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Session 164 - Surveys and Fate of Antimicrobial Resistant Bacteria

SATURDAY-212 / SATURDAY-212 - Analysis of Surface Longevity of *Klebsiella pneumoniae carbapenemase* (Kpc)-Producing Enterobacteriaceae on an Environmental Surface

June 18, 2016, 12:45 - 2:45 PM | BCEC, Exhibit and Poster Hall, Halls A and B

Authors

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Disclosures

R.P. Orr: None. **A. Cheruvanky:** None. **W. Chai:** None. **M. Denecke:** None. **J. Carroll:** None. **A. Mathers:** None.

Abstract

Background: KPC-producing Enterobacteriaceae have been identified as an urgent threat to hospitalized patients around the world. However, our understanding of nosocomial transmission of these organisms is incomplete and may involve the environment. Little is known about the surface longevity on inanimate objects of different species that carry KPC and cause nosocomial infections. This would be critical information for targeting infection control measures. We examined the difference in surface survival between the two most common KPC-positive nosocomial pathogens *Klebsiella pneumoniae* (KPC-Kp) and *Enterobacter cloacae* (KPC-Ec). **Methods:** Three independent 30-day trials of clinical strains of KPC-Kp and KPC-Ec were performed using a bleach-sterilized surface outlined with a grid design. Each cell was inoculated with $5X10^7$ colony forming units (CFU)s. Sterilized, pre-soaked cotton swabs were applied approximately every 24 hours to a new cell along with a swab from a paired surface without added organisms as a negative control. Collected samples were incubated overnight in tryptic soy broth with a 10µg ertapenem disk. If growth was visually detected, the sample was plated on KPC selective chromogenic agar and pigmented colonies consistent with KPC-Kp or KPC-Ec were considered positive.**Results:** A total of 129 samples were processed throughout the duration of the experiment. Both KPC-Kp and KPC-Ec had some samples that survived the entirety of the 30-day trial. Surface samples were 100% (21/21) and 100% (21/21) week 1, 52% (11/21) and 100% (18/18) week 2, 54% (13/24) and 91% (22/24) weeks 3 and 4 for KPC-Kp and KPC-Ec, respectively. Comparison of surface survival from day 8 to 30 demonstrated KPC-Ec had more persistence then KPC-Kp (40/42 versus 24/45; p=0.001 by Fischer exact).**Conclusion:** We conclude that KPC-Kp and KPC-Ec have the capacity to survive on an environmental surface for prolonged periods of time. This indicates that the hospital environment could play a larger role in KPC-positive Enterobacteriaceae transmission than currently recognized. KPC-Ec persisted slightly longer in the environment than KPC-Kp, which may point to a larger role of the environment in hospital transmission of this species and will require further investigation.