

The Impact of Ultraviolet (UV) Disinfection System Coupled with Evidence-Based Interventions on the Incidence of Hospital Onset Clostridium Difficile (HO-C. diff)

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Introduction

Burden of Clostridium difficile (C. diff) at FSLH

- A study conducted by Lipp, Nero & Callahan (2012) of New York hospitals showed association of C. diff infections translated to:
 - 12 additional hospital days per episode
 - Average cost of \$29,000 per episode
- 2012 NYS Hospital-Acquired Infection (HAI) Report: FSLH had an unacceptably high rate of HO-C. diff
- 2012 Rate – 19.09/10,000 patient days
- C. diff rates steadily increased for 1.5 years
- Interventions in place prior to June of 2013 were not sufficient to cause a significant or acceptable drop in HO-C. diff rates.

Methods

- A cross sectional design study
- All inpatients in a 370 licensed bed acute care hospital
- Baseline period was 7/1/2012 – 6/30/2013 where all bundle components were in place to prevent C. diff
- Comparison timeframe of 7/1/2013 – 6/30/2014 where all bundle components were in place and the addition of a UV disinfection protocol to the terminal room cleaning process was implemented
- An algorithm was used to guide the Environmental Services (EVS) Department in selecting priority rooms for UV usage. Rooms with C. diff patients were a top priority at this time.

Analysis

HO-C. diff cases were determined using the National Healthcare Safety Network (NHSN) surveillance definition, and overall rates were calculated by dividing the total number of cases by the total number of patient days multiplied by 10,000 patient days.

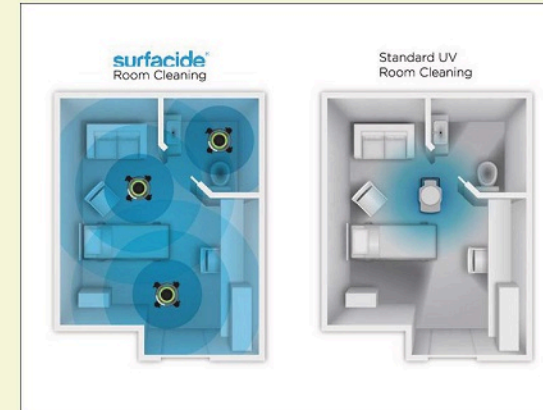
Interventions

• Prior to 2013

- Contact precautions for all C. diff positive patients
- Contact precautions for highly suspect patients prior to confirmation
- Contact precautions continued for 30 days past end of treatment
- Dedicated patient equipment
- Hand hygiene performed with soap and water
- NO COHORTING
- Universal use of disposable thermometers for all inpatients regardless of isolation status
- Use of bleach for cleaning all C. diff rooms (daily and terminal)
- Use of bleach universally in critical care for daily and terminal cleaning
- Heightened awareness of problem.

• June 2013 – purchased Surfacide UV Disinfection System

- Total room coverage
- Shadows substantially reduced
- Distance to surfaces reduced
- Validation via Laser Mapping.

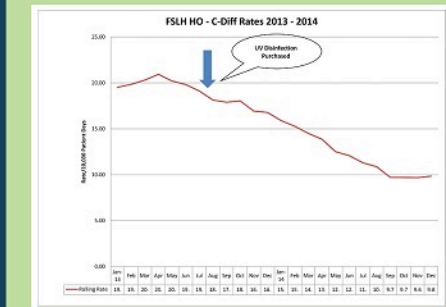


Implementation of UV

- Prioritization list based on annual risk assessment
- Communication – Communication – Communication
- Teamwork
 - EVS – dedicated staff on each shift
 - Admitting – tracked discharges – notification of type of discharge – those requiring UV disinfection
 - Infection Prevention – isolation lists sent to Admitting and EVS daily
 - Nursing Supervisor – support to assist in bed flow
 - Competition amongst EVS staff – who can use the machine the most in a month
- Regular collaborative meetings to discuss issues.

Results

41 percent reduction in HO-C. diff from the baseline to the intervention period.



FSLH did not change any of the other evidence-based bundle component efforts (hand hygiene, environmental cleaning or antibiotic stewardship) during the observation period.

Conclusion

Surfacide significantly reduces C. diff rates.

