

You are connected to the WCLN
Webinar *“Benefits of Microbial
Burden Management”*

We will begin the webinar
at 12:00 noon



**CONTINUOUS CONTROL OF MICROBIAL
BURDEN IN CLINICAL ENVIRONMENTS FOSTERS
PATIENT SAFETY THROUGH REDUCTIONS IN
HEALTHCARE ASSOCIATED INFECTIONS**

Michael G. Schmidt, Ph.D.
Professor, Microbiology and Immunology
Medical University of South Carolina

Abstract

- National health-service providers, private health insurers, and healthcare practitioners have each called for increased practices that foster patient safety.
- Healthcare associated infections (HAI) represent one of the most significant risks to patient safety, occurring at an alarmingly high rate of 1 per 25 hospitalizations in the US.
- Components fabricated from solid copper alloys have an ability to continuously control the concentration of microbes *in situ* at levels recommended subsequent to terminal cleaning (<250 cfu/100cm²).
- In one clinical trial, limited placement of copper surfaces was shown to mitigate the rate of HAI acquisition through a reduction to environmental burden.
- The HAI rate was significantly lower in rooms with copper surfaces (11.8 to 4.8 per 1,000 patient days (p= 0.013)). Here we report on the *in situ* evaluation of copper surfaces within an ambulatory-surgical care center.
- Results
 - Thirteen different objects were evaluated over 500 days.
 - Objects fabricated using copper alloys were found to harbor significantly lower concentrations of bacteria than control facsimiles (p<0.0001).
 - The median burden associated with the copper objects was below the limit of detection.
- These results represent the first evaluation of copper alloy surfaces in a setting of ambulatory-surgical care
- Support previous observations that copper alloys continuously control the concentration of bacteria within built clinical environments.
- Collectively these data serve to advance the conclusion that an application of copper touch surfaces throughout healthcare can enhance infection control efforts augmenting patient safety.

Continuous control of microbial burden in clinical environments fosters patient safety through reductions in healthcare associated infections

Disclosures

- 1. Some of the work described here was supported by the US Army Medical Research and Materiel Command under Contract No. W81XWH-07-C-0053. The views, opinions and/or findings presented here are those of the author(s) and should not be construed as an official US Department of the Army position***
- 2. Unrestricted research grant from Olin Brass to evaluate the antimicrobial effectiveness of CuVerro™ Products***
- 3. Unrestricted research grant from Ministry of Health of the Republic of Chile by investment funds for refurbishing the Intensive Care Unit of the Roberto del Río Hospital and the Corporación Nacional del Cobre de Chile (CODELCO) administered through DUAM S.A***

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Continuous control of microbial burden in clinical environments fosters patient safety through reductions in healthcare associated infections

Learning Objectives

- 1.** Understand the linkage between the intrinsic burden of the built clinical environment and Healthcare Associated Infections (HAI)
- 2.** Review the opportunity that burden management of the built environment affords healthcare resulting in improvements to patient outcomes and satisfaction.
- 3.** Evaluate the clinical opportunity afforded by interventions for limiting HAI
- 4.** ***Evaluate*** the cost effectiveness of burden management in mitigating HAI acquisition rates

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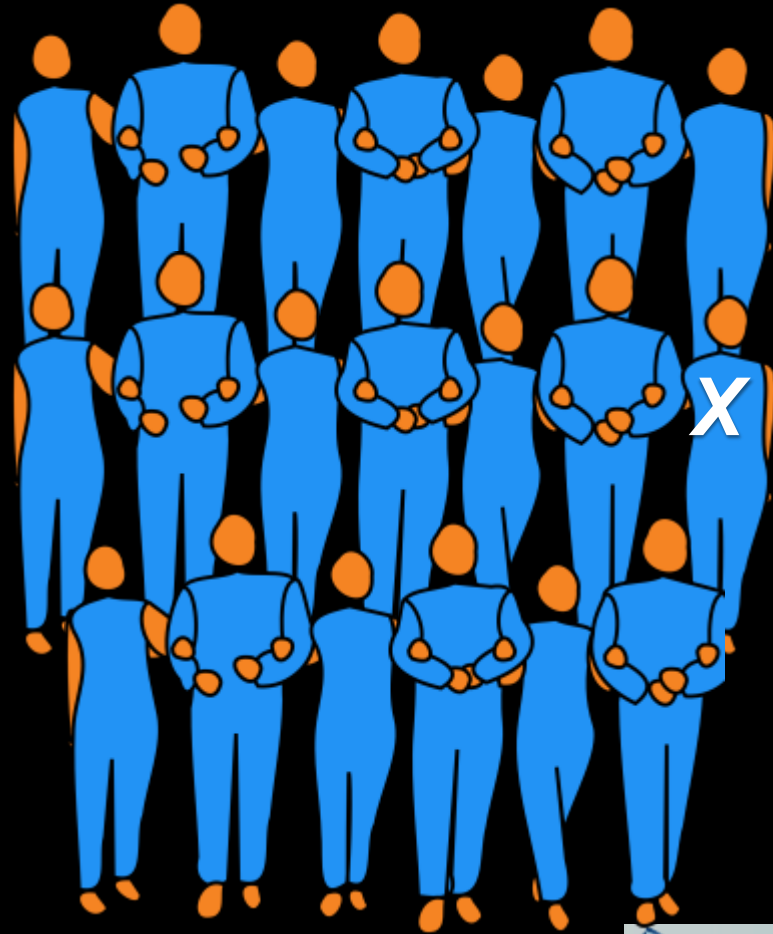
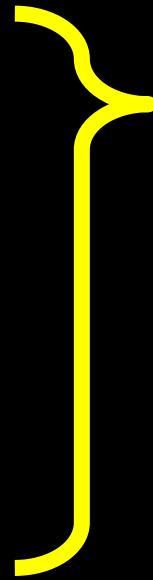
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***If one full wide bodied jet was lost each day
would anyone fly?***



In the United States

*1 : 25 Contract an
infection*



HAI



**HIV
AIDS**



**Breast
Cancer**

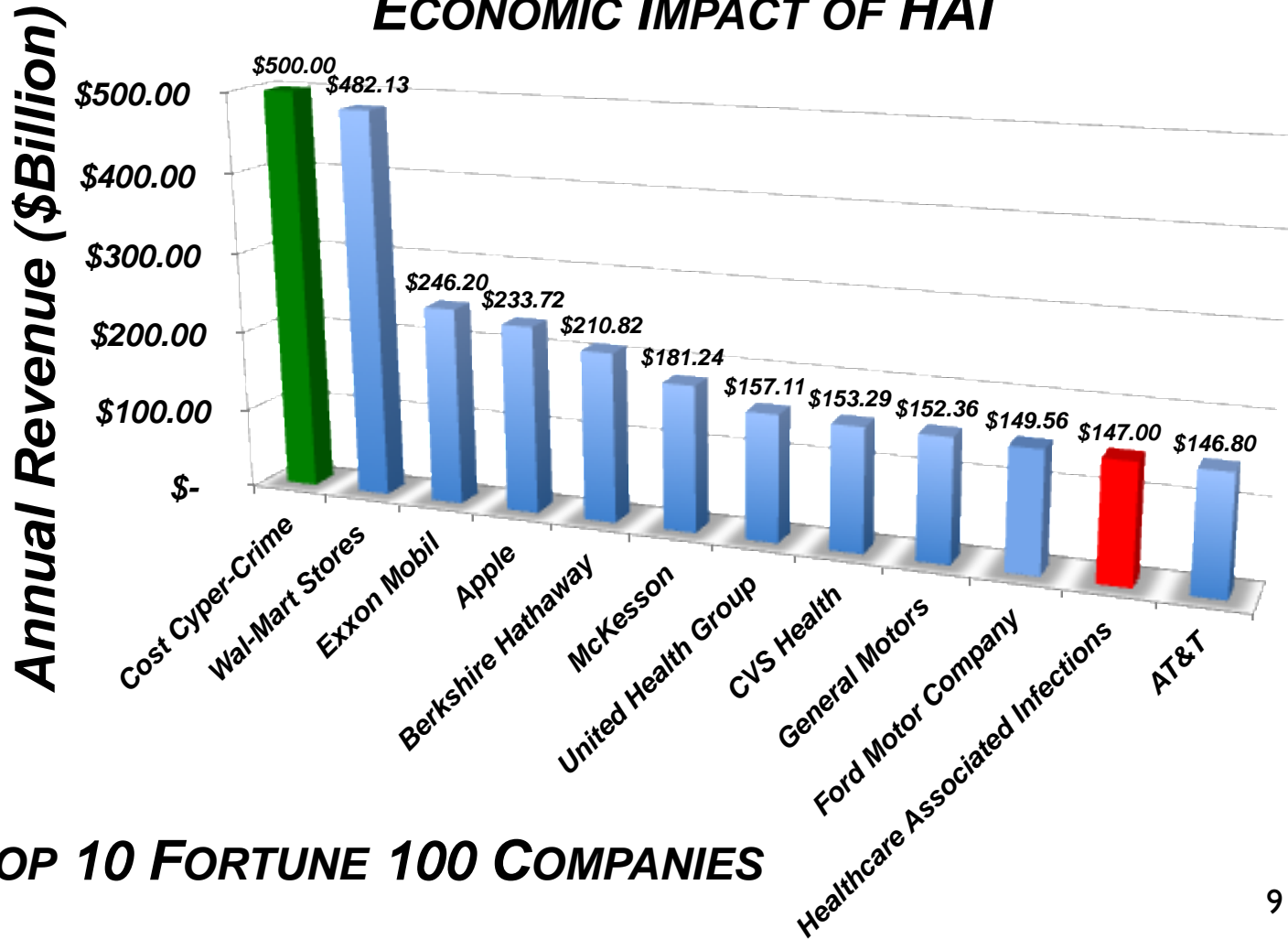




*Accounts for an additional **~\$147 Billion**
in health care costs in the United States*



