Novaerus Study Summary Report

Overview

Village at Manor Park (VMP) implemented Novaerus technology in selected areas in the Maplewood Center over a period, beginning April/May 2015. The Novaerus technology uses Dielectric Barrier Discharge (DBD) plasma system to control airborne infections by eradicating viruses, bacteria, mold, and allergens as well as harmful contaminants such as MRSA, Clostridium difficile, norovirus, and influenza. VMP implemented the Novaerus technology in all patient rooms, hallways, and the dining rooms of the first floor Maplewood Center. The center consists of three wings on the first floor: Park View wing, Sunny View wing, and Terrace View wing.

This study, a non-randomized observational study, compares nosocomial (facility acquired) respiratory infections at VMP before and after the implementation of Novaerus technology. Specifically, this study compares nosocomial infection rates of respiratory etiologies before and after the implementation of Novaerus technology. Additionally, this study observes the trend of nosocomial infections of respiratory spanning the entire 23-month period under review.

Methodology

A 23-month review was performed to evaluate the results of implementation of the Novaerus technology. A Nurse Risk Manager Consultant visited the facility for two days to abstract information and to review the following data:

- o Admission, transfer, and discharge data for all residents,
- o Monthly infection control records, reports, and surveillance,
- o Individual resident infection control examination results (x-rays, cultures, etc.), and
- o A map of the facility, which displays selected areas where the Novaerus system implemented.

The period selected for aggregate pre-post review reflects the timeframes of July 2014 – March 2015 and July 2015 – March 2016. Comparison of like periods in both years reduces the risk of data skew related to seasonal variances that might occur with respiratory infections. Since the Novaerus technology was implemented in April/May 2015, those months have been excluded from any pre-post analysis. Subsequent to this comparison, this study observes the overall (linear) trend of nosocomial respiratory infections spanning the entire 23-month period under review.

First, this study tallies the facility's nosocomial infection counts related to respiratory etiologies in the aforementioned period, July 2014 – March 2015, prior to Novaerus implementation. Next, this study tallies the facility's nosocomial infection counts related to respiratory etiologies in the aforementioned period of July 2015 – March 2016, subsequent to Novaerus implementation. The sum totals in each category are compared and the differences presented in percent change. Statistical significance was tested using McNamar's test. Lastly, this study plots the monthly totals for each category spanning the entire 23-month period under review and observes the linear trend line. Each metric is reported for house wide surveillance as well as independently for each wing as a separate graph.

Conclusion

When comparing **the facility's overall nosocomial respiratory infections**, prior to and after implementation of the Novaerus technology, the facility rate **declined significantly by 79%** (p < 0.001).   Independently, each wing also saw a statistically significant decrease in respiratory infections (PV, 69%; TV, 80%; SV, 84%). **The overall** (linear) **trend lines house wide and in each wing exhibit significant declining trends** (as shown on the accompanying graphs). Implementation of the Novaerus technology has contributed significantly to the infection control as well as quality improvement efforts at VMP.

84.38% Reduction

Total Number of Nosocomial Respiratory Infections

Pre-Novaerus: 32
Post-Novaerus: 5

80.00% Reduction

Total Number of Nosocomial Respiratory Infections

Pre-Novaerus: 20
Post-Novaerus: 4