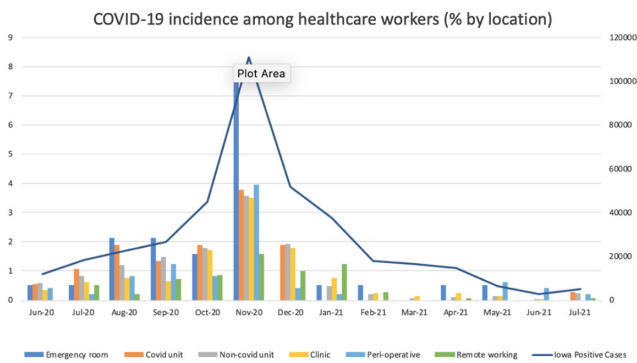


Figure 1: Trend of COVID-19 infections among healthcare workers at a mid-west tertiary care hospital (% by location) and COVID-19 cases in the state of Iowa, 2020-2021



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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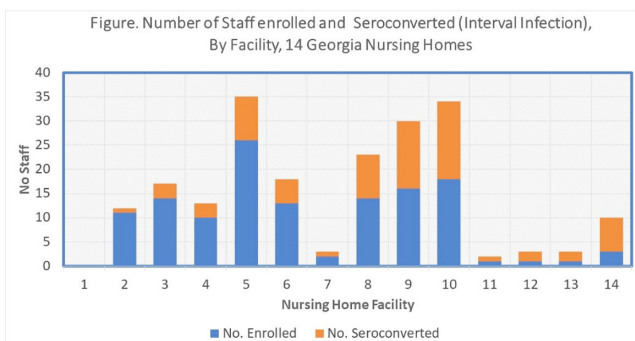
Poster Presentation - Top Poster Award

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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Poster Presentation - Top Poster Award

Subject Category: COVID-19

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

Sonya Kothadia; Brigid Wilson; Federico Perez and Robert Bonomo

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

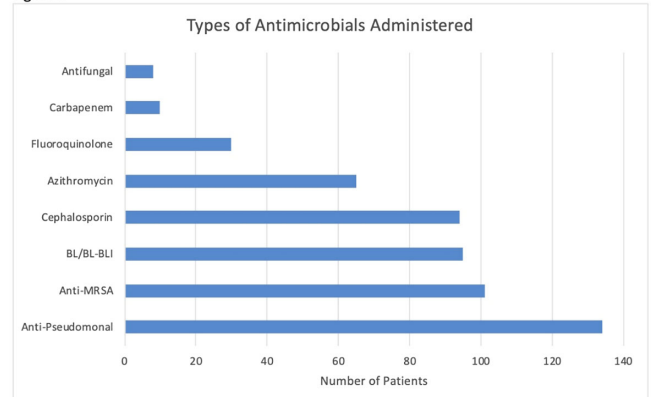


Figure 1: Number of hospitalized COVID-19 patients who received at least one dose of an antimicrobial from each category

Figure 2

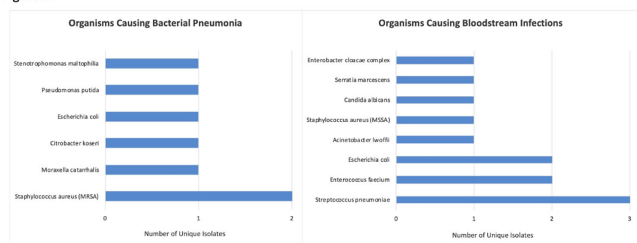


Figure 2a: Respiratory culture isolates in cases of COVID-19 patients with bacterial pneumonia
 Figure 2b: Organisms isolated from blood cultures in cases of COVID-19 patients with bloodstream infection

Among patients with coinfection, the 30-day mortality rate was 45% (9 of 20). Diagnoses of BSI (OR, 6.35; 95% CI, 1.41–26.30) and bacterial pneumonia (OR, 9.34; 95% CI, 2.01–46.34) were associated with increased mortality. Of the data available, 12 (63%) of 19 patients with coinfection had elevated procalcitonin levels (ie, >0.50). At the time of COVID-19 diagnosis, the median absolute lymphocyte count in patients who died was 0.7 K/mm³ (95% CI, 0.6–1.12) in comparison to 1 K/mm³ (95% CI, 0.7–1.4) in patients who survived at 30 days. **Conclusions:** Our analysis of hospitalized COVID-19 patients with advanced age and underlying comorbid conditions demonstrated that coinfections were infrequent but that they were independently associated with increased mortality. This finding highlights the need for better tools to diagnose the presence or absence of bacterial and fungal coinfection in COVID-19 patients. Our findings also emphasize the need for judicious use of antimicrobials while discerning which patients are at risk of critical illness and mortality.