ECONOMIC IMPACT OF HAI



TOP 10 FORTUNE 100 COMPANIES

Cleaner environment

>90% Reduction

Lower RISK of infection

Fewer infections > 50 % Reduction

Better outcomes & lower costs

Solutions for Clean Hospital Environments

- **Hand Hygiene**
- **Chemical cleaners & disinfectants**
- **Extended Cleaning with Robots**
 - **Ultraviolet**
 - **Hydrogen Peroxide**
- **Inherently bactericidal surfaces**



Daily Cleaning



Daily Cleaning



Terminal Cleaning



Frequency, on average once every 5th day

When We Clean

CDC Home
CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Healthcare-associated Infections (HAIs)

Healthcare-associated Infections > Preventing HAIs > Toolkits

Options for Evaluating Environmental Cleaning

Prepared by:
Alice Guh, MD, MPH¹
Philip Carling, MD²
Environmental Evaluation Working Group
December 2010

¹Division of Healthcare Quality Improvement, Emerging and Zoonotic Infections Branch, Centers for Disease Control and Prevention
²Carney Hospital and Boston University School of Medicine
³Brian Koll, Beth Israel Medical Center, Department of Health, Nashville, Tennessee
Chicago, IL

Introduction

In view of the evidence that transmission of many healthcare acquired pathogens is related to contamination of near-patient surfaces and equipment, all hospitals should develop programs to optimize the thoroughness of high touch surface cleaning at the time of discharge or transfer of patients. Since detailed objective monitoring programs may need to be developed, hospitals implementing the advanced or Level II program from the start, should also implement the elements of which are outlined below. Some of the elements of a Level I program, the elements of which are outlined below. Some of the elements of a Level I program from the start, should also implement the elements of which are outlined below. Some of the elements of a Level I program from the start, should also implement the elements of which are outlined below.

At present, the objective monitoring of the cleaning process of curtains that separates patient beds) beyond those outlined in the current standard is not defined. Additionally, there is no standard method for measuring the achievement of certain cleaning parameters (e.g., adequate contamination defining the level of microbial contamination that correlates with hygienic practices. As our understanding of these issues evolves, additional areas in these respective areas can be developed and practically implemented to advance their efforts in optimizing environmental hygienic practices.

...evidence that **transmission** of many healthcare acquired **pathogens** is **related to contamination** of near-patient **surfaces and equipment**....

...hospitals should develop programs to **optimize the thoroughness of high touch surface cleaning** as part of **terminal room cleaning** at the time of patient discharge or transfer.

Top of page

How Well We Clean?

TABLE. Comparison of Rates of Cleaning for 14 Types of High-Risk Object (HRO) in 36 Acute Care Hospitals, Before and After Intervention

High Risk Objects (HRO)	All hospitals		
	Phase I	postintervention (final results)	
Type of HRO	Mean % of HROs cleaned (range)	95% CI	Mean % of HROs cleaned
Sink	79 (38–97)	72.4–84	79.9–90.7
Tray table	74 (35–100)	66.8–81.6	74.9–88.6
Toilet seat	71 (3–100)	66.8–81.6	71.9–87.5
Flush handle	71 (3–100)	66.8–81.6	71.9–87.5
Side rail	71 (3–100)	66.8–81.6	71.9–87.5
Bedside table	71 (3–100)	66.8–81.6	71.9–87.5
Call light	71 (3–100)	66.8–81.6	71.9–87.5
Chair	71 (3–100)	66.8–81.6	71.9–87.5
Telephone	71 (3–100)	66.8–81.6	71.9–87.5
Bathroom	29 (0–82)	22.1–36.2	64.1–78.1
Bathroom door knob	28 (0–90)	20.9–35.8	66.1–81.6
Bathroom light switch	25 (0–84)	17.1–33.1	55.9–72.9
Room door knobs	22 (0–73)	15.9–28.4	59.7–73.2
Bedpan cleaner	22 (0–79)	15.9–28.3	51.7–71.4

NOTE. All P values are <.001; CI, confidence interval.

48% of surfaces are not clean after terminal cleaning.

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

Improving Cleaning of the Environment Surrounding Patients in 36 Acute Care Hospitals

Philip C. Goeling, PhD, Michael M. Pears, MD, Mark E. Rupp, MD, John L. Fu, MD, PhD, Brian Duda, MS, CSC, Sandra Van Rosten, RN, MS, CSC, for the Healthcare Environmental Hygiene Study Group

OBJECTIVE. The prevalence of serious infections caused by multidrug-resistant pathogens transmitted in the hospital setting has increased in recent years. Despite increased interventions, in the context of resistance that hampers routine compliance with disinfection procedures, surfaces in the environment surrounding the patient, we implemented a multiphased project to both evaluate and improve current cleaning practices.

DESIGN. Prospective quasi-experimental, before-after study.

SETTING. Thirty-six acute care hospitals in the United States ranging in size from 23 to 723 beds.

MEASUREMENTS AND MAIN RESULTS. We used a fluorescent tagging method to objectively evaluate the thoroughness of terminal room disinfection during before and after structured observational and pre-validated interventions.

CONCLUSIONS. Of 16,000 standardized environmental surfaces (14 types of objects), only 54.9% (90%) were cleaned or touched (95% confidence interval, 53.4–57.0). Thoroughness of cleaning at baseline increased only with hospital expenditures for environmental services personnel (P < .001). After implementation of comprehensive and provision of objective performance feedback to the environmental services staff, we documented the 52.6% (95% of total standardized environmental surfaces were cleaned (P < .001). Improvement was associated with demographic, fiscal, or staffing parameters but was related to the degree to which cleaning was adopted at baseline (P < .001).

KEY WORDS. Significant improvements in disinfection cleaning can be achieved in most hospitals, without a substantial added labor investment, by the use of a structured approach that incorporates a simple, highly objective surface-tagging method, expert professional feedback to environmental services personnel, and administrative intervention. However, administrative feedback and institutional financial support are necessary to achieve success, and sustainability requires an ongoing programmatic commitment from risk reduction.

Infect Control Hosp Epidemiol 2008; 33:1035–1042

The impact of healthcare-associated infections (HAIs), particularly those caused by multidrug-resistant organisms, is substantial. Although there have been some successes of “one-off” small-scale interventions to eliminate adverse events, including HAIs, in hospitals, the rate of overall improvement has been slow.^{1–3} Hand hygiene and isolation practices are traditionally recognized as critical interventions in limiting the spread of hospital-associated pathogens.⁴ However, although some reports have recently documented sporadically improved rates of compliance with hand hygiene guidelines,⁵ the majority of reporting hand hygiene while providing direct patient care in the environment surrounding the patient (the “patient zone”),⁶ as well as the potential for both gloved and ungloved hands to transmit pathogens between environmental surfaces

and patients, may limit the impact of even optimal hand hygiene practices. In addition, the optimization of infection practices has both programmatic and logistical limitations.^{7,8} Although numerous studies prior to 2005 programatically evaluated concentration of patient care activities with Chlorhexidine-alcohol, multidrug-resistant “superbug” colonization (MRSA), and nosocomial resistant enterococci (NRE), recent reports have more rigorously clarified the magnitude of such contamination^{9–11} with these “superbug” pathogens.¹²

It has now been well documented that pathogens such as methicillin-resistant *S. aureus*,¹³ MRSA,¹⁴ and VRE,¹⁵ are readily transmitted from environmental surfaces to healthcare workers’ hands. Recently, the link between environmental contamination and patient acquisition has been more convincingly

From the Infection Control Section, Carter Center Hospital (P.C.G.), Boston University School of Medicine (P.C.G., J.L.F.), and the Department of Infection Diseases, Boston Medical Center (M.M.P.). Boston, Massachusetts; the Department of Infection Diseases, Stanford Hospital, Stanford University School of Medicine, California College of Physicians and Surgeons, Columbia University, New York, New York (M.E.R.); the Department of Infection Diseases, Boston Medical Center and University of Toronto, Ontario, Toronto (J.L.F.); the Department of Hospital Epidemiology, The Johns Hopkins, Baltimore (M.M.P.); the Department of Hospital Epidemiology, University of Iowa Hospitals and Clinics, Iowa City (B.D.); participating members of the Healthcare Environmental Hygiene Study Group are listed at the end of the text.

Received May 15, 2008; accepted July 23, 2008; electronically published December 15, 2008.

