

Table 1: List of Metrics

Metric	Description	Target practice	Total n/N (%)
1	Proportion (prop) of GU conditions with antibiotic prescribed	Overall AU	11,840/69,816 (17.0%)
2	Prop of tier 3 GU conditions that were antibiotic treated	Unnecessary AU	1,276/39,386 (3.2%)
3	Prop of treated UTI (excluding pyelonephritis) visits associated with preferred antibiotic class	Antibiotic selection	3,545/5,020 (70.6%)
4	Prop of treated UTI (excluding pyelonephritis) where duration was ≤7 days	Treatment duration	3,242/5,020 (64.6%)
5	Prop of tier 1 GU visits with risk factors for antibiotic resistance with culture obtained	Diagnostic testing	1,183/1,676 (70.6%)
6a	Rate of collection of urinalyses (UA) per primary care/ED visit	UA ordering	266,784/ 1,214,620 (22.0%)
6b	Rate of collection of UA plus antibiotic prescription, per primary care/ED visit	AU	28,366/1,214,620 (2.3%)

Figure 1: Heatmap of correlation matrix

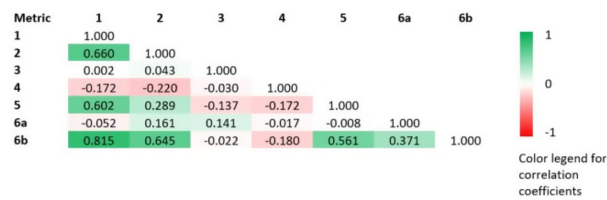
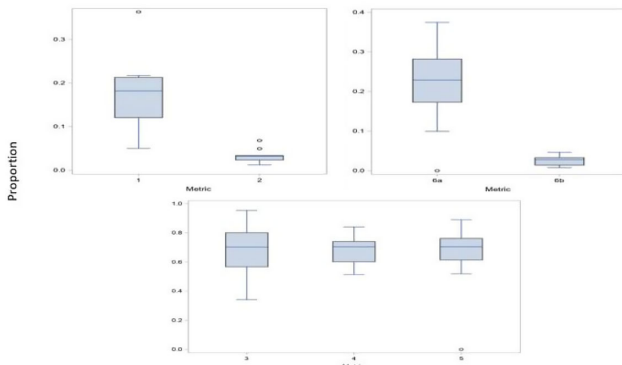


Figure 2: Box plots for each metric showing median, upper quartile, lower quartile, outliers (circles) for metrics calculated on 18 facilities in a western VA network



infections were excluded. Descriptive analyses included calculation of the correlation matrix for the 7 metrics and the construction of box plots to display interfacility variability. **Results:** Metrics were calculated quarterly for 18 VA medical centers, including affiliated clinics, in a western VA network, from July 2018 to June 2020 (Table 1). Tier 3 GU conditions accounted for 1,276 of 11,840 (11%) of GU-related antibiotic use. Metrics 1 and 6b were strongly correlated with each other and were also positively correlated with metrics 2 and 5 (coefficients > 0.5) (Fig. 1). Substantial interfacility variation was observed (Fig. 2). **Conclusions:** Stewardship metrics for suspected or documented UTIs can identify opportunities for practice improvement. Broadly capturing GU conditions in addition to UTIs may enhance utility for performance feedback. Antibiotic prescribing for tier 3 GU conditions is analogous to unnecessary antibiotic use for acute, uncomplicated bronchitis and upper respiratory tract infections.

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Poster Presentation - Top Poster Award

Subject Category: COVID-19

COVID-19 incidence among nonphysician healthcare workers at a tertiary care center—Iowa, 2020–2021

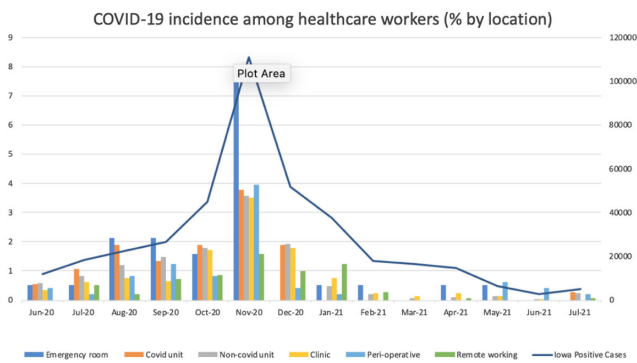
Takaaki Kobayashi; John Heinemann; Alexandra Tranel; Alexandre Marra; William Etienne; Oluchi Abosi; Stephanie Holley; Mary Kukla; Angie Dains; Kyle Jenn; Holly Meacham; Beth Hanna; Bradley Ford; Melanie Wellington; Patrick Hartley; Daniel Diekema and Jorge Salinas