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Poster Presentation - Top Poster Award

Subject Category: COVID-19

Characteristics of healthcare personnel who reported concerns related to PPE use during care of COVID-19 patients

Nora Chea; Stephanie Tavitian; Cedric Brown; Taniece Eure; Rebecca Alkis; Gregory Blazek; Austin Penna; Joelle Nadle; Linda Frank; Christopher Czaja; Helen Johnston; Devra Barter; Kathleen Angell; Kristen Marshall; James Meek; Monica Brackney; Stepy Carswell, Stepy Thomas; Scott Fridkin ; Lucy Wilson; Ashley Fell; Sara Lovett; Sarah Lim; Ruth Lynfield, Ruth Sarah Shrum; Erin C. Phipps; Marla Sievers; Ghinwa Dumyati; Cate Concannon; Kathryn McCullough; ; Woods; Sandhya Seshadri; Christopher Myers; Rebecca Pierce; Valerie Ocampo; Judith Guzman-Cottrill; Gabriela Escutia; Monika Samper; Sandra Pena; Cullen Adre; Tiffanie Markus; Kathryn Billings; Matthew Groenewold; Ronda Sinkowitz-Cochran; Shelley Magill; Cheri Grigg and Betsy Miller

Background: Healthcare facilities have experienced many challenges during the COVID-19 pandemic, including limited personal protective equipment (PPE) supplies. Healthcare personnel (HCP) rely on PPE, vaccines, and other infection control measures to prevent SARS-CoV-2 infections. We describe PPE concerns reported by HCP who had close contact with COVID-19 patients in the workplace and tested positive for SARS-CoV-2. **Method:** The CDC collaborated with Emerging Infections Program (EIP) sites in 10 states to conduct surveillance for SARS-CoV-2 infections in HCP. EIP staff interviewed HCP with positive SARS-CoV-2 viral tests (ie, cases) to collect data on demographics, healthcare roles, exposures, PPE use, and concerns about their PPE use during COVID-19 patient care in the 14 days before the HCP’s SARS-CoV-2 positive test. PPE concerns were qualitatively coded as being related to supply (eg, low quality, shortages); use (eg, extended use, reuse, lack of fit test); or facility policy (eg, lack of guidance). We calculated and compared the percentages of cases reporting each concern type during the initial phase of the pandemic (April–May

Table. Characteristics of HCP cases with close contact with COVID-19 patients in the workplace, April 2020–January 2021

	HCP cases (N=1,998)
Sex, no. (%)^a	
Female	1,542 (77.2)
Male	445 (22.3)
Age group in years, no. (%)^b	
<30	517 (25.9)
≥30	1,460 (73.1)
Race and ethnicity, no. (%)^c	
White, non-Hispanic	935 (46.8)
Black, non-Hispanic	432 (21.6)
Hispanic	337 (16.9)
Asian, non-Hispanic	187 (9.4)
Native Hawaiian or other Pacific Islander, non-Hispanic	18 (0.9)
American Indian or Alaska Native, non-Hispanic	8 (0.4)
Multiple races, non-Hispanic	35 (1.8)
Healthcare role, no. (%)	
Registered nurse	689 (34.5)
Certified nursing assistant	316 (15.8)
Licensed practical nurse	108 (5.4)
Physician	129 (6.5)
Administrative personnel	69 (3.5)
Other ^d	687 (34.3)
Facility type, no. (%)	
Hospital	1,243 (62.2)
Nursing home	449 (22.5)
Other ^e	306 (15.3)
Specimen collection date of positive SARS-CoV-2 test, no. (%)^f	
April–May 2020	279 (14.0)
June–August 2020	584 (29.2)
September 2020–January 2021	1,132 (56.7)
Reported ≥1 PPE concern, no. (%)	
Use concern	413 (20.7)
Supply concern	193 (9.7)
Facility policy concern	43 (2.2)

^aSex was not reported for 11 cases.

^bAge was not reported for 21 cases.

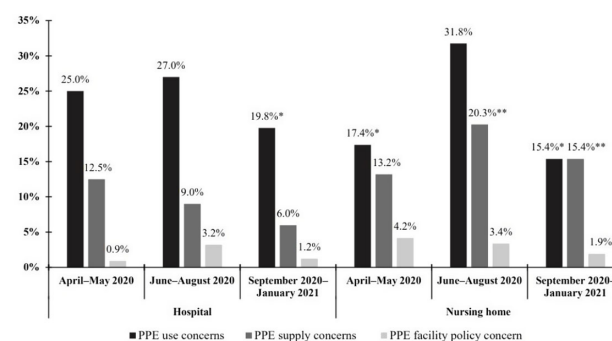
^cRace was not reported for 46 cases.

^dOther healthcare roles include home health personnel, surgical or medical technicians, medical assistants, nurse practitioners, emergency medical services personnel, physical therapists, radiology technicians, respiratory therapists, occupational therapists, and phlebotomists.

^eExamples of other facility types include outpatient clinics, urgent care clinics, free-standing emergency rooms or departments, mental health facilities, and dental clinics.

^fSpecimen collection dates of positive SARS-CoV-2 tests were not reported for 3 cases.

Figure 1. Personal protective equipment (PPE) concerns reported by HCP cases with close contact with COVID-19 patients, stratified by facility type, April 2020–January 2021



*p<0.05 using mid-P exact test when compared with the percentage of cases working in the same facility type and reporting PPE use concerns from June–August 2020

**p<0.05 using mid-P exact test when compared with the percentage of cases working in hospital and reporting PPE supply concerns during the same time period

2020), during the first US peak of daily COVID-19 cases (June–August 2020), and during the second US peak (September 2020–January 2021). We compared percentages using mid-P or Fisher exact tests (α = 0.05). **Results:** Among 1,998 HCP cases occurring during April 2020–January 2021 who had close contact with COVID-19 patients, 613 (30.7%) reported ≥1 PPE concern (Table 1). The percentage of cases reporting supply or use concerns was higher during the first peak period than the second peak period (supply concerns: 12.5% vs 7.5%; use concerns: 25.5% vs 18.2%; p