MICROBES UBIQUITOUSLY ATTACH BIOFILMS ARE THE CONSEQUENCE

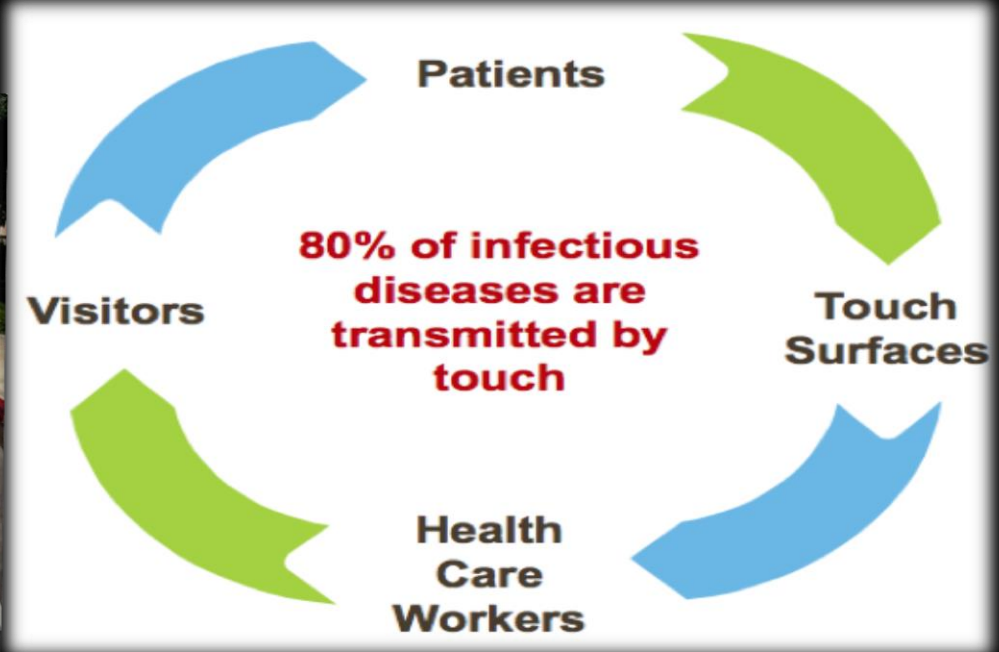


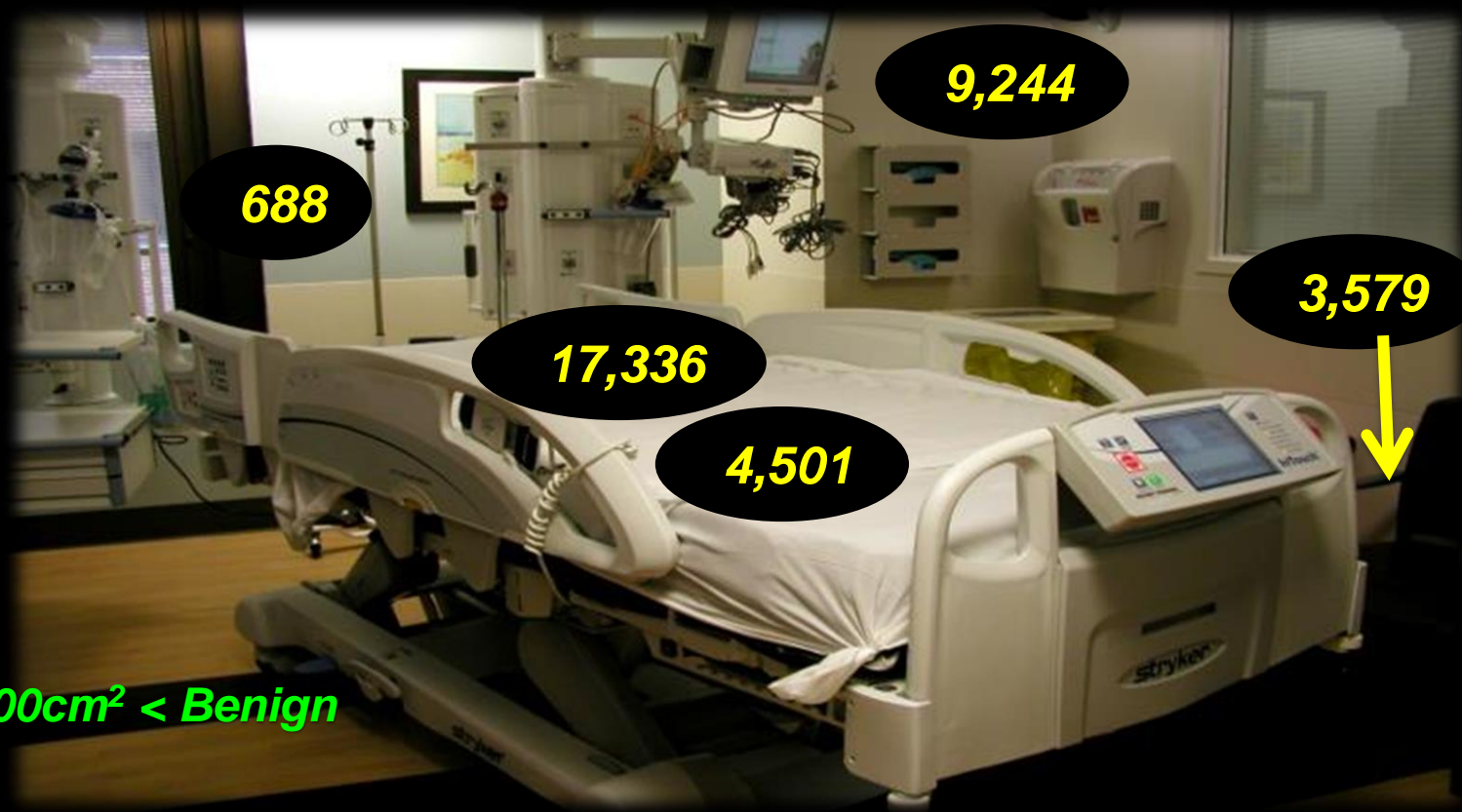
MICROBES UBIQUITOUSLY ATTACH BIOFILMS ARE THE CONSEQUENCE



EVEN THE 'SAFE OBJECTS' ARE NOT IMMUNE !

CONSIDER THE PATH OF MICROBES

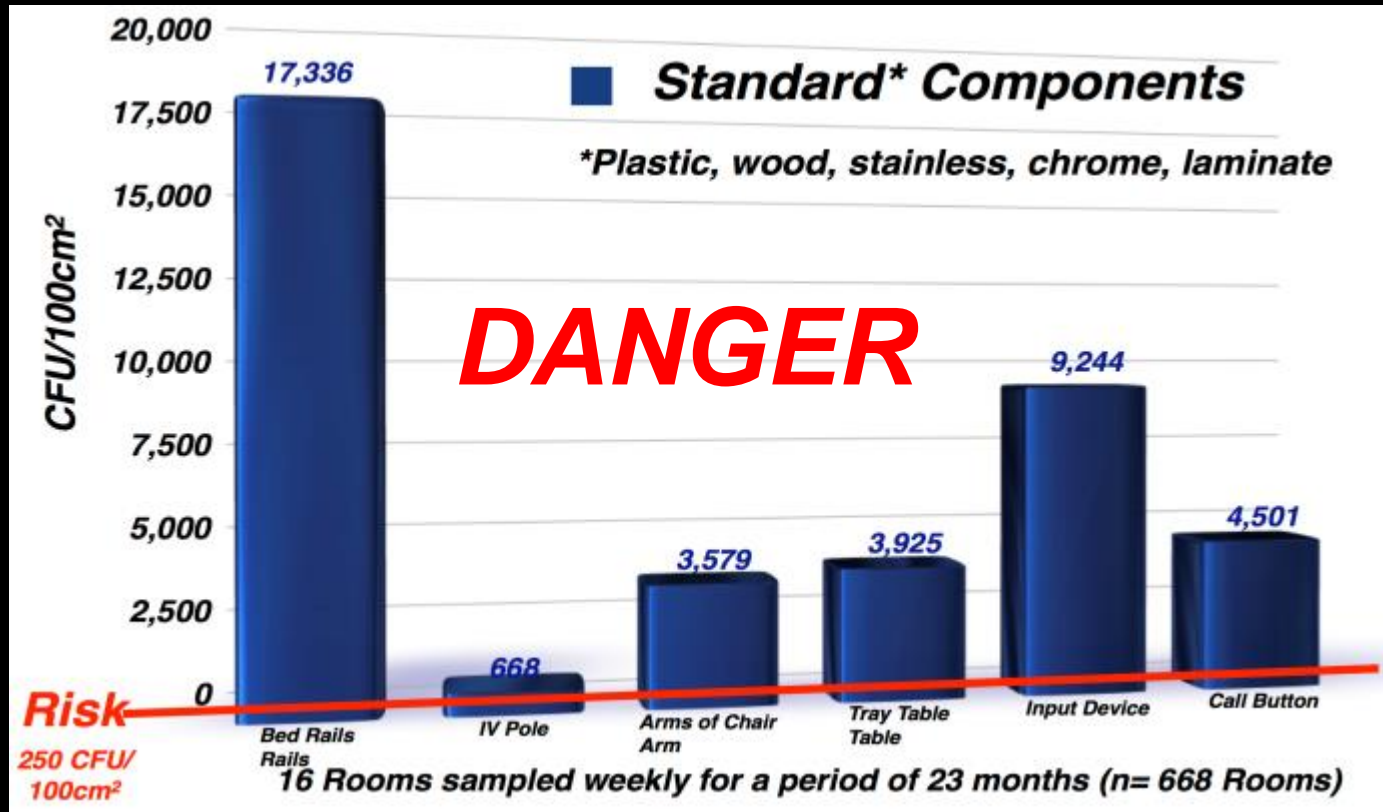




250/100cm² < Benign

When we look, the **risk** is omnipresent!

Risk is omnipresent, despite cleaning



RISK IS CLUSTERED

ARTICLE IN PRESS

American Journal of Infection Control 2016

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Journal homepage: www.ajicjournal.org

