

▲ ENVIRONMENTAL SERVICES

WHITE PAPER

CROTHALL HEALTHCARE'S STRATEGIC INITIATIVES FOR REDUCING HEALTHCARE-ASSOCIATED INFECTIONS

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Very few people ... have any idea of the exquisite cleanliness required in a sick room!
—*Florence Nightingale, 1859*

Crothall's greatest difference is our unique, leading-edge, best practices delivery model. Our focused, innovative performance within a single skill set ensures our robust environmental hygiene program is the best in class. — *Bobby Kutteh, CEO*

THREE KEY TAKE-AWAYS

1. HAI risks are even broader today.

HAI risk to patient, staff and visitor safety has always been a critical issue in hospitals. But now HAI incidents impact reputation and brand negatively. And, the financial risks have expanded as penalties from CMS and CMS/private insurers no longer reimburse procedures they have deemed preventable.

2. The challenges are daunting and multi-dimensional to mitigate HAI.

While pathogens have become more resistant patient flow demands have added time pressure to patient room cleaning and disinfection. At the same time regulatory requirements have intensified while human error and/or lack of training has added to the challenge of maintaining a disinfected, safe environment.

3. HAI Solutions must be more aggressive, disciplined and innovative today.

Processes have to be challenged constantly for better ways - more effective ways. And, they must be disciplined, teachable and repeatable. Partnerships with cutting edge manufacturers identify new methods and systems of disinfection. Appropriate products must be applied in the appropriate area for the appropriate risk and in the appropriate order. And maybe most importantly, the people executing these processes and applying the correct materials must be engaged, passionate and disciplined.

MISSION STATEMENT

In the markets we serve, we will be recognized as the premier provider of the highest quality, customer-focused support services.

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EXECUTIVE SUMMARY

Crothall clearly understands the role played by Environmental Services in mitigating risk and impacting Hospital Associated Infections (HAI) that endanger patients. In collaboration with our hospital partners, we have developed several effective methods that support efforts to reduce environmental risk factors impacting HAI. We remain diligent in service delivery all the while remaining nimble with our research and evaluations related to the most effective technologies and EPA registered solutions to support this mission.

HAI RISKS ARE EVEN BROADER TODAY

HAI risk to patient, staff and visitor safety has always been a critical issue in hospitals. The financial risks have expanded in the form of penalties from CMS and private insurers; they no longer reimburse for procedures that have been deemed preventable. The negative impact that HAI incidents have on reputation and brand also cannot be discounted.

Environmental hygiene can impact both HAI and patient perception. Today perception impacts many facets of healthcare operations from the traditional, such as word of mouth, to current means such as HCAHPS and social media. With HAI incidence rates published in many states and over 700,000 HAI events/75,000 HAI deaths a year there is significant, credible information available in addition to perception based sources. As consumerism expands in healthcare and patients feel empowered, their healthcare decisions are less about what they are told to do by healthcare professionals and more about what they want.

HCAHPS scores for cleanliness are affected by both the reality of clean and the perception of clean. As patients and family members perceive the facility, so goes the ratings and the financial incentives or penalties. Small things like a perception of “clutter” can create a perception of “unclean” no matter that the room may be completely disinfected. Perception becomes reality. Thus, it is critical that Environmental Service departments address the perceptions of clean as aggressively as removing pathogens from the environment.

THE CHALLENGES ARE DAUNTING AND MULTI-DIMENSIONAL TO MITIGATE HAI

While pathogens have become more resistant, patient flow demands have added time pressure to patient room cleaning and disinfection. At the same time, regulatory requirements have intensified, while consistency with processes and people continues to add to the challenge of maintaining a disinfected, safe environment.

We firmly believe HAI reduction starts with hand hygiene—both performance and compliance are critical. Crothall has aligned with the Handwashing for Life Institute to allow us to access industry best practices, training and the latest in awareness and compliance initiatives. Our Staff is trained in the techniques and disciplines we learn from Handwashing for Life and we gladly share those Best Practices with our Clients and their Staff.

Once hand hygiene processes are implemented, effective HAI reduction requires a disinfected environment for Patients, Staff and Visitors. Attention to disinfecting surface types and focusing heavily on high touch surfaces is critical to mitigate HAI risk. Both visual and scientific surface measurements must be included in an aggressive quality management program to ensure performance compliance is maximized. Adenosine triphosphate or ATP testing is the standard scientific methodology used to provide the best measure of cleaning efficacy.

HAI SOLUTIONS MUST BE MORE AGGRESSIVE, DISCIPLINED AND INNOVATIVE TODAY

Cleaning and disinfection processes have to be constantly challenged to find better ways, more effective ways. They must be disciplined, teachable and repeatable. These can include technology based solutions involving both disinfection (e.g. UV, chemical) and cleaning aids (e.g. microfiber) as well as administrative methods. Partnerships with cutting edge manufacturers identify new methods and systems of cleaning and disinfection. Appropriate products must be applied in the appropriate area for the appropriate risk and in the appropriate order. And maybe most importantly, the people implementing these processes and applying the correct materials must be engaged, passionate and disciplined.

There are many adjunct technology based solutions available in the industry. Ultraviolet-C, or UV-C, when used in the appropriate manner, is a premier solution to support the mitigation of HAI risks. In light of published studies related to UV and like technology, it is clear that when UV-C is used, both proximity and time must be considered. That is, moving a single emitter around a high risk room can take hours and delay patient flow. Thus, the triple emitter system best addresses distance effectiveness, process shadowing and time constraints.

As the industry continues to evolve and new challenges arise, it is critical to review, evaluate and collaborate with solution-driven vendors and adhere to evidenced based practices to determine the safest, most effective and best in class solutions available to mitigate HAI risk. Research and adherence to the latest evidence based practices is critical. Exploration can never stop.

Crothall is committed to partnering with our Client families to find the most effective and efficient products and protocols. But none of those tools are effective in the hands of poorly trained and disengaged service staff. Crothall is a discerning employer, hiring only 6.5% of the applicants we receive in a given year—we firmly believe it takes the right person to execute the protocols and apply the right products to impact HAI incidence.

THIS WHITE PAPER

Discusses the association among hospital environmental contamination, pathogen transmission, and patient safety.

Describes Crothall’s strategic initiatives for reducing environmental contamination, decreasing healthcare-associated infections, and promoting improved patient outcomes.

Demonstrates Crothall’s ongoing commitment to being the industry leader and setting the standard for proving specialized housekeeping services to hospitals.

INTRODUCTION

THE RISING COST OF HAIS

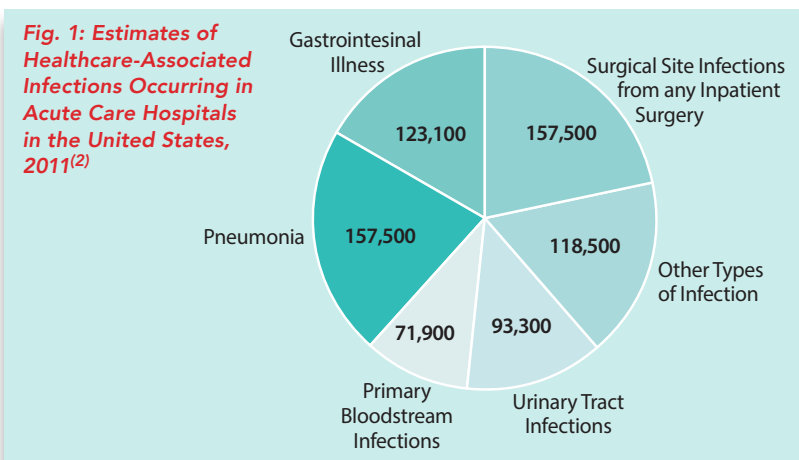
There are 5,686 hospitals in the United States with 36 million annual patient admissions.⁽¹⁾ Daily, about 1 in 25 hospitalized patients has at least one HAI, with 722,000 HAIs in acute care hospitals during 2011.⁽²⁾ About 75,000 patients with HAIs died during their hospitalization.⁽²⁾

Twenty-one percent of the infections are the result of surgery; 21% of the infections are pneumonia; 17% originate from the gastrointestinal tract; 13% originate from the urinary tract; and 10% are bloodstream infections (Fig.1).⁽²⁾

The annual cost for the five major infections (central line-associated bloodstream infection, ventilator-associated pneumonia, surgical site infection, *Clostridium difficile* infection, and catheter-associated urinary tract infection) is \$9.8 billion, with surgical site infections contributing the greatest to overall expenditures.⁽³⁾ Infection prevention interventions can result in savings of \$5.7 to \$31.5 billion dollars annually.⁽⁴⁾

The rising costs of treating infection coupled with the knowledge that certain infections can be prevented has led the Center for Medicare and Medicaid’s (CMS) Inpatient Prospective Payment System and some private insurers to no longer reimburse for several preventable HAIs.⁽⁵⁾

- › Catheter-associated urinary tract infections
- › Surgical site infections after coronary artery bypass surgery
- › Vascular catheter-associated infection
- › Surgical site infection following spine, neck, shoulder, and elbow surgery
- › Surgical site infection following bariatric surgery for obesity
- › Surgical site infection following cardiac implantable electronic device



Clearly, HAIs result in a mounting personal, medical, economic, and legal toll, especially impacting patients who are immuno-compromised.

