



# Hospital Infection: Essential New Research to Support Cleaning and Screening



Betsy McCaughey, Ph.D.  
Founder & Chairman  
Committee to Reduce Infection Deaths  
[www.hospitalinfection.org](http://www.hospitalinfection.org)  
©2016

# The Importance of Environmental Cleaning





# How Unclean are Hospitals?

- ✚ **Findings of Two Boston University Studies**
  1. 49 operating rooms in four New England teaching hospitals
    - ✚ More than half the objects that should be disinfected were overlooked by cleaning staff.
  2. Patients' rooms in 20 hospitals in Washington DC, Connecticut & Massachusetts
    - ✚ More than half the surfaces that are supposed to be cleaned for new patients were left unclean.

Sources: PC Carling et al., "Operating room environmental cleaning – an evaluation using a new targeting method," Abstract 280 presented at SHEA's 17th Annual Scientific Meeting (April 2007); PC Carling et al., "Improving patient area cleaning/disinfecting activities in twenty hospitals," Abstract 280 presented at SHEA's 17th Annual Scientific Meeting (April 2007).

## Who Occupied the Room Before Your Patient?

- ✚ Tufts University researchers found that the “strongest predictors” of which patients acquired VRE were:
  1. VRE found on surfaces in the room
  2. The room had been occupied by a previous patient with VRE anytime within the previous two weeks.
  
- ✚ VRE withstands “terminal cleaning.” Even after a room was “terminally cleaned” an average of 2.8 times, the germ could still be found on surfaces.

Source: Marci Drees et al. “Prior Environmental Contamination Increases the Risk of Acquisition of Vancomycin-Resistant Enterococci” *Clinical Infectious Disease*. March, 2008.

# Thorough Cleaning Reduces VRE Colonization

- ✚ When researchers at Rush University Medical Center in Chicago trained the staff to soak surfaces with detergent rather than merely spraying and wiping, and to clean commonly overlooked objects such as telephones, remote controls, and faucets.
- ✚ When using bleach: Don't "spray and wipe," "drench and wait" for three minutes instead.
- ✚ **The spread of VRE to patients was reduced by two thirds.**

Source: Haden, Et al, Reduction in Acquisition of Vancomycin-Resistant Enterococcus after Enforcement of Routine Environmental Cleaning Measures, CID 2006:42 (June 1, 2006)



## C. *diff*: Environmental Cleaning is Key

- ✚ At Case Western Reserve and the Cleveland VA Medical Center, 78% of surfaces were still contaminated with *C.diff* after routine cleaning. →
  - ✚ Down to 1% after rigorous cleaning with bleach.<sup>1</sup>
- ✚ At a university hospital in Philadelphia, three patients occupying the same room consecutively came down with *C.diff*. One died as a result.<sup>2</sup>
- ✚ July-August 2005, 8 infants in the NICU at a Utah hospital contracted *C.diff*. All 8 infants had shared three beds in the same corner of the NICU.<sup>3</sup>

Sources: (1) Fakh, M. G., et al., "Resident Physician (RP) and Physician Extender (PE) Survey Regarding Isolation Precautions for Patients with *Clostridium difficile*," Abstract 185 presented at SHEA's 17th Annual Scientific Meeting, April 2007. (2) Flomenberg, P. Lecture at Thomas Jefferson University Medical Center Infection Control Conference, October 22, 2007 (3) Harper, L.M., "Decreasing *Clostridium difficile* in the Newborn Intensive Care Unit Through Institution of Environmental Cleaning Procedures", Virox Solutions Newsletter, Vol. 14, 2007.



## **“Rates suddenly started coming down.”**

Robert Orenstein, D.O., Division of Infectious Diseases, Mayo Clinic, Rochester Minnesota

### A TARGETED STRATEGY TO WIPE OUT C. DIFFICILE

1. Initiated and financed by Mayo Clinic
2. Wiped high touch surfaces around patients' beds once a day with Clorox wipes
3. Tested room surfaces periodically with a bioluminescence product to verify cleaning
4. Results: Decreased incidence of CDI by 75%
5. One 39 bed unit went 137 days without a C. diff infection



# NEGLECTED OPPORTUNITY TO PREVENT C. DIFF PATIENT HAND HYGIENE

More often patients give themselves  
C. diff.

Patients need help cleaning their  
hands and unfortunately don't get it.  
And they need a reminder, especially  
at mealtimes.

