household members when there were contacts with possible co-index patients or potential tertiary transmission to assess risk from different exposure scenarios.
- In terms of implications for practice, currently in Ontario, household contacts that cannot effectively self-isolate from a case (e.g., due to care needs, interactions with/between young children) are recommended to continue to self-isolate for 14 days from last exposure to the case while the case was infectious. This can mean up to 24 days of self-isolation from when the case's symptoms began (14 days after the case ended isolation on day 10), which has significant impacts on individuals.

- In Ontario, household contacts are recommended to be tested during their quarantine period; early testing may identify co-primary cases, whereas later testing is more likely to detect if transmission has occurred. Delaying testing until day 10 from case symptom-onset may result in delayed identification of co-primary cases among household contacts. Testing initially and repeating testing at day 10 may result in increased demand for testing.

Citation

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