Patients are routinely exposed to microorganisms that are ubiquitous in the healthcare environment. Increasingly resilient and opportunistic bacteria, spores and viruses are shed from patients and staff, and these pathogens:

- › Can contaminate the hospital environment
- › May be transmitted between patients and the healthcare provider
- › May lead to potential infection with significant morbidity and/or mortality
- › May put visitors at risk for acquiring these organisms

Microorganisms are progressively more adept at surviving and reproducing on environmental surfaces⁽⁶⁾ while also developing increased resistance to available treatments,⁽⁷⁾ posing a challenge to the infection prevention and medical teams.

Healthcare leaders need to consider novel management strategies to achieve operational efficiency. Crothall Healthcare’s specialized response to environmental hygiene, combining passion, precision, and performance, results in an unwavering commitment to patient and employee safety. Our proactive, proven approach to disinfection cleaning processes sets the industry standard for thoroughness and effectiveness with reducing potential infection risk in the healthcare environment, and resulting in improved patient outcomes and satisfaction. These strategic initiatives and positive outcomes can be found on page 10.

BACKGROUND

PATIENTS’ PERSPECTIVE

Patients expect their hospital room to be clean;⁽⁸⁾ it’s critical the hospital room is meticulously cleaned and disinfected prior to their admission and on a daily basis during their stay. Additionally, they anticipate a satisfactory and uneventful outcome and do not want to become ill with an HAI, potentially resulting in additional morbidity, extended hospital admission and possible mortality. Many variables impacting pathogen transmission are associated with infection prevention practice compliance: environmental cleaning, hand hygiene, staffing

challenges, antibiotic policies, disinfection/sterilization practices, employee vaccination compliance, hospital census, patient acuity and facility design may all affect total outcomes. Breakdowns and failures with practice can put the patient at risk for acquiring a pathogen and possible infection. All of these variables must be proactively and rigorously addressed to be able to meet patient expectations of a safe hospital experience, while staying in a clean room, in today’s competitive marketplace.

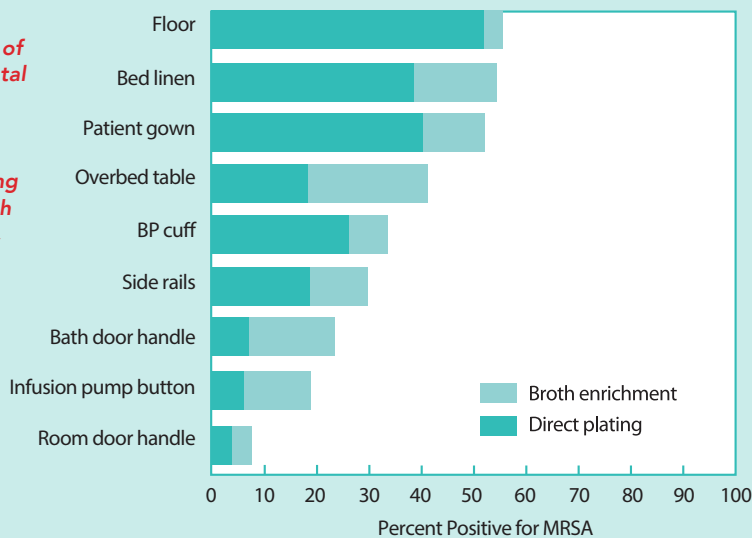
CONTAMINATED ENVIRONMENTAL SURFACES

An estimated 20% to 40% of HAIs have been attributed to transmission by the hands of HCP who have become contaminated from direct patient contact or by indirect contact with contaminated environmental surfaces.⁽⁹⁾ While hand hygiene is

the most important way to reduce pathogen transmission in the healthcare environment, it is exceptionally challenging to measure adherence, with varying compliance rates across studies.⁽¹⁰⁾ The evidence that pathogens responsible for healthcare-associated infections can be widely found in the hospital environment^(11–14) and hence readily acquired on the hand by touching surfaces⁽¹⁵⁾ demonstrates the importance of decontaminating hands before every patient contact.⁽¹⁶⁾

Patients are the prime source for environmental contamination; surfaces within the patient’s vicinity, also known as the “patient zone”⁽¹⁷⁾ that are frequently touched by the patient and HCP have an increased contamination frequency than other sites.⁽¹⁸⁾ Environmental surfaces and equipment can harbor pathogens and bioburden (Fig. 2). This contamination may contribute to the spread of disease-causing, multidrug-resistant organisms (MDROs), such as MRSA

Fig. 2: Percentage of environmental cultures positive for MRSA, by direct plating and by broth enrichment, by item cultured.⁽¹³⁾



(Methicillin resistant *Staphylococcus aureus*), VRE (Vancomycin resistant *Enterococcus*), and *C. diff.* (*Clostridium difficile*).^(18,19)

MRSA SURFACE CONTAMINATION

Epidemiological studies have shown that patients admitted to rooms previously occupied and contaminated by patients with these pathogens are at significant risk of acquiring these organisms from contaminated environmental surfaces that were not properly disinfected and cleaned upon discharge of the previous patient.⁽¹⁸⁾

MICROORGANISM TRANSMISSION

Patients—and sometimes HCP—will shed bacteria, spores and viruses into the hospital environment, creating potential threats to other staff members, patients and visitors.⁽¹⁸⁾ Microorganisms may be attached to droplets, skin scales or other particles and disperse through the hospital environment, where they have the ability to survive for hours to days to months (Fig. 3). Transmission of many healthcare-associated pathogens is related to contamination of near-patient surfaces and equipment.^(12, 20) Environmental contamination depends on the following:⁽¹⁸⁾

- › The ability to culture the organism
- › The degree of patient shedding; infected patients shed more than those colonized
- › The number of culture-positive body sites
- › Sampling methodology
- › Difficulty of cleaning the environment
- › Presence of an ongoing outbreak
- › Diarrhea, with widespread contamination
- › Type of patient

In addition, horizontal surfaces have a greater amount of microorganisms and contamination than vertical surfaces, ceilings, and intact walls.

IMPORTANCE OF CLEANING AND DISINFECTION

Cleaning, the removal of soil and contaminants from surfaces, is recognized as a vital component of the intervention package required to reduce hospital infection.⁽²¹⁾ Disinfection results in destroying pathogens. Friction is also used to remove surface contamination. The type of materials used in environmental surfaces and the design/amount of equipment in a patient's room will impact cleaning effectiveness.

