



**THE VALUE PROPOSITION THAT ANTIMICROBIAL
COPPER AFFORDS HEALTHCARE AND IMPROVED
PATIENT OUTCOMES**
24 JUNE 2020

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Bottom Line Up Front (BLUF) Copper Works!

- *Antimicrobial Copper Surfaces*
 - Consistently and Continuously kill bacteria, fungi and inactivate viruses... *that then can...*
 - ✓ Reduce the Risk of Transmission of Infectious Agents
 - ✓ Improve Patient Outcomes
 - ✓ Reduce Costs of Care
 - ✓ Avoid Financial Penalties, *in United States*
 - ✓ *Help Business Recover after the pandemic (COVID-19)*

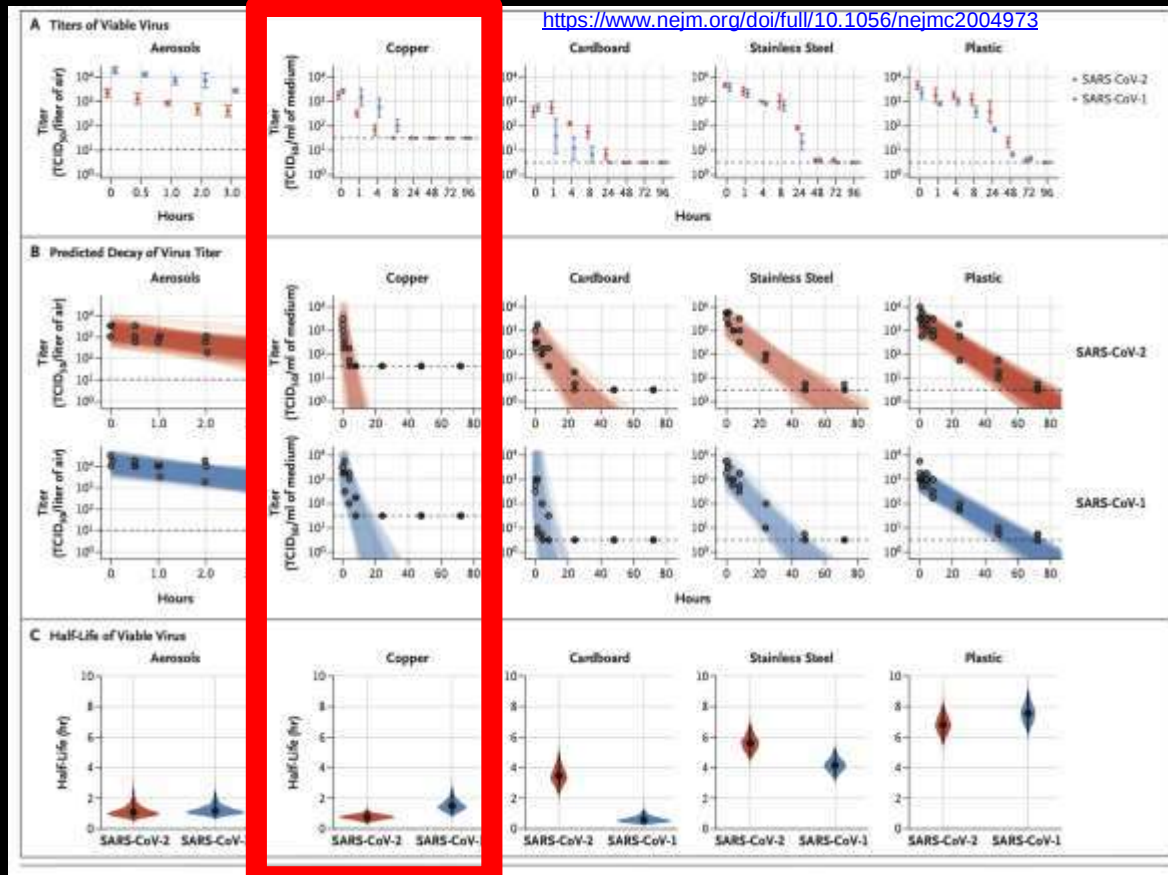
Bottom Line Up Front (BLUF)

Copper Works!