Background: Whether working on COVID-19 designated units put healthcare workers (HCWs) at higher risk of acquiring COVID-19 is not fully understood. We report trends of COVID-19 incidence among nonphysician HCWs and the association between the risk of acquiring COVID-19 and work location in the hospital. **Methods:** The University of Iowa Hospitals & Clinics (UIHC) is an 811-bed, academic medical center serving as a referral center for Iowa. We retrospectively collected COVID-19-associated data for nonphysician HCWs from Employee Health Clinic between June 1st 2020 and July 31st 2021. The data we abstracted included age, sex, job title, working location, history of COVID-19, and date of positive COVID-19 test if they had a history of COVID-19. We excluded HCWs who did not have a designated working location and those who worked on multiple units during the same shift (eg, medicine resident, hospitalist, etc) to assess the association between COVID-19 infections and working location. Job titles were divided into the following 5 categories: (1) nurse, (2) medical assistant (MA), (3) technician, (4) clerk, and (5) others (eg patient access, billing office, etc). Working locations were divided into the following 6 categories: (1) emergency department (ED), (2) COVID-19 unit, (3) non-COVID-19 unit, (4) Clinic, (5) perioperative units, and (6) remote work. **Results:** We identified 6,971 HCWs with work locations recorded. During the study period, 758 HCWs (10.8%) reported being diagnosed with COVID-19. Of these 758 COVID-19 cases, 658 (86.8%) were diagnosed before vaccines became available. The location with the highest COVID-19 incidence was the ED (17%), followed by both COVID-19 and non-COVID-19 units (12.7%), clinics (11.0%), perioperative units (9.4%) and remote work stations (6.6%, p < .001). **Conclusions:** Strict and special infection control strategies may be needed for HCWs in the ED, especially where vaccine uptake is low. The administrative control of HCWs working remotely may be associated with a lower incidence of COVID-19. Given that the difference in

Table 1: Comparison of demographics between healthcare workers with and without COVID-19, 2020–2021, Iowa

	COVID positive N= 758	COVID negative N = 6213	P value	Odds ratio*
Age, mean (range)	35.1 (19-72)	38.4 (18-78)	<0.01	0.99 (0.98-0.99) per additional year
Gender (female)				
Female	655 (86.4%)	5193 (83.6%)	0.045	1.1 (0.88-1.4) reference
Male	103 (13.6%)	1020 (16.4%)		
Job title (% = # of positive HCW within the category)				
Medical assistant N=394	64 (16.5%)	330 (83.8%)	<0.01	1.55 (1.04-2.33)
Nurse N=4,030	489 (12.1%)	3541 (87.9%)		reference
Technician N=323	34 (10.5%)	289 (89.5%)		0.99 (0.67-1.47)
Clerk N=221	21 (9.5%)	200 (90.5%)		1.00 (0.62-1.61)
Other N=2,003	150 (7.5%)	1853 (92.5%)		0.74 (0.56-0.98)
Location (% = # of positive HCW within the category)				
Emergency department N=188	32 (17.0%)	156 (83.0%)	<0.01	1.55(1.04-2.33)
COVID units N=370	47 (12.7%)	323 (87.3%)		0.97 (0.70-1.35)
Non-COVID units N=2,576	326 (12.7%)	2250 (87.3%)		reference
Clinics N=1,972	217 (11.0%)	1755 (89.0%)		0.91 (0.72-1.15)
Peri-operative N=479	45(9.4%)	434 (90.6%)		0.75 (0.54-1.05)
Remote working N=1,386	91 (6.6%)	1295 (93.4%)		0.75 (0.53-1.08)

Figure 1: Trend of COVID-19 infections among healthcare workers at a mid-west tertiary care hospital (% by location) and COVID-19 cases in the state of Iowa, 2020-2021



COVID-19 incidence among HCWs by location was lower and comparable after the availability of COVID-19 vaccines, facilities should make COVID-19 vaccination mandatory as a condition of employment for all HCWs, especially in areas where the COVID-19 incidence is high.

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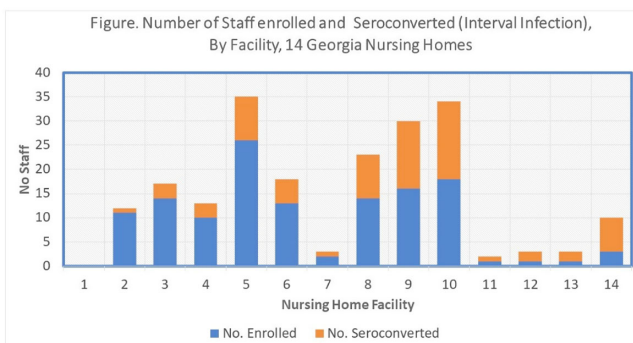
Poster Presentation - Top Poster Award

Subject Category: COVID-19

Which nursing home workers were at highest risk for SARS-CoV-2 infection during the November 2020–February 2021 winter surge of COVID-1?