Effective cleaning and disinfection will decrease the number of environmental pathogens, reduce the risk of transmission and potential infection, and be an integral part of a hospital's infection prevention and control plan. It is highly likely that cleaning practice plays a larger role in positive outcomes than does the product used.⁽²²⁾

DAILY CLEANING AND DISINFECTION CHALLENGES

Numerous clinical studies indicate thoroughness of disinfection cleaning may be suboptimal and can be significantly improved.⁽²⁰⁾ Environmental surface contamination may contribute to the spread of disease⁽¹⁹⁾ and potential infection by contaminating HCP hands, gloves, uniforms, gowns and equipment. Several significant pathogens, including MRSA, VRE, *C. diff.* spores and *Acinetobacter baumannii* can survive, under certain conditions, for four to five months or more.⁽¹⁸⁾ Norovirus can survive for a week or more.⁽¹⁸⁾

The number of microorganisms on a surface is impacted by:

- › Amount of surface moisture
- › Amount and type of activity taking place in the immediate vicinity
- › Amount of air flow
- › Prevailing ambient temperature
- › Number of people interacting with the environment
- › Type of environmental surface and its ability to foster microbial growth
- › Biofilm development on equipment and furnishings

Hospital environments are complex and may result in disinfection cleaning challenges. A surface may appear "clean" but still harbor pathogens. Frequent environmental contamination has been implicated as a contributing factor during protracted outbreaks of MRSA, *C. diff.*, VRE, *Acinetobacter baumannii*, and norovirus.⁽¹⁸⁾ Evidence exists that improved cleaning regimens are associated with the control of outbreaks^(11,23) and bacterial transmission.⁽¹²⁾ Environmental surface contamination with pathogens can be transmitted onto the hands of HCP and may spread disease-causing organisms like MRSA, VRE and *C. diff.* to the patient.⁽¹⁸⁾

Fig. 3: Length of Pathogen Survival on Environmental Surfaces⁽⁶⁾

LINGERING CONTAMINATION

Pathogen	Length of Survival
<i>Acinetobacter</i>	3 days – 5 months
<i>Clostridium difficile</i>	5 months
<i>Enterococcus</i> , including VSE ¹ and VRE	5 days – 4 months
<i>Klebsiella</i>	2 hours –>30 months
<i>Staphylococcus aureus</i> , including MRSA	7 days – 7 months

REGULATORY AND GOVERNMENTAL AGENCIES' PERSPECTIVES

Regulatory agencies, including The Joint Commission (standards and National Patient Safety Goals) and the Centers for Medicare and Medicaid Services (CMS), in conjunction with the United States Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC), recognize the importance of environmental hygiene to reduce infection. These organizations are increasing their recommendations and standards to improve environmental hygiene. The regulatory agencies are requiring documentation demonstrating that hospitals are focused on reducing HAIs. The evolving regulatory and governmental healthcare emphasis is to supervise, inspect, analyze and optimize the thoroughness of disinfection cleaning to ensure safe patient care.

IMPORTANCE OF A CLEAN ENVIRONMENT

There is generalized agreement that a clean environment is necessary to provide both good standards of hygiene and maintain patient and staff confidence.⁽²⁶⁾ Patient satisfaction surveys also question the hospital's cleanliness. Patients may subjectively consider hospitals "dirty" and will associate this with a general lack of care.⁽²⁶⁾ The media also have a heightened interest with environmental hygiene and reporting on "dirty hospitals." Many states now have public reporting of hospital infection rates, with diminished reimbursement in some situations, for having higher-than-expected infection rates. The hospital must strive to meet community standards and exceed expectations to avoid negative outcomes. The impact of negative media coverage can adversely affect the bottom line.

A clean, disinfected environment may promote a healthier workforce. HCP who work in close proximity to patients, including those who provide either direct or indirect patient care, need to stay healthy to come to work, reduce infection risk to their families, and minimize the potential of spreading illness to patients.

MEETING THE CHALLENGES

Healthcare providers must align their operations to more efficiently meet HAI challenges. Effective administration and management of environmental services resources are critical for improving processes and maintaining a safe and clean environment for patients and healthcare personnel.

THE CROTHALL HEALTHCARE SOLUTION

STRATEGIC INITIATIVES FOR IMPROVED OUTCOMES

The Centers for Disease Control and Prevention (CDC) divides housekeeping surfaces into two distinct groups: those with minimal hand contact (e.g., floors and ceilings) and those with frequent hand contact (also known as "high-touch surfaces"),⁽²⁷⁾ which have the potential to become reservoirs for infection. High-touch surfaces can quickly become contaminated; pathogen transmission is related to the contamination of near-patient surfaces and equipment.⁽²⁰⁾

High-touch housekeeping surfaces include:⁽²⁷⁾

- › doorknobs
- › bed rails
- › light switches
- › wall areas around the toilet in the patient's room
- › edges of privacy curtains
- › sink
- › bedside table
- › side rail
- › call box
- › telephone

The CDC recommends that high-touch housekeeping surfaces should be cleaned and/or disinfected more frequently than surfaces with minimal hand contact⁽²⁷⁾ and that programs be developed that optimize cleaning thoroughness.⁽²⁰⁾

THE HUMAN FACTOR

Every day, HCP perform thousands of interventions and actions that have the potential to transmit infection and/or cause environmental contamination. To address the problem, there is a focus on technical solutions—re-engineering protocols, adopting new products and researching new technology. But what cannot be overlooked is the human factor: the front-line housekeeping staff, whose daily cleaning and disinfecting activities help to protect the patient.

§482.42 Condition of Participation: Infection Control⁽²⁴⁾

"... The hospital must provide and maintain a sanitary environment to avoid sources and transmission of infections and communicable diseases."

Standard EC.02.06.01

"Areas used by patients are clean and free of offensive odors" (The Joint Commission. Accreditation Program: Hospitals)⁽²⁵⁾

The cultural divide between the environmental services and clinical staff is a resultant theme impeding hospital cleanliness.⁽²⁹⁾ Optimal performance barriers include:⁽²⁹⁾

- › Gaps in training, education and understanding of their role
- › Separation from traditional hospital clinical team
- › Potential for language or understanding barriers
- › Pressure from nursing and admitting staff to clean a room under the allotted time
- › Feeling of disempowerment to challenge hospital staff

This results in hospital equipment and furniture not being appropriately cleaned and an increase in pathogen transmission risk to patients and HCP.

Crothall's Environmental Services program, respected as an integral part of a facility's infection prevention program, is designed to go beyond basic cleaning to disinfect surfaces and interrupt microorganism transmission by implementing specially designed protocols that consist of best practices to protect patients, staff and visitors from acquiring pathogens. To be healing environments, hospitals must not only look visibly clean; they must also be free of microbial contamination. The hospital environment has wide-ranging surfaces, equipment, and intricate designs. Crothall's thorough, goal-driven, integrative environmental cleaning and disinfection approach (Fig. 4) reduces HAIs and leads to positive patient outcomes, accomplished through multiple systems and processes.

Crothall proactively responds to these human factor challenges by:

- › Ongoing and direct employee coaching, training, engagement, feedback, partnership, accountability and empowerment of staff members to ensure they are clear about their individual responsibility for promoting environmental hygiene, through correct cleaning/disinfection processes and proper personal protective equipment (PPE) use, which leads to improved and sustained outcomes
- › Educating the environmental services and healthcare teams in the proper use of hospital-grade chemical agents
- › Designing comprehensive, specific and integrative protocols and strategies, including a "High Profile Cleaning" systematic process that focuses on disinfecting and cleaning of high-touch points in the patient zone and cultivates patient engagement
- › Auditing staff to ensure strict adherence to standard protocols that have a high-touch point focus
- › Actively using the "Hygiene" performance improvement technology for measuring Adenosine Triphosphate (ATP), an objective indicator if a surface is clean or not. Immediate employee feedback can be given to ensure service quality. Both short-term and long-term trending is performed, with findings shared with the infection prevention and hospital leadership teams.
- › Fluorescent marking systems are also used to objectively evaluate cleaning practices
- › Using checklists to ensure all procedures are being followed
- › Competency testing to assess worker performance
- › Partnering with the hospital's Infection Prevention Team, e.g., disinfection selection, outbreak termination, etc., serving on the Infection Prevention and Control Committee, and participating in regular multi-disciplinary environmental rounds performed with Environment of Care and Infection Prevention colleagues
- › Using appropriate one-step EPA-registered hospital disinfectants for cleaning and disinfecting high-touch, environmental surfaces; Quaternary test strips are used to check product potency and ensure the appropriate amount of disinfectant is delivered.
- › Cleaning/disinfecting *C. difficile* rooms with CDC-recommended Environmental Protection Agency (EPA)-registered disinfectants with a *C. difficile* sporicidal label claim
- › Implementing premium microfiber products and hydrogen peroxide liquid agents
- › Enhancing standard protocols with 'no-touch' automated room disinfection (NTD) highly efficient technologies, e.g., ultraviolet (UV) technology and hydrogen peroxide vapor technology to inactivate microbes
- › Conducting periodic independent consultant assessment surveys to ensure compliance with protocols and assist with regulatory preparedness
- › Partnered with a manufacturer and hospital for performing clinical evaluations with Perisept, a non-bleach cleaner with a *C. difficile* sporicidal claim
- › Scientific testing of emerging antimicrobial product technology for reducing environmental contamination in the patient zone and publishing findings in the peer-review literature

In the markets we serve, we will be recognized as the premier provider of the highest quality, customer-focused support services.

