computed $W(i, j)$ for all room pairs i, j for parameters t1 = 30 seconds and t2 = 1,800 and 3,600 seconds. For nurses, there was a strong negative correlation of between pairwise room distance and the weights $W(i, j)$ (−0.768 for t2 = 1,800; −0.711 for t2 = 3,600), The more distant 2 rooms were, the less they shared nurse traffic. This was not true for physicians (correlation = −0.027 for t2 = 1,800; −0.014 for t2 = 3,600). Figure 1 shows a weight versus distance scatter plot for nurses for t1 = 30 and t2 = 1,800. This spatial correlation has positive implications for disease spread; the base simulation, which preserves these spatial correlations, has between 12% and 55% fewer mean infected patients (>100 replicates) for different simulation parameters compared to the perturbed simulation. **Conclusions:** Our results, based on fine-grained data, show a "naturally emerging" cohorting behavior of nurses, where nurses are more likely to visit rooms close to each other within a 30–60 minute time window, than rooms further away. Through simulations, this behavior provides substantial protection against disease spread.

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New Approaches to Colonization Screening in Response to Emerging Antimicrobial Resistance

Karen Anderson, Centers for Disease Control and Prevention; Maria Karlsson, Centers for Disease Control and Prevention; Sandra Boyd, Centers for Disease Control and Prevention; Natashia Reese, Centers for Disease Control and Prevention; Uzma Ansari, Division of Healthcare Quality and Promotion, Centers for Disease Control and Prevention; Davina Campbell, Centers for Disease Control and Prevention; Amelia Bhatnagar, Goldbelt C6, Juneau, AK; Paige Gable, Centers for Disease Control and Prevention; Stephanie Swint, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention; Cynthia Longo, Divsion of Healthcare Quality Promotion, Centers for Disease Control and Prevention; Sarah Gilbert, Goldbelt C6, Juneau, AK 99801, USA; Lori Spicer, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention; Jake Cochran, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention; David Lonsway, Centers for Disease Control and Prevention; J. Kamile Rasheed

Background: The capacity to monitor the emergence of carbapenemase-producing organisms (CPO) is critical in limiting transmission. CPO-colonized patients can be identified by screening rectal specimens for carbapenemase genes and the Cepheid GeneXpert Carba-R (XCR), the only FDA-approved test, is limited to 5 carbapenemase genes and cannot identify the bacterial species. **Objective:** We describe the development and validation of culture-based methods for the detection of CPO in rectal cultures (RCs) and nonrectal cultures (NRCs) of tracheal aspirate and axilla-groin swabs. **Methods:** Colonization screening was performed at 3 US healthcare facilities; specimens of RC swabs and NRC ESwabs were collected. Each specimen was inoculated to a MacConkey broth enrichment tube for overnight incubation then were subcultured to MacConkey agar with meropenem and ertapenem 10 µg disks (BEMA) and CHROMagar KPC (KCHR) or CHROMagar *Acinetobacter* (ACHR). All media were evaluated for the presence of carbapenem-resistant organisms; suspect colonies were screened by real-time PCR for the most common carbapenemase genes. MALDI-TOF was performed for species identification. BEMA, a previously validated method, was the comparator for 52 RCs; clinical culture (CC) served as the comparator method for 66 NRCs. Select CPO-positive and -negative specimens underwent reproducibility testing. **Results:** Among 56 patients undergoing colonization screening, 12 (21%) carried a CPO. Only 1 patient had CPO solely from RC. Also, 6 patients had both CPO-positive RC and NRC, and 5 patients only had a CPO-positive NRC. Of the latter, 4 had a CPO-positive tracheal specimen, and 1 had a positive culture from both tracheal and axilla-groin specimens. Sensitivity of BEMA (70%) for NRC was lower than for KCHR (96%) and ACHR (88 %) for all specimens. All methods showed a specificity of 100% and reproducibility of 92%. The detected CPO included OXA-23–positive *Acinetobacter baumannii*, NDM-positive *Escherichia coli*, KPC-positive *Pseudomonas aeruginosa* and 4 genera of KPC-positive Enterobacteriaceae. **Conclusions:** The addition of nonrectal specimens and use of selective media contributed to increased sensitivity and enhanced identification of CPO-colonized patients. Positive cultures were equally distributed among the 3 specimen types. The addition of the nonrectal specimens resulted in the identification of more colonized patients. The culture-based method was successful in detecting an array of different CPOs and target genes, including genes not detected by the Carba-R assay (eg, blaOXA-23-like). Enhanced isolation and characterization of CPOs will be key in aiding epidemiologic investigations and strengthening targeted guidance for containment strategies.

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Nonsusceptibility to Ceftazidime or Cefepime Can Predict Carbapenemase-Production Among Carbapenem-Resistant *Pseudomonas aeruginosaa*

Snigdha Vallabhaneni, Centers for Disease Control and Prevention; Jennifer Huang, Centers for Disease Control and Prevention; Julian Grass, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention; Sarah Malik, Centers for Disease Control and Prevention; Amelia Bhatnagar, Goldbelt C6, Juneau, AK; Alexander Kallen, Centers for Disease Control and Prevention; Elizabeth Nazarian, Wadsworth Center-NYS DOH; Shannon Morris, Wadsworth Center - NYS DOH; Chun Wang, Texas Dept of State Health; Rachel Lee, Texas Department of State Health Services; Myong Koag, Texas Department of State Heatlh Services; Bobbiejean Garcia, Texas Department of State Health Services; Allison Chan, Tennessee Department of Health; Allison Brown; Maroya Walters, Centers for Disease Control and Prevention

Background: In the United States, carbapenemases are rarely the cause of carbapenem resistance in *Pseudomonas aeruginosa*. Detection of carbapenemase production (CP) in carbapenem-resistant *P. aeruginosa* (CRPA) is critical for preventing its spread, but testing of many isolates is required to detect a single CP-CRPA. The CDC evaluates CRPA for CP through (1) the Antibiotic Resistance Laboratory Network (ARLN), in which CRPA are submitted from participating clinical laboratories to public health