Table 1.

	n (%).
HCPs	N=31
Respiratory Therapist	7 (23)
Registered Nurse	12 (39)
Medical Doctor	6 (19)
Certified Nurse Assistant	1 (3)
Speech Pathology	2 (7)
Radiologic Technologist	2 (7)
Phlebotomist	1 (3)
Height, cm (IQR)	165 (158-168)
Patients	N=12
Age (IQR)	70 (63-78)
Female	8 (67)
Length of Stay in Room, days (IQR)	10 (5-13)
Symptoms	
Shortness of Breath	8 (67)
Cough	9 (75)
Fever	6 (50)
Diarrhea	3 (25)
Vaccinated[1]	6 (50)
Length between AGP & Onset of Symptoms, days (IQR)	9 (7-15)
Length between AGP & COVID +, days (IQR)	4 (3-7)

[1] 2 doses of mRNA vaccines, Pfizer or Moderna, or 1 dose of others, Johnson & Johnson

Figure 1. Nine position-based medical mask pieces
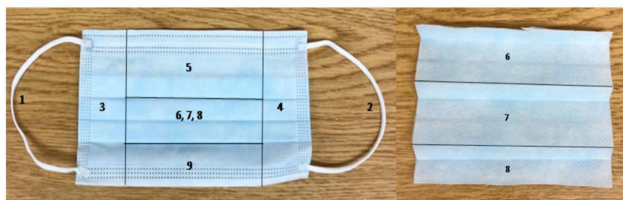
from routine clinical documentation. Study HCPs completed HCP-role–specific routine care (eg, assessing, administering medications, and maintaining oxygen supplementation) while in patient rooms and were observed by study team members. **Results:** We enrolled 31 HCPs between September and December 2021. HCP and patient characteristics are presented in Table 1. In total, 330 individual samples were obtained from 31 masks and 26 face shields among 12 patient rooms. Of the 330 samples, 0 samples were positive for SARS-CoV-2 via RT-PCR. Positive controls were successfully performed in the laboratory setting to confirm that the virus was recoverable using these methods. Notably, all samples were collected from HCPs caring for COVID-19 patients on high-flow, high-humidity Optiflow (AGP), with an average of 960 seconds (IQR, 525–1,680) spent in each room. In addition to Optiflow and routine care, study speech pathologists completed an additional AGP of fiberoptic endoscopic evaluation of swallowing. Notably, 29 (94%) of 31 study HCP had physical contact with their patient. **Conclusions:** Overall, mask contamination in HCPs treating patients with COVID-19 undergoing AGPs was not detectable while wearing face shields, despite patient contact and performing AGP.

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Poster Presentation - Poster Presentation
Subject Category: COVID-19
The role and relevance of asymptomatic healthcare worker testing in COVID-19 hospital outbreaks
Matthew Garrod; Katy Short; James Zlosnik and Natalie Prystajecky

Background: Many healthcare facilities have faced the decision of conducting point prevalence testing (PPT) of healthcare workers (HCW) during COVID-19 outbreaks. As a containment strategy, PPT can identify asymptomatic or presymptomatic cases for isolation. It is less clear how useful testing asymptomatic HCW is in understanding the spread and possible routes of transmission in an outbreak. This study investigated HCW cases identified through PPT during acute-care outbreaks in Fraser Health (FH), British Columbia, incorporating both epidemiological

and whole-genome sequencing (WGS) data to determine their epidemiological source. **Methods:** This study was a retrospective review of cases associated with COVID-19 acute-care outbreaks in FH occurring between December 2020 and June 2021, when most of these infections were of the alpha and gamma lineages. All patients and HCWs with a positive COVID-19 test and epidemiologically linked to the outbreaks were included in the study. WGS results supported determination of epidemiological source for cases. The proportion of patient and HCW cases related to the outbreak was compared. All analyses were conducted using SAS version 4.3 software with the PROC GLM package. **Results:** Between December 2020 and June 2021, 49 acute-care COVID-19 outbreaks were declared. Point-prevalence testing of HCWs, in addition to routine patient PPT, was conducted in 28 outbreaks (57%), with 2,167 eligible HCWs (63%) tested. Testing identified 14 previously unknown HCW cases, representing 12.96% of all HCW cases epidemiologically linked to the outbreaks. None of these HCWs were determined to be the index case for their associated outbreak. There was no statistically significant difference between HCWs and patients regarding WGS failure rate, and all failed samples were removed from further analysis. Patients were 3.8 times as likely as HCWs to present as symptomatic when testing positive. HCWs were 2.2 times as likely as patients to have WGS results unrelated to the outbreak. **Discussion:** Although point-prevalence testing of HCW identified previously unknown cases, these cases were more likely than patients to be unrelated to the outbreak and therefore less useful in understanding the epidemiology of the outbreak. It is difficult to determine whether HCW PPT was effective at preventing transmission, especially with robust infection prevention measures already in place. Patients were more likely than HCWs to present as asymptomatic, however this may be due to the attribution of symptoms to other conditions. **Conclusions:** Point prevalence testing of HCWs during COVID-19 outbreaks may assist with preventing transmission but is less likely to contribute meaningful information to the investigation.