Major Article

Copper alloy surfaces sustain terminal cleaning levels in a rural hospital

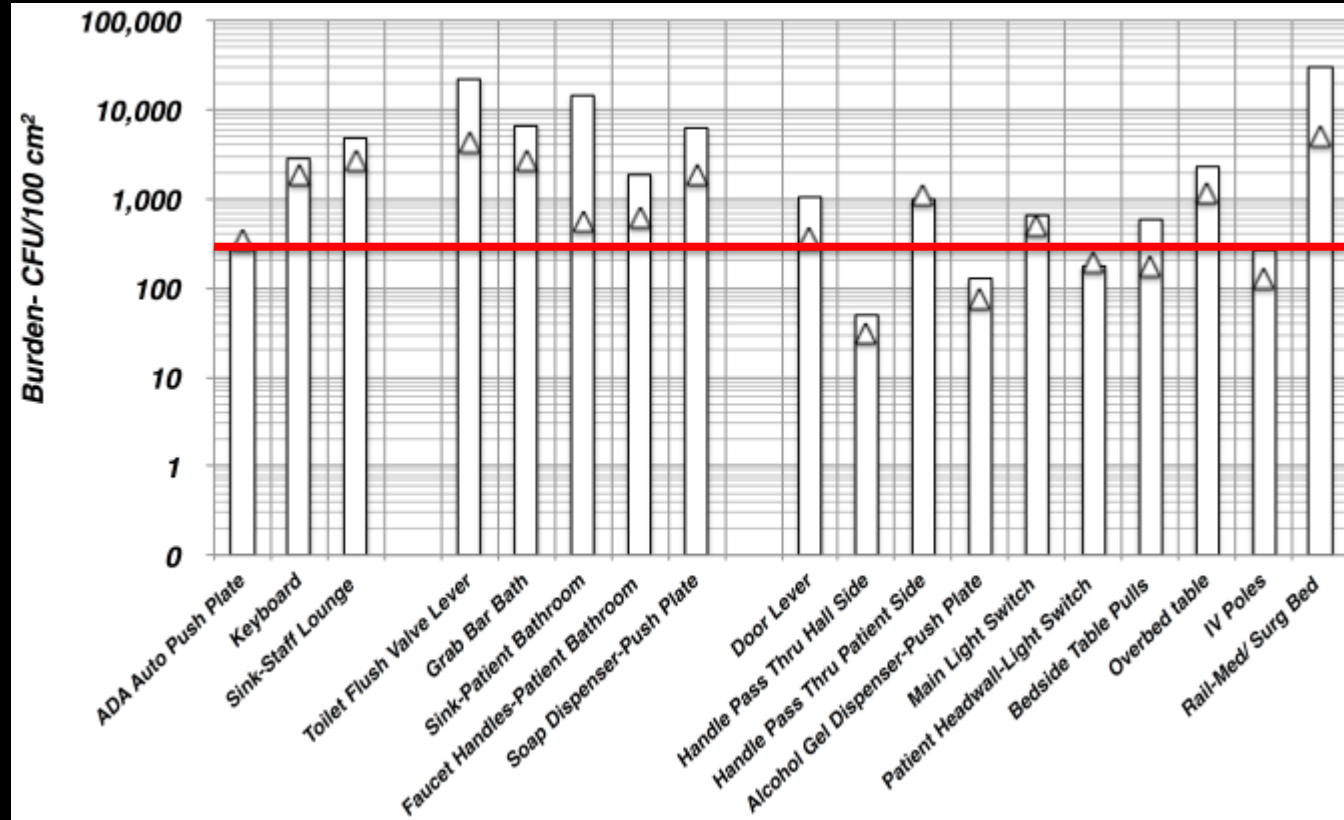
Shannon M. Hesse-Leavure PhD ^{1,2*}, Queenster Nartey BA ¹, Justin Vanerka BA ¹, Michael G. Schmidt PhD ²

¹Department of Biology (Emerald College) Limited, UK
²Department of Microbiology and Immunology, Medical University of South Carolina, Charleston, SC

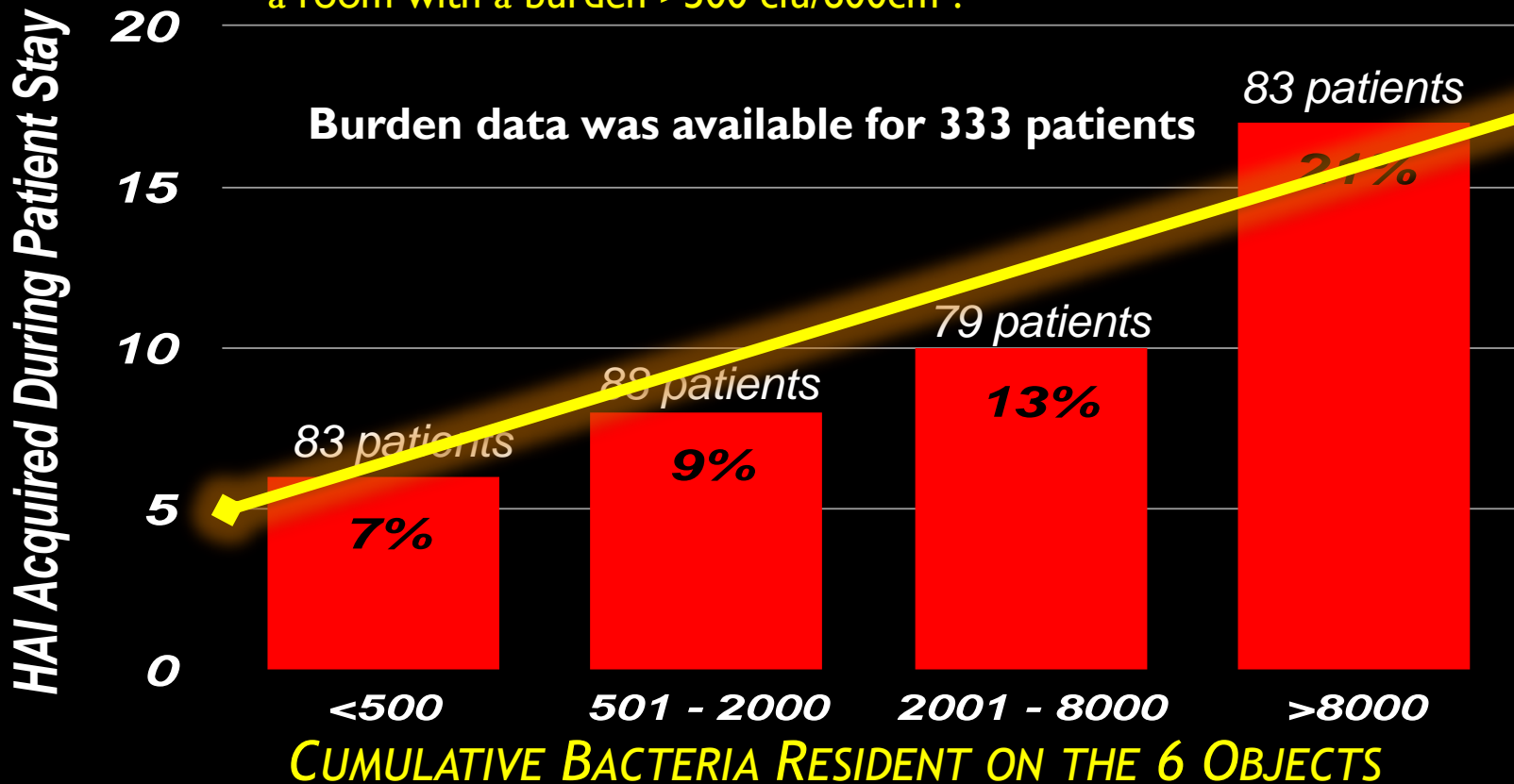
by whom:
 Accepted for publication:
 Health care associated infection
 Infection control
 Microbiology
 Risk assessment

Objective: To assess the ability of copper alloy surfaces to mitigate the bacterial burden associated with commonly touched surfaces in conjunction with daily and terminal cleaning in rural hospital settings.
Design: A prospective intervention to test trial design was used to evaluate the effectiveness of copper alloy surfaces and inspection criteria to augment infection control practices under pragmatic conditions.
Setting: Half of the patient rooms in the medical-surgical suite in a 49-bed rural hospital were refitted with copper alloy materials. The control rooms maintained traditional plastic, metal, and porcelain surfaces.
Methods: The primary outcome was a comparison of the bacterial burden harbored by 20 surfaces and components associated with control and intervention areas for 12 months. Locations were evaluated regardless of the occupancy status of the patient room. Significance was assessed using parametric methods employing the Mann-Whitney U test with significance assessed at P < .05.
Results: Components fabricated using copper alloy were found to have significantly lower concentrations of bacteria at or below levels prescribed upon completion of terminal cleaning. Surfaces were found to harbor significant concentrations of bacteria, whereas those fabricated from copper alloy were found to be at or below their concentrations prescribed subsequent to terminal cleaning.
Conclusions: Copper alloys can significantly decrease the burden harbored on high-touch surfaces and thus remain inclusive in an integrated infection control strategy for rural hospitals.

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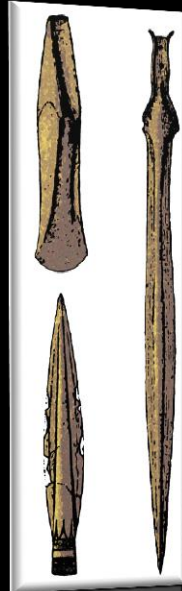
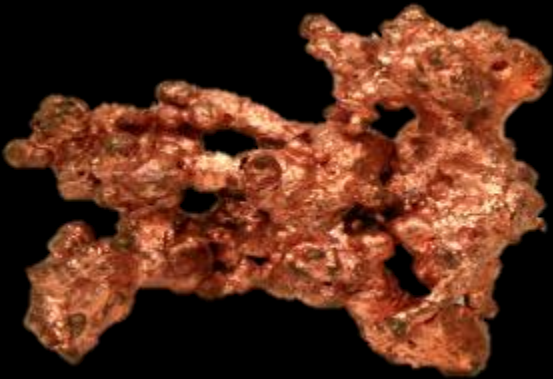


Burden Matters! There was a significant association between burden and HAI risk ($p=0.038$) with 89% of HAI occurring among patients cared for in a room with a burden >500 cfu/600cm².