PHOTO HERE



**Please clean your hands before eating, and avoid placing your food or utensils anywhere except on your plate.**

*Look for our complimentary hand wipe.*



**rid**  
Committee to  
reduce infection deaths

# Enjoy your meal!



# **THE NIGHTMARE BACTERIA: CARBAPENEM RESISTANT KLEBSIELLA LESSONS FROM THE OUTBREAK AT THE NIH ---2011**

To halt the outbreak:

NIH screened all patients for CRK

Rooms were double cleaned with bleach then misted  
with hydrogen-peroxide sprayers

NIH researchers urge the CDC to make CRK  
a reportable disease

Source: Evan S. Snitkin<sup>1</sup>, Adrian M. Zelazny<sup>2</sup>, Pamela J. Thomas<sup>1</sup>, Frida Stock<sup>2</sup>, NISC Comparative Sequencing Program<sup>3</sup>, David K. Henderson<sup>2</sup>, Tara N. Palmore<sup>2,\*</sup>, and Julia A. Segre<sup>1,\*</sup>

1. National Human Genome Research Institute, Bethesda, MD 20892, USA

2. National Institutes of Health Clinical Center, Bethesda, MD 20892, USA

3. National Institutes of Health Intramural Sequencing Center (NISC), Bethesda, MD 20892, USA



# **THE BIGGEST BREAKTHROUGH IN HEALTHCARE: A CLEAN HOSPITAL ROOM**

## ***180 DEGREE TURN IN HOW HOSPITAL PROFESSIONALS SEE ENVIRONMENTAL CONTAMINATION***

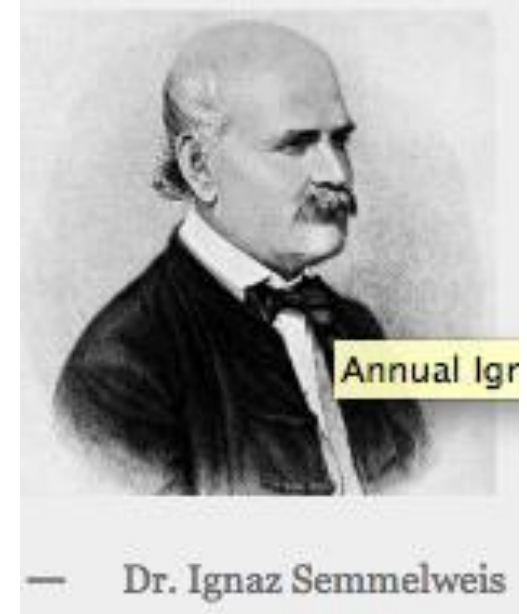
“There’s been a complete turnaround,” Curtis Donskey, M.D. Cleveland Veterans Medical Center

ultra-violet disinfection devices  
Hydrogen-Peroxide vapor machines  
silver-based overall-cleaning  
peracetic-acid dispersed in droplets

***We urge the Joint Commission and the CDC to move ahead quickly on evaluating the use of these machines to offset human error in the cleaning process.***

## Annual Ignaz Semmelweis Award

Goes to daring innovators, willing to challenge the prevailing knowledge of the time in the cause of safer medical care, specifically in the healthcare arena of cleaning and screening.





**Dilute Hydrogen Peroxide (DHP)** is the first technology poised to solve the problem of human fallibility in cleaning hospital room surfaces. DHP continuously rids hospital rooms of bacteria such as MRSA, VRE, C. diff, as well as fungi and viruses with no toxicity to patients. Because it's nontoxic, hospitals do not have to move patients out of the room. That means no down time or delays in turning over a room - an important bottom line issue for hospitals. Pilot programs prove DHP can reduce infection rates in hospitals by up to 70% over six months, a remarkable advance compared with current technologies.



# Can Hospitals Afford to Screen and Clean?

## The Cost of Hospital Infections

**At least 2,000,000**

Estimated Infections Per Year

**X**

**\$15,275\***

Average Additional Hospital Costs  
When A Patient Contracts An  
Infection

---

---

**\$30.5  
Billion**

Spent *Per* Year Treating Hospital  
Infections

(This figure does not include doctors' bills, home nursing care, lost time at work, and other non-hospital costs.)

Source: \**The Use of Economic Modeling to Determine the Hospital Costs Associated with Nosocomial Infections.* Preview By: Roberts, Rebecca R.; Scott II, R. Douglas; Cordell, Ralph; Solomon, Steven L.; Steele, Lynn; Kampe, Linda M.; Trick, William E.; Weinstein, Robert A.. *Clinical Infectious Diseases*, 6/1/2003, Vol. 36 Issue 11, p1424, 9p; (AN 10029849)



**RID HAS ONE MISSION:  
TO SAVE LIVES**

**PLEASE FIND OUT MORE ABOUT OUR WORK AT:**

**[www.hospitalinfection.org](http://www.hospitalinfection.org)**

**[betsy@hospitalinfection.org](mailto:betsy@hospitalinfection.org)**



# Use RID as a Resource

[www.hospitalinfection.org](http://www.hospitalinfection.org)

