Conclusion. Baseline SARS-CoV-2 prevalence and 16-week cumulative incidence were substantial in this pre-vaccination Peruvian HCW cohort. Almost 40% of new infections occurred in HCW without complaint of symptoms illustrating a limitation of symptom-based HCW screening for COVID-19 prevention. Nurse assistants and non-clinical healthcare workers were at greater risk of infection indicating a role for focused infection prevention and risk reduction strategies for some groups of HCW.

Disclosures. **Fernanda C. Lessa, MD, MPH**, Nothing to disclose

376. Sensitivity and Specificity of the WHO Probable SARS-CoV-2 Case Definition Among Symptomatic Healthcare Personnel

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Session: P-16. COVID-19 Epidemiology and Screening

Background. SARS-CoV-2 continues to spread globally, including in limited resource settings. It is therefore important to derive general case definitions that can be useful and accurate in the absence of timely test results. We aim to validate the World Health Organization (WHO) case definition, a symptom-screening tool currently used to identify SARS-CoV-2 cases in a cohort of symptomatic health care providers (HCP) who completed a symptom survey interview and received a PCR test at Boston Medical Center (BMC) between March 13, 2020 and May 5, 2020.

Methods. We classified each HCP as a probable or not probable case of SARS-CoV-2 based on the WHO case definition. Using PCR test as gold standard, we computed the sensitivity and specificity of the WHO case definition. We used a stepwise logistic regression model on all PCR-tested HCP to identify symptoms predictive of PCR positivity.

Results. Of 328 included HCP, 109 (33.2%) were PCR positive, 213 (64.9%) negative, and 6 (1.8%) had indeterminate test result. The sensitivity and specificity of the WHO case definition were 65.1% and 74.6%, respectively. The positive predictive value was 56.8% and the negative predictive value was 80.7%. Symptoms found to be predictive of PCR positivity were fever, headache, loss of smell and/or loss of taste, and muscle ache/joint pain. Sore throat was found to be predictive of PCR negativity. The area under the curve using the final model was 0.8412. All statistically significant symptoms included in the final model, were also included in the WHO case definition.

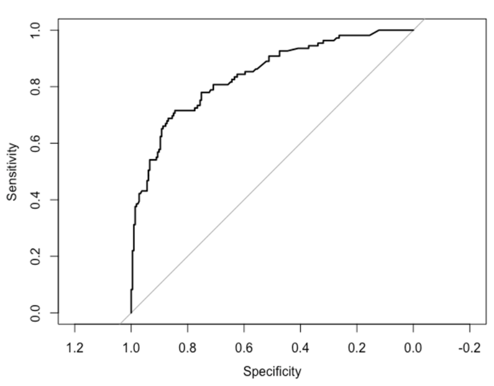
Table 1. Results for sensitivity and specificity

Result from WHO case definition		Gold Standard (test result)	
		Positive	Negative
	Positive	71	54
	Negative	38	159

Table 2. Stepwise Logistic Regression Results

	Estimate	OR	p-value
Intercept	-1.79	0.17	<0.001
Sore Throat	-1.02	0.36	0.001
Fever	0.55	1.73	0.075
Headache	0.65	1.91	0.034
Loss of Taste and/or Loss of Smell	2.55	12.86	<0.001
Muscle Ache/Joint Pain	0.73	2.08	0.018
Rash	1.09	2.96	0.151

Figure 1. ROC curve for stepwise logistic regression model



Conclusion. In our largely symptomatic HCP cohort, our model yielded similar symptoms to those identified in the WHO probable case definition. As seen in similar studies, it is unlikely that further adjustment will improve the performance of a SARS-CoV-2 case definition. However, it is concerning that 35% (38/109) of PCR positive SARS-CoV-2 HCP would have been classified as not probable cases by the WHO definition, given that this definition does not even include asymptomatic cases. This is further evidence for global building of laboratory capacity and development of affordable diagnostics to improve global pandemic control.