- **Copper is the only* touch-surface material**
 - **With an inherent ability to kill pathogens responsible for infections**
 - **Proven to ...**
 - ✓ **Efficiently kill bacteria and inactivate viruses responsible for healthcare associated infections (HAIs)**
 - ✓ **Significantly, reduce the rate of HAI acquisitions!**

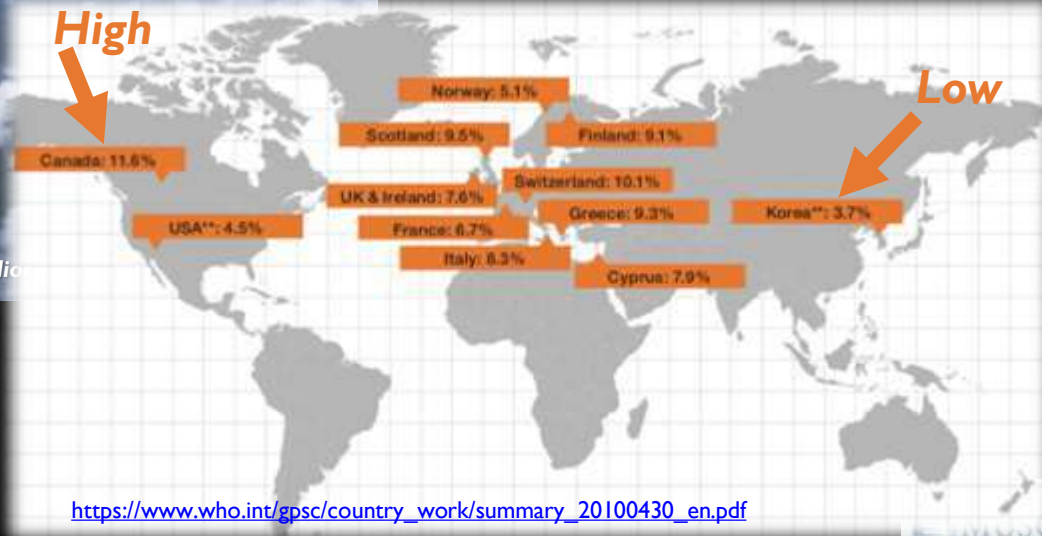
Copper Inactivates SARS-CoV-2

- 10 experimental conditions involving two viruses
 - SARS-CoV-2 (red) and SARS-CoV-1 (blue)
 - aerosols, plastic, stainless steel, copper, and cardboard
- Virus was maintained at 21 to 23°C and 40% relative humidity over 7 days.
- ✓ **SARS-CoV-2 was quickly inactivated on copper surfaces**
- ✓ SARS-CoV-2 was more stable on plastic and stainless steel