Crothall Healthcare Mission Statement

Fig. 4: Continuing Employee Education

- ✓ New hire orientation
- ✓ Weekly "Mindings" (weekly reminder training that entails a task and safety topic)
- ✓ CHAT sessions (that include a monthly topic)
- ✓ Annual refresher training
- ✓ Training, including hand hygiene, PPE, *C. difficile* modules, VRE, MRSA, isolation room cleaning, and safe work practices

Crothall utilizes several different measurement tools to ensure high-touch surfaces are properly cleaned/disinfected, and the customer is satisfied with the outcome. One tool is the “High Profile Patient Room Cleaning QA” metric. This measurement device, which is used by both the customer and the Crothall Leadership Team, assesses if the following high-touch surfaces were cleaned/disinfected properly to meet Crothall’s high standards:

- | | | |
|-------------------------|-----------------------|-------------------------------|
| 1. Light switches | 5. Bed hand rail | 9. Remote control/call button |
| 2. Sink faucets | 6. Bedside table | 10. Overbed table |
| 3. Restroom door handle | 7. Shower handle/rail | |
| 4. Toilet and flusher | 8. Telephone | |

During a recent 6-month period, with more than 76,000 responses, Crothall received an extraordinary 95% satisfaction score with the “High Profile Patient Room Cleaning” process.

- › Using High Efficiency Particulate Air (HEPA) filtration in selected clinical situations
- › Allocating significant resources for piloting and studying the results of emerging innovative technologies
- › Researching optimally constructed hospital furniture and equipment surfaces to reduce environmental contamination
- › Staying current with emerging and novel chemicals and technology
- › Implementing and ensuring compliance with evidence-based policies and procedures based on:
 - The Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), Canadian and British infection prevention guidelines and recommendations
 - Regulatory agencies (e.g., OSHA, Department of Public Health, CMS), accrediting agencies (e.g., The Joint Commission, Healthcare Facilities Accreditation Program (HFAP), National Integrated Accreditation for Healthcare Organizations (NIAHO)
- › Partnering with a board-certified infection preventionist to ensure best practices with reducing HAIs
- › Incorporating well-designed research from medical literature
- › Implementing industry studies and recommendations
- › Adopting best practices from other leading organizations (e.g., AORN, APIC)
- › Understanding that the implementation of newer technologies will always complement basic environmental cleaning and disinfection
- › Evaluating an organization’s specific and unique needs when recommending proper cleaning procedures, products and new technologies
- › Embracing Crothall’s research and scientific experience; this was successfully tested to ensure appropriate environmental cleanliness/disinfection at Bellevue Hospital in New York City while managing a patient with Ebola Virus Disease (EVD)

Crothall recognizes that a successful environmental services program depends upon:

- › Acknowledging the Environmental Services (EVS) Department as a key player in infection prevention
- › Clinically involving the EVS staff
- › Viewing EVS as full-fledged health care team members
- › Team cooperation breeding empowerment

REGULATORY ADHERENCE

Crothall recognizes that The Joint Commission’s spot inspection of non-clinical departments can be demanding. Even a small violation by a member of our team can potentially lead to vast problems for the hospital. Understanding and enforcing standards is vital to our success.

We know the issues inspectors demand for review. Our training and operating procedures are designed to establish and update the critical record sets so that adherence is readily demonstrable and inspections are easily accommodated, facilitated, and satisfied. We train all department members on the array of local, state, and federal regulations and requirements. We also ensure complete compliance with the gamut of agency-mandated training topics, and document the completion of this training by each employee.

Crothall also works with “Safety and Disaster Solutions, Inc.,” an independent consulting firm specializing in healthcare environmental hygiene, safety, and infection prevention needs, to evaluate our program elements and site performance. We feel a “fresh eyes” approach gives us the perspective we need to maintain and improve. We are the first support services vendor to use an outside consultant to verify performance, and it demonstrates our willingness to find problems before an inspection occurs and do what is necessary to fix them.

Our track record is unblemished. After over 70 unannounced Joint Commission surveys at client hospitals, Crothall has not earned a single Requirement for Improvement (RFI) in any of the departments it manages. On our watch, every department we run is “Survey-Ready, Every Day”—we guarantee it.

BELLEVUE HOSPITAL EVS TEAM JOINS FIGHT TO TREAT EBOLA PATIENT

OCTOBER 14, 2014 Bellevue Hospital Center braces for a potential Ebola crisis after being designated the official treatment center in New York City's 11-hospital public hospital system by hospital and city officials. Fear spreads as the deadly disease reaches U.S. shores and initial hospital treatment centers suffer the lash back of missteps in infection containment.

Crothall's EVS Director David Diaz and his team, who sanitize and clean the oldest public hospital in the U.S. every day, did not have long to wait before the first case was dispatched to the isolation treatment rooms at Bellevue. "We had 20 people on standby. They were pre-determined to serve in our Ebola treatment areas, and were thoroughly trained in our policies and procedures," David explained.

What is different from what the team did every single day for Contact Isolation patients? The disease is spread by contact, just as the other diseases are. However, Ebola causes patients to expel volumes of bodily fluids, including blood, and the mess is very difficult to keep up with, especially in the required Personal Protective Equipment (PPE). To combat spreading the infection, anyone in contact with a patient must follow a rigorous procedure for both donning and doffing PPE ... and be observed by a coach or another worker to assure not a single step is missed. Any missteps could lead to almost certain infection.

The Bellevue team received a lot of support from Rich Feczko, Crothall's National Director, Systems, Standards, Innovation, & Global Support, in preparing for a crisis. And just as Crothall was updating its Disaster Preparedness and Infection Prevention protocols, so were sister companies Morrison and TouchPoint within Compass Group. However, EVS required specialized knowledge of the disease's pathway, what it would take to completely disinfect contaminated surfaces to stop the spread of infection, and a protocol to protect the EVS team. In addition, waste management, also in the EVS team's wheelhouse, was another service component that Rich and TouchPoint's Todd Gartrell had to be covering as the CDC and DOT regulations clashed.

OCTOBER 23, 2014 When their first confirmed case of Ebola arrives at Bellevue, 100 staff members "from doctors to transporters, to waste handlers and administrative workers" are involved in the patient's around-the-clock care, including one EVS team member—Director David Diaz. However, he was not alone. Regional Manager Jeff Gontarek immediately contacted Rich that evening as the patient was being transported and admitted to the site, just prior to the press conference. Bellevue's success was seen as a turning point for other hospitals that might face Ebola on a shoestring budget. "They have the spirit," said one anonymous doctor. "If they show they can save this guy, then Ebola patients can be saved in many hospitals. The whole world will change because of them."

In the end, it was a collaboration of the patient (a Doctor Without Borders physician who treated Ebola patients in Guinea), plasma from a nurse who survived the disease, and Bellevue's leadership and staff that turned the tide in the U.S. Crothall Director David Diaz and the many others from our company who supported him belong to that group.

"We discussed our company and department responsibility, including the CDC Ebola and DOT Class A waste guidelines that would be relevant to the process. At the same time, we were closely following all regulatory releases and updates to align our policies and guidelines related to Ebola events. This includes the training and awareness document that Todd Gartrell and I were able to craft with the support of Safety and Disaster Solutions, Inc., our TJC and infection prevention consultant team, and which was aligned with all regulatory requirements," Rich recalled.

"We had to make sure our team members were comfortable and confident working in their protective equipment," said David. "They had to be willing to jump in there." North Star, who had a trained Hazmat team, also coached the group and provided terminal cleaning.

The hospital was well prepared, having established perimeters using different colored tape—green, yellow, and red lines where defined clearance levels were able to operate. Once in the patient room, David was not cleared to pass the yellow line. Special receptacles were labeled to receive different kinds of waste. "We had the benefit of learning from the Texas hospital's mistakes, and we all agreed to use their protocols for handling waste."

NOVEMBER 10, 2014 The patient with Ebola leaves Bellevue Hospital, free of the virus. Mayor DeBlasio declares New York City Ebola-free.

David and the other 100 workers were monitored for 21 days before they were cleared free of Ebola. "We worked with the hospital, and once we had the process nailed down, everyone was calm. In the end, we just had to trust each other," David said.

