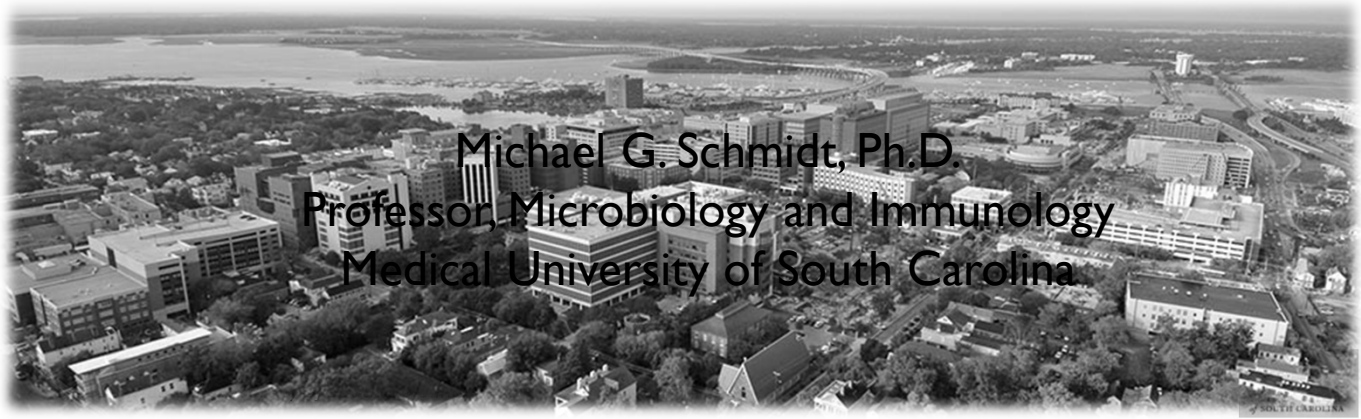


You are connected to the WCLN Webinar “*Benefits of Microbial Burden Management*”

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.

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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***

Michael G. Schmidt, Ph.D.

Professor of Microbiology and Immunology, Medical University of South Carolina

The views, opinions and/or findings presented here are those of the author and should not be construed as an official position of the Center for Health Design or the Medical University of South Carolina

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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

Michael G. Schmidt, Ph.D.

Professor of Microbiology and Immunology, Medical University of South Carolina

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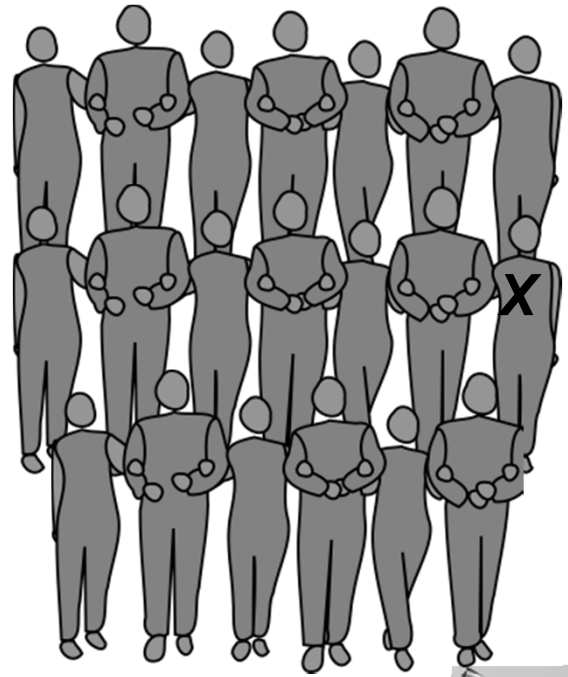


***If one full wide bodied jet was lost each day
would anyone fly?***



6

*In the United States
1 : 25 Contract an
infection*



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7



HAI



*HIV
AIDS*



*Breast
Cancer*



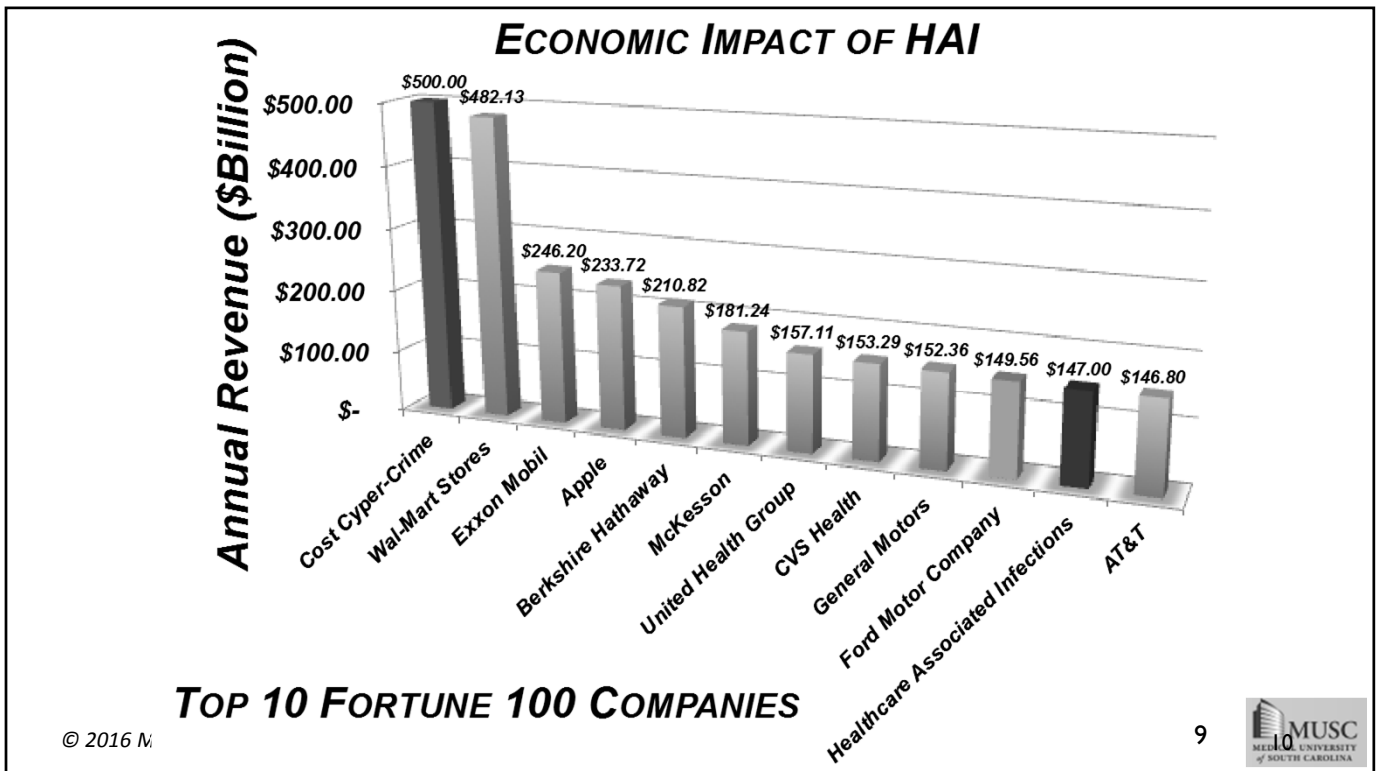
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Accounts for an additional ~\$147 Billion in health care costs in the United States



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



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Daily Cleaning



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Terminal Cleaning



Frequency, on average once every 5th day



COPPER SURFACES CAN CONTINUOUSLY ENHANCE PATIENT SAFETY

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 and Zoonotic Infection Control, 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
4Department of Health, Nashville, Tennessee

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 day objective monitoring programs may need to be developed, hospital Level I program, the elements of which are outlined below. Some hospitals implementing the advanced or Level II program from the start. Rates of infection caused by healthcare acquired pathogens (e.g., MRSA) are lower in hospitals that have successfully achieved a Level I program. At present, the objective monitoring of the cleaning process of curtains (that separates patient beds) beyond those outlined in the current standard is not required. Additionally, there is no standard method for measuring the achievement of certain cleaning parameters (e.g., adequate concentration of disinfectant). As our understanding of these issues evolves, more objective monitoring programs can be developed and practically implemented. As our understanding of these issues evolves, more objective monitoring programs can be developed and practically implemented. As our understanding of these issues evolves, more objective monitoring programs can be developed and practically implemented. As our understanding of these issues evolves, more objective monitoring programs can be developed and practically implemented.