Significance of Challenge in Controlling HAI

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



Fine print – Airline deaths-153 between 2001-2011 or 2 deaths per 1,000 million

Global HAI Rates

Significance of Challenge

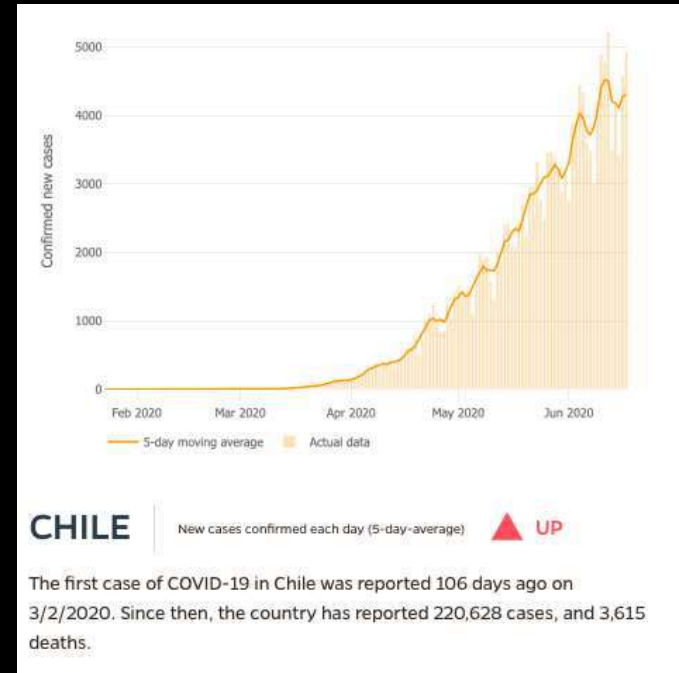
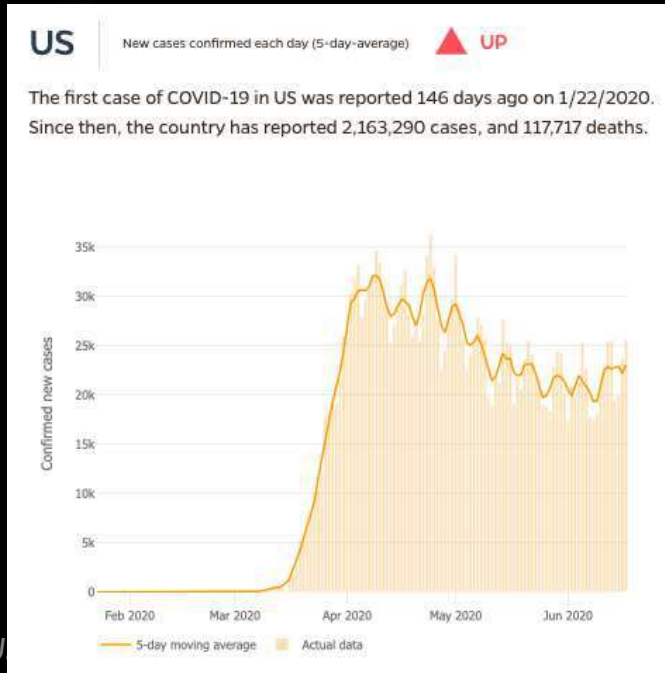
Ongoing Coronavirus Pandemic Underscores Urgency in Enhancing Our Ability to Control Microbes in Built Environments

Total Confirmed

8,550,458

Global Deaths

456,651



Significance of Challenge

- Handwashing compliance < 50%
- Healthcare surfaces NOT being cleaned sufficiently
- Rooms Previously Occupied by patient with a MDRO Transfer a 60% increased risk of MDRO infection Acquisition to next patient occupying the same room



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

Type of HRO	Preintervention (phase I)		All hospitals postintervention (final)	
	Mean % of HROs cleaned (range)	95% CI	Mean %	95% CI
Sink	79 (38-97)		73.9	68.5-78.1
Tray table	74 (35-97)		73.9	68.5-78.1
Toilet seat			78 (33-100)	70.5-85
Flush handle			78 (20-100)	72.4-83.6
Side rail			71 (19-95)	64.1-78.1
Bedpan			74 (15-100)	66.1-81.6
Bedpan cleaner			66 (25-100)	59.7-73.2
Room door knobs			64 (8-100)	55.9-72.9
Light switch			64 (8-100)	55.9-72.9
Room door knobs			66 (25-100)	59.7-73.2
Bedpan cleaner			62 (0-100)	51.7-71.4

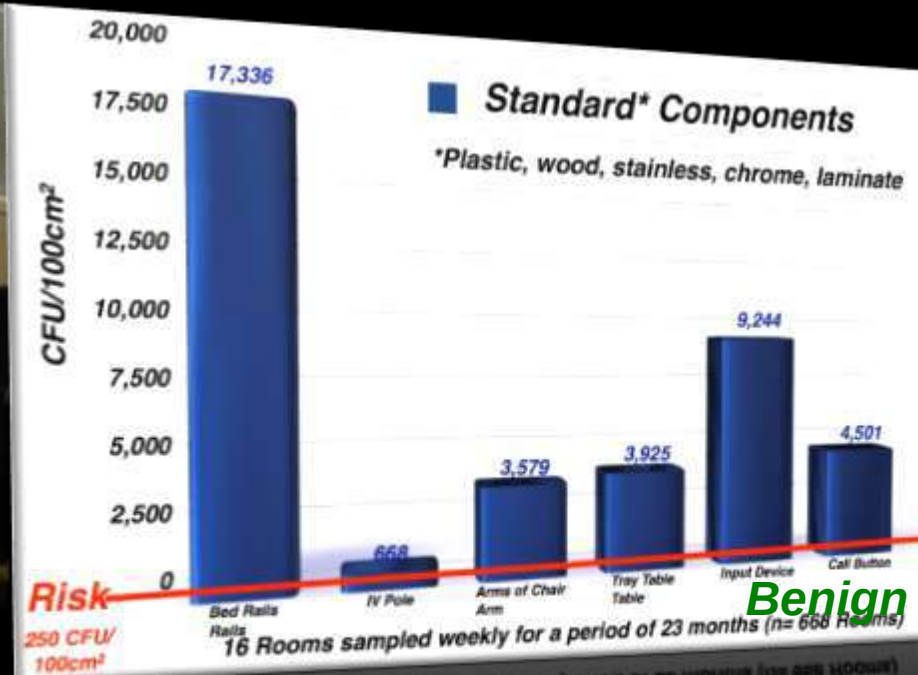
NOTE. All P values are <.001; CI, confidence interval.

