

Healthcare Case Study:
Southwestern Vermont
Medical Center
Bennington, Vermont

May 2013

Evaluation and Adoption of Hydrogen Peroxide Based Technology versus UV in Reducing Healthcare Acquired Infections (HAIs)

Summary

In 2012, Southwestern Vermont Medical Center in Bennington, Vermont researched, evaluated and ultimately selected Halosil International's HaloFogger® and Halo™ disinfectant versus ultraviolet (UV) technology. After developing an effective internal system for use of the equipment, the result was a significant reduction of the hospital's healthcare acquired infection (HAI) rates from multi-drug resistant infections. In addition, they have reduced re-admissions of patients, within 30 days of discharge, with *Clostridium Difficile* infections. They have implemented the fogging system in both patient and emergency rooms.

Background

Southwestern Vermont Medical Center is a small community hospital located in Bennington, Vermont with 99 patient beds and emergency room facilities that serves 55,000 people in Vermont, Massachusetts and New York State. The hospital is non-for-profit and was established in 1910 and exists to provide exceptional, safe and affordable care to the greater community.

In 2012, the hospital's infection control staff researched new, commercially available technologies that had claims to be effective in reducing HAIs by treating the environment as a potential source of infections. While Southwestern Vermont Medical Center's HAI rates were historically low, the hospital's ultimate goal was to provide patients with the best care available.

After a scientific reference article search, the staff ultimately considered both hydrogen peroxide based and ultraviolet technologies. A list of factors for both technologies was



Halosil International
91 Lukens Drive
New Castle, Delaware 19720 USA
Phone +1 302 454 8102
Fax +1 302 454 8009
www.halosil.com

developed based on research findings and discussions with other infection control practitioners in hospital systems across the United States:

Peroxide fogging with the HaloFogger®

Pros

- Low capital cost
- Comparatively low annual cost-in-use
- Non-corrosive
- Safe
- Easy-to-use by housekeeping staff
- Portable and easy to store
- EPA approved

Cons

- Room preparation required - covering HVAC vents
- Need for room vacancy during treatment
- Extending room turnaround time to a range of 1 to 1 ½ hours

UV

Pros

- No additional chemical usage
- Lower room turnaround time

Cons

- No EPA regulatory oversight or approval
- High capital cost and cost of replacement bulbs
- More labor intensive – covering windows, removal of textiles and assurance of light dispersion to high-risk surfaces
- Line of sight effectiveness
- Sensitive and easily breakable capital being handled and stored by housekeeping staff

Results

During a preliminary 6-month evaluation period beginning in May 2012, Southwestern Vermont Medical Center was challenged with intermittent usage of Halosil technology and variable results. This was caused by availability of trained hospital cleaning staff and the lack of established protocols and processes. In response, Southwestern Vermont Medical Center's Infection Control staff worked with the EVS department to develop procedures and integrate the facility's nursing staff to the importance of the project. Both the EVS and Nursing staff embraced the technology.

During the subsequent six-month period from December 2012 through publication of this case study in May 2013, the Southwestern Vermont Medical Center reported no cases of MRSA (methicillin resistant Staphylococcus), *C diff* or other antibiotic resistant organisms in the hospital. In addition, there have been no re-admissions, within 30-days of discharge, for patients with *C diff*. As data continues to be collected, the facility has succeeded in no antibiotic resistant HAIs or *C diff* re-admissions for over 120 days.

Challenges

While housekeeping shift schedules and turnover rates made initial training and adoption of new disinfection technology challenging, the infection control staff was motivated to assure successful HaloFogger® technology adoption. As a result, the team developed a spreadsheet and a system for assuring that appropriately trained members of housekeeping were responsible for fogging selected rooms upon patient discharge and room vacancy. In addition, engaging the nursing partners was an important part of the success.

Conclusion

The HaloFogger and disinfectant from Halosil International were effective in significantly reducing HAIs and *C diff* readmissions at Southwestern Vermont Medical Center. As a result, all private and shared precaution rooms are now treated upon patient discharge. These include patient rooms with known MRSA and *C diff* infections, as well as emergency rooms.

Additionally, Halosil's fogging technology has also been adopted by the long-term care facility on Southwestern Vermont's property. The long-term care facility treats precautionary patient rooms with the HaloFogger and Halo™ disinfectant. As a result, there have been no cases of HAI patient transfers between Southwestern Vermont Medical Center's hospital and long term care facilities.

References

Havill, N. L., Moore, B. A. and J. M. Boyce. 2012. Comparison of the Microbiological Efficacy of Hydrogen Peroxide Vapor and Ultraviolet Light Processes for Room Decontamination. *Infect Control Hosp Epidemiol*, Vol. 33: 507-512.