Background: The use of disposable or single-use filtering facepiece respirators (FFRs), like N95s, are an important component of personal protective equipment for healthcare personnel in treating patients with a respiratory virus and not approved for reuse. The current pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has resulted in the limited availability of respirators. As a result, the decontamination of FFRs is a potential solution for reuse in order to conserve supplies. However, the efficacy of disinfection for a contaminated FFR needs to be evaluated. This experiment examined the effectiveness of a targeted ultraviolet C (UVC) device for the decontamination of a single-use respirator.

Methods: To mimic an aerosolized droplet contaminating a cellulose based respirator, a 6 mm cotton disk was inoculated with a 10 µL aliquot of *Bacillus subtilis* endospores. The disks were placed directly under the UVC light with 6 inches between the bulb and disk. The samples were then exposed for 90 seconds, 3 minutes, 5 minutes, and 10 minutes, respectively. After specified exposure time, the disks were turned over, and the other side was exposed for the same time interval as the previous side. Disks were placed in a 10 mL nutrient broth and incubated at 30°C for 48 hours. Lastly, the serially diluted specimens were plated onto nutrient agar, incubated for 48 hours, and the log₁₀ colony forming units (CFU) reductions were enumerated by comparing disks after decontamination versus untreated controls.

Results: The log₁₀ CFU reduction of *B. subtilis* spores over all time intervals were significant when compared to controls. The mean reduction of spores on the cotton disks were 2.5 log after 90 seconds, 4 log after 3 minutes, and >6 log for both 5 and 10 minutes with no measurable recovery of spores for the last two exposures.

Conclusion: The use of targeted UVC was very successful in reducing the *B. subtilis* spores from a cotton disk within 90 seconds, and the 100% elimination of the spores after 5 minutes. Even though a pandemic virus was not used, the sporicidal efficacy suggests this device could be effective at inactivating SARS-CoV-2. Based upon these findings, a targeted UVC device could be utilized for the decontamination of a single-use respirator needed during times of shortages.

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501. Serum IgG Antibody Testing Against Severe Acute Respiratory Syndrome Coronavirus 2 in Healthcare Workers

Joy J. Juskowich, MD¹; Ziad Dimachkie, MD¹; Mary Fanning, DNP, NR, NEA-BC²; Arif R. Sarwari, MD¹; Nathan M. Lerfeld, MD, FACP¹; Seyoum Bage, MD²; Matthew E. Simmons, MD²; Jonathan E. Stanley, DO²; Ruchi Bhandari, PhD, MPA, MA, MBA¹; Rashida A. Khakoo, MD, MACP¹; ¹West Virginia University, Morgantown, West Virginia; ²WVU Medicine, Morgantown, West Virginia

Session: P-17. COVID-19 Infection Prevention

Background: With the COVID-19 pandemic, many changes were made in healthcare institutions including but not limited to canceling elective surgeries, limiting face-to-face clinic visits, and implementing visitor restrictions. Phased reopening began at West Virginia University (WVU) Medicine on May 25, 2020. While preparing for transition, concern was raised regarding potential for more employee exposures to persons with SARS-CoV-2 infection. In West Virginia (WV), we did not get the predicted surge of SARS-CoV-2. Current cumulative percent positivity for SARS-CoV-2 PCR in WV is 2332 positives of 133,142 tests (1.75%). We provided appropriate personal protective equipment (PPE), including controlled air purifying respirators for all healthcare workers (HCW) caring for persons with suspected or confirmed COVID-19 from the beginning. Policies requiring masks for all HCW and patients took effect on March 27, 2020 and April 29, 2020, respectively. We hypothesized that due to appropriate PPE use there would be no difference in SARS-CoV-2 antibody positivity in HCW working in high versus low risk areas.

Methods: Serum samples from 1042 randomly selected HCW across 4 WVU Medicine hospitals, ranging from 170 to 690 beds with 121 cumulative SARS-CoV-2 PCR positive patients at the time of the study, were tested for SARS-CoV-2 IgG between May 26, 2020 and June 5, 2020. Physicians, nurses, and respiratory therapists were characterized as high or low risk based on work location. Environmental services (EVS) workers were included but not risk-stratified. A questionnaire was used to obtain information on demographics, chronic medical conditions, symptoms, and exposures.