48% of surfaces are not clean after terminal cleaning!



Significance of Challenge

Risk is Omnipresent



Conclusion

- **Burden represents a clear and present danger to all admitted for care... in spite, of our best efforts**



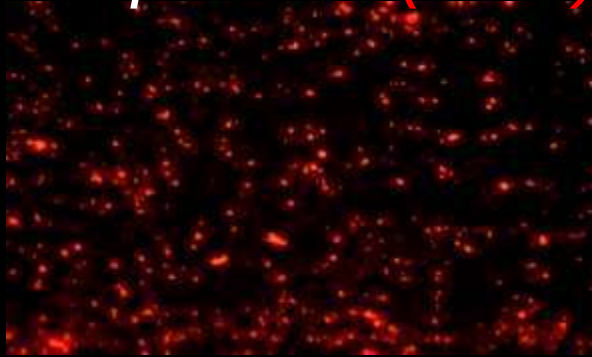
***AN OPPORTUNITY AFFORDED BY
ANTIMICROBIAL COPPER TO HEALTH
CARE
PART 2***

HUMANS HAVE BENEFITED FROM COPPER SINCE ANCIENT TIMES

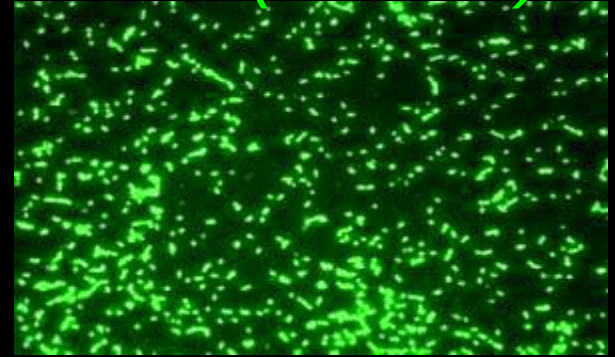


CONTACT WITH COPPER RESULTS IN RAPID DEATH FROM MULTI-COMPONENT MECHANISM

Respiration (CTC)



DNA (SYTO9)



Stainless Steel
4 hours

Copper
10 minutes

Collapsed membrane potential



Destruction of nucleic acid -
consequence of free radical
production secondary to
contact with Copper