***AN OPPORTUNITY AFFORDED BY
ANTIMICROBIAL COPPER TO HEALTH
CARE
PART 2***

HUMANS HAVE BENEFITED FROM COPPER SINCE ANCIENT TIMES



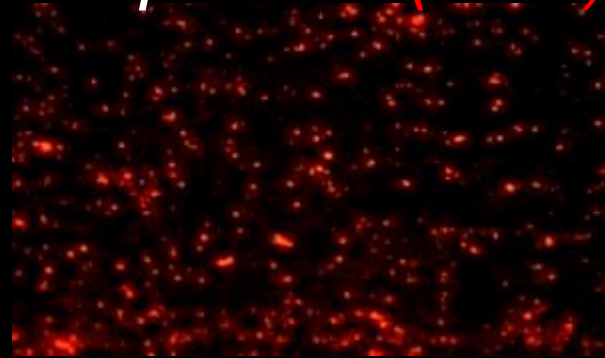
BUT THEN... HUMANS APPRECIATED THAT COPPER HAD REMARKABLE, ANTIMICROBIAL, PROPERTIES



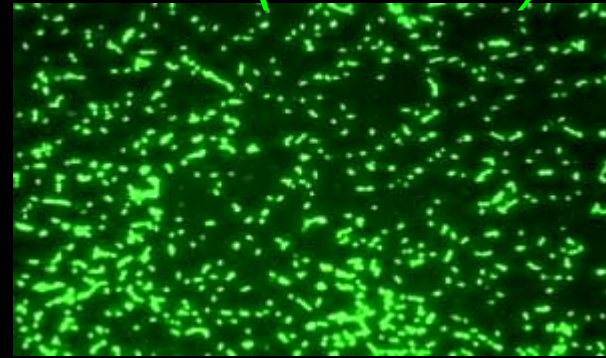
CONTACT WITH COPPER RESULTS IN RAPID DEATH FROM MULTI-COMPONENT MECHANISM

Stainless Steel
4 hours

Respiration (CTC)



DNA (SYTO9)



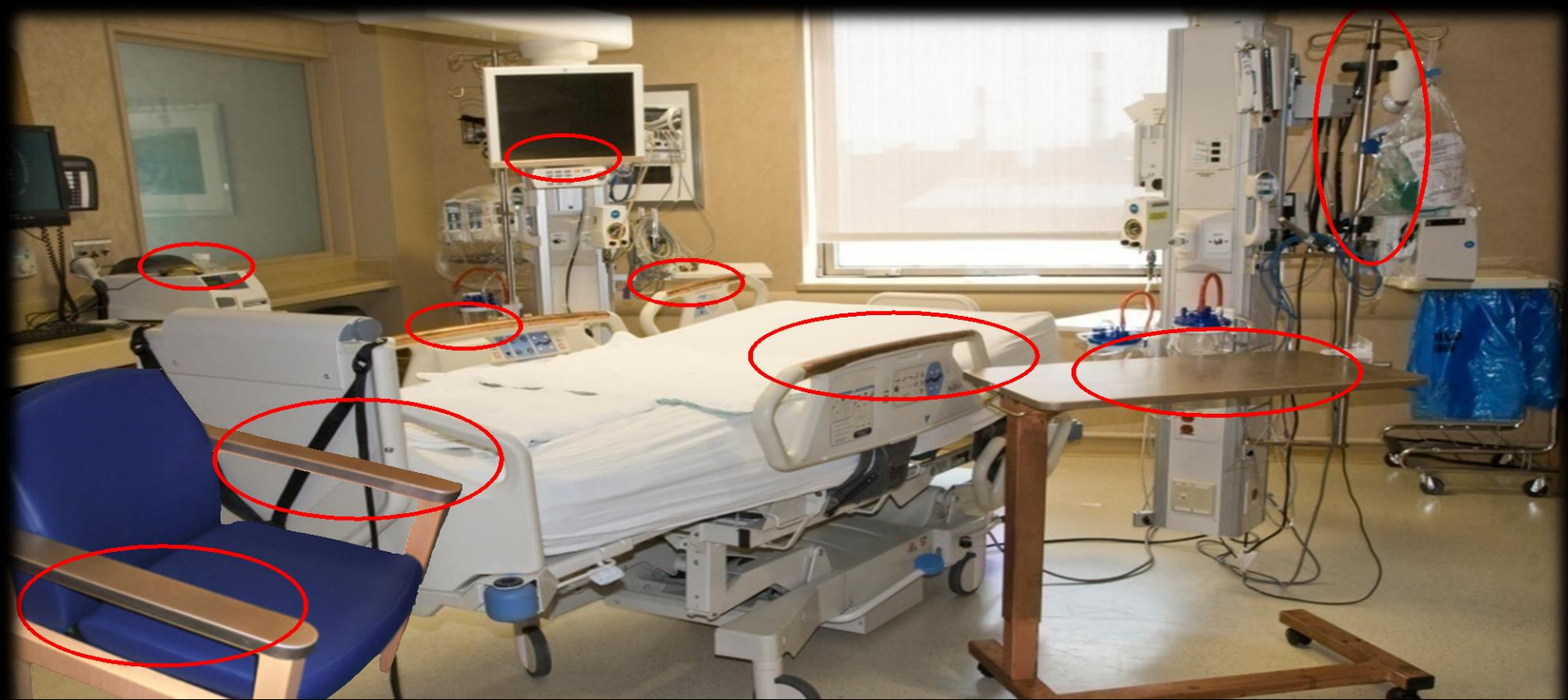
Copper
10 minutes

Collapsed membrane potential



Destruction of nucleic acid as a consequence of free radical production

**CLINICAL OPPORTUNITY COPPER
AFFORDS HEALTHCARE
PART 3**



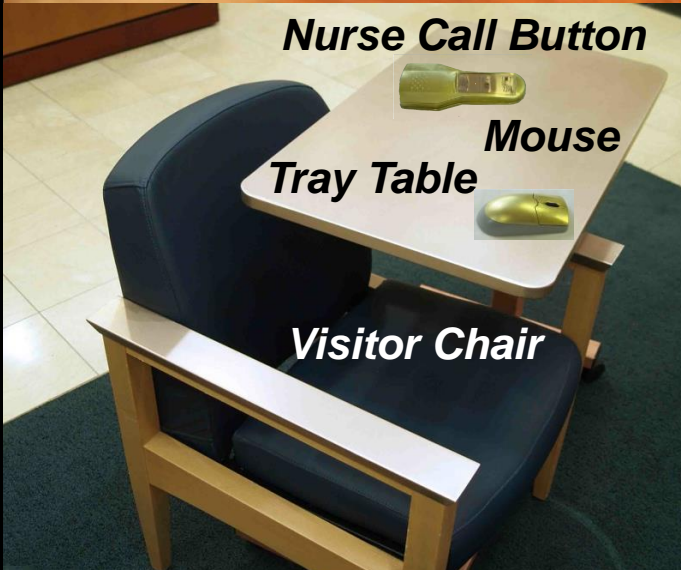
Our opportunity as Reality



Copper Palm Rest



Copper Monitor Bezel



Nurse Call Button

Mouse

Tray Table

Visitor Chair



Copper Bed Rails



Copper IV Pole

Our opportunity as Reality

Commercially Available Healthcare Products from Copper Alloys.



Commercially Available Healthcare Products from Copper Alloys.



DOES IT IMPROVE CLEANLINESS?

