

## Letters to the Editor

### Surveillance for COVID-19 in Cardiac Inpatients: Containing COVID-19 in a Specialized Cardiac Centre



#### To the Editor:

We read with interest the article by Cosentino et al., who described a triage pathway for patients with acute coronary syndrome (ACS) during a COVID-19 outbreak.<sup>1</sup> However, although COVID-19 might manifest as ACS, other cardiac complications can also be associated with SARS-CoV-2 infection<sup>2</sup>; for instance, respiratory viruses can cause heart failure or myocarditis. Because a small percentage might be presymptomatic,<sup>3</sup> this makes detection even more challenging. Some form of risk stratification is necessary to prioritize patients for COVID-19 testing.<sup>4</sup>

In Singapore, the first case of COVID-19 was reported toward the end of January 2020. The National Heart Centre Singapore is the largest cardiac centre locally, with more than 10,500 admissions per annum. During the COVID-19 outbreak, all cardiac inpatients were screened using a risk-stratified approach. If patients had suspicious travel/epidemiology history, respiratory symptoms, or pulmonary infiltrates on imaging, they were placed in a dedicated ward where SARS-CoV-2 was tested for and health care workers (HCWs) used N95 masks, disposable gowns, gloves, and goggles, until COVID-19 was excluded. Patients who tested positive were transferred to isolation wards and patients who tested negative were decanted to the general ward. If percutaneous coronary intervention (PCI) was necessary before COVID-19 could be excluded, patients were managed as if they were positive.

Over a 12-week period (February 5 to May 1, 2020), 336 cardiac inpatients, representing 20% of all admissions (336/1589), were tested for COVID-19. Most had pulmonary infiltrates on baseline imaging (88.9%; 299/336); 31.8% (107/336) had concomitant respiratory symptoms; and 3.6% (12/336) had epidemiological risk-factors for COVID-19. A total of 9 cardiac patients (2.7%; 9/336) tested positive for respiratory viruses (3 SARS-CoV-2, 6 other respiratory viruses), compared with 18.9% (352/1945) of noncardiac medical inpatients in our co-located general hospital who tested positive over the same period (103 SARS-CoV-2, 249 other respiratory viruses). Details of the 6 cardiac patients with COVID-19 are shown in Figure 1. Two were asymptomatic and tested on the basis of epidemiology alone; 1 had respiratory symptoms and pulmonary infiltrates. One presented with congestive cardiac failure likely precipitated by COVID-19, another was asymptomatic but presented with hypertensive urgency; and the last case was admitted for ACS requiring PCI. Of the 40 emergency PCIs carried out, 17.5%

(7/40) of the patients were tested for COVID-19; only 1 tested positive. To date, no health care-associated transmission of COVID-19 has been detected at our institution. Vigilance should be maintained for viral causes of common cardiac complications, as well as epidemiologic risk factors for COVID-19, given the possibility of presymptomatic transmission.

Liang En Wee, MPH  
ian.wee@mohh.com.sg

Wen Ruan, MRCP  
Xiang Ying Jean Sim, MRCP  
Kym Ng  
Poh Choo Phoon  
Edwin Philip Conceicao  
May Kyawt Aung, MPH  
Aaron Sung-Lung Wong, MRCP  
Terrance Siang Jin Chua, MRCP  
Indumathi Venkatachalam, FRACP

*National Heart Centre Singapore and Singapore General Hospital, Singapore Health Services, Singapore*

#### Funding Sources

The authors have no funding sources to declare.