...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.

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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)	Phase I		All hospitals postintervention (final results)	
	Mean % of HROs cleaned (range)	95% CI	Mean % of HROs cleaned (range)	95% CI
Sink	79 (38-97)	72.4-84.0	80.1-90.7	73.9-88.6
Tray table	74 (35-100)	66.0-80.0	73.9-88.6	68.5-83.7
Toilet seat	71 (3-100)	66.0-80.0	73.9-88.6	68.5-83.7
Flush handle	55 (0-100)	42.4-62.8	78 (33-100)	70.5-85.0
Side rail	55 (0-100)	42.4-62.8	78 (33-100)	70.5-85.0
Bedside table	55 (0-100)	42.4-62.8	78 (33-100)	70.5-85.0
Call light	55 (0-100)	42.4-62.8	78 (33-100)	70.5-85.0
Chair	55 (0-100)	42.4-62.8	78 (33-100)	70.5-85.0
Telephone	55 (0-100)	42.4-62.8	78 (33-100)	70.5-85.0
Bathroom	29 (0-82)	22.1-36.2	71 (19-95)	64.1-78.1
Bathroom towel	28 (0-90)	20.9-35.8	74 (15-100)	66.1-81.6
Bathroom light switch	25 (0-84)	17.1-33.1	64 (8-100)	55.9-72.9
Room door knobs	22 (0-73)	15.9-28.4	66 (25-100)	59.7-73.2
Bedpan cleaner	22 (0-79)	15.9-28.3	62 (0-100)	51.7-71.4

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

48% of surfaces are not clean after terminal cleaning.

http://journals.cambridge.org/abstract_S0195941700027077
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INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

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

Phyllis C. Gething, MS; Michael M. Papan, MS; Mark E. Rupp, MS; John L. Fox, MS; PhD; Brian Todd, MS, CGC; Barbara Van Buren, BS, RN, MS, CGC for the Healthcare Environment Hygiene Study Group

OBJECTIVE. The prevalence of surface infections caused by multidrug-resistant pathogens transmitted in the hospital setting has increased. Cleaning and disinfection interventions to reduce the number of microbes that settle on high-touch environmental surfaces surrounding patients are essential to minimizing the impact of these pathogens. We implemented a multifaceted program to both evaluate and improve cleaning practices.

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

SETTING. Thirty-six acute care hospitals in the United States ranging in size from 20 to 750 beds.

MEASUREMENTS AND MAIN RESULTS. We used fluorescent dye-based methods to objectively measure the bioburden of 14 types of high-risk objects (HROs) and other environmental surfaces (EHSs) before and after intervention. The mean percentage of HROs cleaned increased from 55% to 73% (95% CI, 68.5-83.7) after intervention. The mean percentage of EHSs cleaned increased from 42% to 70% (95% CI, 64.1-78.1) after intervention. The mean percentage of HROs cleaned increased from 55% to 73% (95% CI, 68.5-83.7) after intervention. The mean percentage of EHSs cleaned increased from 42% to 70% (95% CI, 64.1-78.1) after intervention. The mean percentage of HROs cleaned increased from 55% to 73% (95% CI, 68.5-83.7) after intervention. The mean percentage of EHSs cleaned increased from 42% to 70% (95% CI, 64.1-78.1) after intervention.

CONCLUSIONS. Improving cleaning of the environment surrounding patients in 36 acute care hospitals resulted in a significant increase in the percentage of HROs and EHSs cleaned. These findings suggest that cleaning interventions can reduce the number of microbes that settle on high-touch environmental surfaces surrounding patients.



MICROBES UBIQUITOUSLY ATTACH BIOFILMS ARE THE CONSEQUENCE



MICROBES UBIQUITOUSLY ATTACH BIOFILMS ARE THE CONSEQUENCE



EVEN THE 'SAFE OBJECTS' ARE NOT IMMUNE!

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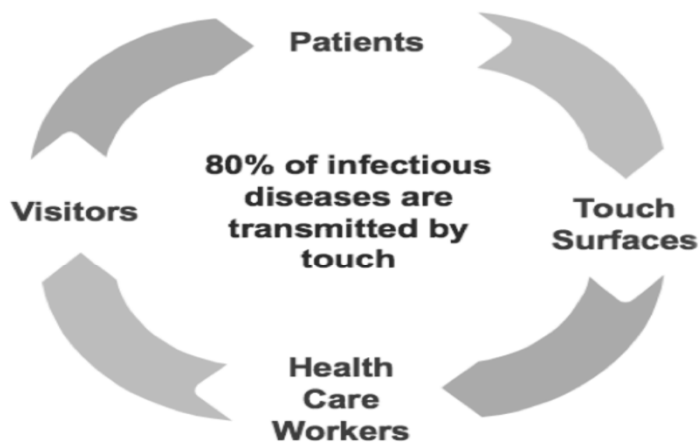
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CONSIDER THE PATH OF MICROBES

