

SYNOPSIS

03/16/2020

Review of “Detection of SARS-CoV-2 in different types of clinical specimens”

Article citation: Wang W, Xu Y, Gao R, Lu R, Han K, Wu G, et al. Detection of SARS-CoV-2 in different types of clinical specimens. JAMA. 2020 Mar 11 [Epub ahead of print]. Available from: <https://jamanetwork.com/journals/jama/article-abstract/2762997>

One-Minute Summary

- The authors describe the **detection of SARS-CoV-2 by real-time PCR in different specimen types collected from 205 hospital inpatients** with confirmed coronavirus disease 2019 (COVID-19) from three hospitals in China between January 1 to February 17, 2020.
 - 68% were male and the mean age was 44 years (range 5 to 67 years).
 - Most patients presented with fever, dry cough and fatigue; and **19%** had severe illness.
- **1,070 specimens** were collected. Sample positivity by specimen type for COVID-19 was:
 - 93% (14/15) bronchoalveolar lavage fluid (BAL), 72% (75/104) sputum, 63% (5/8) nasal swab, 46% (6/13) fibrobronchoscope brush biopsy, 32% (126/398) pharyngeal swab, 29% (44/153) stool and 1% (3/307) blood. **No urine specimen tested positive (0/72).**
 - **Nasal swabs had the highest viral load** with a mean cycle threshold (Ct) of 24.3 (correlating to 1.4×10^6 copies/mL). Mean Ct for other specimens ranged from 31.1-34.6 ($< 2.6 \times 10^4$ copies/mL).
- 20 patients had two to six specimens collected simultaneously.
 - Seven patients had one positive specimen (respiratory or stool specimen).
 - Five patients had positive respiratory and stool specimens.
 - Two patients had positive respiratory and blood specimens.
 - Six patients had multiple positive respiratory specimens.
 - **Live virus was detected in 50% (2/4) stool** specimens tested by culture and electron microscopy, suggesting the possibility for fecal transmission. **Neither patient had diarrhea.**

Additional Information

- Pharyngeal swabs were collected for most patients one to three days after admission. Blood, sputum, stool, urine and nasal specimens were collected throughout illness.
- BAL and fibrobronchoscope brush biopsy were only collected from severely ill patients.
- Detailed clinical information was not available for all patients, therefore clinical correlations with viral load cannot be made.
- Real-time PCR targeted the *ORF1ab* gene. Ct values are inversely proportional to viral RNA levels.

PHO Reviewer’s Comments

- There was a discrepancy in the number of positive sputum specimens reported between the text and the table (72/104 and 75/104, respectively).

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of “Detection of SARS-CoV-2 in different types of clinical specimens”. Toronto, ON: Queen’s Printer for Ontario; 2020.

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