STRATEGIC PARTNERSHIPS

The sick can never be made well in dirty surroundings. —Sojourner Truth, Civil War nurse

Crothall believes the best outcomes are derived from continually forming strategic partnerships with companies that offer cutting-edge technology to promote environmental hygiene and patient safety. As the leader in healthcare support services, we never accept status quo. Our specialists turn over every rock, challenge every process, and study the market for new ways that work better and faster than our current “best.” When a better way is discovered, it is thoroughly researched and vigorously tested to ensure its effectiveness.

New protocols are then developed, standardized, and shared nationally. Metrics are created and applied to identify opportunities for improvement in the process itself. Even the metrics themselves are subject to constant review for a better, more sensitive tool. Crothall’s protocols work because of frequent auditing, making adjustments, auditing again, and making adjustments again.

For example, Crothall was the first in the industry to standardize ultraviolet (UV) technology as an innovation to destroy microorganisms and fight HAIs. First, as part of the hospital patient room or operating room terminal disinfection process, the room is manually cleaned and disinfected. Then, UV technology is launched, with the Ultraviolet Germicidal Irradiation (UVGI) destroying airborne and surface microorganisms.

SURFACIDE UV-C HARD SURFACE DISINFECTION SOLUTIONS

Surfacide® provides an evidence-based, automatic Ultraviolet-C room disinfection system that eradicates Multidrug-Resistant Organisms (MDROs), including *C. difficile* (spores and bacteria), Methicillin Resistant *Staphylococcus aureus* (MRSA), Vancomycin Resistant *Enterococci* (VRE), and *Acinetobacter baumannii*. The technology also eradicates Extended Spectrum Beta Lactamase (ESBL) producing and Carbapenem-resistant *Enterobacteriaceae* (CRE) organisms. Surfacide® has also been used successfully to disinfect Ebola hospital rooms in Western Africa and is part of many hospital’s Ebola preparedness plans in the United States.

The Surfacide® Helios™ system implements multiple ultraviolet emitters into the patient’s room at discharge, including the bathroom, to ensure complete room disinfection and patient safety. Surfacide® has changed the way UV-C technology is used in healthcare. By implementing multiple light emitters, with laser validation, in the patient environment, the Helios™ System overcomes the obstacles of using single emitter UV-C light systems.

The use of multiple emitters:

- › Eliminates shadows in the patient’s environment
- › Reduces proximity to every high-touch surface
- › Cuts disinfection time, allowing for a faster room turnaround time (TAT)



Image from: <http://www.surfacide.com>

Additional advantages include:

- › Biocidal activity against a wide range of microorganisms by destroying pathogen DNA
- › Environmental surface, equipment, and air decontamination
- › Rapid vegetative bacteria decontamination, including activity against *C. difficile* spores
- › No requirement to completely seal off the room
- › Ability to keep the heating, ventilation, and air conditioning systems fully functioning
- › Residual-free process
- › Well-distributed UV energy in a room

Crothall hospitals have successfully implemented The Surfacide® Helios™ system in a multitude of clinical settings to reduce the potential infection risk and increase patient safety. Multiple UV emitters have been effectively used in:

- › Operating room suites
- › Intensive Care Units
- › Isolation precaution rooms
- › Discharge rooms, where the patient has stayed longer than 30 days
- › Terminating *C. difficile* outbreaks
- › Oncology and Transplant Units due to the high potential for infection

Crothall managers proactively introduce UV technology specifics and outcome data to the Infection Prevention and Control Representative key client and key other related hospital customers. During the implementation period, initial test specifics are established for a pre-determined period of time including controlled specialty areas (OR, Burn Unit, isolation precaution rooms, etc.) and testing methods (typically, hospital microbiology or designated resource). The appropriate application locations are then chosen. The manufacturer's recommendations for training, safety, product handling, device maintenance and usage are followed. Ongoing product training and education is included during orientation and annual refresher sessions. An outcomes report in partnership with Infection Prevention and Control is given during joint review meetings.

Since proactively acquiring the Surfacide® Disinfection System, we have used this technology in over 1,000 rooms. (By the time this white paper is published.) We have also used Surfacide® in the operating room, GI Lab, wound care center, and the child development center. These areas are put on a regular schedule to ensure thorough room disinfection. The demand for the use of the equipment in the hospital is overwhelming. I am in constant communication with our infection prevention team to make sure we are continuing the process of eliminating unwanted microorganisms in our environment and promoting safe patient care. —Scott Herbert, Director, Environmental Services, BJC Christian Hospital

JERSEY SHORE UNIVERSITY MEDICAL CENTER

At Jersey Shore University Medical Center in New Jersey, the Infection Prevention Team recognized the importance of a robust and comprehensive environmental hygiene program to help reduce HAIs.

Annette Case, RN, BSN, CNN, the Infection Preventionist Coordinator, reached out to Crothall with her infection rate concerns in Medical Intensive Care Unit (MICU). Ms. Case was aware of Crothall's use of leading UV technology and wanted to bolster the current cleaning/disinfection process. The Crothall Team was very excited to collaborate with the Infection Prevention Department and make a difference.

Resultantly, a concentrated cycle cleaning and UV utilization was initiated. Ample time was provided between patients to ensure effective use of the Surfacide® UV Towers. Subsequently, infection rates dramatically decreased, leading to improved patient outcomes and staff satisfaction. The positive outcome is another example that validates Crothall's integrative approach to environmental hygiene and reducing HAIs.

CHILDREN'S HOSPITAL OF PITTSBURGH (CHP) OF UPMC,

At Children's Hospital of Pittsburgh (CHP) of UPMC, a Magnet Hospital-recognized, 296-bed facility, is a leader in the treatment of pediatric conditions and diseases. Ismael Silva, Crothall's Regional Manager for Environmental and Patient Transportation Services partnered with the organization's infection prevention and control department for introducing Surfacide® to protect the young patients against transmissible pathogens. Surfacide's® 3 emitter device was introduced into the following:

- › Operating Room suites
- › Pediatric Intensive Care Unit
- › Isolation precaution rooms
- › Specified areas or units when there are heightened concerns with HAIs
- › Transplant Unit
- › Oncology Unit
- › Patient rooms where the length of stay was greater than 30 days

As reflected in the data (table pictured below), infections are trending downward at CHP, with Surfacide® playing a key role.



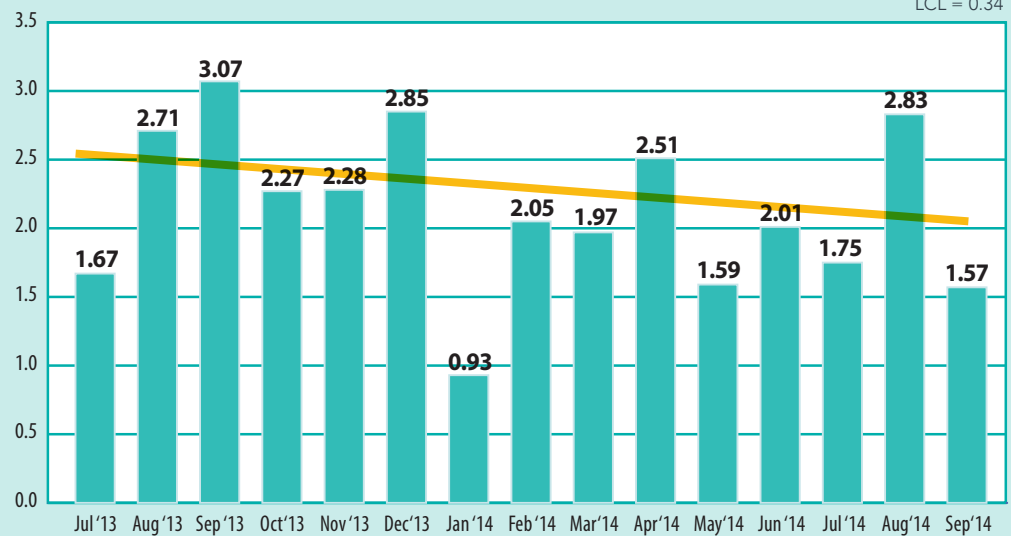
"The Environmental Services Department is committed to providing a program of prevention and control of infections at CHP and the population it serves. The goal is to reduce the risk of acquiring and transmitting infections for patients, visitors and staff by properly cleaning and disinfecting their environment. The Environmental Services Department works in collaboration with the Infection Prevention Team for the establishment and implementation of an effective program."—Ismael Silva

HEALTHCARE ACQUIRED INFECTIONS

FY 2014 – Current

Goal = 1.94

UCL = 3.91
CL = 2.12
LCL = 0.34



The first quarter of 2015 represents 45 infections for an Infection Rate of 2.00 per 1,000 patient days. The major categories include:

- › Primary BSI-1
- › EENT-1
- › SSI-13
- › CLABSI-12
- › GI-4
- › SST-1
- › CNS-1
- › LRI-4
- › SUTI-8

OHIO STATE UNIVERSITY MEDICAL CENTER

At the Ohio State University Medical Center, the Infectious Diseases team studied Surfacide® effectiveness with reducing MDROs, including *C. difficile*, in:

- › Terminally cleaned inpatient hospital rooms and operating rooms
- › Portable computers, not pre-cleaned
- › Bathrooms of patients with *C. difficile* colitis, also not pre-cleaned

The results demonstrated that the Surfacide® disinfection system was highly effective with reducing MDRO contamination and augmenting the patient safety program; refer to the following poster that was presented at the SHEA 2015 Spring Conference.