Cleaner environment

>90% Reduction

Lower RISK of infection

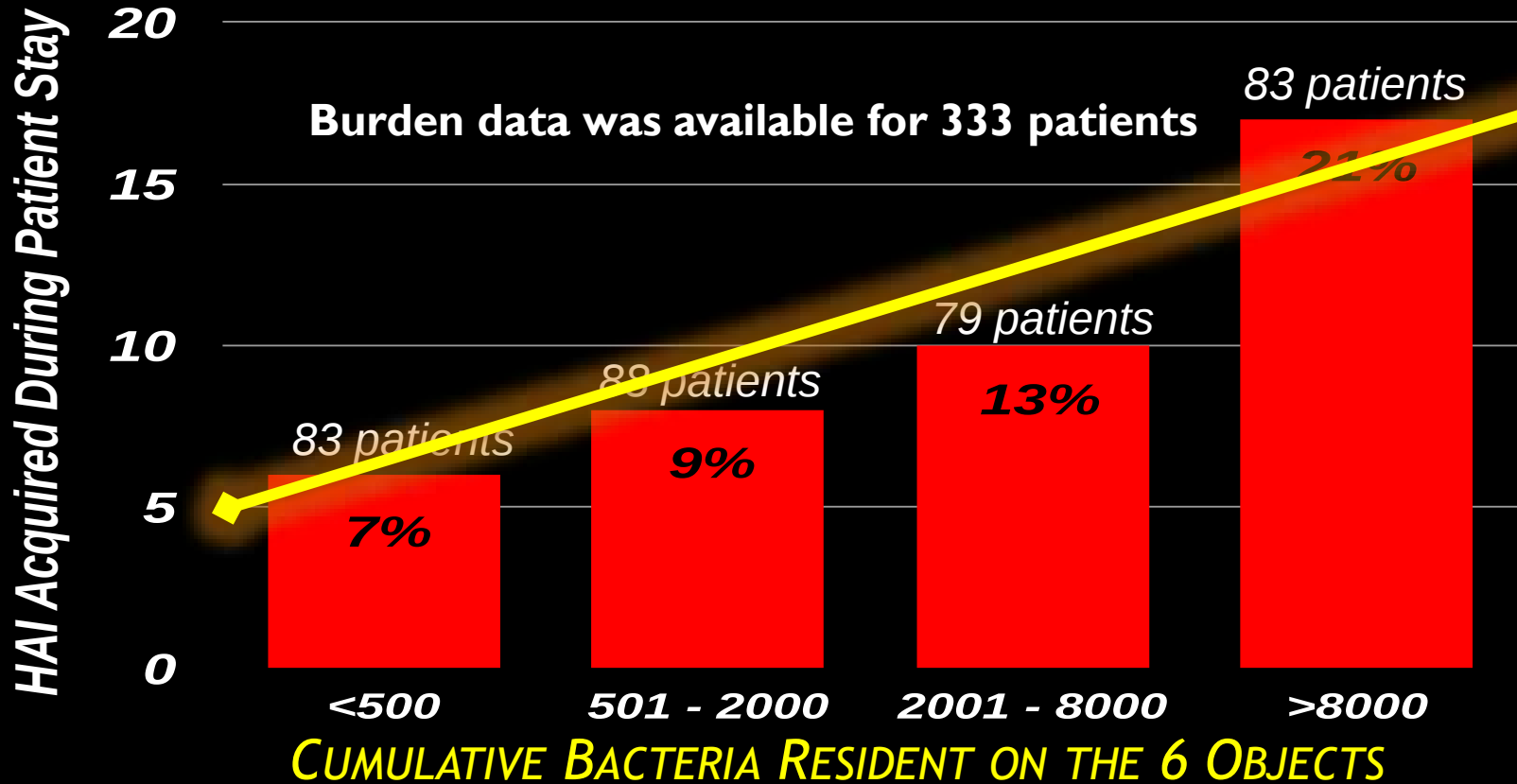
Fewer infections

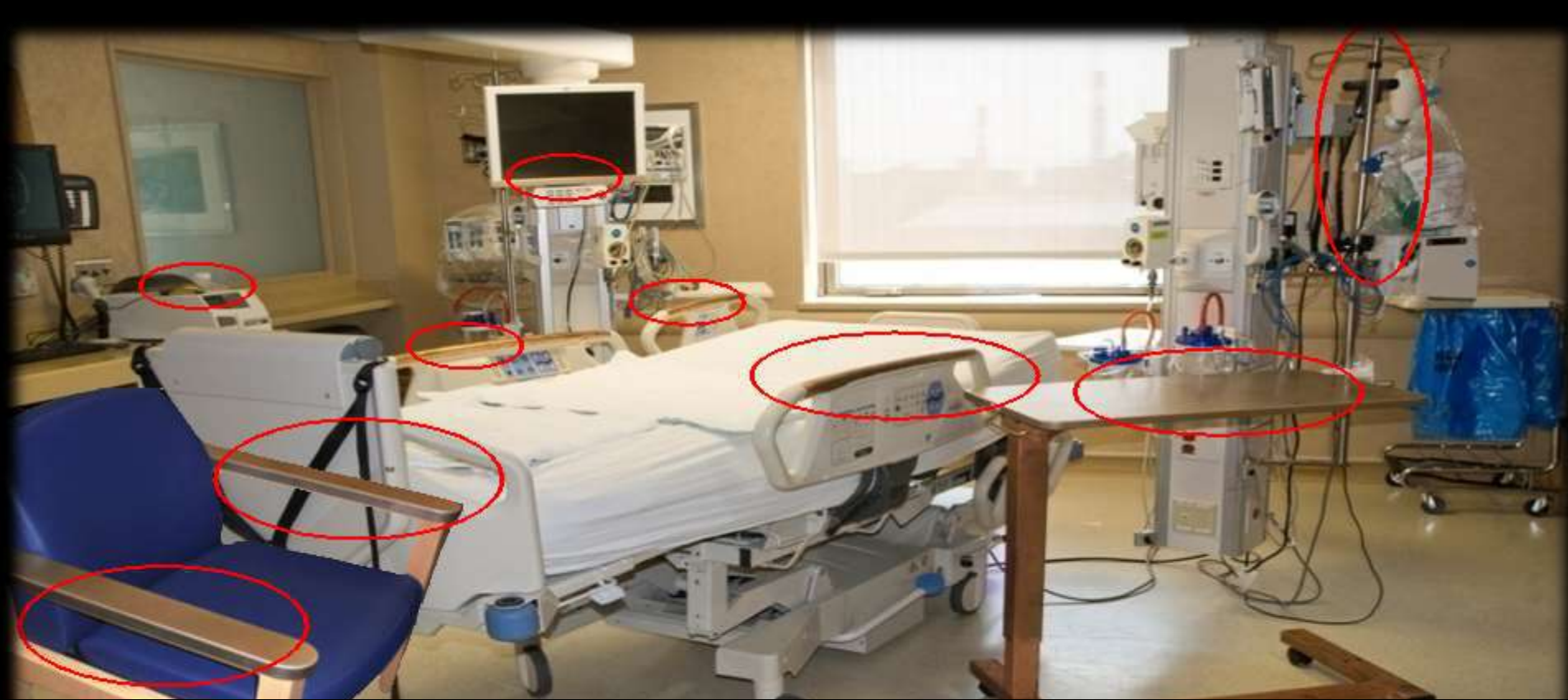
> 50 % Reduction

Better outcomes & lower costs

CLINICAL OPPORTUNITY COPPER AFFORDS HEALTHCARE PART 3

Microbial Burden Matters!





Benefits of Antimicrobial Copper are Significant

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Copper Minimizes Risk!

