

States and Mexico are experiencing widespread community transmission of SARS-CoV-2, which may have implications for antibiotic seeking and use. The objective of this study was to examine antibiotic seeking behavior as it relates to COVID-19 in the border region relative to the greater US and Mexico populations. **Methods:** An interdisciplinary team at The University of Arizona developed a survey to assess knowledge, attitudes, and beliefs about antibiotics along the US–Mexico border region (defined as 100 km from the border) and to compare findings from the border region to the broader US and Mexico populations. The team recruited survey participants through Amazon’s MTurk survey platform and through the distribution of recruitment flyers to community partners in Arizona and Mexico border regions from October 2020 to January 2021. Targeted recruitment was 750 through March 2021. We report here on findings from the first round of recruitment ($n = 116$). These participants were asked whether they had sought out antibiotics specifically as a treatment for COVID-19, as well as their general beliefs and behaviors on self-seeking antibiotics for illness. **Results:** As of January 24, 2021, we surveyed 116 participants: 82 (70.7%) from the United States and 34 (29.3%) from Mexico. Most participants (71.2%) were aged 25–44 years; 56.9% were male; and 50% reported Hispanic ethnicity. Of these, 13.8% lived within 100 km of the US–Mexico border. Overall, 21.6% of participants reported taking antibiotics to fight COVID-19–like illness. Of these participants, 28% obtained the antibiotics directly from a pharmacy, without a physician prescription, and 16% obtained them from an online vendor. Additionally, 33% of US respondents reported that they would be willing to travel to Mexico to obtain antibiotics if they were too difficult to obtain in the United States. Of these respondents, 55% said they would be willing to travel for >1 hour to obtain antibiotics. **Conclusions:** Preliminary data suggest that the COVID-19 pandemic will have widespread ramifications on antibiotic seeking behavior and could propagate antibiotic resistance. Targeted intervention strategies in the border region are necessary to mitigate the unique factors that contribute to antibiotic use in this area.

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Risk Factors for In-Hospital Mortality from COVID-19 Among Nursing Home Patients—An Urban Center Experience

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Background: As the COVID-19 pandemic continues, special attention is focused on high-risk patients. In this study, we assessed the risk factors for COVID-19 mortality in nursing home patients. **Methods:** In this retrospective cohort study, we reviewed the electronic medical records of SARS-COV-2 PCR–positive nursing-home patients between March 8 and June 14, 2020. The primary outcome was in-hospital mortality. Risk factors were compared between those who were discharged or died using the Student t test, the Mann–Whitney U test, χ^2 analysis, and logistic regression. **Results:** Among 169 hospitalized nursing-home patients, the case fatality rate was 43.2%. The mean age was 72.3 ± 13.8 years; 92 patients (54.4%) were male; and 112 patients (66.3%) were black. Within the first day of hospitalization, 83 (49%) patients developed fever. On admission, 24 (14.2%) patients were hypotensive. Leukopenia, lymphopenia, and thrombocytopenia were present in 20 (12%), 91 (53%), and 40 (23.7%) patients, respectively. Among the inflammatory markers, elevations in CRP and ferritin levels occurred in 79% and 24%, respectively. Intensive care admission was needed for 40 patients (23.7%). Septic shock occurred in 25 patients (14.8%). Patients over the age of 70 were more likely to die than younger patients (OR, 2.2; 95% CI, 1.2–4.1; $P = .20$). Patients with a fever on admission were more likely to die than those who were afebrile (OR, 2.03; 95% CI, 1.08–3.8; $P = .03$). Also, 66.7% hypotensive patients died compared to 39.3% normotensive patients (OR, 3.1; 95% CI, 1.2–7.7

$P = .01$). Intubated patients died more often than those not intubated, 78.4% versus 33.3%, respectively (OR=7.3, $p < 0.001$, CI 3.1, 17.2). Factors significantly associated with death included higher mean qSofa ($p < 0.001$), higher median Charlson scores (0.02), thrombocytopenia ($p = 0.04$) and lymphocytopenia (0.04). From multivariable logistic regression, independent factors associated with death were Charlson score (OR=1.2, $p=0.05$), qSofa (OR=2.0, $p=0.004$), thrombocytopenia (OR = 3.0, $p = 0.01$) and BMI less than 25 (OR = 3.5, $p=0.002$). **Conclusions:** Our multivariable analysis revealed that patients with a greater burden of comorbidities, lower BMI, higher qSOFA sepsis score, and thrombocytopenia had a higher risk of death, perhaps because of severe infection despite a robust immune response.