Ultraviolet Light for Patient Room Disinfection Post-Terminal Clean

Christina Liscynsky, MD¹, Sahanna Bhatt, BS² and Julie E. Mangino, MD¹

¹ The Ohio State University Wexner Medical Center, Division of Infectious Diseases and Department of Clinical Epidemiology
² The Ohio State University, Columbus, OH.



Wexner Medical Center

Abstract # 7139 SHEA 2015

Background

- UV-C light reduces micro-organism bio-burden in the hospital environment.
- Surfacide® UV-C Disinfection System reduced known quantities of CFUs carried in on a variety of surfaces.
- MRSA and VRE needed only 400mJ or less to achieve a 3 log CFU reduction
- *Acinetobacter* and CRKP required 800mJ for a 3 log reduction in CFUs
- *C. difficile* spores required 1200-1400mJ for a 3 log reduction in CFUs
- **Objective:** Analyze the number of CFUs present pre and post UV-C treatment with the Surfacide® multi-emitter system using EZ Reach polyurethane sponges (sampling a large surface area) in the following:
 - Terminally cleaned inpatient hospital rooms and operating rooms (ORs)
 - Portable computers, **not pre-cleaned**
 - Bathrooms of patients with *C. difficile* colitis, also **not pre-cleaned**.



Surfacide® Multi-Unit UV Emitters

Methods

- Inpatient and Operating Rooms (ORs)**
- Private, vacant, rooms were terminally cleaned *prior* to this study
 - Five surfaces (e.g. bedrail, IV pole, wardrobe and medicine cabinet handles, computer mouse, sink) were selected; sampling depended on type of room and configuration.
 - The right 1/2 of each surface was swabbed with a 4.4x3.8cm EZ Reach PU sponge before treatment.
 - Rooms were treated with 3 UV-C emitters at a medium energy setting for 30-60 minutes to deliver a target dose of 800mJ/cm².
 - The left 1/2 of the same surface was then swabbed post UV-C treatment.
 - Swabs were refrigerated overnight, and cultured the next day.

Portable Computer (no pre-cleaning)

- The computer on wheels (x3) were arranged in front of 2 emitters. The left 1/2 of the keyboard was swabbed with the PU sponge.
- Keyboards were treated with 400mJ with the scrub option. Emitters were programmed to disinfect one area and not rotate around to disinfect the whole room.
- The other 1/2 was then swabbed.
- Samples were cultured on the same day.

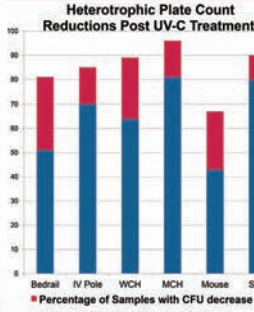
Bathrooms (no pre-cleaning)

- Occupied rooms of patients with suspect/confirmed *C. difficile*, (Enteric Isolation) were selected for study.
- Bathrooms were cultured randomly during the day, while the patient was admitted.
- Swabbing procedure was done as above on the toilet seat, sink faucet or the toilet handrail, if no sink was present in bathroom.
- Bathrooms were treated with an estimated 1200mJ delivered in either a 10 or 20 minute cycle depending on bathroom size; longer duration for larger bathroom.
- Samples were cultured on the same day.

All cultures were done at an independent site, Richter International Inc. Columbus, OH.

Results

Heterotrophic Plate Counts Post UV-C Treatment In Inpatient and Operating Rooms: Post Terminal Cleaning							
	Bedrail	IV Pole	Wardrobe Cabinet Drawers (WCD)	Medicine Cabinet Handles (MCH)	Mouse	Sink	All
Total surfaces sampled (N)	47	47	47	42	42	10	235
CFU Decrease	#/ %	38 (81)	40 (85)	42 (89)	40 (95)	28(67)	9 (90)
<10 CFU	#/ %	24 (51)	33 (70)	30 (64)	34 (81)	18 (43)	8 (80)



Portable Computers No Pre-cleaning

	Untreated by UV-C	Treated by UV-C
	GRAM - CFUs/swab	GRAM + CFUs/swab
1	440	1000
2	<10	1020
3	170	330

Bathrooms No Pre-cleaning

Clostridium difficile CFUs			
ROOM	PRE CFUs	POST CFUs	Surface
1	<10	<10	Faucet
	<10	<10	Toilet
2	110	<10	Handrail
	3,700	30	Toilet
3	<10	<10	Faucet
	<10	<10	Toilet
4	<10	<10	Handrail
	<10	<10	Toilet
5	<10	<10	Faucet
	<10	<10	Faucet
6	<10	<10	Faucet
	30	<10	Toilet
7	<100	<10	Faucet
	280	<10	Toilet
8	<10	<10	Handrail
	<10	<10	Toilet
9	<10	<10	Faucet
	<10	<10	Toilet

Discussion

- Post Terminal Cleaning UV-C treatment:**
- In inpatient and ORs, 84% of surfaces had substantial CFU decreases to enhance terminal cleaning for these rooms.
 - 63% of surfaces in inpatient rooms and the ORs had <10 CFUs post UV-C treatment.
 - The computer mouse did disappointingly; likely due to a horizontal orientation; i.e. not hung vertically, to overcome shadows.
 - Results did not vary by type of surface, as evidenced by handles of the medicine cabinet (plastic) vs. wardrobe (metal).

No pre-cleaning with UV-C treatment:

- Portable computers treated in a "scrub mode", showed almost all had <10CFUs post-treatment.
- Bathrooms had significant decreases in *C. difficile* spores to <10CFUs in 3 of the 4 rooms that were positive pre-treatment
- Toilet seats accounted for 3 of 4 positive cultures obtained pre-cleaning.

Conclusion

- Terminally cleaned rooms continue to have evidence of microorganism bio-burden.
- Surfacide® UV-C disinfection system was effective in reducing micro-organism burden post-terminal cleaning, and led to significant declines in CFUs of frequently used hospital surfaces (i.e. computers).
- This UV-C multi-emitter system is effective in substantially decreasing *C. difficile* in contaminated bathrooms even if not yet cleaned.

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HYGIENA



Hygiena's ATP verification system, is a CDC-recommended, objective method for monitoring and improving environmental cleanliness in hospitals. The scientific detection of adenosine triphosphate (ATP), the universal unit of energy in all living cells, immediately determines if surfaces are truly clean and safe.

