

RESULTS: Recorded light levels ranged from 5–2610 lux (mean = 188; n=75). Significantly fewer bacteria were recovered from coated keyboards than from control keyboards ($p < 0.001$). Multiple regression analysis confirmed that the light activated antimicrobial coating had a reductive effect upon ACC ($t = -5.44$; $p < 0.0001$). Bed occupation and the status of the visual prompt at the time of sampling were also important factors. Fewer bacteria were recovered from unoccupied bed spaces ($t = -3.99$; $p < 0.0001$). More bacteria were recovered from keyboards with a flashing cleaning reminder than from those without ($t = 2.81$; $p = 0.005$). Lux reading had no effect upon ACC ($p = 0.97$).

CONCLUSIONS: Computer keyboards can act as a source from which healthcare workers can contaminate their hands. A light-activated antimicrobial coating could help reduce the associated bioburden and thus, the risk of onward transmission. However, the use of any antimicrobial surface does not negate the need for frequent and proper cleaning.

Presentation Number 2-258

Testing Elimination of an Infection Prevention Device from Catheter Bundle and Potential Effect on Overall Catheter Bloodstream Infection Rate

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ISSUE: During 2009-2010, a pediatric hospital changed its central line bundle to address its residents' extreme vulnerabilities to central-line-associated bloodstream infections (CLABSI). Vulnerabilities include long-term central lines, short bowel syndrome, long-term intravenous nutrition, and the increased contaminants and line accesses those conditions entail. Changes: *Scrubbing residents' lines with chlorhexidine gluconate (CHG) following diaper changes to reduce exposure to fecal bacteria. *Staff invented a vest that decreases the risk of restless residents displacing their catheters. *A disinfection cap was added because CLABSI rates were high despite consistent compliance with manual disinfection of intravenous therapy (IV) connectors. The cap bathes connector hub in isopropyl alcohol (IPA) and protects the hub from touch/airborne contamination between accesses. *At the insertion site, nurses began placing a foam patch that secretes CHG to combat infection from skin flora. The disinfection cap was trialed alone in Q 3-2010. CLABSI fell by 54.7% (Q3 2010 vs. previous six quarters). After the patch, scrubbing, and vest were added in Q4 2010, CLABSI fell by 53.1% (Oct. 1, 2010-Sept. 30, 2011 vs. previous six quarters). These data suggested the cap was the most effective intervention, but the involvement of other interventions complicated post-trial data.

PROJECT: Staff felt that line scrubbing, disinfection cap and vest were sufficient to keep CLABSI low, and suspected the antimicrobial patch was not contributing substantial extra protection. In May 2012, patch use was discontinued. Post-discontinuation data were reviewed and analyzed.

RESULTS: Annual CLABSI rates: 2009 (no interventions) = 9.2/1,000 catheter days 2010 (disinfection cap added Q3, other three interventions added Q4) = 6.09/1,000 2011 (all four interventions in place for entire year) = 4.73/1,000 Jan.-Sept/ 2012 (patch discontinuation in May) = 3.84/1,000 Sufficient data are not available at this time to draw a conclusion. At the June 2013 conference this poster will present a full year of data on the effect of eliminating the patch.

LESSON LEARNED: *The initial, preliminary data show no clear initial impact from patch discontinuation, perhaps because CHG scrubbing made the patch redundant. *Previous data show the

CLABSI rate fell by about as much when the disinfection cap was used alone as it did when all four interventions were deployed. The data, including the fact that cessation of patch use has not initially had a significant effect on the CLABSI rate, suggest the other three interventions were sufficient to maintain a comparatively low rate in a vulnerable population.

Presentation Number 2-259

Decreasing Operating Room Contamination of Surfaces and Air with Pulsed Xenon Ultraviolet Disinfection

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BACKGROUND/OBJECTIVES: Compare the bacterial contamination remaining on surfaces and in the air of operating rooms (ORs) before and after standard cleaning and quick cleaning (QC) followed by pulsed xenon ultraviolet disinfection (PX-UVD).

METHODS: 12 surfaces in 2 ORs were sampled before and after between-case cleaning. Contact agar plates were used and colony counts determined after incubation at 35 degrees C for 48-hour (hr). 60 before and 60 after routine between-case cleaning (RC) cultures were obtained followed by 72 cultures after QC plus PX-UVD. Airborne contamination was measured by placing 5, 9 cm blood agar (TSA II) settle plates near the operative field for 8-hr during cases and for 8-hr following the terminal clean in 2 rooms over 2 days. Air sampling was repeated after PX-UVD between cases and following the terminal clean plus PX-UVD. Negative binomial regression, sign-rank test and two sample Wilcoxon-Mann-Whitney analyses were performed using Stata.

RESULTS: Prior to cleaning, 60% (n=60) of 12 high-touch surface cultures were positive. After RC, 40% (n=60) of surfaces showed microbial growth ($p=0.056$). Following QC plus PX-UVD, 18% (n=72) of surface cultures were positive ($p=0.0005$). Mean colony counts were 2.5/25 cm² before cleaning, 2/25 cm² after standard cleaning ($p=0.066$), and 0.375/25 cm² following QC plus PX-UVD ($p=0.004$). The UVD effect was similar in the 2 study ORs. Total colony counts on surfaces in subsequent cases increased, although not significantly, despite RC. QC plus PX-UVD decreased the microbial burden in subsequent cases; the difference between RC and QC plus PX-UVD was significant by the third case ($p=0.031$). Among the most frequently contaminated surfaces, QC plus PX-UVD consistently resulted in fewer positive cultures and lower colony counts compared to RC. Settle plates exposed over an 8-hr period during cases demonstrated a mean of 20.35 colonies/50 cm². QC plus PX-UVD between cases reduced the mean settle plate colony count to 10.95 ($p=0.0012$). Settle plates exposed over an 8-hr period after the terminal clean had an average of 0.3 colonies/50 cm²; PX-UVD resulted in no microbial growth ($p=0.0425$).

CONCLUSIONS: QC plus PX-UVD in the OR resulted in significant reductions (55%) in positive high touch surface cultures and colony counts (> 81%) compared to RC. The PX-UVD effect was consistent in both ORs in our study. PX-UVD decreased surface contamination during sequential cases and was significantly superior to RC after the third case. PX-UVD significantly decreased air contamination during cases by 46% and 100% after the terminal clean.