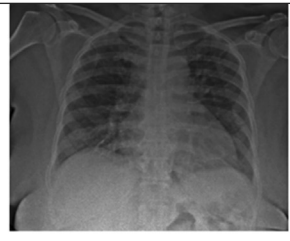
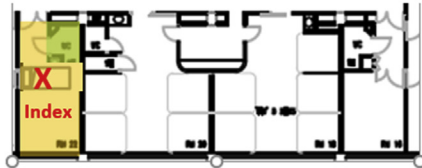
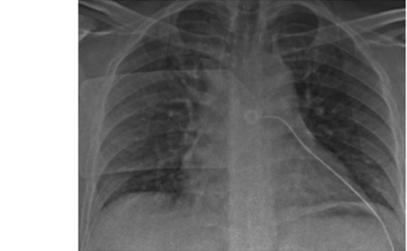
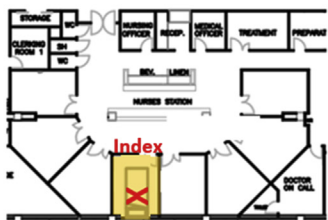
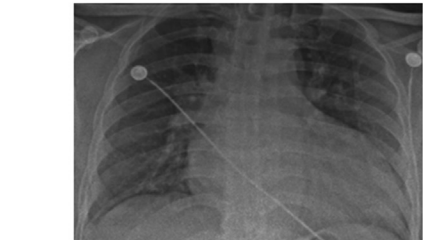
#### Disclosures

The authors have no conflicts of interest to disclose.

#### References

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**Details of cardiac patients who tested positive for SARS-CoV-2, imaging findings, and period of overlap between index case and exposed inpatients (hours), prior to isolation**

<p>54 yo female, factory worker. No contact with confirmed COVID-19 cases or visits to COVID-19 clusters</p> <p>Respiratory symptoms: Cough, nasal congestion, anosmia, dyspnoea</p> <p>Diagnosis: Congestive cardiac failure precipitated by COVID-19 upper respiratory tract infection (URTI)</p> 		<p>Imaging findings: No consolidation on chest radiograph; prominent pulmonary vasculature markings</p>
<p>Respiratory surveillance ward: 11 HCW contacts: 2 doctors, 8 nurses and 1 housekeeping staff; all wearing appropriate PPE; none tested positive</p> <p>Shared same room</p> <p>4 hours (Patient contacts)   20 hours (Index case)   20 hours (Patient contacts)</p> <p>Time to diagnosis: 20 hours Time exposed (20 hrs)</p> <p>One exposed patient sharing cohorted cubicle; did not test positive</p> <p>■ Index case      ■ Patient contacts</p>		
<p>46 yo male, shipyard supervisor. Staying in dormitory with confirmed cases of COVID-19</p> <p>Respiratory symptoms: None</p> <p>Diagnosis: Hypertensive urgency; presymptomatic COVID-19 infection</p>  <p>= index patient room: single-occupancy room with attached toilet</p>		<p>Imaging findings: No consolidation on chest radiograph</p>
<p>Respiratory surveillance ward: 12 HCW contacts: 4 doctors, 7 nurses and 1 housekeeping staff; all wearing appropriate PPE; none tested positive</p> <p>18 hours (Index case)</p> <p>■ Index case</p>		
<p>48 yo male, construction worker. Close contact of confirmed COVID-19 case.</p> <p>Respiratory symptoms: None</p> <p>Diagnosis: Myocardial infarction; presymptomatic COVID-19 infection</p> 		<p>Imaging findings: No consolidation on chest radiograph; cardiomegaly</p>
<p>Intensive care unit: 13 HCW contacts: 4 doctors, 8 nurses, 1 housekeeping staff; all wearing appropriate PPE; none tested positive</p> <p>Cardiac catheterisation laboratory: 8 HCW contacts: 1 doctor, 1 radiographer, 1 cardiac lab technician, 3 nurse and 2 housekeeping staff; all wearing appropriate PPE; none tested positive</p> <p>21 hours (Index case)</p> <p>■ Index case</p>		

**Figure 1.** Clinical details, imaging findings, and epidemiology investigations for cardiac patients positive for SARS-CoV-2 (n = 3) at a specialist cardiac centre in Singapore, during a COVID-19 outbreak. HCW, health care worker; hrs, hours; PPE, personal protective equipment; yo, year old.