Disclosures. **All Authors**: No reported disclosures

377. SARS-CoV-2 Genomic Surveillance Reveals Little Spread Between a Large University Campus and the Surrounding Community

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Session: P-16. COVID-19 Epidemiology and Screening

Background. Understanding SARS-CoV-2 transmission dynamics is critical for controlling and preventing outbreaks. The genomic epidemiology of SARS-CoV-2 on college campuses has not been comprehensively studied, and the extent to which campus-associated outbreaks lead to transmission in nearby communities is unclear. We used high-density genomic surveillance to track SARS-CoV-2 transmission across the University of Michigan-Ann Arbor campus and Washtenaw County during the Fall 2020 semester.

Methods. We retrieved all available residual diagnostic specimens from the Michigan Medicine Clinical Microbiology Laboratory and University Health Service that were positive for SARS-CoV-2 from August 16th – November 25th, 2020 (n = 2245). We extracted viral RNA, amplified the SARS-CoV-2 genome by multiplex RT-PCR, and sequenced these amplicons on an Illumina MiSeq. We applied maximum likelihood phylogenetic analysis to whole genome sequences to define and characterize transmission lineages.

Results. We assembled complete viral genomes from 1659 individual infections, representing roughly 25% of confirmed cases in Washtenaw County across the fall semester. Of these cases, 468 were University of Michigan students. Phylogenetic analysis revealed 203 genetically distinct introductions of SARS-CoV-2 into the student population, most of which were singletons (n = 171) or small clusters of 2 – 8 students. We identified two large SARS-CoV-2 transmission lineages (115 and 73 students, respectively), including individuals from multiple on-campus residences. Viral descendants of these student outbreaks were rare, constituting less than 4% of cases in the community.

Conclusion. We identified many SARS-CoV-2 transmission introductions into the University of Michigan campus in Fall 2020. While there was widespread transmission among students, there is little evidence that these outbreaks significantly contributed to the rise in COVID-19 cases that Washtenaw County experienced in November 2020.

Disclosures. **Adam Lauring, MD, PhD**, **Roche** (Advisor or Review Panel member) **Sanofi** (Consultant)

378. Descriptive Analysis of SARS-CoV-2 Infections Among Health System and University Employees

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CDC Epicenters

Session: P-16. COVID-19 Epidemiology and Screening

Background. We aimed to describe SARS-CoV-2 (COVID-19) infections among employees in a large, academic institution.

Table 1. COVID-19 Attribution Definitions

Attribution Classification	Definition
Healthcare/workplace-acquired	
Healthcare worker or Co- worker	Exposure to a COVID-infected healthcare worker or co-worker during their infectious window
Patient	Exposure to a COVID-infected patient while not wearing adequate personal protective equipment (pre-isolation) or breach in personal protective equipment
Visitor	Exposure to a COVID-infected visitor while not wearing adequate personal protective equipment
Community-acquired	Exposure to a COVID-infected person in the community (or a co-worker outside the workplace) including non-Duke work environments during infectious window OR the employee case and their significant other/housemate/family member developed symptoms at the same time (and confirmed positive) making a community point source the most likely explanation
Unknown, likely community-acquired	Close contact with a person who has symptoms consistent with COVID (but has not been tested for COVID infection) during their infectious window; the contact occurred in the community (or a co-worker outside the workplace) including non-Duke work environments OR the employee case and their significant other/housemate/family member developed symptoms at the same time (but did not get tested for COVID) making a community point source a likely explanation
Unknown	No known contact with a COVID-infected person in the community, no known contact with a COVID-infected co-worker or visitor in the healthcare environment during their infectious window, and no breach in PPE during care of a COVID-infected patient. Alternatively, known contact with a COVID-infected person in the community AND a COVID-infected co-workers or visitor in the healthcare environment during their infectious window.