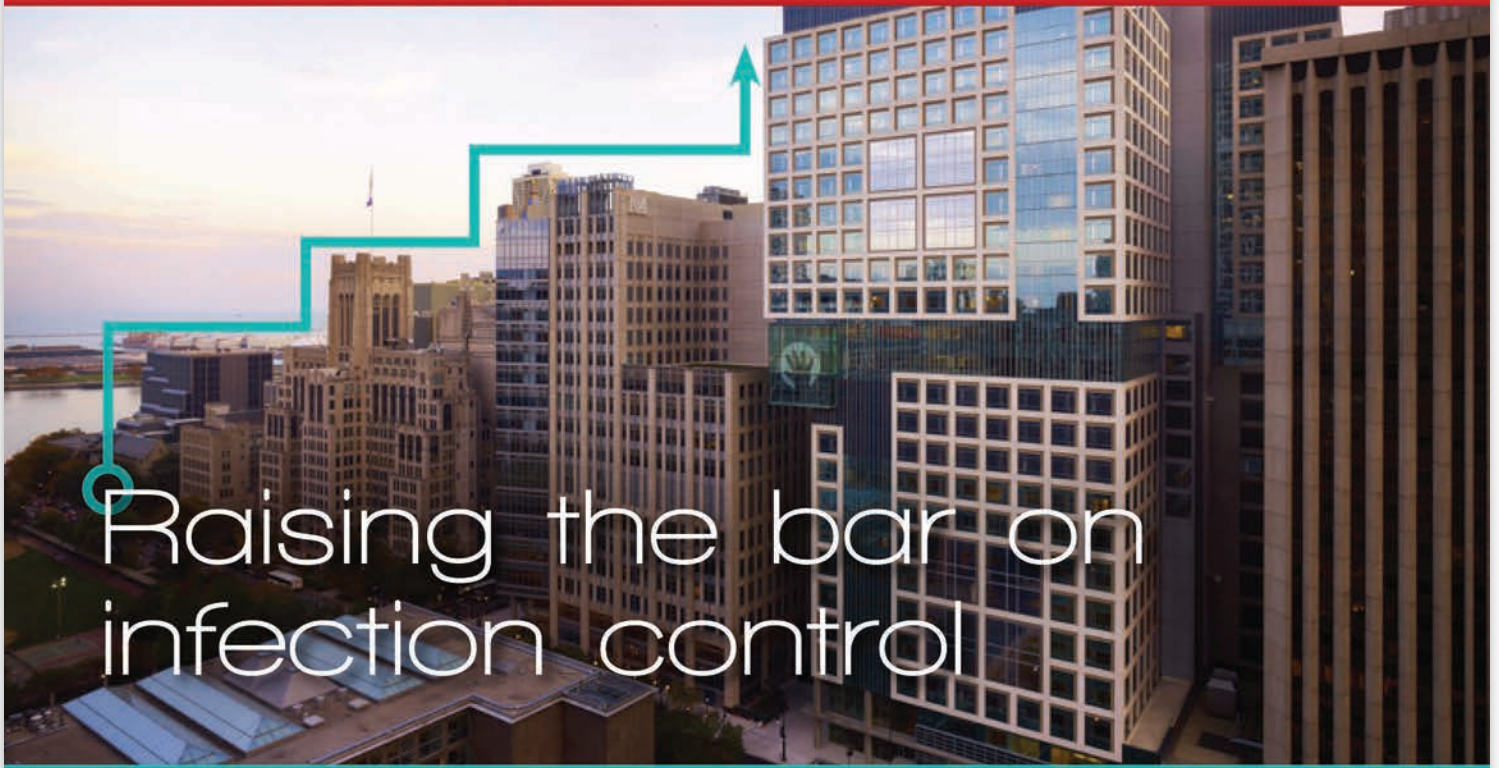
Crothall's implementation of the Hygiena ATP verification system gives hospitals an affordable, objective, easy-to-use method for verification of surface cleanliness, giving actionable results in only 15 seconds. This user-friendly monitoring system will not only improve hospital cleanliness and reduce infection risk, but also will ensure the cleaning budget is used more efficiently. Crothall has ATP technology in over 200 locations nationally.

Hygiena ATP technology is aligned with TeamCOACH quality assurance inspections that assist with maintaining a safe environment. Users can immediately know if surfaces have been cleaned/disinfected properly. Problem areas can be quickly remediated. This verification ensures the room is safe for the current, or next patient, to occupy. Cleaning thoroughness results can be benchmarked and trended over time.

Reports can be generated for hospital committees, record keeping, and employee evaluations.

Hygiena notes there are many different ways to evaluate cleanliness of the healthcare environment, and each comes with pros and cons. Visual inspection is quickly being replaced by quantifiable, objective methods upon the recommendation of the Centers for Disease Control and Prevention (CDC). Managers need reliable data collection and objective measurement techniques to truly know if a surface is clean. A simple method, like blacklight detection of fluorescent gels, is an excellent training tool, but fails to measure the actual removal of biological matter. Another technique is microbiology testing; microbiology tests give the most quantitative, specific results for pathogens or bacteria on a surface, but results are slow and tests are expensive. EVS and Infection Prevention need quick results to turn beds over faster, verify instrumentation is clean, and collect quantifiable data for meaningful analysis. Refer to the table below to see how the various methods compare across desirable attributes.

Methods	ATP Monitoring	Microbiology Testing	Blacklight	Visual Inspection
Ease of Use Can it be used by any level user?	★★★★	★	★★★★	★★★★★
Objective Does it measure without bias	★★★★★	★★★★★	★★	★
Specific Does the method detect microbiological matter?	★	★★★★★		
Quantitative Are results numeric and measurable?	★★★★★	★★★★★		
Qualitative Can results be categorized as Pass/Fail?	★★★★★	★★★★★	★★★★★	★★★★★
Timeliness Does the method minimize time investment?	★★★★★		★★	★★★★★
Low Cost Are supplies and other costs affordable?	★★		★★	★★★★★
Training Tool Does the tool confirm proper cleaning	★★★★★	★	★★★★★	★★
Management Tool Is the data collected powerful for managers?	★★★★★	★★★★★	★	★
Fraud-proof Are results protected from manipulation?	★★★★★	★★★★★		
Software Analysis Does the product come with software?	★★★★★		★	★
Grand Total	38 ★★	26 ★★	19 ★★	21 ★★



Raising the bar on infection control

▲ ANN & ROBERT H. LURIE CHILDREN'S HOSPITAL OF CHICAGO

As hospitals everywhere work to enhance patient safety, infection control remains a serious concern. How can hospitals protect patients while in their care, and what role can housekeepers play?

These were important questions asked by the administration at Ann & Robert H. Lurie Children's Hospital (Lurie Children's) in Chicago when they moved into a brand new, much larger, state-of-the-art facility in 2012.

"With a new environment come a lot of unknowns," noted Infection Preventionist Maria Bovee, MPH, CIC. "We wanted to have the assurance of knowing that our patients are safe and we're doing all we can."

"We know from a lot of studies that visual inspection is not the standard; there are no guarantees that surfaces are indeed clean," she said. In other words, it is not enough for any hospital—especially a children's hospital—to simply strive for the perception of cleanliness. They have to know they are doing all they can do to keep their little patients safe.

After considering different approaches, the hospital's Infection Prevention and Control (IP&C) department embarked on a collaborative program with Crothall Healthcare's environmental services team to train

housekeepers and monitor cleaning using an ultraviolet (UV) fluorescent marker and ultraviolet light to assess cleaning effectiveness.

A key benefit of this method is that it provides housekeepers with a visual measure of their performance, Angelica Almeida, Operations Director of Environmental Services and Linen, noted. Since this initiative was started in April 2013, documented cleaning results have improved significantly—with compliance scores rising from the 60% to the 90%, based on the hospital's measured objectives.

Just as notable is the housekeepers' ownership of this approach. These positive outcomes earned Lurie Children's an invitation to present a poster at the 2014 Association for Professionals in Infection Control & Epidemiology (APIC) Conference held in Anaheim, CA, in June. Their experience provides valuable insight on how to bolster housekeeping engagement.

SETTING THE GOALS

First, the team created a list of surfaces in patient rooms to be assessed based on the Centers for Disease Control and Prevention (CDC) Environmental Checklist for Monitoring Terminal Cleaning, which was adapted to reflect the hospital's pediatric environment. The goal is to achieve and maintain 95% compliance based on the number of marked surfaces cleaned in relation to the number of surfaces evaluated. If there is less than 50% glow in the marked area and wiping action can be visibly seen, or if there is complete absence of UV markings, the surface is considered cleaned with the assumption that disinfectant was applied. Evaluation is performed by members of the IP&C staff, who were trained on methods to objectively interpret markings.

USING AVAILABLE RESOURCES

As a distinct component of the EVS training program, sleep study rooms are converted by day to simulated patient rooms, where housekeepers are trained and videotaped while cleaning, using the fluorescent marker. Also, the fluorescent marker is used on actual patient floors, where about 10 percent of patient rooms are assessed each week. Different surfaces are marked each week, and housekeepers do not know which areas are being evaluated. Cleaning effectiveness is then checked with a special UV flashlight, and findings are shared with housekeepers.

Rather than approaching this as a punitive exercise, it is the "beginning of a discussion," Bovee explained. "Feedback to employees helps them understand where they can improve and lets them know if they're doing a good job."

"That's important," she noted. "They take pride in this."

