Effective Health Care

Surface Cleaning, Disinfection, and Monitoring of Cleaning to Reduce Hospital Acquired Infections
Nomination Summary Document

Results of Topic Selection Process & Next Steps

- The topic, *Surface Cleaning, Disinfection, and Monitoring of Cleaning to Reduce Hospital Acquired Infections*, is not feasible for a full systematic review due to the limited data available at this time; however, it will be considered for a potential technical brief by the Effective Health Care (EHC) Program.

- If this topic is developed into a technical brief, the will be posted on the AHRQ Web site. To sign up for notification when this and other EHC Program topics are posted, please go to http://effectivehealthcare.ahrq.gov/index.cfm/join-the-email-list1/ .

Topic Description

Nominator(s): Organization

Nomination Summary: The high incidence of hospital acquired infections (HAIs) creates a significant burden on the health care system in terms of morbidity and mortality for affected patients. The bioburden of microorganisms on fomites in the hospital environment has been linked to HAIs, and environmental cleaning is thought to be potentially effective in preventing or reducing HAI rates.

Staff-Generated PICO

Primary outcome: HAI rates in patients
Population(s): Patients in hospitals or long term care settings outpatient settings, free standing surgical centers, dialysis centers, rehabilitation/physical therapy facilities and alike
Intervention(s): Cleaning, disinfecting, and environmental monitoring of surfaces in hospital or long term care settings, including routine versus outbreak conditions, as well as patients rooms versus common areas; techniques should include new technologies (e.g. fogging, UV light); coating with disinfectants (e.g. copper)
Comparator(s): Different method(s) or benchmark
Outcome(s): Colonization rates, HAI rates (composite and/or pathogen specific), patient satisfaction

Intermediate outcome: surface contamination: We also suggest a second PICO for the intermediate outcome of surface contamination. While reducing HAI in patients is the paramount outcome of interest, it is well established that these infections result from

contamination of the environment. Thus, removing these contaminants is an essential aspect of reducing HAIs, and evaluation of evidence to achieve this intermediate outcome seems appropriate. Furthermore, there is little direct evidence for cleaning/disinfection/monitoring and HAI rates.

Population(s): Surfaces in hospital or long term care settings, outpatient settings, free standing surgical centers, dialysis centers, rehabilitation/physical therapy facilities and alike including routine versus outbreak conditions, as well as patients rooms versus common areas

Intervention(s): Cleaning, disinfecting, and environmental monitoring; new technologies (e.g. fogging, UV light); coating with disinfectants (e.g. copper)

Comparator(s): Different method(s) or benchmark

Outcome(s): Cleanliness of monitored surfaces

Key Questions from Nominator:

Key Questions from the original nomination, focused on monitoring:

- What is the impact of cleaning monitoring on HAI rates?
- What is the best monitoring approach (or combination of approaches) to use (i.e. ATP vs. UV marker vs. viable count (cfu/cm^2)?
- What is the need for, and type of, disinfectant to use to ensure minimal risk of environment derived HAIs?

Key Questions from the expanded nomination, focused on cleaning and disinfection:

- What is the optimal way to integrate cleaning and disinfection technologies (including new technologies) into a quality system that includes auditing to ensure compliance?
- What methods of training, education and motivation (e.g. team building with Infection Control and Nursing) are most effective in addressing human factors regarding ongoing cleaning compliance of housekeeping staff?
- What are the common barriers to implementation of best practices for environmental cleaning and disinfection that need to be addressed? What research involving housekeeping staff is needed to identify some of these barriers?
- What is the impact the various cleaning methods on room turnover, employee or patient health risk from exposure, numbers of adjunctive cleaning devices needed per 100 acute care beds, required manual pre-cleaning by housekeeping personnel prior to device use, etc.?

Considerations

- The topic meets EHC Program appropriateness and importance criteria. (For more information, see http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/.)

- Hospital-acquired infections (HAIs) are the most common complication of hospital care, resulting in 1.7 million infections and 99,000 deaths each year. More than two million people are sickened every year with antibiotic-resistant infections, with at least 23,000 dying as a result.

- HAI rates create a significant burden on the health care system, in terms of morbidity and mortality for affected patients, as well as from a financial perspective for the health care facility. The current HAI rates have been deemed unacceptable, and the need to reduce HAI rates has become an urgent priority in the US.

- The available evidence is limited in establishing a direct connection between cleaning/disinfection/monitoring and clinical outcomes such as HAI rates; most focus on outcomes such as colonization rates. Studies also appear to be heterogeneous, with small amounts of evidence across a wide range of pathogens, locations, and cleaning/disinfecting/monitoring modalities.

- A technical brief by AHRQ may help to shift the focus of research to more patient-centered outcomes, and highlight gaps in the evidence and the methodological challenges that exist.