Burden Significantly Lower with Copper



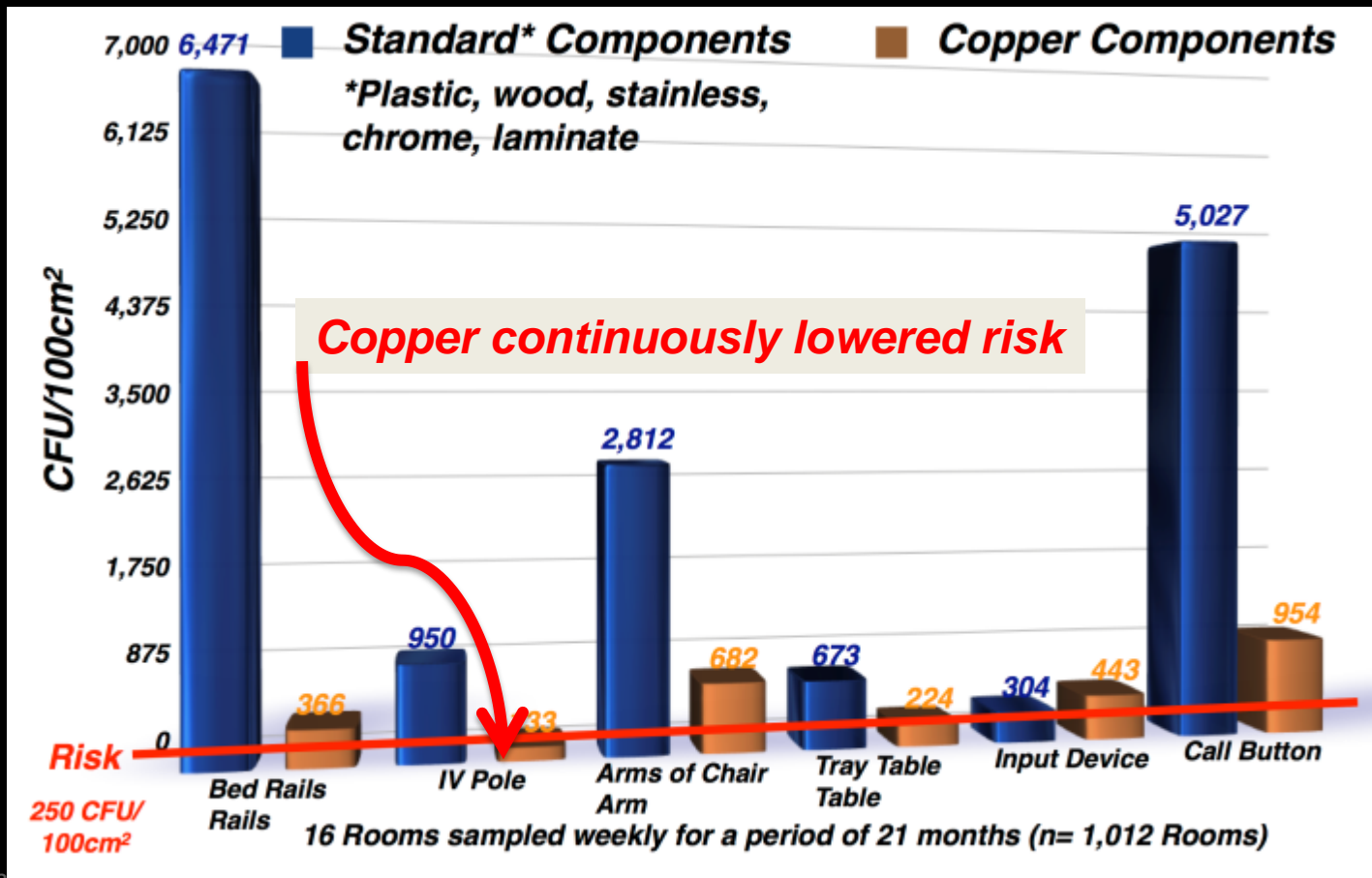
6,474



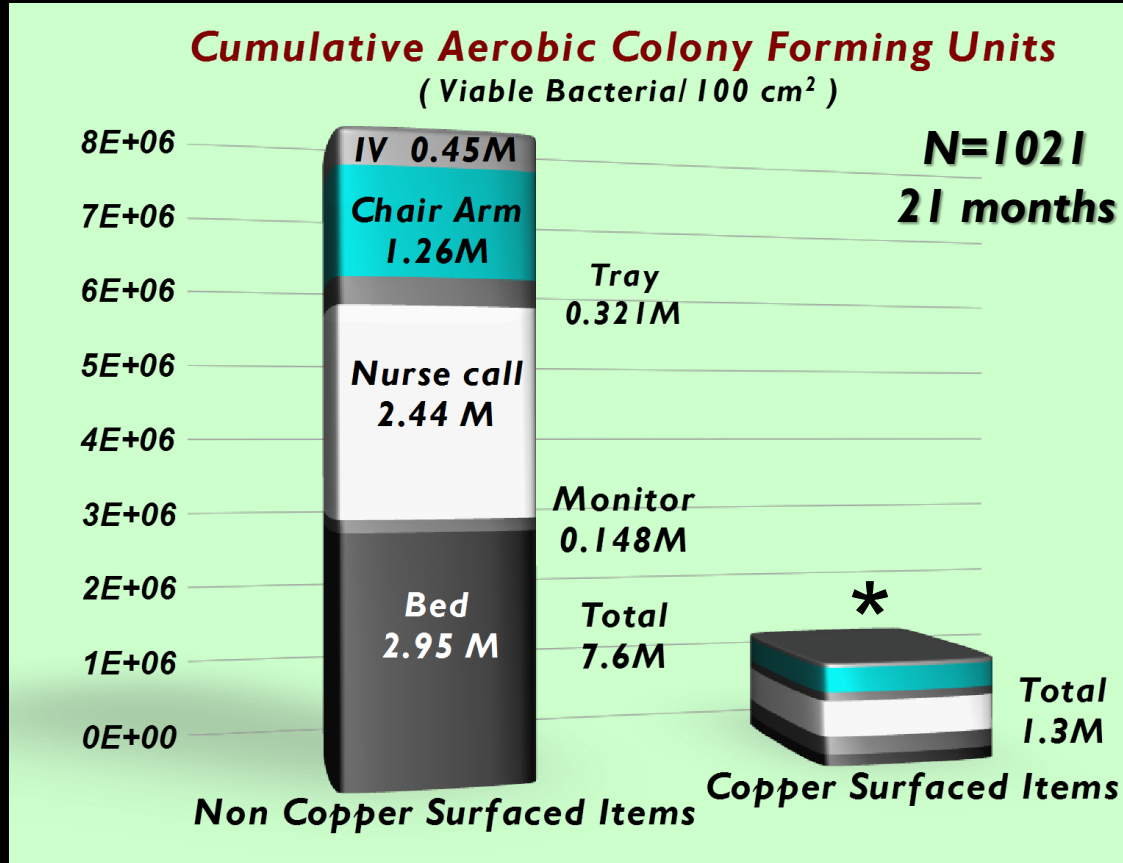
366

16 rooms sampled weekly for a period of 21 months, n=1012

Risk was Significantly Lower with Copper



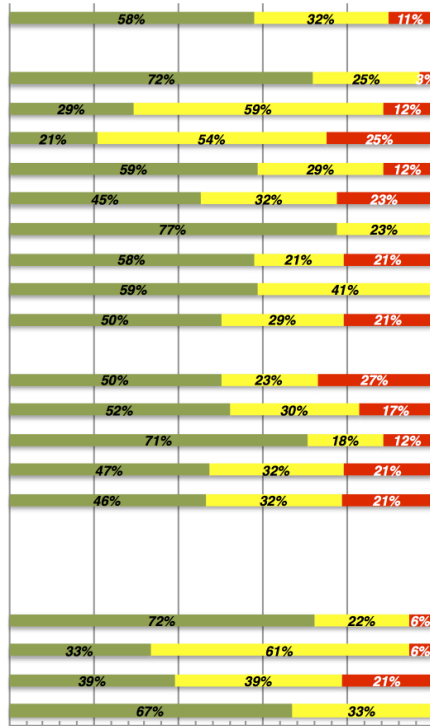
RISK WAS CONSISTENTLY LOWER WITH COPPER



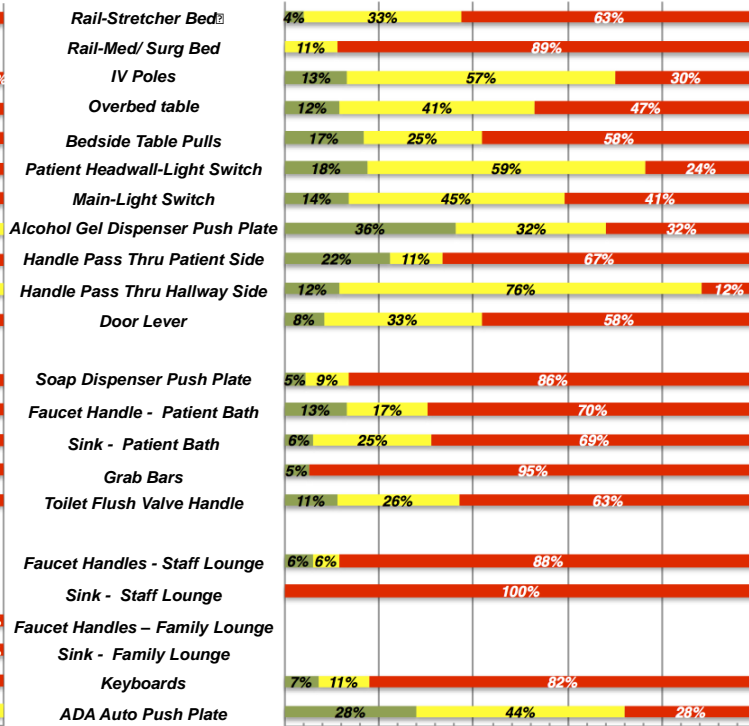
COPPER MINIMIZES RISK

Occupied Areas

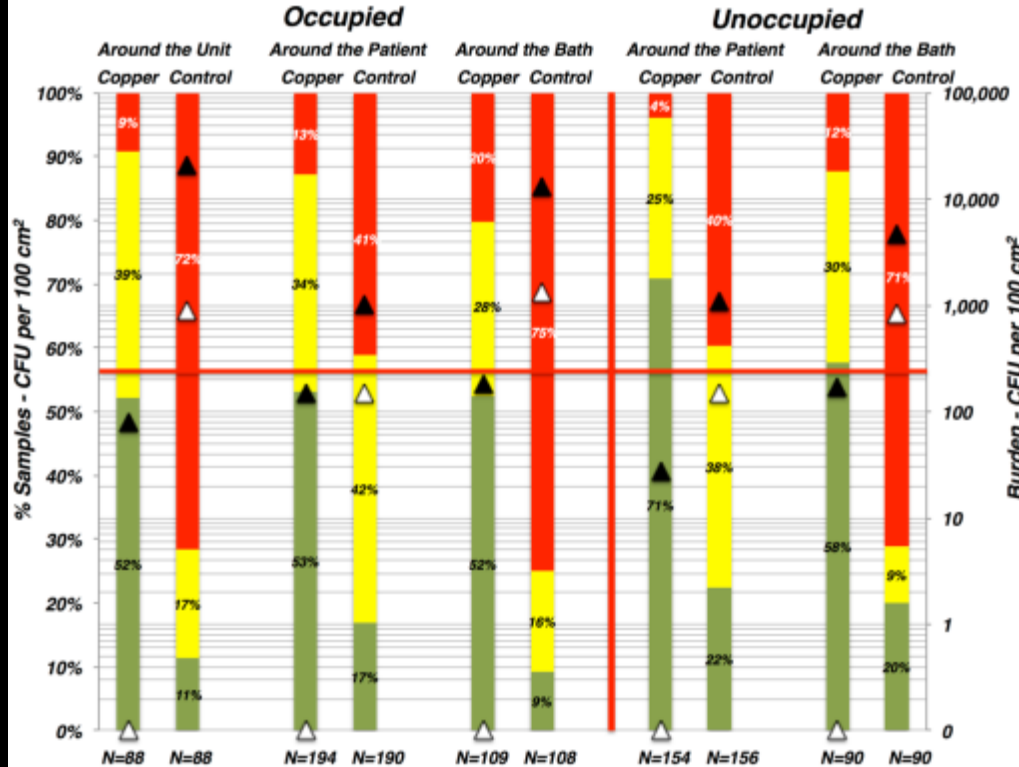
Copper Alloy Surfaces



Control Surfaces



■ Below Threshold
 ■ 1-250
 ■ >250



- **Components fabricated from solid copper alloys are consistently able to limit the concentration of microbes on commonly touched surfaces within occupied and unoccupied patient rooms at levels prescribed subsequent to terminal cleaning (<250 cfu/100cm²)**
- **Unoccupied rooms harbor significant concentrations of microbes subsequent to terminal cleaning**
- **▲ Average Burden Observed △ Median Burden Observed**



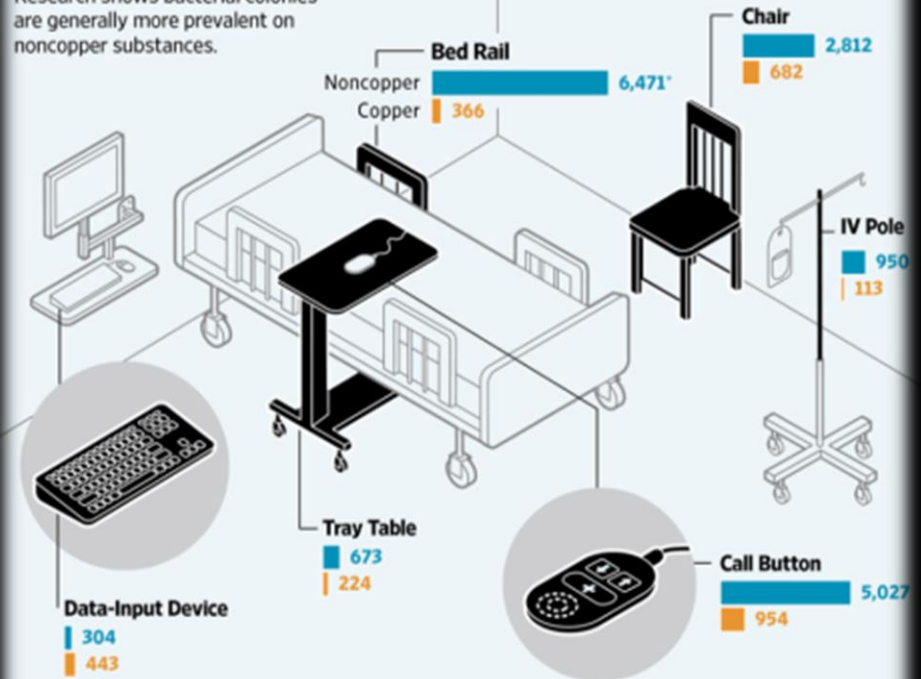
DOES IT IMPROVE CLEANLINESS?