GETTING THE DETAILS RIGHT

As with any process, the integrity is in the details. To support the best outcomes:

- ▲ Members of the infection control staff routinely verify the effectiveness of cleaning in a sampling of actual patient rooms. This supports an environment where people are working together as a team.
- ▲ A shared (IP&C and EVS) intranet site was developed to enter data and view reports, enabling the open sharing of results.

This last element is integral to the process. IP&C sends reports to EVS leadership with monthly compliance data, including the top three surfaces with the lowest compliance scores and

employees to be recognized if a room was cleaned at 100%. EVS staff members are able to access the intranet site and view results by type of surface, room number, and housekeepers who cleaned the rooms, which helps direct daily huddles.

RESULTS AND LESSONS LEARNED

The impact of the initiative shows in the results.

- ▲ The program began in April 2013 with compliance scores in the high 60% and has progressively increased monthly compliances to scores into the 90% for the months of April to July 2014 (90%, 91%, 93%, and 93%), respectively.
- ▲ IPC began the marking program and in April 2014 this responsibility was moved to EVS leadership. Since EVS managers started doing the discharge cleaning evaluations, they have significantly increased the number of surfaces being monitored. The range of surfaces being evaluated is between 438-899 per month.
- ▲ EVS managers are required to perform these evaluations as part of their job responsibilities.
- ▲ Ann & Robert H. Lurie Children's Hospital of Chicago has become a training site for EVS managers from other institutions who have come to learn this program.

Additionally, some general lessons have been learned that can be used to shape education and training. For example, it has been shown that:

- ▲ Housekeepers who get distracted and stray from Crothall's 10-step cleaning approach are more likely to miss spots.
- ▲ In general, surfaces that are smooth and flat are easy to clean and consistently have high cleaning compliance scores.

ALMOST THERE

The team at Lurie Children's recognized in its findings that several limitations with their methodology exist, notably the assumption that wiping action and removal of UV marker indicates adequate cleaning and disinfection of the surface. Also, there are evaluator differences in interpreting UV marker results.

Still, the results and the housekeepers' response are game changing.

"We knew it would be hard to get to our 95 percent goal," said Bovee. But with scores in the 90s, they're almost there. "We are doing really well."

OXIVIR®

Oxivir®, manufactured by Diversey Care (www.diversey.com), is a one-step hospital disinfectant cleaner powered by accelerated hydrogen peroxide technology. This synergistic combination of cleaning and disinfectant properties results in effective and fast cleaning and disinfection performance:

- › Contact times are as short as 60 seconds for common hospital pathogens, including MRSA, VRE, norovirus, tuberculosis, and bloodborne pathogens.
- › The HMIS (Hazardous Materials Identification System) rating is a highly favorable 0-0-0. This numerical hazard rating addresses health, flammability, and physical hazard. Personal protective equipment is not needed.
- › Use of the product ensures thorough soil removal and effective one-step disinfection.
- › The active ingredient is gentle on surfaces and breaks down to oxygen and water.

Integrating Oxivir® assists Crothall's clients with reducing HAI costs, including extended hospital stay and treatment, and its non-corrosive formula is safe on most hard, non-porous surfaces.

PERISEPT SPORICIDAL DISINFECTANT CLEANER

This new EPA-registered sporicidal disinfectant cleans and kills a broad spectrum of bacteria and organisms, including *Clostridium difficile* spores, in two minutes. The 2-minute claim, against one of the most difficult spores to kill and control in the healthcare setting, is the fastest kill claim in the industry. The non-bleach, hydrogen peroxide/ peroxyacetic acid based formulation leaves no harmful or corrosive residues, and no undesirable film on surfaces. Crothall clients safely use one-step Perisept to clean, deodorize, and disinfect hospital surfaces and reduce the risk of *Clostridium difficile*.

AQUAOX

The integrated AQUAOX infection control system uses electro-chemically activated fluids, with non-toxic, biodegradable, fast acting solutions, to clean and disinfect healthcare surfaces. The AQUAOX solution is highly effective against bacteria, spores, viruses, fungi, and molds. Crothall's clients can use this emerging technology to augment existing processes to reduce the HAI risk and promote patient safety.

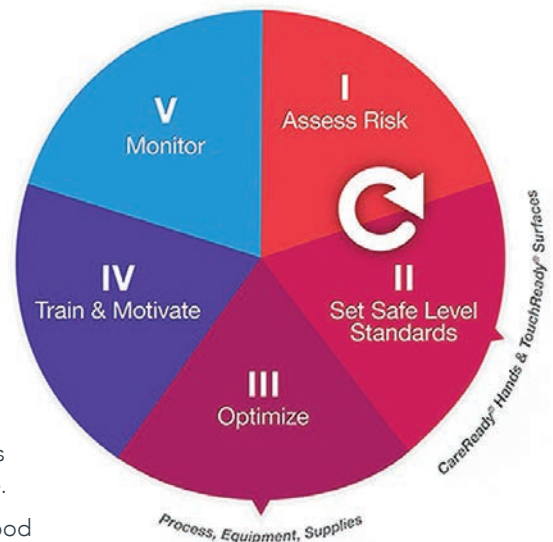
HANDWASHINGFORLIFE®

The Handwashingforlife® Institute is devoted to advancing the science of hand hygiene with the purpose of reducing incidence of foodborne illness caused by poor hand hygiene practices. Crothall has partnered with this organization as part of an ongoing commitment to reduce the risk of HAIs and person-to-person illness. Resultantly, the science of hand hygiene, correct gloving technique, and the importance of high-touch surface cleanliness is continually taught to all housekeeping specialists.

The HandsOn™ System establishes risk-based standards and process control to reduce the risk of foodborne outbreaks. Managers get the tools to assess their risk and implement sustainable solutions in protecting customers, staff and the very business itself.

THE FIVE STRUCTURED STEPS TO SUSTAINABLE SOLUTIONS

- I. Assess Risk** Identify and verbalize the risk of the unwashed hand. Rank surfaces at highest risk for cross-contamination.
- II. Set Safe Level Standards** Establish clear standards for individual and team level success.
- III. Optimize** Insure the conditions for success are in place before training. If compliance isn't convenient and isn't user friendly, it isn't done.
- IV. Train & Motivate** Convert to a culture of cleanliness. This step introduces best practice tools, techniques and materials to motivate behavior change.
- V. Monitor** What gets measured and rewarded gets done. Rewarding the good and disciplining the less-than acceptable behaviors are key to sustainability.



SUMMARY

We must ensure a safe and healthy environment in which to heal. —Crothall Healthcare

Over the years, countless new technologies have emerged. As part of our ongoing journey to continually improve and expand our support services, Crothall has put significant resources into piloting and studying the results of each new technology or innovation.

Clinical testing is always done in conjunction with our clients as well as third-party infectious disease and infection prevention experts. And, it is an ongoing process to exhaust all avenues in the search for better solutions.

In summary, Crothall Healthcare's approach to ensure a safe patient zone:

- › Increases focus on patient safety and care
- › Prevents HAIs
- › Embraces innovative technologies
- › Ensures consistently high levels of cleanliness
- › Employs environmentally conscious cleaning practices
- › Raises patient and staff satisfaction
- › Meets regulatory compliance
- › Guarantees service outcomes
- › Keeps staff up to date with ongoing training programs
- › Reduces supply costs
- › Is customer-focused (e.g., provides independent continuous readiness audits)
- › Focuses on standardization in protocols, quality assurance and management tools

CROTHALL OVERVIEW

Crothall was founded in 1991 to address the need for a specialized, high-quality, innovative and responsive support services company, exclusively serving the unique needs of the healthcare industry. With more than 1,200 healthcare clients accompanied by an unblemished Joint Commission survey record, Crothall provides excellence with every delivered solution.

As the industry front-runner, Crothall continually integrates scientifically proven, evidence-based recommendations, tools and industry best practices to reduce environmental contamination and provide a safe environment for patients and HCP. This synergistic approach, coupled with ongoing, extensive research and testing, assists with identifying many innovative, exciting, cutting-edge technologies that offer significant, unified advantages to augment our infection prevention efforts.

Infection prevention is a constant battle that must be waged daily for the health and safety of patients and HCP. Crothall's people and processes deliver sustainable outcomes that meet high standards of quality and safety resulting in total customer satisfaction.

Crothall remains in the forefront and will continue to pioneer new solutions for our healthcare customers. No other company has the training, technology, and, most importantly, thorough processes, that have made Crothall Healthcare the industry leader. ■

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