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Risk factors associated with SARS-CoV-2 transmission, outbreak duration, and mortality in Fraser Health acute-care settings
Tamara Duncombe; Matthew Garrod; Wang Xuetao; Joyce Ng; Eunsun Lee; Katy Short and Kennard Tan

Background: Transmission of SARS-CoV-2 in acute-care settings affects patients, healthcare workers, and the already-burdened healthcare system. An analysis of risk factors associated with outbreak severity was conducted to inform prevention strategies. **Methods:** This study was a cross-sectional analysis of COVID-19 outbreaks at Fraser Health (FH) acute-care sites between March 2020 and March 2021. Outbreak severity measures included COVID-19 attack rate, outbreak duration, and 30-day case mortality. Covariates at patient, outbreak, unit level, and facility level were included (Table 1). Generalized linear models with generalized estimation equations were used for all outcome measures, with outbreak duration and 30-day case mortality using multivariate negative binomial distributions, and attack rate using Gaussian distribution. A P value of .05 indicated statistical significance. Analyses were performed using SAS version 3.8 software, R version 4.1.0 software, and Stata version 16.0 software. **Results:** Between March 2020 and March 2021, 54 COVID-19 outbreaks were declared in FH acute-care sites involving 455 SARS-CoV-2–positive patients. The average outbreak duration was 23 days, the average attack rate was 28%, and the average 30-day all-cause mortality per outbreak was 2 deaths. The results of the full models are shown in Table 1. **Discussion:** We identified an inverse relationship between increased hand hygiene compliance during outbreaks and all 3 severity measures. Paradoxically, hand hygiene rates in the year prior to

Table 1: Effect Estimates for Outbreak Severity

Risk Factors	Effect Estimates		
	Attack Rate	30-Day Case Mortality	Outbreak Duration
Length of stay	0.006‡		0.02‡
Comorbidity total factor	0.142‡		0.11*
Hand hygiene rates during outbreak	-1.775‡	-10.32*	-5.24‡
Hand hygiene rates prior to outbreak		0.04‡	2.68‡
Bed Moves	0.468‡		
Unit age	0.003*		0.02‡
Nursing hours to patient days	0.017*		
Facility Type			
Regional	-0.15*		-0.34*
Community (reference)	---		---
Region			
North	-0.118*	-1.34‡	-0.31‡
South	-0.084	-0.31	0.23
East (reference)	---	---	---

*: p<0.05; ‡: p<0.01

Table 1.

	Infected contacts (n=10)	Uninfected contacts (n=201)	Univariate odds ratio, 95% CI, p-value	p-value
Index case Ct value, median units, IQR	17.33, 6.74	18.7, 5.9	0.961 [0.849, 1.08]	0.511
Index vaccinated, n (%)	8 (80.0%)	155 (77.1%)	1.19 [0.244, 5.79]	0.829
Index immunocompromised, n (%)	2 (20.0%)	36 (17.9%)	1.15 [0.233, 5.62]	0.868
Age of index, mean ±sd	65.5 ± 13.1	63.6 ± 19.3	1.00 [0.970, 1.04]	0.759
Index symptomatic, n (%)	7 (70.0%)	133 (66.2%)	1.19 [0.299, 4.76]	0.800
Air-conditioned ward, n (%)	2 (20.0%)	47 (23.4%)	0.819 [0.168, 3.99]	0.802
Ward with air blowers, n (%)	4 (40.0%)	66 (32.8%)	1.36 [0.372, 5.00]	0.643
Proximity of contact within 2 metres, n (%)	3 (30.0%)	53 (26.4%)	1.20 [0.299, 4.80]	0.802
Duration of contact, hrs, mean ± sd	80.2 ± 44.9	42.3 ± 40.7	1.02 [1.00, 1.03]*	0.0121
Contact vaccinated, n (%)	9 (90.0%)	163 (82.7%)	1.88 [0.230,15.3]	0.525
Contact immunocompromised, n (%)	3 (30.0%)	43 (21.4%)	1.57 [0.391, 6.35]	0.535
Age of contact, mean ± sd	69.1 ± 11.4	61.2 ± 20.3	1.02[0.985, 1.07]	0.192