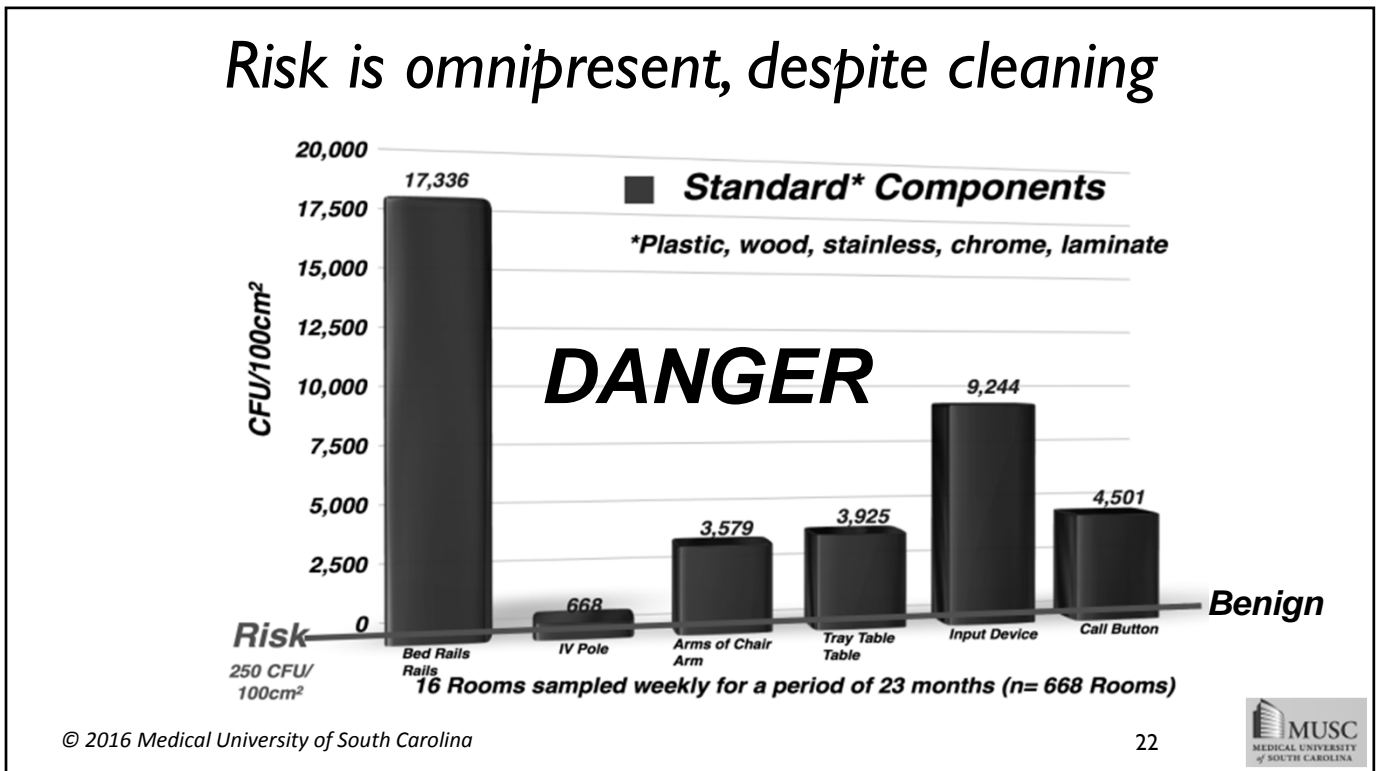
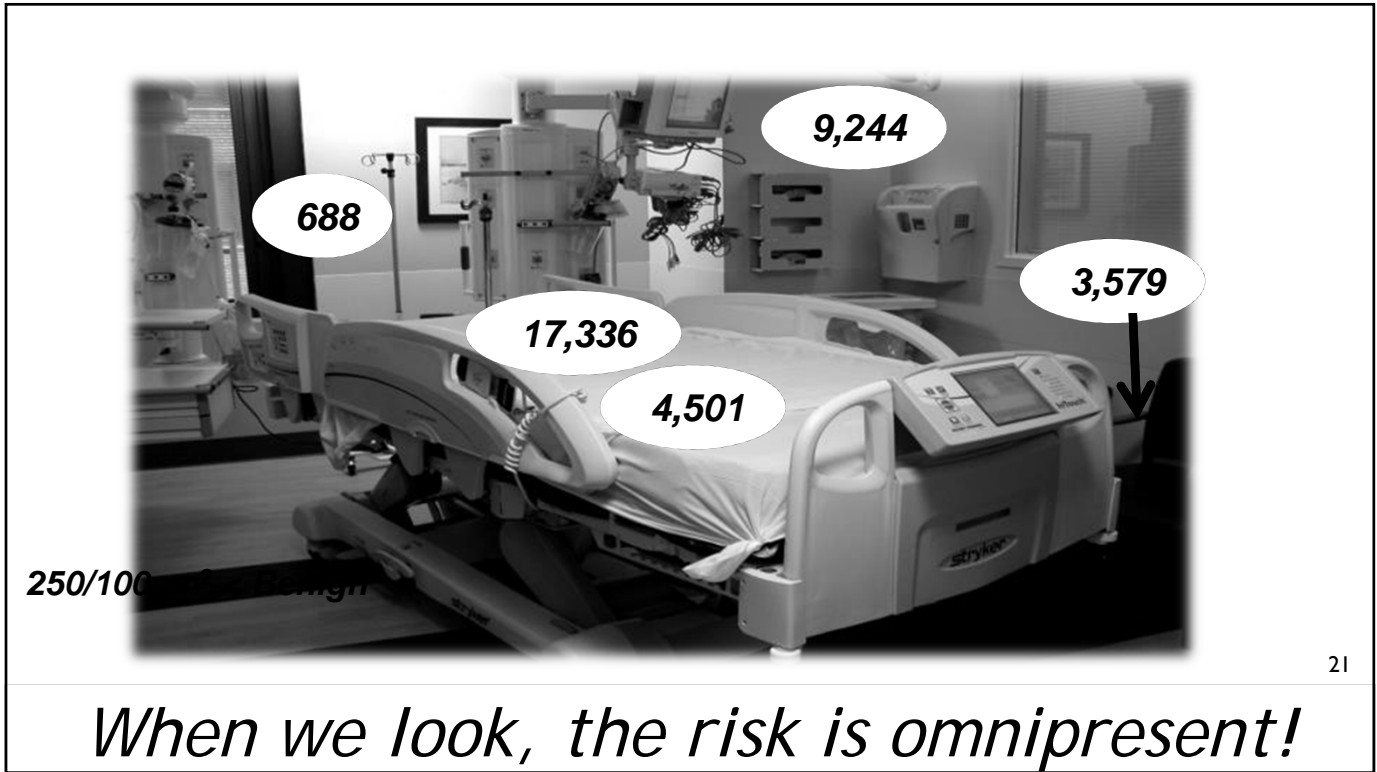


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RISK IS CLUSTERED

ARTICLE IN PRESS

Volume 39 | Number 11 | November 2016

Contents lists available at ScienceDirect

American Journal of Infection Control

Journal homepage: www.ajicjournal.org

Major Article

Copper alloy surfaces sustain terminal cleaning levels in a rural hospital

Sharon M. Hines-Lanoue PhD^{1,2*}, Queenier Nantey BA¹, Justin Yaverka BA¹, Michael C. Schmidt PhD²

¹Department of Biology, Clemson University, Clemson, SC

²Department of Biomedical Engineering, Medical College of South Carolina, Charleston, SC

Objective: To assess the ability of copper alloy surfaces to reduce the bacterial burden associated with commonly touched surfaces in conjunction with daily and terminal cleaning in rural hospital settings.

Design: A prospective observational study was conducted to evaluate the effectiveness of copper alloy surfaces and compare results to standard infection control practices under realistic conditions.

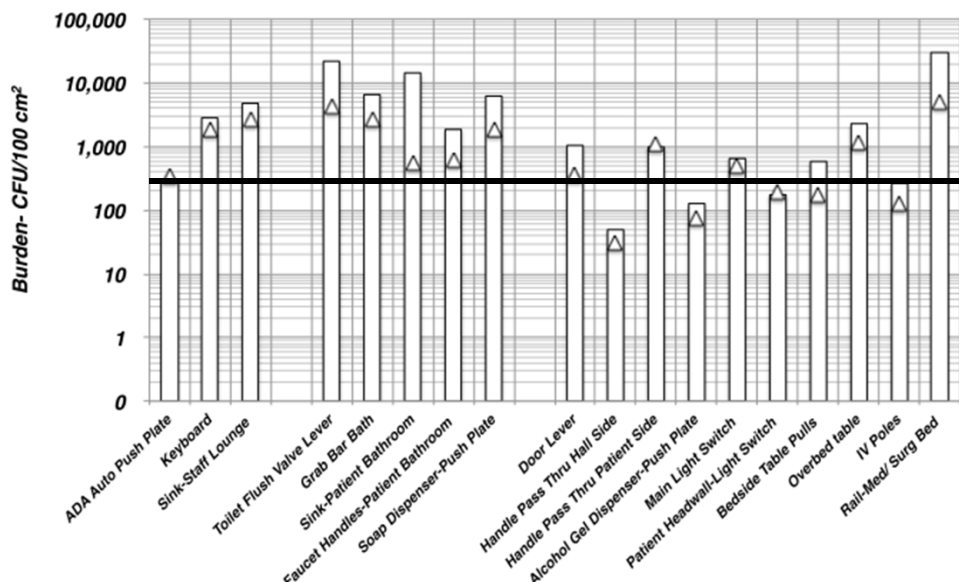
Setting: Half of the patient rooms in the medical surgical unit in a 40-bed rural hospital were outfitted with copper alloy surfaces. The control rooms maintained traditional plastic, metal, and wooden surfaces.