Results: SARS-CoV-2 IgG was positive in 9 of 1042 (0.86%) randomly selected HCW. Seroprevalence was lower in high risk 5/835 (0.60%) versus low risk 4/176 (2.27%) group. This was not statistically significant. No EVS workers tested positive 0/31 (0%). Of 9 HCW who tested positive, 2 had previously tested positive for SARS-CoV-2 PCR.

Conclusion: SARS-CoV-2 IgG seroprevalence in a large sample of HCW across 4 WVU Medicine hospitals was low (0.86%). Low seroprevalence among HCW in high risk areas may be related to appropriate PPE use. Seroprevalence in HCW not caring for patients with COVID-19 could be from community or other inadvertent exposure.

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502. The Impact of Combating COVID-19 on Blood Culture Contamination and Central Line Associated Bloodstream Infection Rates

Jennifer LeRose, MS-II, MPH¹; Avnish Sandhu, DO²; Jordan Polistico, MD³; Joseph Ellsworth, BS⁴; Nancy Baran, MS, MT (ASCP)⁵; Mara Cranis, MPH⁴; Lavina Jabbo, MHSA, MT⁴; Lori Cullen, RN⁴; Judy Moshos, MT (ASCP), CIC⁴; Teena Chopra, MD, MPH³; ¹Michigan State University College of Osteopathic Medicine, Beverly Hills, Michigan; ²Department of Internal Medicine, Division of Infectious Diseases, Detroit Medical Center, Wayne State University School of Medicine, Detroit, MI, USA, Detroit, Michigan; ³Detroit Medical Center, Wayne State University, Detroit, MI, USA, Detroit, Michigan; ⁴Department of Internal Medicine, Division of Infectious Diseases, Detroit Medical Center, Wayne State University School of Medicine, Detroit, MI, USA, Detroit, Michigan; ⁵Department of Internal Medicine, Division of Infectious Diseases, Detroit Medical Center, Wayne State University School of Medicine, Detroit, MI, USA, Detroit, Michigan

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Background: Coronavirus disease (COVID-19) pandemic has presented challenges to every facet of the healthcare system. There is limited research evaluating the consequence of diverting resources from patient safety initiatives to COVID-19 crisis efforts. In an attempt to quantify the impact of COVID-19 on quality of patient care, we compared rates of blood culture contamination and central line associated bloodstream infections (CLABSIs) during COVID-19 to those before the pandemic.

Methods: A comparative retrospective cohort study was conducted to analyze blood culture contamination and CLABSI rate per 1,000 line days in a tertiary care hospital in Detroit within a "pre-COVID-19" timeframe, January - May 2019, and "COVID-19" timeframe, January - May 2020. The CLABSI rate data was obtained through Infection Control Surveillance System TheraDoc[®]. Blood culture contamination report was obtained through the Microbiology Department. Chi-square and t-test were used for statistical analysis.

Results: The blood culture contamination rate increased from 3.1% during pre COVID-19 timeframe to 4.0% during COVID-19 (p-value < 0.01) (Figure 1) with the highest rate in March and April 2020 correlating with the peak of COVID-19 (Figure 2). The CLABSI rate per 1,000 line days increased from 0.71 in pre-COVID-19 time frame to 2.70 during COVID-19 (p-value < 0.01) (Figure 1). Of the 33 CLABSIs identified during the COVID-19 time frame, 18 (54%) patients tested positive for COVID-19. When comparing COVID-19 positive and COVID-19 negative patients; average length of stay was 28.1 days shorter in the positive group (p-value < 0.01). COVID-19 positive patient had higher mortality (p-value < 0.01) (Table 1). Refer to Table 1 for comparison of variables between pre COVID-19 and COVID-19 cohort and COVID-19 positive and negative cohort.

Figure 1. Rate of blood culture contamination (top) and CLABSI per 1,000 Line Days Rate (below) Between Two Study Period (Pre COVID-19 and COVID-19)