Antimicrobial lighting technology in an active trauma room

Case Study Abstract

Partner/Study Location: Samaritan Hospital, a member of St. Peter's Health Partners in Troy, NY

Study Objective: Test efficacy of Vital Vio's Antimicrobial Lighting at reducing surface contamination in an active Emergency Department trauma room

Test Parameters: RODAC contact plates were pressed to 5 different surfaces/sites per sampling time and incubated. Colony counts were obtained by counting the colonies that grew on each plate. Sampling occurred for 5 days each sampling week, for a total of 25 sites per week. Samples were taken for 2 weeks pre-install and at weeks 2, 4, 8, and 12 post-install.

Conducted by: Dr. Sara Shelley, Lead Microbiologist at Vital Vio

Study Conclusions: This study showed a decrease in the average colony count starting at 2 weeks post-installation and reached a statistically significant reduction to pre-install levels by week 8 post-install.

A study was performed in an active trauma room in the Emergency Department of Samaritan Hospital, an affiliate of St. Peter's Health Partners in Troy, NY. This room was a one bed trauma room that was frequently in use and a total of 8 2' x 2' Vital Vio Antimicrobial fixtures were installed.

Methods: Five different surfaces in the room were sampled with non-selective RODAC plates at 5 time points: 2 weeks of pre-installation, and weeks 2, 4, 8, and 12 post-installation. The sites were sampled for five days during each time point, for a total of 25 plates per time point. Plates were counted from each time point resulting in a colony count value for each site on each day. Averages were obtained for each sampling week across all days and sites during that week.

The fixtures installed were dual mode and produced both the Antimicrobial + Light white mode and the Enhanced Antimicrobial violet mode. The lights were on an occupancy sensor and switched into Enhanced Antimicrobial mode when the room was unoccupied.
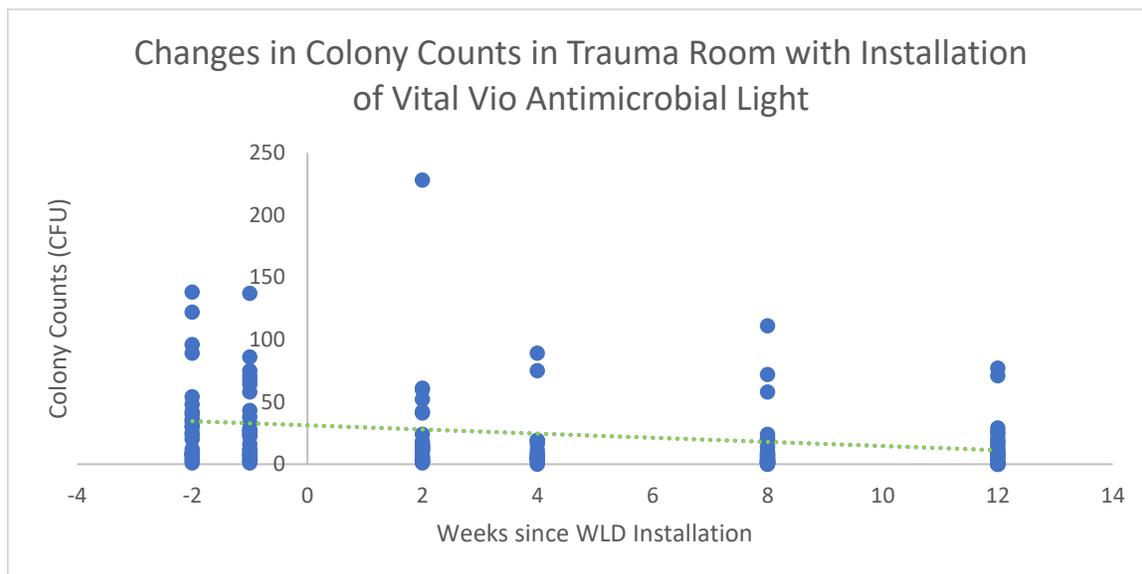

Figure 1. Each data point shows the colony count from one plate. Each plate is from one sampling site. There were 5 sampling sites per day, for 5 days in each week (except Week 4 which had a smaller number due to holidays). The trendline (in green) is a linear regression of the data points and shows the decreasing average colony count which is detailed in Figure 2.
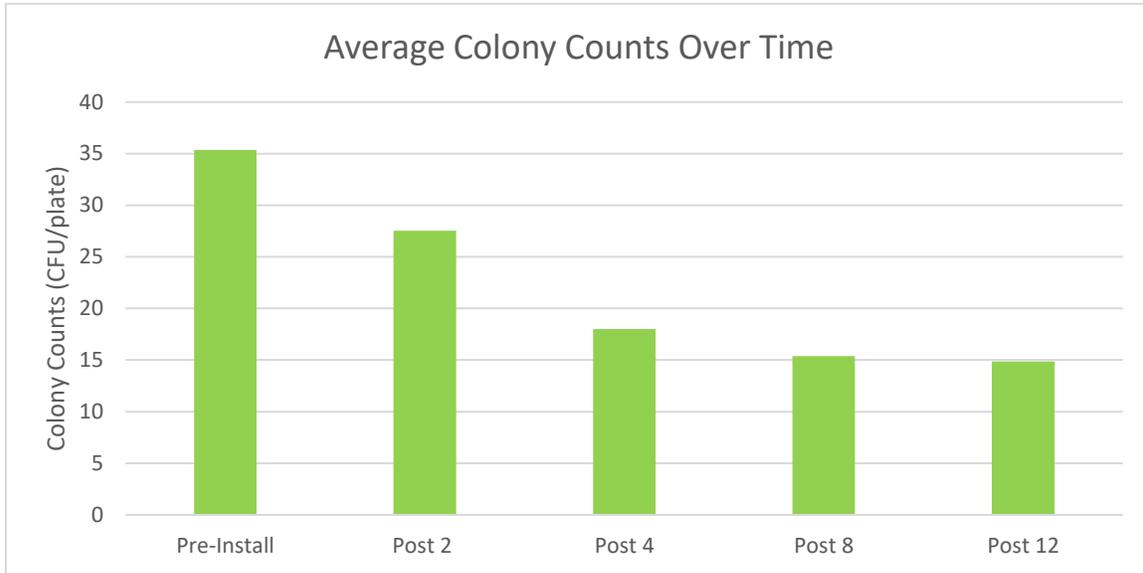
Average Colony Counts Over Time

Figure 2. This figure shows the average of each week of colony counts from all the sampling sites and across all 5 days. The pre-install sample has 2 weeks of data.

Results: All post-installation times show average colony counts that are lower than the pre-installation value. There are statistically significant decreases in average colony count compared to pre-installation averages after Week 8 (Student's T-test, $p=0.01$ at Week 8 and $p=0.003$ at Week 12). Vital Vio's antimicrobial lights are designed to continuously protect spaces and reduce surface bioburden levels over time. This study in a trauma room at Samaritan Hospital shows the effectiveness of Vital Vio's antimicrobial technology during active room use in a hospital setting.