Results: The primary outcome was a comparison of the bacterial burden before and after cleaning of copper alloy surfaces and comparison associated with control and intervention areas for 12 months. Surfaces were analyzed in terms of the frequency of use of the patient room. Significance was assessed using independent t-tests, employing the Mann-Whitney U test with significance assessed at $P < .05$.

Conclusion: Copper alloy surfaces sustained higher terminal cleaning levels than control surfaces. Surfaces with copper alloy were found to have significantly lower concentrations of bacteria, whereas floor surfaces and other copper alloy were found to have higher concentrations compared to control surfaces.

Conclusion: Copper alloy can significantly decrease the bacterial burden on high touch surfaces, and this may be included in an integrated infection control strategy for rural hospitals.

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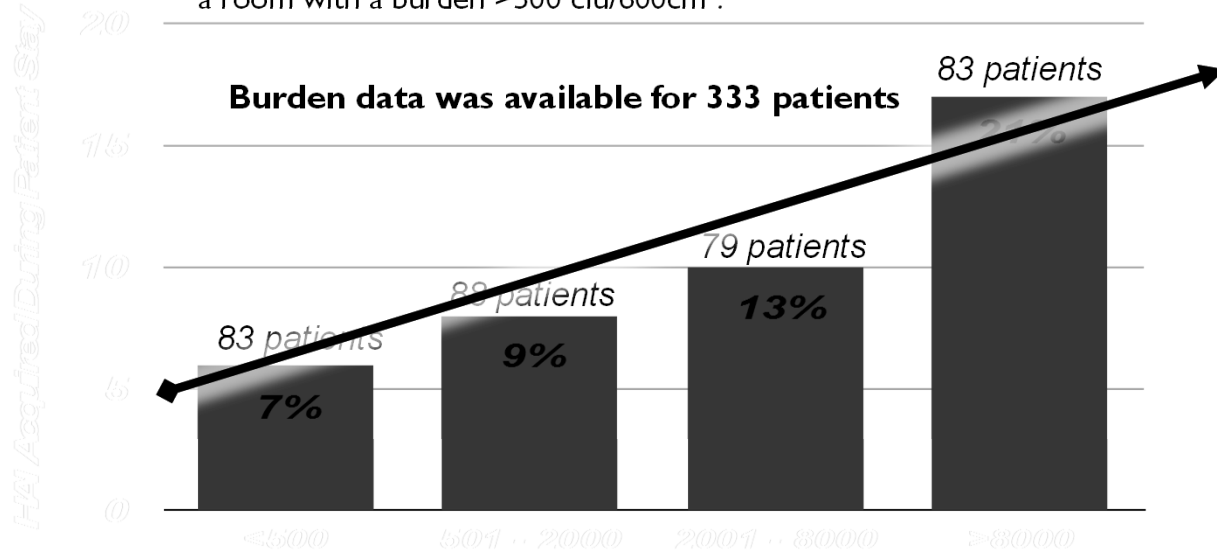


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Burden Matters! There was a significant association between burden and HAI risk ($p=0.038$) with 89% of HAI occurring among patients cared for in a room with a burden >500 cfu/600cm².



CUMULATIVE BACTERIA RESIDENT ON THE 6 OBJECTS
Microbial Burden Present in ICU (CFU per 100 cm²)

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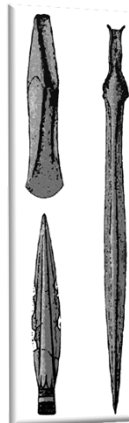
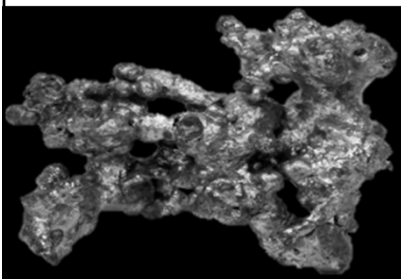
AN OPPORTUNITY AFFORDED BY ANTIMICROBIAL COPPER TO HEALTH CARE PART 2

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HUMANS HAVE BENEFITED FROM COPPER SINCE ANCIENT TIMES



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



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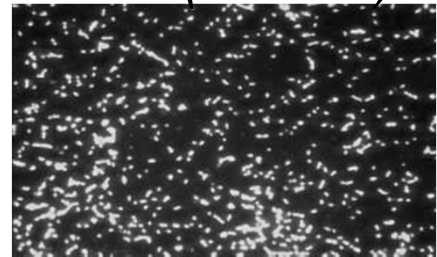
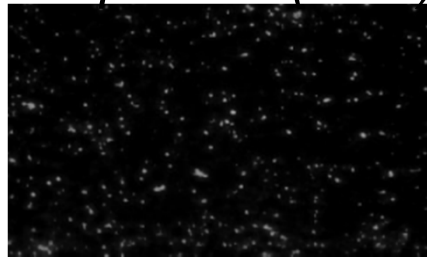


**CONTACT WITH COPPER RESULTS IN RAPID DEATH
FROM MULTI-COMPONENT MECHANISM**

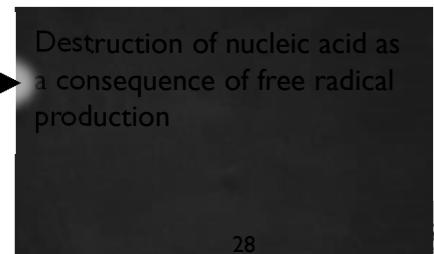
Respiration (CTC)

DNA (SYTO9)

*Stainless Steel
4 hours*



*Copper
10 minutes*



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CLINICAL OPPORTUNITY COPPER AFFORDS HEALTHCARE PART 3

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Our opportunity as Reality

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Copper Palm Rest

Copper Monitor Bezel

Nurse Call Button

Mouse Tray Table

Visitor Chair

Copper Bed Rails

Copper IV Pole

Our opportunity as Reality

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Commercially Available Healthcare Products from Copper Alloys.

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Commercially Available Healthcare Products from Copper Alloys.



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DOES IT IMPROVE CLEANLINESS?

