Review of “Transmission of 2019-nCoV infection from an asymptomatic contact in Germany”


Note: On February 4, 2020, new information with regard to this article was added below based on an article in Science that appeared on February 3, 2020.

Note: On February 6, 2020, a supplementary appendix was added to the published article describing the development of symptoms in the index case.

One-Minute Summary

- The original research letter described a case of 2019-nCoV acquired outside Asia where transmission appeared to have occurred during the incubation period of the index case. The article reviews the five infected cases – an index case and four subsequently identified cases (Patients 1-4).

- Index case: Female from Shanghai who visited Germany on January 19-22, 2020 and had meetings with a company near Munich on January 20-21.

- The authors originally reported no signs or symptoms while in Germany, but noted the patient became ill on her flight back to China on January 22, 2020.

  - Additional details have since been reported: On January 20, the index patient felt a bit “warm” and took a Chinese over the counter medication, which she reported to contain acetaminophen. On January 21, she felt tired and had some minor pain in some muscles and the bones of her chest. On January 22, she felt slightly cold, but this subsided when she used a shawl. She reported her first awareness that she was sick, followed shortly by the onset of fever, on January 23 following return to Shanghai. She tested positive on January 26 and informed the company in Germany on January 27.

- Patient 1: Previously healthy German male, 33 years old. Became ill with sore throat, chills and myalgia on January 24. Fever and cough developed on January 25. He returned to work on January 27.

  - He attended meetings with index patient on January 20-21.
  - Tested on January 27 after notification from the index case and was found to be positive by reverse-transcriptase-polymerase-chain-reaction (PCR).
  - Viral load (10⁸ copies per mL) in sputum was high, including on repeat sputum testing with the last available result obtained on January 29 (five days after symptom onset).
• Three additional people who worked at the Munich company tested positive on January 28.
  • Patient 2 had contact with index case.
  • Patients 3 and 4 only had contact with Patient 1.
• In the original research letter (published January 30, 2020), the authors concluded that infection appears to have been transmitted during the incubation period of the index case, although further case details (as described above) now raise questions about the original conclusions.

Additional Information
• The authors note potential for concern regarding prolonged shedding after recovery based on high sputum viral load detected by PCR in Patient 1, who had not been severely ill during the course of his infection

New Information Posted Post-Publication
Based on an online report on the Science website referring to a letter sent to the New England Journal of Medicine, information collected directly from the index case revealed that she felt tired, had muscle pain and took paracetamol while at the meetings she attended in Germany.

The authors have added further details in a supplementary appendix following a telephone conversation with the patient on February 5, 2020.

PHO Reviewer’s Comments
The original Rothe et al. article suggested transmission to Patient 1 from the index case during her incubation period. Although not clear from the article’s original text, the article also suggested that Patient 2 may also have acquired infection from the index case during her incubation period; however, it has subsequently been revealed that the index case had symptoms while in contact with Patients 1 and 2 and therefore, based on this new information, these cases would no longer support transmission during the incubation period.

Patient 3 is of interest, as they were not exposed to the index case, but was reported to have been exposed to only Patient 1 and only on the same two days that Patient 1 was exposed to the index case. The potential mechanism of transmission to Patient 3 is therefore unclear.
Citations

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, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world. For more information about PHO, visit publichealthontario.ca.