YES, IN A HOSPITAL SETTING

WHAT ABOUT IN
OUTPATIENT SURGERY
CENTERS?

Beating Bacteria

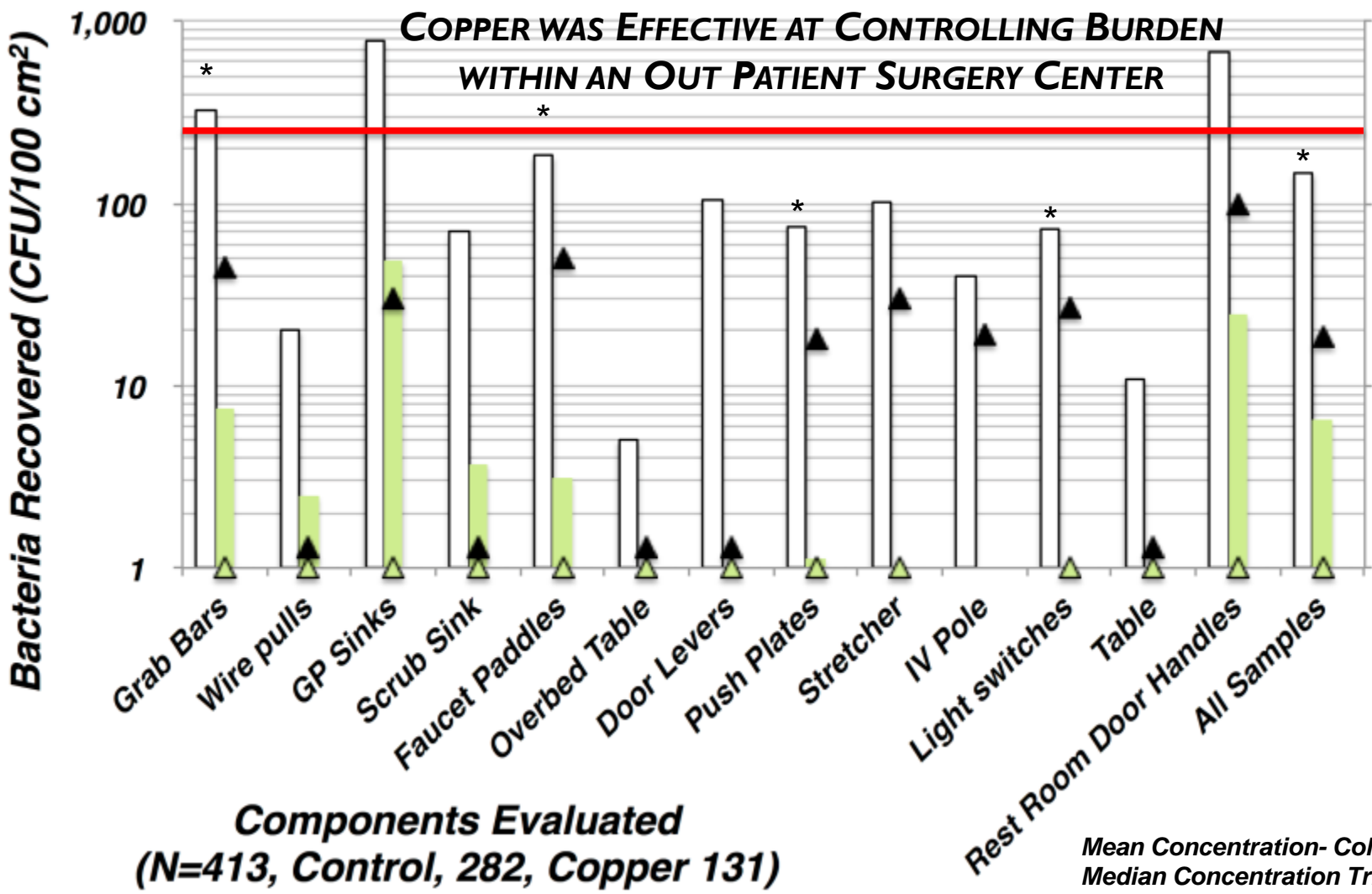
Research shows bacterial colonies are generally more prevalent on noncopper substances.



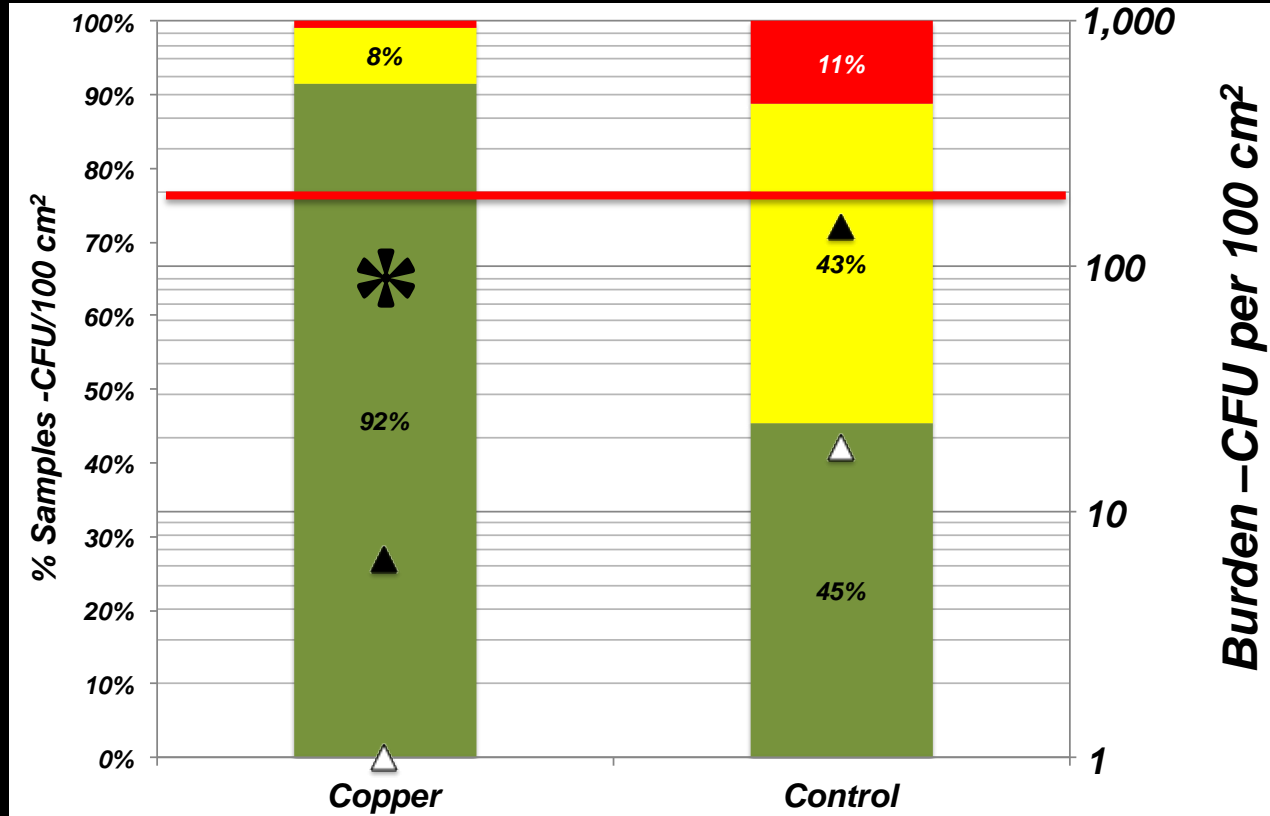
*Bacteria are measured in colony-forming units per 100cm²

Source: Journal of Clinical Microbiology

Jess Karonen/THE WALL STREET JOURNAL



COPPER WAS EFFECTIVE AT CONTROLLING BURDEN WITHIN AN OUT PATIENT SURGERY CENTER



COULD SOMETHING SO SIMPLE LIKE THIS WORK?