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Burden Significantly Lower with Copper

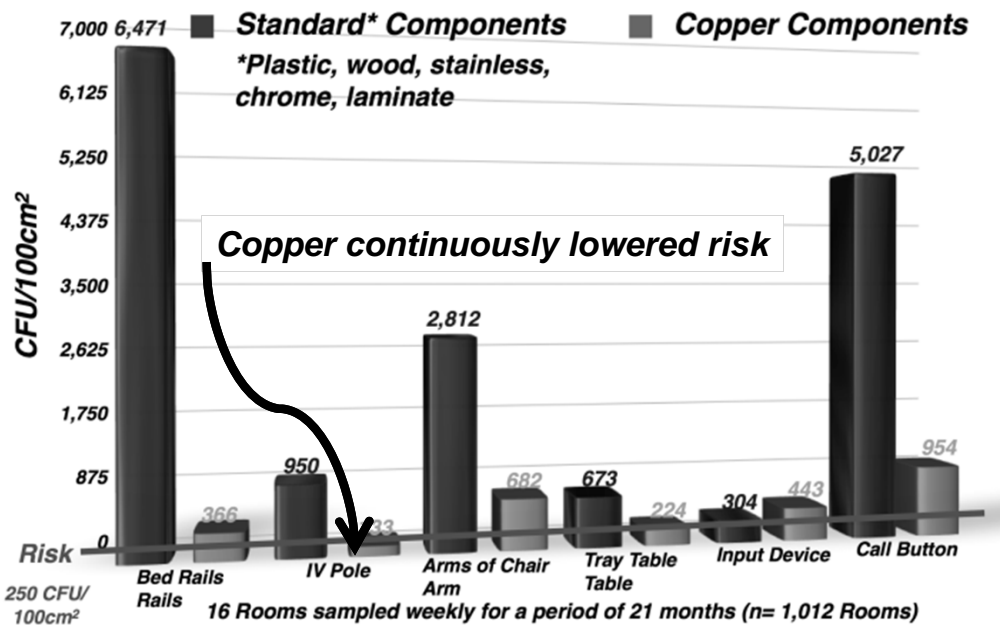


16 rooms sampled weekly for a period of 21 months, n=1012

35



Risk was Significantly Lower with Copper

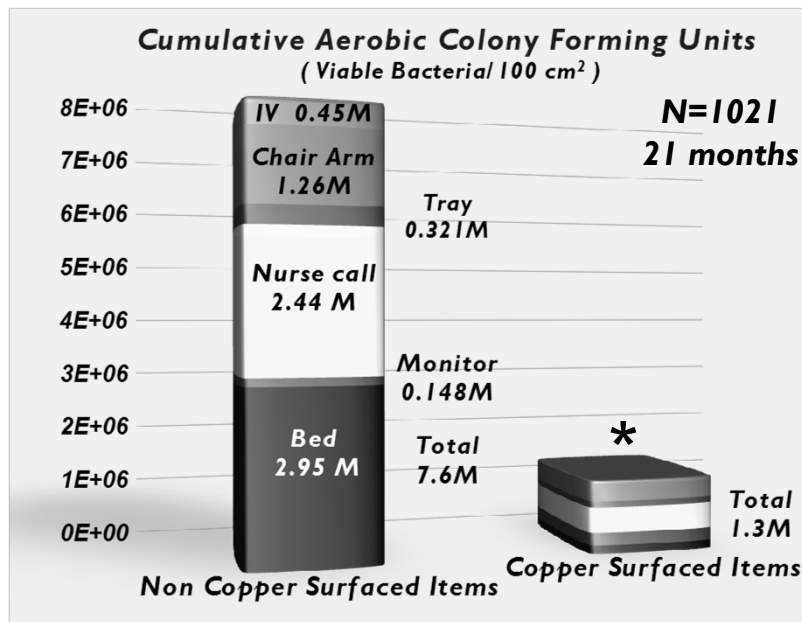


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RISK WAS CONSISTENTLY LOWER WITH COPPER

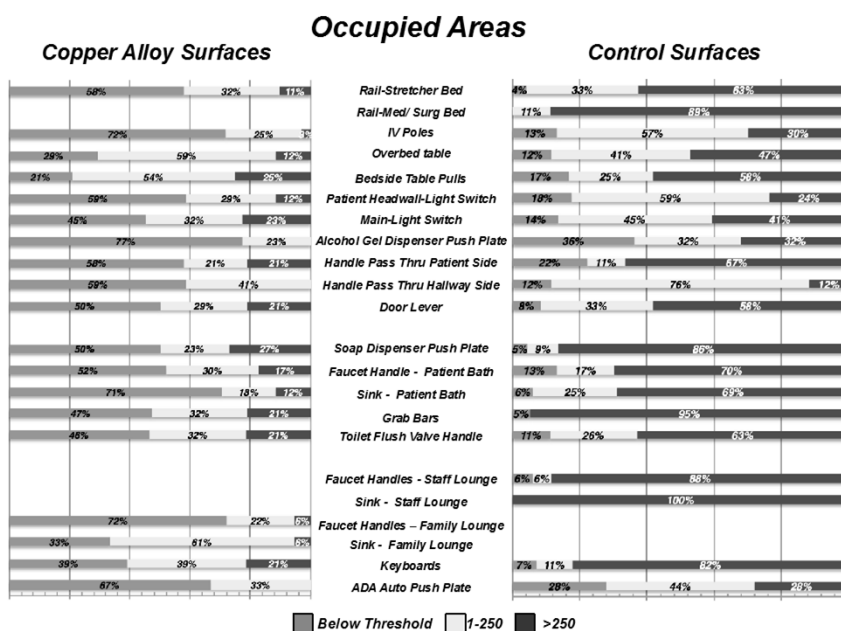


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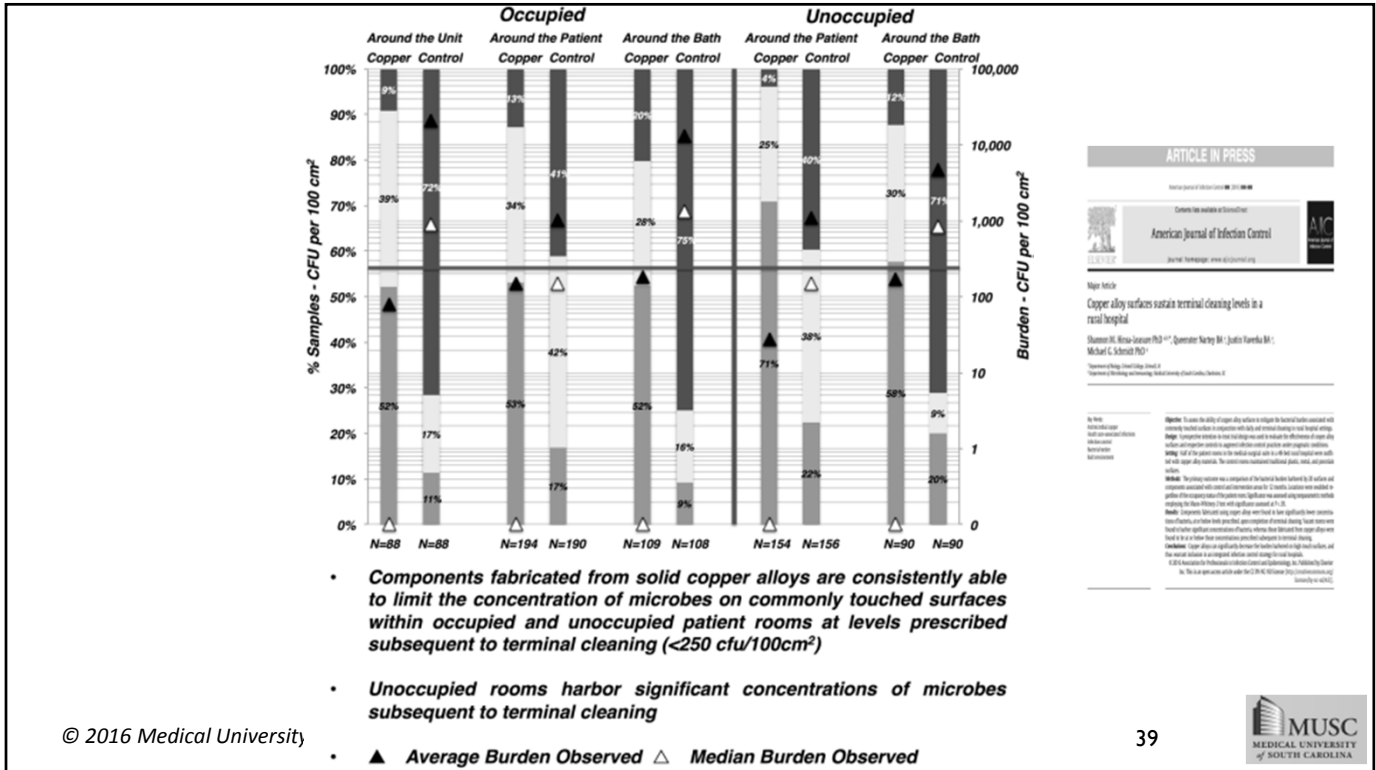
COPPER MINIMIZES RISK