A photograph of a hospital room featuring a Stryker bed. The bed is white with a control panel on the side. In the background, there are medical monitors and other hospital equipment.

6,474

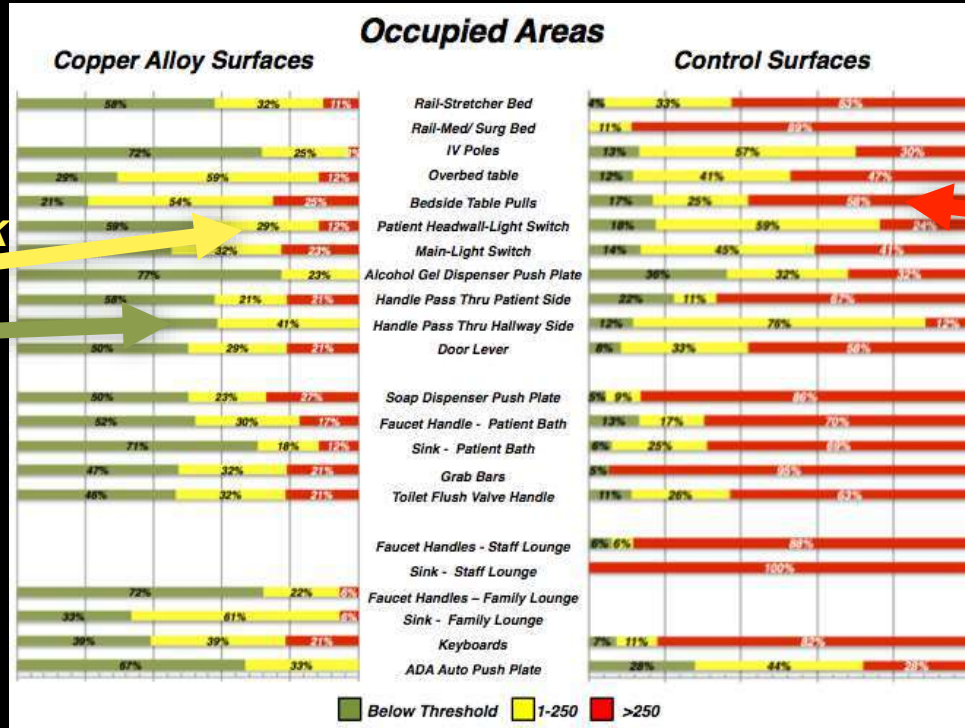
A photograph of a hospital room featuring a Stryker bed. The bed is white with a control panel on the side. In the background, there are medical monitors and other hospital equipment.