*statistically significant odds ratio for each hour of contact duration in the same room

the pandemic were positively associated with duration and mortality. Increased unit age was also associated with increases in each of the severity measures. Comorbidity total factor was correlated with outbreak attack rate and duration, demonstrating the importance of individual patient characteristics in an outbreak. **Conclusions:** Our findings highlight the importance of hand hygiene practices during an outbreak. Additionally, it is important to understand the difficulties faced by older facilities, many of which face infrastructural challenges. This study reinforces the need to incorporate infection control standards into healthcare planning and construction.
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Duration of exposure is the most important risk factor for nosocomial COVID-19 in open multibed wards
Hwang Ching Chan; Alicia Ang; Nazira Fauzi; Revathi Sridhar; Annie Poh; Isaac Low; Dale Fisher; Paul Tambyah and Jyoti Somani

Background: The National University Hospital (NUH) is a 1,200 bed tertiary-care hospital with no documented nosocomial transmission of COVID-19 among patients for the first year and a half of the pandemic, despite 65% of the patients being housed in 4- to 8-bedded open cubicles with shared bathrooms. However, this arrangement changed in late September 2021 with large community clusters including in healthcare institutions nationally associated with the spread of the δ (delta) variant of SARS-CoV-2. We conducted a retrospective review of hospital epidemiology data to determine risk factors for SARS-COV-2 transmission during this period. **Methods:** Index patients were defined as the first patient in an open cubicle with a confirmed positive SARS-CoV-2 PCR test. Contacts were defined as being in the same cubicle as a patient before isolation from 2 days before symptom onset, up to 7 days from positive test if asymptomatic. Clinical and patient movement data were obtained manually from routine clinical records. Proximity of the contact from the index was classified as within, or more than, 2 m away, according to the prevailing definition from the Singapore Ministry of Health. A univariate analysis was performed to identify risk factors for nosocomial acquisition of SARS-CoV-2. The analysis was deemed exempt from ethics review (reference no. NHG-DSRB-2021/01026). **Results:** From October 1 to November 30, 2021, 30 index cases occurred in open cubicles identified (median, 9 days after admission; IQR, 19 days). Contact tracing yielded 211 contacts, of whom 10 (4.7%) were infected. Linear regression analysis found the duration of contact for each hour spent in the same room as the index case was the only statistically significant risk variable for contracting COVID-

19, with an odds ratio 1.02 (Table 1). **Conclusions:** Patients in open cubicles are at risk for nosocomial transmission of COVID-19 and other infections. The duration of contact appeared to be more important than vaccination status of index or ward ventilation status. Larger multicentered studies are needed to validate this finding, which has significant implications for infection prevention strategies and pandemic planning.
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Rapid identification and isolation of patients with COVID-19 reduces the odds of transmission to hospital roommates
Jessica Alban; Patrick Burke; Joanne Sitaras and Thomas Fraser

Background: The Cleveland Clinic Main Campus is a multispecialty academic medical center with 1,200 adult patient beds, 58% of which are double occupancy. Our facility relies on double-occupancy rooms to provide needed care during the COVID-19 pandemic. Inherently, double occupancy poses a greater risk of exposure to SARS-CoV-2 despite mitigation efforts. We investigated the incidence of postexposure SARS-CoV-2 infection in double-occupancy rooms and evaluated risk factors for viral transmission. **Methods:** Early in the observation period patients were tested for SARS-CoV-2 based on clinical suspicion. By June 2020, all admitted patients were tested. Symptomatic patients were admitted with pending tests under transmission-based precautions. Asymptomatic patients were managed with standard precautions including patients admitted to double-occupancy rooms. A double-occupancy exposure event was defined as an uninfected patient sharing a room with a patient positive for SARS-CoV-2. All patient exposures were tracked and evaluated by the infection prevention (IP) team. The IP prospective review of source patients included determination of lowest cycle threshold (Ct) value of first COVID-19 test, and whether their infection was hospital or community onset. Review of exposed patients included sex, age, and exposure time (in hours) to the source patient. Postexposure infection was defined as a positive test for SARS-CoV-2 in the exposed population within 14 days of the defined exposure event. We fit a multivariable logistic regression model to estimate the effect of exposure time on the odds of postexposure infection in susceptible roommates. **Results:** From March 15 to December 15, 2020, 172 susceptible patients were exposed to a roommate with COVID-19. Also, 28 exposed patients met our definition for postexposure infection (attack rate, 16%). The frequency of postexposure infection was higher in patients for whom the source was hospital-onset versus community-onset disease (25% vs 10%; *P* = .01) and when the source patient's Ct value was below the median value of 21.1 (26% vs 11% p **Conclusions:** We identified a postexposure infection attack rate of 16% for double-occupancy patients in