Table 2. Description of 3,140 COVID 19 Infections in Employees from 3/2020 to 4/2021

Variable	N (%)
Age	
18-25	405 (13.0)
26-35	1054 (33.8)
36-45	625 (20.0)
46-55	579 (18.6)
56-65	397 (12.7)
65+	59 (1.9)
Initial Symptoms*	
Congestion or Runny Nose	810 (25.8)
Headache	709 (22.6)
Cough	654 (20.8)
Muscle or Body Aches	533 (17.0)
Sore Throat	441 (14.0)
Fatigue	378 (12.0)
Fever or Chills	289 (9.2)
Other**	149 (4.7)
New Loss of Taste or Smell	139 (4.4)
Nausea or Vomiting	97(3.1)
Shortness of Breath or Difficulty Breathing	74 (2.4)
Diarrhea	57 (1.8)
Asymptomatic	269 (8.6)
Worked during infectious window	2538 (80.8)
Worked during pre-symptomatic window***	1397 (44.5)
Worked with symptoms	1141 (36.3)
Quarantined prior to symptom onset	219 (7.0)
Tested negative followed by a positive test	63 (2.0)
Severe disease	70 (2.2)
Reinfection	21 (0.7)
Attribution	
Community	1646 (52.4)
Unknown, likely community	129 (4.1)
Unknown	1057 (33.7)
Workplace	308 (9.8)
Workplace-patient	81 (2.6)
Workplace-employee	222 (7.1)
Workplace-visitor	5 (0.2)

*Initial symptoms included all symptoms that the employee reported on the first day of symptom onset, therefore making the denominator greater than 3,140 symptoms.

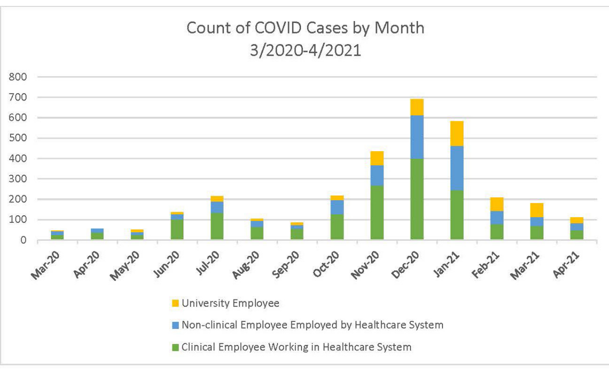
**Examples of "Other" symptoms include loss of appetite, night sweats, abdominal pain, dizziness

***Defined as 2 calendar days prior to the onset of symptoms

Methods. We prospectively tracked and traced COVID-19 infections among employees across our health system and university. Each employee with a confirmed positive test and 3 presumed positive cases were interviewed with a standard contact tracing template that included descriptive variables such as high-risk behaviors and contacts, dates worked while infectious, and initial symptoms. Using this information, the most likely location of infection acquisition was adjudicated (Table 1). We compared behavior frequency between community and unknown, likely community and community and unknown cases using descriptive statistics.

Table 3. Risk Factors for Community, Likely Community, and Unknown Cases

Risk Factor	Community N=1646	Unknown, Likely Community N=129	Unknown N=1057
Travel within 14 days	385 (23.4)	36 (27.9)	213 (20.2)
Masked gatherings (eg, church)	937 (56.9)	73 (56.6)	543 (51.4)
Unmasked gatherings/activities	745 (45.3)	61 (37.4)	395 (37.4)



Number of SARS-CoV-2 cases among employees between 3/2020 and 4/2021 by month and stratified according to clinical employee working in the healthcare system, non-clinical employee employed by the healthcare system, and university employee

Results. From 3/2020 to 4/2021 we identified 3,140 COVID-19 infections in 3,119 employees out of a total of 34,562 employees (9.0%) (Figure 1). Of those 3,119 employees 1,685 (54.0%) were clinical employees working in the health system, 916 (29.4%) were non-clinical employees working in the health system, and 518 (16.6%) were university employees. Descriptive characteristics for the COVID-19 infections and adjudications are outlined in Table 2. Severe disease among employees was significantly less frequent compared to patients in the health system (15.3% vs 2.2%, p< 0.01). The frequency of travel within 14 days, masked gatherings and unmasked gatherings/activities was not significantly different between the community and unknown, likely community groups or the community and unknown groups (Table 3).