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ARTICLE IN PRESS

Journal of Infection Control

Original Article

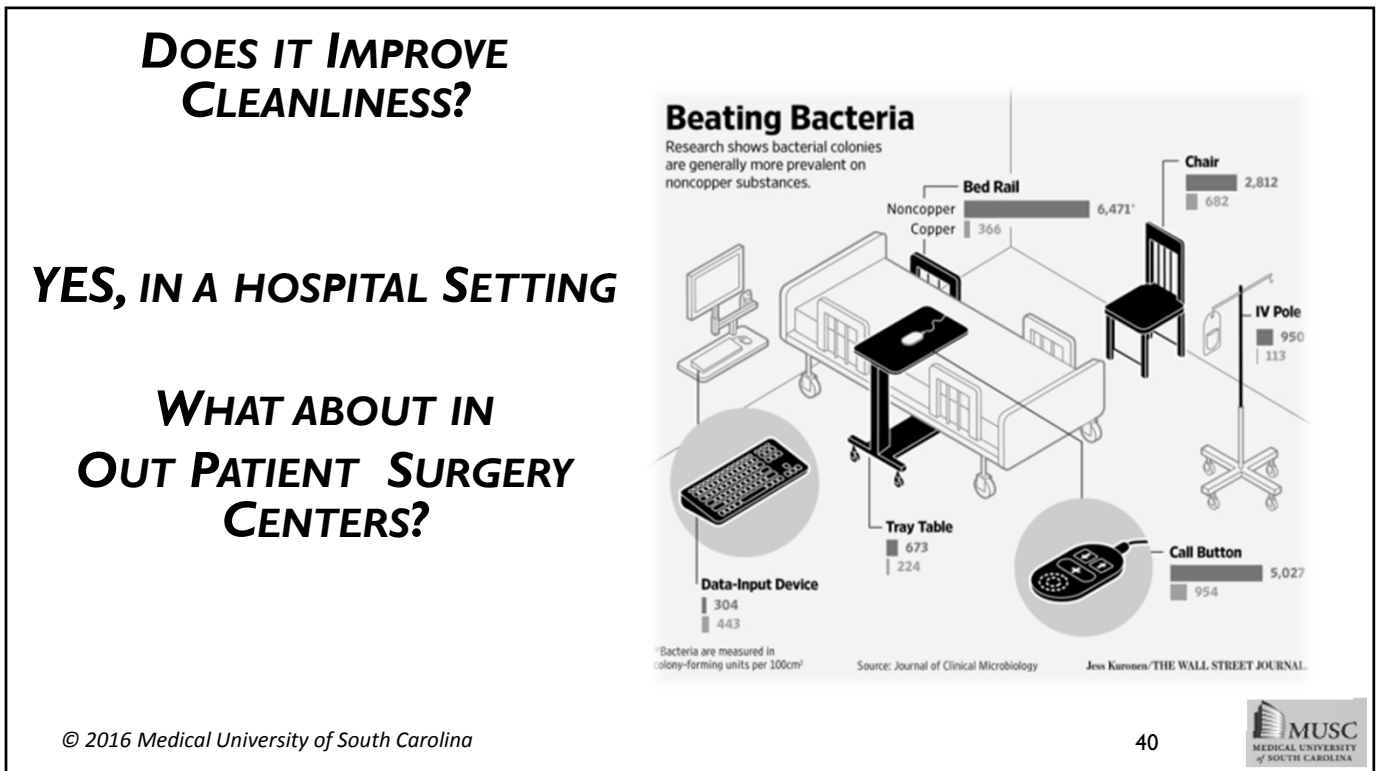
Copper alloy surfaces sustain terminal cleaning levels in a rural hospital

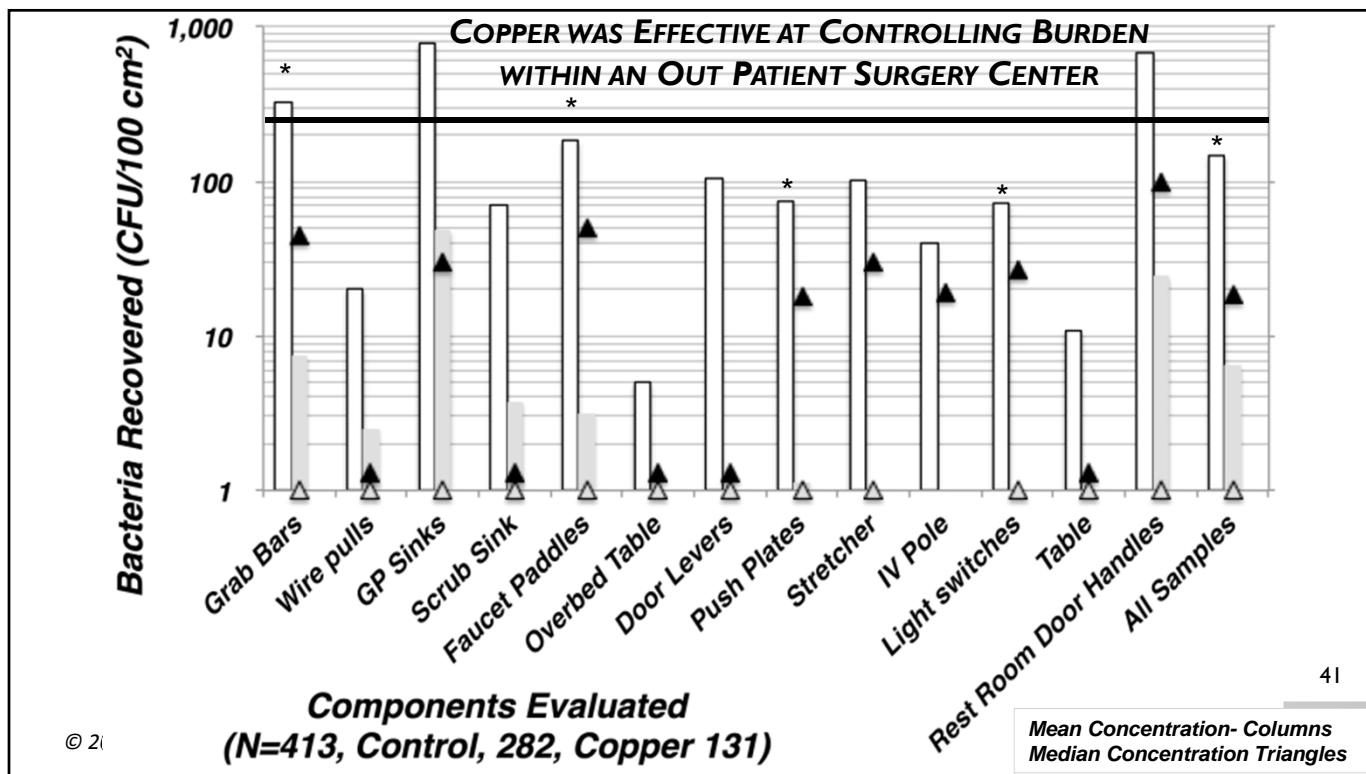
Shannon H. Krasa-Vintura PhD^{1,2*}, Querente Harvey BS¹, Justin VanDera BS¹, Michael C. Schmidt PhD^{1,2}