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Linking Staff Cases in a Hospital COVID-19 Outbreak Using Electronic Tracking Data

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Background: Significant outbreaks of SARS-CoV-2 infections have occurred in healthcare personnel (HCP). We used an electronic tracking system (ETS) as a tool to link staff cases of COVID-19 in place and time during a COVID-19 outbreak in a community hospital. **Methods:** We identified SARS-CoV-2 infection cases through surveillance, case investigation and contact tracing, and voluntary testing. For those wearing ETS badges (Centrak), data were reviewed for places occupied by the personnel during their incubation and infectious windows. Contacts beyond 15 minutes in the same location were considered close contacts. **Results:** Over 6 weeks (August 10–September 14, 2020), 35 HCPs tested positive for SARS-CoV-2 by NAAT testing. In total, 18 nurses and aides were clustered on 1 hospital unit, 7 cases occurred among respiratory therapists that visited that unit, and 10 occurred in other departments. Overall, 17 individuals wore ETS badges as part of hand hygiene monitoring. ETS data established potential transmission opportunities in 17 instances, all but 2 before symptom onset or positive test result. Contacts were most often (10 of 17) in common work areas (nursing stations), with a median time of 45 minutes (IQR, 21–137). Contacts occurred within and between departments. A few COVID-19 patients were cared for in this location at the time of the outbreak. However, we did not detect HCP-to-patient nor patient-to-HCP transmission. **Conclusions:** Significant HCP-to-HCP transmission occurred during this outbreak based on ETS location. These events often occurred in shared work areas such as the nursing station in addition to break areas noted in other reports. ETS systems, installed for other purposes, can serve to reinforce standard epidemiology.

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Using a Quality-Driven Approach to Maintain an N-95 Respirator Supply During a Pandemic-Driven Global Shortage

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Background: Reports of hospitals overwhelmed by COVID-19 patients created severe shortages of personal protective equipment (PPE). In this large academic medical system, we used a systematic team approach to

proactively maintain an adequate PPE supply. The team consisted of staff from multiple departments including infection prevention, environmental health and safety, operational efficiency, and supply chain. The healthcare system solicited donations of PPE, and our team was tasked with developing a sustainable method to provide healthcare workers with safe and effective N-95 respirators. Respirators are normally fitted to our 6,000+ healthcare workers through a fit-testing process using 4 models of N-95s. We received >60 models, many in small quantities, posing a new level of complexity that prevented use of our typical fit-testing method. **Methods:** Donated respirators were manually verified on the CDC/NIOSH website to validate approval or approved alternative. A categorization system was developed, and respirators were sorted based on quality, style, and condition. User seal checks replaced qualitative fit testing due to the uncertain and quickly changing respirator supply. Staff were educated about the importance of performing a seal check to evaluate respirator fit and were provided instructions for what to do if they failed a seal check. We performed limited quantitative fit testing on a small group previously fit tested to 1 of the 4 models of N-95s normally stocked to identify the most effective alternative respirators to serve as substitute N-95s. **Results:** We were able to provide staff with new N-95s and delay the release of reprocessed N-95s. Overall, 18 models of respirators were tested on staff for filtration effectiveness and fit. We deemed 61% masks to be of last resort, and these were not released. We determined that 39% were acceptable as an alternative for at least 1 of our usual respirator models. However, only 3 models (17%) available in small quantities fit wearers whose size was in shortest supply. This scarcity led to the evaluation and purchase of a new respirator prototype for small N-95 wearers, which was an important success of our team's work and for staff safety. **Conclusions:** Collaboration between teams from a variety of backgrounds, using both qualitative and quantitative data, resulted in a sustainable method for receiving, sorting, and evaluating donated N-95 respirators, ensuring the delivery of a steady supply of effective N-95 respirators to our staff. This quality-driven approach was an efficient and effective strategy to maintain our N-95 respirator supply during a pandemic driven global shortage.