Joseph Kellogg; William Dube; Carly Adams; Matthew Collins; Theodore Lopman, Theodore Johnson; Avnika Amin; Joshua Weitz and Scott Fridkin

Background: Nursing home (NH) residents and staff were at high risk for COVID-19 early in the pandemic; several studies estimated seroprevalence of infection in NH staff to be 3-fold higher among CNAs and nurses compared to other staff. Risk mitigation added in Fall 2020 included systematic testing of residents and staff (and furlough if positive) to reduce transmission risk. We estimated risks for SARS-CoV-2 infection among NH staff during the first winter surge before widespread vaccination. **Methods:** Between February and May 2021, voluntary serologic testing was performed on NH staff who were seronegative for SARS-CoV-2 in late Fall 2020 (during a previous serology study at 14 Georgia NHs). An exposure assessment at the second time point covered prior 3 months of job activities, community exposures, and self-reported COVID-19 vaccination, including very recent vaccination (≤ 4 weeks). Risk factors for seroconversion were estimated by job type using multivariable logistic regression, accounting for interval community-incidence and interval change in



resident infections per bed. **Results:** Among 203 eligible staff, 72 (35.5%) had evidence of interval seroconversion (Fig. 1). Among 80 unvaccinated staff, interval infection was significantly higher among CNAs and nurses (aOR, 4.9; 95% CI, 1.4–20.7) than other staff, after adjusting for race and interval community incidence and facility infections. This risk persisted but was attenuated when utilizing the full study cohort including those with very recent vaccination (aOR, 1.8; 95% CI, 0.9–3.7). **Conclusions:** Midway through the first year of the pandemic, NH staff with close or common resident contact continued to be at increased risk for infection despite enhanced infection prevention efforts. Mitigation strategies, prior to vaccination, did not eliminate occupational risk for infection. Vaccine utilization is critical to eliminate occupational risk among frontline healthcare providers.

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Coinfections in hospitalized COVID-19 patients are associated with high mortality: need for improved diagnostic tools

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Background: Hospitalized patients with COVID-19 often receive antimicrobial therapies due to concerns for bacterial and fungal coinfections. We analyzed patients admitted with COVID-19 to our VA facility to understand antimicrobial use, frequency of coinfections, and outcomes in our population. **Methods:** This retrospective study included veterans who were 18 years or older and hospitalized with COVID-19 from March 10, 2020, to March 9, 2021 at the Louis Stokes VA Medical Center in Cleveland, Ohio. We identified antimicrobials administered and coinfections with bacterial or fungal pathogens. Patients were deemed to have coinfection if there was supporting microbiological data and a consistent clinical course upon review of clinical records. Urinary tract infections were excluded because of difficulty determining infection. Odds ratios (ORs) and 95% confidence intervals (CIs) for 30-day mortality were derived using multivariate logistic regression models that included age, Charlson comorbidity index (CCI), corticosteroid use, and time of infection. **Results:** In our cohort of 312 patients, the median age was 70 years and 97% of the patients were male. The mean CCI was 3.7 (SD, 3.0), and 111 patients (35.6%) had a score ≥ 5 . Oxygen was administered to 250 patients (80.1%), and 20 (6.4%) required mechanical ventilation. Antimicrobials were administered to 164 patients (52.6%) (Fig. 1). Of 20 patients (6.4%) with coinfection, 11 (3.5%) had a bloodstream infection (BSI) and 9 (2.9%) had bacterial pneumonia (Fig. 2). The overall 30-day mortality rate was 12.5% (39 of 312).

Figure 1

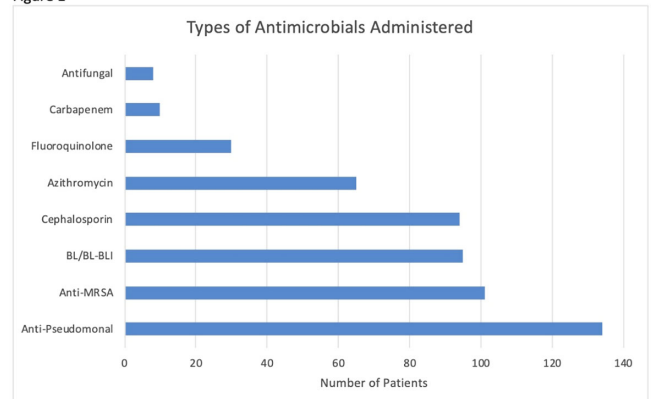


Figure 1: Number of hospitalized COVID-19 patients who received at least one dose of an antimicrobial from each category