¹Department of Infection Control, MUSC, Charleston, SC, USA

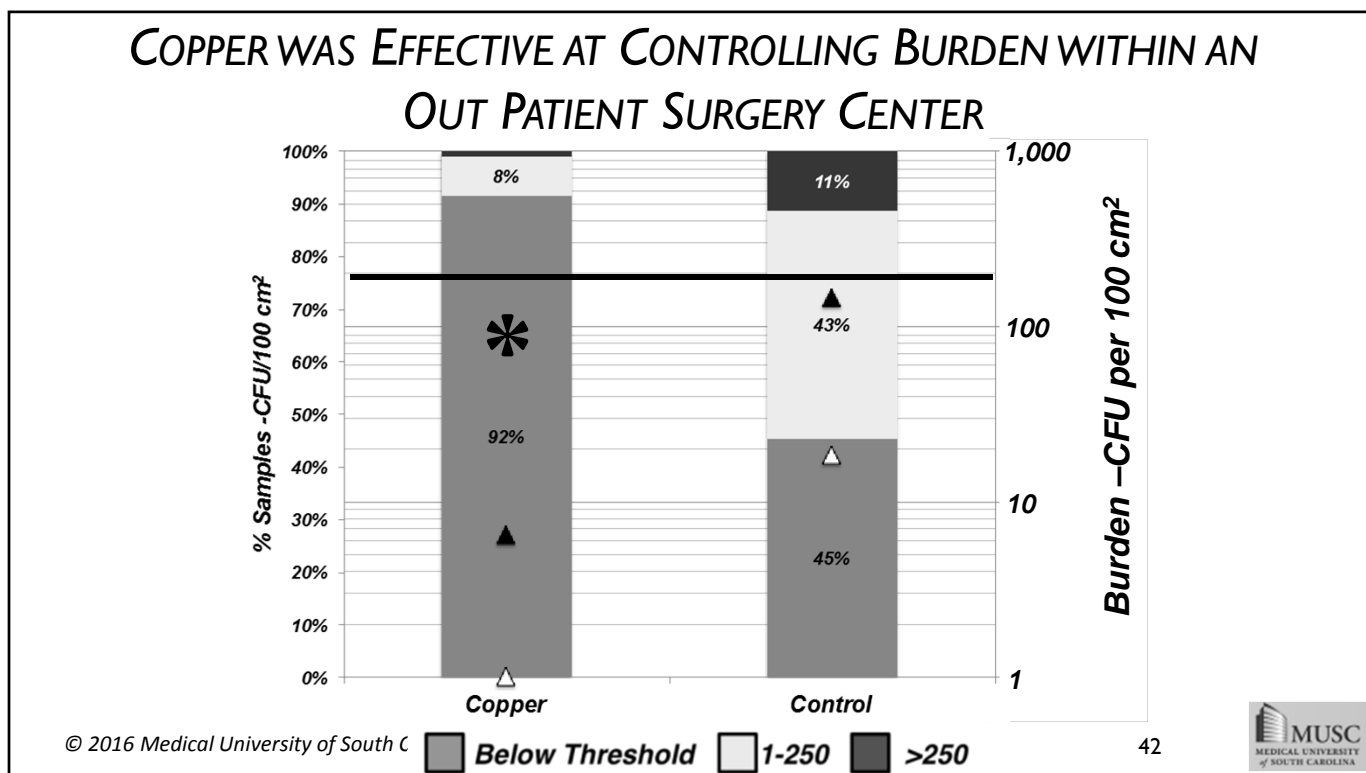
²Department of Infectious Disease, MUSC, Charleston, SC, USA

Abstract To assess the ability of copper alloy surfaces to reduce bacterial burden and to compare burden on copper and control surfaces, we sampled 100 commonly touched surfaces in 10 occupied and 10 unoccupied patient rooms in a rural hospital. Surfaces were sampled at 100% and 50% of the patient rooms in the morning and evening. We found that copper surfaces consistently maintained lower bacterial burden than control surfaces, and that copper surfaces maintained lower bacterial burden than control surfaces in unoccupied rooms. Copper alloy surfaces sustain terminal cleaning levels in a rural hospital.





© 21



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COULD SOMETHING SO SIMPLE LIKE THIS WORK?



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INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MAY 2013, VOL. 34, NO. 5

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

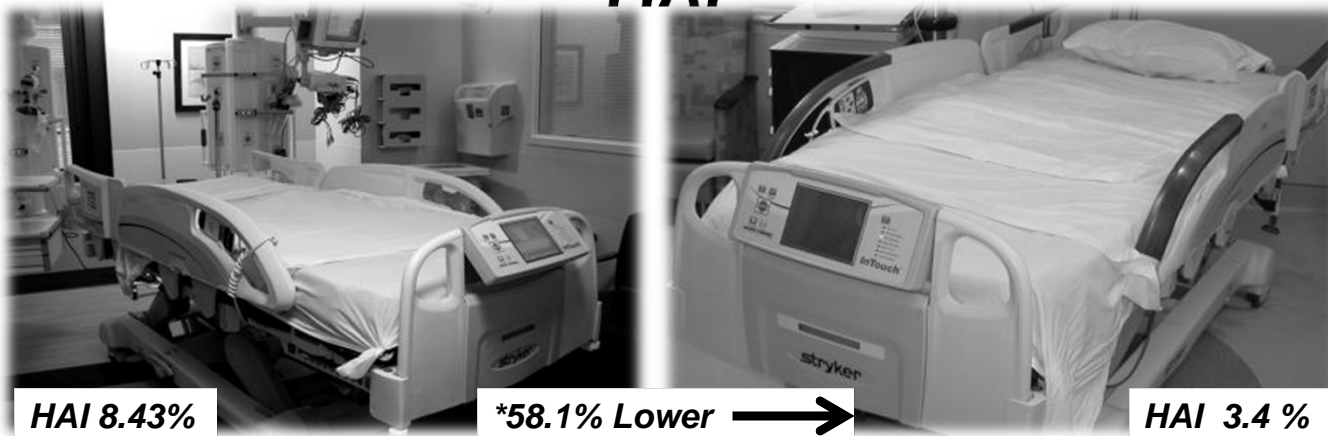
**MEDICAL UNIVERSITY OF SOUTH CAROLINA,
MEMORIAL SLOAN KETTERING CANCER CENTER
RALPH H JOHNSON VA MEDICAL CENTER
COPPER DEVELOPMENT ASSOCIATION**