366

Burden Significantly Lower with Copper

Benefits of Antimicrobial Copper are Significant

Copper Minimizes Risk!



Low Risk

No Risk

High Risk



Burden Significantly Lower with Copper

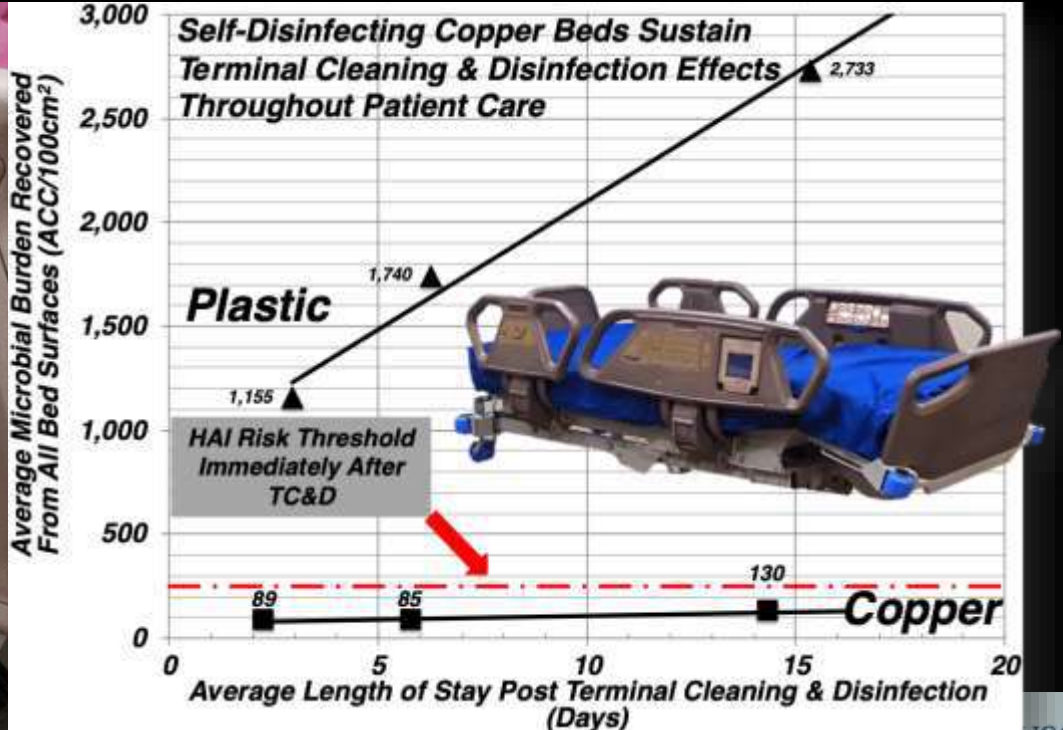
Benefits of Antimicrobial Copper are Significant

Range of Commercially Available Antimicrobial Copper Products!



COPPER WORKS!

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



RESEARCH FINDINGS

DOES IT IMPROVE CLEANLINESS?