Conclusion. The majority of COVID-19 infections were linked to acquisition in the community, and few were attributed to workplace exposures. Employees with unknown sources of COVID-19 participated in higher-risk activities at approximately the same frequency as employees with community sources of COVID-19. The most frequently reported initial symptoms were mild and non-specific and rarely included fever. Despite a comprehensive testing and benefit program, a large proportion of COVID-positive employees worked with symptoms, highlighting ongoing challenges with presenteeism in healthcare.

Disclosures. **Rebekah W. Moehring, MD, MPH**, **UpToDate, Inc.** (Other Financial or Material Support, Author Royalties)

379. Abstract For Comparison of Mandatory vs Non-Mandatory Compliance Rates For SARS-CoV-2 Testing in Grades K-12

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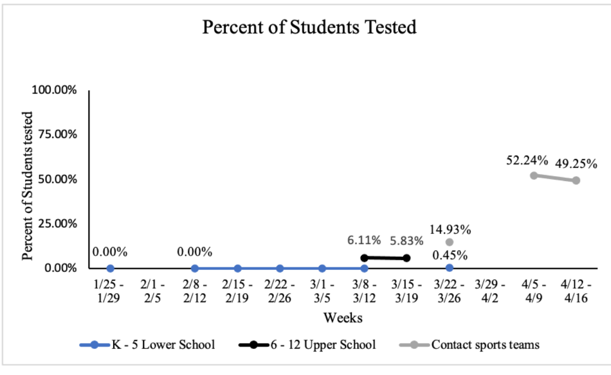
Session: P-16. COVID-19 Epidemiology and Screening

Background. Rapid testing to identify asymptomatically infected students with SARS-CoV-2 in elementary schools has been suggested as a possible method to reduce risk for in person instruction. As of August 3, 2020 (updated on January 25, 2021), California schools who obtained a waiver to conduct in-person instruction are not required to have mandatory testing for asymptomatic students, except for high contact sports which are required to undergo weekly testing. We explored the uptake of voluntary vs mandatory testing in a private waivered school.

Methods. Between the dates January 25, 2021 to April 16, 2021, the K-12 school superintendent sent an email to all parents outlining the voluntary testing program with a link to the on-line sign up and consent form. All students were offered weekly self-collected anterior nares BinaxNOW Rapid Antigen Test. Signed parental consent was required and tests were performed at the school. Students participating in contact sports were required to undergo testing the week a varsity game was played as a condition of participation. Data was gathered from the school administration and de-identified.

Results. K-5 Lower school had a school population of 448 students. Testing was offered on 8 weeks during the period of 2/15-2/19 to 4/5-4/9. 2 students (0.45%) receive screening on the week of 3/22-3/26. The other seven weeks when screening was offered 0 students received screening. 6-12 Upper school had a school population of 360 enrolled students. Testing was offered 3/8-3/12 and 3/15-3/19. The upper school had 22 students (6.11%) receive testing on the week of 3/8-3/12 and 21 students (5.83%) on the week of 3/15-3/19. Contact sports teams had 67 students on their roster. Weekly testing was offered from 3/22-3/26 to 4/12-4/16. Contact sports teams had 10 students (14.93%) receive testing on the week of 3/22-3/26, 33 students (52.24%) on the week of 4/5-4/9, and 32 students (49.25%) on the week of 4/12-4/16.

Figure 1. Percent of students from each campus and sports team screened per week offered.



Conclusion. Voluntary SARS-CoV-2 screening was not a feasible approach for detection of asymptomatically infected individuals due to low uptake, however in the same school, mandatory testing had high uptake and would be a feasible strategy.

Disclosures. **All Authors**: No reported disclosures

380. Environmental Contamination with SARS-CoV-2 in Nursing Homes

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