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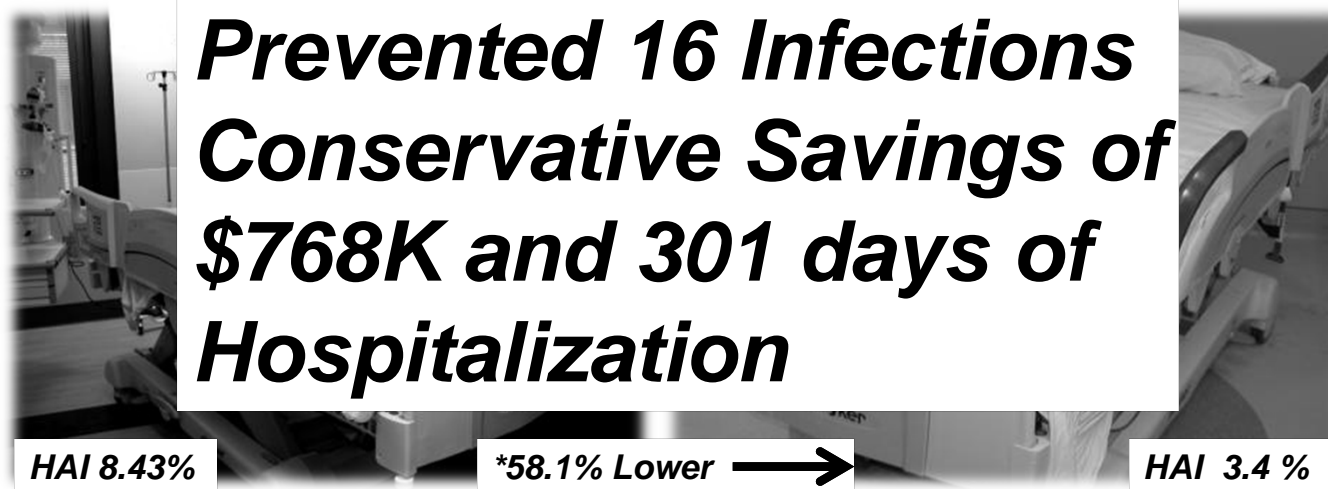


YES, COPPER SURFACES SIGNIFICANTLY REDUCED HAI



COPPER SURFACES SIGNIFICANTLY REDUCED HAI

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



-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:

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

CDC reports:

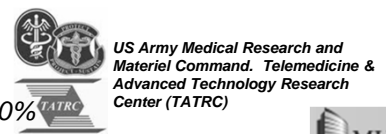
- 2,000,000 Healthcare Associated Infections (HAI's) per year.
- 100,000 Deaths per year from HAIs
- ~2 infections/bed ~One person dies per 20 HAIs

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%



IMPACT OF HAI

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

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:	<i>+19 days</i>	<i>~ 6X risk</i>

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:	<i>+19 days</i>	<i>~ 6X risk</i>	<i>+\$43,000</i>

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:	<i>+19 days</i>	<i>~ 6X risk</i>	<i>+\$43,000</i>	<i>+2.5x risk</i>

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 | Center for Medicare & Medicaid Innovation

01/07/13 3:14 PM

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Innovation Center Home > Model Impact Estimator

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.

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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 a room with 10 copper objects
 2. Use 23 rooms as the model for the ICU, \$69,000
 3. Assume a 97% reduction in infections

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

- ✓ 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	If @\$29,000/HAI*
With Copper Surfaces in Room:	Average Size Hospital	Average Size Hospital
# HAIs saved	185	185
\$ saved	\$7.9 million	\$5.4 million



Potential Savings from Copper Surfaces

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

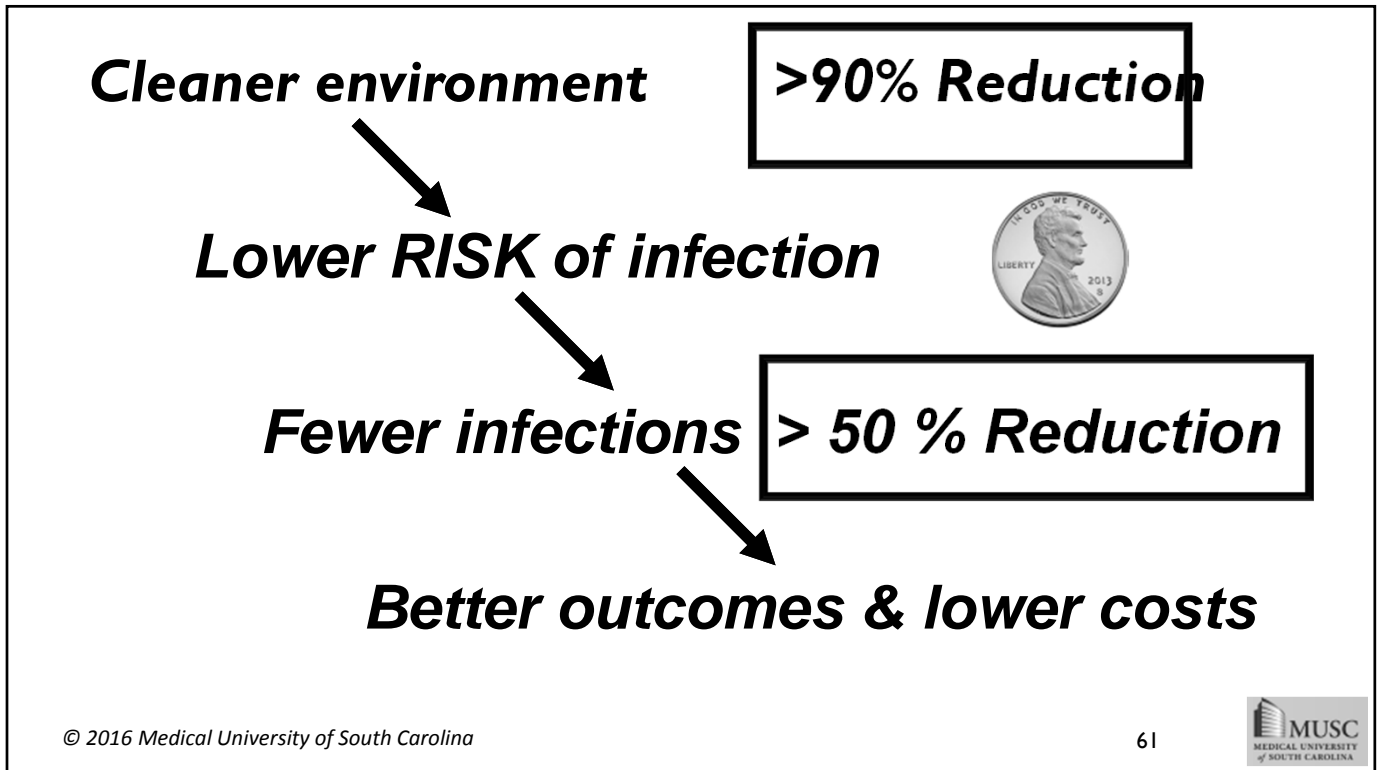
– Savings are Above and Beyond Current Proactive Measures!*

- ✓ 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



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 ⁶⁵

Thank you!

- Dr. Robert Cantey
- Dr. Lisa Steed
- Mr. Andrew Morgan
- Ralph H. Johnson VA Med. Center*
- Dr. Joseph John, Jr.
- Dr. Hadi Baig
- Albert Einstein College of Medicine*
- Dr. Katherine Freeman
- Irwin P. Sharpe & Associates*
- Mr. Peter Sharpe



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- Dr. Kent Sepkowitz
- Dr. Urania Rappo
- Ms. Susan Singh

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- Dr. Harold T. Michels
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- Mr. Wilton Moran
- Mr. Adam Estelle

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