members were trained, and 380 batches of quality-assured ABHR (17,820 L) were produced and distributed to 278 health facilities. Consumption of ABHR in the first distribution was used to benchmark predicted ABHR consumption per targeted facility in subsequent months. Increased demand for ABHR due to the COVID-19 pandemic and the Ebola virus disease outbreak in central Uganda (September 2022) was addressed through emergency requests on a case-by-case basis. ABHR local production costs $3 per liter for materials, less than half of commercial ABHR ($8 per liter). **Conclusions:** Early results suggest that this approach is potentially sustainable but requires national advocacy as well. Leveraging existing distribution systems while building local capacity for ABHR production and distribution may improve longevity of such innovations in similar resource-limited settings.

Disclosure: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s11–s12
doi:10.1017/ash.2023.224

Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: Infection Control in Low- and Middle-Income Countries

Assessment of ventilation in low-resource healthcare settings: Montserrado County, Liberia—2022–2023

Krithika Srinivasan; Ronan Arthur; Ashley Styczynski; Ethan Bell; Thomas Baer and Jorge Salinas

Background: Mitigating the risk of nosocomial respiratory disease transmission in the healthcare facilities of low- and middle–income countries (LMICs) poses unique challenges because mechanical ventilation and mixed–mode strategies are often unavailable. Carbon dioxide (CO_2) can serve as a proxy for ventilation and, hence, airborne infectious disease transmission risk in naturally ventilated spaces. We assessed the adequacy of ventilation in Liberian hospitals. **Methods:** We sampled 3 hospitals, both urban and rural, in Montserrado County, Liberia. Moreover, 3 CO_2 meters were concurrently utilized to measure CO_2 levels at a 1-meter height in every patient-care room in each facility. We recorded temperature, humidity, room dimensions, and number of people in the rooms. From these variables, we calculated absolute ventilation using the ASHRAE equation to determine areas with the highest risk of nosocomial respiratory disease transmission. We also recorded qualitative observations about the sampled spaces. **Results:** From August 2022 to February 2023, 39 rooms in 3 healthcare facilities were sampled. Initial quantitative findings show that only 8 rooms (21%) met the WHO-recommended ventilation rate of 60 L per second per person. The average ventilation rate per person in the adequately ventilated settings was 86 L per second per patient, compared to 19 liters per second per patient in inadequately ventilated rooms. Additionally, 467 ppm mean CO_2 was noted in well-ventilated rooms compared to 895 ppm mean CO_2 in inadequately ventilated rooms.
Initial qualitative observations showed that facilities with lower CO_2 readings tended to be older constructions that likely had been constructed with airborne disease such as tuberculosis in mind. Willingness to open windows was limited by lack of window screens for malaria prevention, and there was a pervasive fallacy that air conditioning was a source of ventilation. Correspondingly, of the 31 inadequately ventilated rooms, 22 (71%) had operating air conditioning units compared with 4 (50%) of the 8 adequately ventilated rooms. Overall, of the 13 rooms without air conditioning, 7 (54%) were more frequently characterized by open windows compared to only 5 of 26 (28%) of rooms that did have air conditioners. **Conclusions:** Being prepared for the next respiratory disease outbreak and creating more resilient healthcare systems in LMICs requires a frameshift of prevention strategies. Measuring CO_2 provides a simple strategy for identifying areas at highest risk for nosocomial respiratory disease transmission, which can be prioritized for low-cost environmental interventions, such as provision of window screens, as part of routine infection prevention and control efforts.

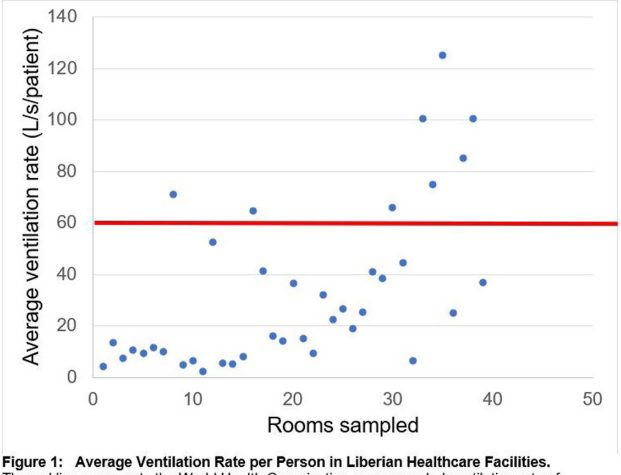

Figure 1: Average Ventilation Rate per Person in Liberian Healthcare Facilities. The red line represents the World Health Organization recommended ventilation rate of 60L/s/patient. Out of 39 rooms measured, only eight (21%), noted above the red line, met the WHO recommended ventilation rate of 60L/s/patient.

Disclosure: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s12
doi:10.1017/ash.2023.225

Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: MDR GNR

Carbapenemase genes and mortality in patients with carbapenem-resistant Enterobacterales, Atlanta, Georgia, 2011–2020

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Background: Carbapenemase genes in carbapenem-resistant Enterobacterales (CP-CRE) may be transmitted between patients and bacteria. Reported rates of carbapenemase genes vary widely, and it is unclear whether having a carbapenemase gene portends worse outcomes given that all patients with CRE infections have limited treatment options. **Methods:** Using active population- and laboratory-based active surveillance data collected by the US CDC-funded Georgia Emerging Infections Program from 2011 to 2020, we assessed the frequency of carbapenemase genes in a convenience sample of CRE isolates using whole-genome sequencing (WGS), and we investigated risk factors for carbapenemase positivity. Only the first isolate per patient in a 30-day period was included. We compared characteristics of patients with CP-CRE and non–CP-CRE. Using multivariable log binomial regression, we assessed the association of carbapenemase gene positivity and 90-day mortality. **Results:** Of 284 CRE isolates, 171 isolates (60.2%) possessed a carbapenemase gene (Table 1), and KPC-3 was the most common carbapenemase gene (80.7%), with only 7 isolates possessing NDM (Table 2). No isolates possessed >1 carbapenemase gene, and most isolates were from urine (82.4%) (Table 1). Carbapenemase gene positivity was associated with lower age, male sex, black race, infection with *Klebsiella pneumoniae*, polymicrobial infection, having an indwelling medical device, receiving chronic dialysis, and prior stay in a long-term acute-care hospital, long-term care facility, and/or prior hospitalization in the last year. The 90-day mortality rates were similar in patients with non–CP-CRE and CP-CRE: 24.8% versus 25.7% ($P = .86$). In multivariable analysis, carbapenemase gene presence was not associated with 90-day mortality (adjusted risk ratio, 0.82; 95% CI, 0.50–1.35) when adjusting for CCI, infection with *Klebsiella pneumoniae*, and chronic dialysis use. **Conclusions:** The frequency of CP-CRE among CRE was high in this study, but unlike prior studies, the 90-day mortality rates wer similar in patients with CP-CRE compared to non–CP-CRE. Our results provide