ORIGINAL ARTICLE

Copper Surfaces Reduce the Rate of Healthcare-Acquired Infections in the Intensive Care Unit

Cassandra D. Salgado, MD;¹ Kent A. Sepkowitz, MD;² Joseph F. John, MD;³ J Robert Cantey, MD;¹
Hubert H. Attaway, MS;⁴ Katherine D. Freeman, DrPH;⁵ Peter A. Sharpe, MBA;⁶
Harold T. Michels, PhD;⁷ Michael G. Schmidt, PhD⁴

**MEDICAL UNIVERSITY OF SOUTH CAROLINA,
MEMORIAL SLOAN KETTERING CANCER CENTER
RALPH H JOHNSON VA MEDICAL CENTER
COPPER DEVELOPMENT ASSOCIATION**

YES, COPPER SURFACES SIGNIFICANTLY REDUCED HAI



HAI 8.43%

***58.1% Lower →**



HAI 3.4 %

COPPER SURFACES SIGNIFICANTLY REDUCED HAI

***Prevented 16 Infections
Conservative Savings of
\$768K and 301 days of
Hospitalization***

HAI 8.43%

***58.1% Lower →**

HAI 3.4 %

-CONCLUSIONS-

*Copper continuously complements cleaning
controlling the bacterial burden within the built
environment resulting in improved patient
outcomes*

***CONTINUOUS ACTION OF COPPER
PLACEMENT OF COPPER COMPONENTS
FACILITATES THE ACHIEVEMENT OF
TERMINAL CLEANING STANDARDS ON A
CONTINUOUS BASIS***

PART 4: WHAT WILL IT SAVE?

*Cost of
Hospital-
Acquired
Infections*



*Cost of
Intervention with
Antimicrobial
Copper Touch
Surfaces*

AHA Statistics:

Costs of an HAI

- 5,686 Registered Hospitals in U.S.
- 914,513 U.S. Hospital Beds.
- **Average size hospital = 160 Beds**

CDC reports:

- 2,000,000 Healthcare Associated Infections (HAIs) per year.
- 100,000 Deaths per year from HAIs
- *~2 infections/bed ~One person dies per 20 HAIs*

AHRQ Reports HAIs results in:

- Additional patient hospital stay of **19.2 days**
- Increase in-Hospital Mortality by **600%**
- Increase average hospital charges by **\$43,000**

DOD Clinical Trials conclude that copper:

- **Reduces Bacterial Contamination by ~ 90% Reduces HAIs > 50%**



US Army Medical Research and Materiel Command. Telemedicine & Advanced Technology Research Center (TATRC)

IMPACT OF HAI

	<i>Average LOS Length of Stay</i>
Without HAI	5.2 days
With HAI	24.4 days
Infections add:	+19 days

Agency for Healthcare Research and Quality August 2010. *Adult Hospital Stays with Infections due to Medical Care*. HCUP (Healthcare Cost and Utilization Project) statistical brief #94; Martin, J. 2011. *Pennsylvania Health Care Cost Containment Council, February 2011*. (<http://www.phc4.org/reports/hai/09/docs/hai2009report.pdf>)

IMPACT OF HAI

	<i>Average LOS Length of Stay</i>	<i>% In-Hospital Mortality</i>
Without HAI	5.2 days	1.5%
With HAI	24.4 days	9.0%
Infections add:	+19 days	~ 6X risk

Agency for Healthcare Research and Quality August 2010. Adult Hospital Stays with Infections due to Medical Care. HCUP (Healthcare Cost and Utilization Project) statistical brief #94; Martin, J. 2011. Pennsylvania Health Care Cost Containment Council, February 2011. (<http://www.phc4.org/reports/hai/09/docs/hai2009report.pdf>)

IMPACT OF HAI

	<i>Average LOS Length of Stay</i>	<i>% In-Hospital Mortality</i>	<i>Average Charge</i>
Without HAI	5.2 days	1.5%	\$9,377
With HAI	24.4 days	9.0%	\$52,096
Infections add:	+19 days	~ 6X risk	+\$43,000

Agency for Healthcare Research and Quality August 2010. *Adult Hospital Stays with Infections due to Medical Care*. HCUP (Healthcare Cost and Utilization Project) statistical brief #94; Martin, J. 2011. *Pennsylvania Health Care Cost Containment Council, February 2011*. (<http://www.phc4.org/reports/hai/09/docs/hai2009report.pdf>)

IMPACT OF HAI

	<i>Average LOS Length of Stay</i>	<i>% In-Hospital Mortality</i>	<i>Average Charge</i>	<i>Re-admission in 30 days</i>
Without HAI	5.2 days	1.5%	\$9,377	16.3%
With HAI	24.4 days	9.0%	\$52,096	40.7%
Infections add:	+19 days	~ 6X risk	+\$43,000	+2.5x risk

Agency for Healthcare Research and Quality August 2010. Adult Hospital Stays with Infections due to Medical Care. HCUP (Healthcare Cost and Utilization Project) statistical brief #94; Martin, J. 2011. Pennsylvania Health Care Cost Containment Council, February 2011. (<http://www.phc4.org/reports/hai/09/docs/hai2009report.pdf>)

What if...

Model Impact Estimator

[Share](#)

About the Model Impact Estimator

The Model Impact Estimator is a tool designed to help health care innovators make cost calculation estimates based on 2011 Medicare utilization data. By inputting the percent change in utilization in one or more service categories, users can generate impact estimates for their proposed models. We emphasize that the impact estimates are estimates and should not be construed as an actuarial assessment. Since these estimates are based on the assumptions made by the user, the Centers for Medicare & Medicaid Services (CMS) does not endorse, in part or in full, the outputs of this tool.

About the data

The Model Impact Estimator estimates are derived from the aggregated 2011 Medicare costs data located on the [Public Use File webpage](#) on the CMS website. This tool uses the most current 2011 Medicare cost and utilization data that was available at the time of its publication. Although the tool focuses on cost, the source data also has aggregated demographic, spending, utilization, and quality indicators at the hospital referral region (HRR) level. As the underlying data is updated, some discrepancies may occur. For more information about the source data, please visit the [CMS.gov Public Use File webpage](#). Please note that data cells in the tool containing user counts of less than 30 are represented by a hyphen (-).

How to use the tool

1. Select the State and Hospital Referral Region where the model will be implemented.
2. View the estimated total and per beneficiary per month (PBPM) impact for the selected Hospital Referral Region and the national average among 14 major Medicare service categories.
3. In the % change column, input the estimated impact of your model. Use negative values if you expect your model to reduce cost and positive values if you expect your model to increase cost. The table generates estimates based on your assumptions. (The validity of these estimates will vary based on the validity of your underlying assumptions.) Please see the Notes section for additional information.
4. Input the estimated implementation cost of your model, the estimated number of beneficiaries the model will include and the model duration. The tool will generate estimates based on these inputs.

Today...

- Using the CMS model

- An investment of \$6.52/patient* will yield \$13,052 /per patient!

1. Assume it will cost \$3,000 to outfit the room with 10 copper objects
2. Use 23 rooms as the number of rooms for the ICU, \$69,000 capital cost
3. Assume average length of stay of 4 days/or 92 patients per room/per year
 - *\$6.52/patient, assuming 5yr placement
4. Assume a -58% reduction to infections

- Model predicts an ANNUAL SAVINGS of \$6,005,704 per year from 23 rooms from one time investment of \$69K! ~ 87 x ROI/yr

- ◆ Replacement Rails
 - ✓ IV Pole/Infusion Stand
 - ✓ Overbed table
 - ✓ Keyboard
 - ✓ Computer mouse
 - ✓ Sink
 - ✓ Faucet
 - ✓ Door lever
 - ✓ Light Switches
 - ✓ Cabinet pulls

Today...

- Using the CMS model

- An investment of \$6.52/patient* will yield \$13,052 /per patient!

1. Assume it will cost \$3,000 to outfit the room with 10 copper objects
2. Use 23 rooms as the number of rooms in the ICU, \$69,000
3. Assume a 92%

IS PREVENTING AN INFECTION WORTH AN INVESTMENT OF \$6.52 TO SAVE \$43K?

ANNUAL SAVINGS of \$13,052/year from 23 rooms
Total investment of \$69K! ~ \$3K/yr

- ✓ Computer mouse
- ✓ Sink
- ✓ Faucet
- ✓ Door lever
- ✓ Light Switches
- ✓ Cabinet pulls

Infection – Cost Model - Savings

	Average Size Hospital
Number of beds	160
Number of HAI per bed	2
Number of HAI each year	320
Cost of HAIs each year	\$15 million*
Annual Savings*	@ \$43,000/HAI
With Copper Surfaces in Room:	Average Size Hospital
# HAIs saved	185
\$ saved	\$7.9 million

	If @\$29,000/HAI*
	Average Size Hospital
	185
	\$5.4 million

Potential Savings from Copper Surfaces

Hospital Savings of \$5.4 - \$7.9 MM per year

– Savings are Above and Beyond* Current Proactive Measures!

- ✓ Single Patient Rooms
- ✓ Prominently located sinks and alcohol hand hygiene dispensers
- ✓ Hand washing compliance programs
- ✓ Regular cleaning of surfaces
- ✓ Bundles for controlling infections (e.g., CLABSI, CAUTI)

*Each of these measures were instituted prior to DOD trial

-CONCLUSIONS-

*Copper continuously complements cleaning
controlling the bacterial burden within the built
environment resulting in improved patient
outcomes*

Cleaner environment

>90% Reduction

Lower RISK of infection



Fewer infections > 50 % Reduction

Better outcomes & lower costs

SUMMARY

1. *BUILT ENVIRONMENT REPRESENTS A CLEAR AND PRESENT DANGER TO PATIENT CARE*
2. *COPPER ALLOYS WERE FOUND TO SUSTAIN THE LEVELS ACHIEVED FROM TERMINAL CLEANING*
3. *COPPER ALLOYS CONTINUOUSLY SUSTAIN THE TERMINAL CLEANING STANDARD WITHIN VACANT ROOMS*

CONCLUSION

***PLACEMENT OF COPPER COMPONENTS
FACILITATES THE ACHIEVEMENT OF
TERMINAL CLEANING STANDARDS ON A
CONTINUOUS BASIS***

BLUF

***PLACEMENT OF COPPER COMPONENTS
FACILITATES THE ACHIEVEMENT OF
TERMINAL CLEANING STANDARDS ON A
CONTINUOUS BASIS***

ONE OUT OF MANY



HEALTHCARE ASSOCIATED INFECTIONS

Thank you !

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- Dr. J. Robert Cantey
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TWIM

THIS WEEK IN MICROBIOLOGY



with Vincent
Racaniello
& friends