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Prevalence of SARS-CoV-2 Antibody in Healthcare Workers in Central Pennsylvania

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Background: Determining the incidence of SARS-CoV-2 in healthcare workers (HCW) is important in assessing the safety of the work environment. Though of limited use in acute illness, serologic testing can detect some infections that occur undetected. We compared the prevalence of antibodies to SARS-CoV-2 to a place of work, exposure by role and department, and use of various prevention methods. **Methods:** Healthcare workers (HCWs) working in Geisinger Health System were offered voluntary serology through Employee Health. Before they had blood taken, they completed a brief questionnaire. Testing was conducted from June 15 to September 4, 2020. Blood was analyzed for SARS-CoV-2 immunoglobulin G (IgG) (Roche and Diasorin platforms). **Results:** In total, 2,295 employees and contract workers providing care at Geisinger facilities were tested. Most of this group, 2,037 (88.8%), were involved in direct patient care. In total, 101 tests returned positive, a rate of 4.4% (95% CI, 3.6%–5.3%). Of 54 HCWs with a positive NAAT for SARS-CoV-2, positive serology results were found in 48, a sensitivity of 89% (95% CI, 78%–95%). Those involved in patient care were slightly more likely to become infected, 91 of 2,037 (4.6%) compared to 10 of 258 who were not involved in patient care (3.9%; $P = .68$). Those with unprotected exposure to a known case of COVID-19 were more likely than those not exposed to be positive for SARS-CoV-2, 51 of 792 (6.4% vs 3.3%; $P = .0008$). This risk was highest for those exposed outside work (7 of 33; 21%; $P = .003$). HCWs working in COVID-19 units were positive at a rate of 4.0% (95% CI, 3.8%–5.4%), no more than other inpatient areas, which were 5.0% positive (95% CI, 3.8%–6.4%).

HCWs working with outpatients were at slightly lower risk, 2.8% positivity (95% CI, 1.9%–4.1%). The rates of infection ranged between 3.3% and 5.0% by job category. Employees were asked about symptoms experienced since March 2020. Positive serology occurred in 39 (2.8%) of 1,414 employees who did not recall any symptoms. Symptoms related to COVID-19, except sore throat, were strongly correlated with positive serology. **Conclusions:** When provided a safe work environment, the risk of COVID-19 in employees is comparable to that in the surrounding communities. Persons with patient care responsibilities have an absolute risk that is marginally higher.

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Cost of Personal Protective Equipment During the First Wave of COVID-19

Alfredo Mena Lora; Mirza Ali; Sherrie Spencer; Eden Takhsh; Candice Krill and Susan Bleasdale

Background: As the world prepared for and responded to the COVID-19 pandemic in early 2020, a rapid increase in demand for personal protective equipment (PPE) led to severe shortages worldwide. Acquisition of PPE in the general market was an integral part of pandemic response, along with the safeguarding of hospital supplies. We seek to quantify the difference in cost per unit (CPU) of PPE during the first wave of COVID-19 compared to prepandemic prices. **Methods:** We performed a retrospective review of market prices for PPE during the first surge of the pandemic in Chicago. Cost of PPE was tabulated and compared with prepandemic prices. The maximum cost per unit (CPU) of PPE was tabulated for each week, and the average cost throughout the pandemic was calculated. Disposable gowns, washable gowns, N95 respirators, face masks, and gloves were included in our analysis. **Results:** PPE prices were significantly higher during the pandemic compared to prepandemic prices (Figure 1). Disposable gown CPU peaked at \$12 during the first week of March, 13.7 times higher than prepandemic prices, and the average gown CPU was 7.5 times higher than prepandemic prices. N95 respirators had a peak CPU of \$12, and average CPU was 8 times higher than prepandemic prices. Face-mask CPU peaked at \$0.55, 11 times higher, and averaged 9 times higher the regular price. Gloves averaged 2.5 times higher than the prepandemic CPU. **Conclusions:** Market prices for PPE were significantly elevated during the first weeks of the pandemic and remained high throughout the first wave of COVID-19. Multiple factors likely contributed to high prices, including demand shock, disrupted supply chains, and a rush to acquisition by healthcare systems and the general population alike. The impact of COVID-19 on prices highlights the importance of supply chains and national stockpiles for pandemic preparedness.

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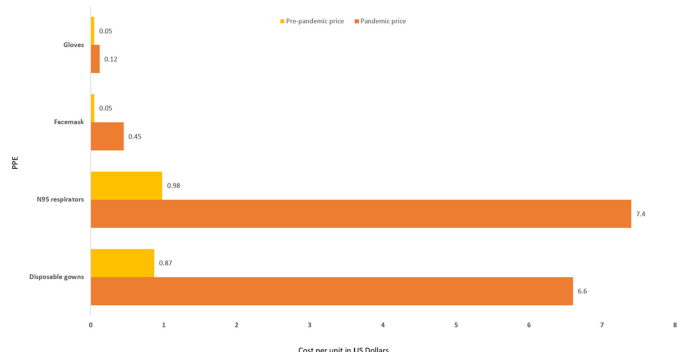


Figure 1.