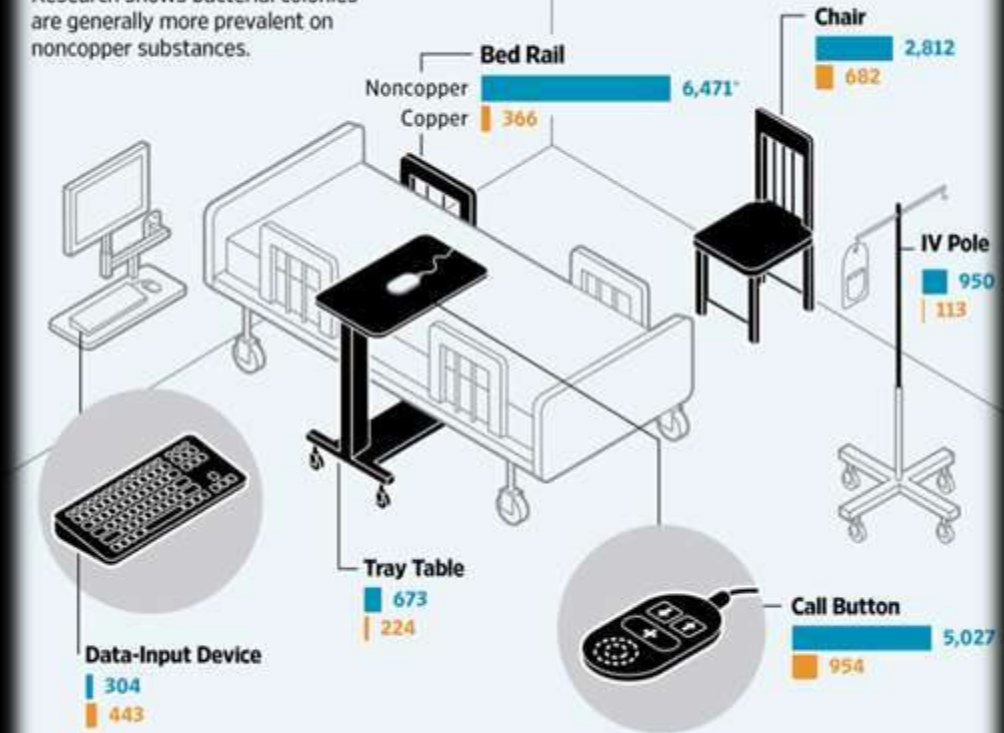
YES

IN HOSPITAL SETTINGS,
OUTPATIENT CENTERS &
AMBULATORY SURGERY CENTERS

**BUT
WHAT ABOUT
INFECTIONS?**

Beating Bacteria

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



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

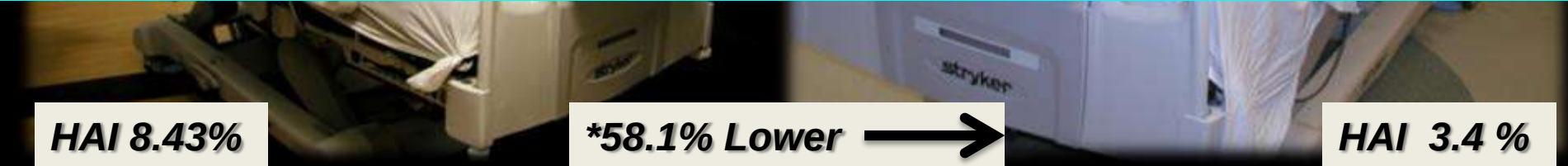
Source: Journal of Clinical Microbiology

Jess Karonen/THE WALL STREET JOURNAL..

YES, COPPER SURFACES SIGNIFICANTLY REDUCED HAI



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



CONCLUSIONS

So far research supports then following –

Copper surfaces can:

- ✓ ***Complement cleaning*** by reducing bacterial burden within the built environment
- ✓ ***Facilitate terminal cleaning standards*** on a continuous basis
- ✓ ***May Help improve patient outcomes...***

-CONCLUSIONS-

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

PART 4: WILL IT SAVE \$, €, £,?

*Cost of
Hospital-
Acquired
Infections*



*Cost of
Intervention with
Antimicrobial
Copper Touch
Surfaces*

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>)

ROI WITH ANTIMICROBIAL COPPER IS SIGNIFICANT

	<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>)

Copper Industry can Leverage AMCu Benefits

- ✓ **Promote potential public health benefits of copper**
- ✓ **Outfit healthcare institutions with copper products (beds, iv poles, overbed tables, hand rails, etc.)**
- ✓ **Consider limited investment (e.g. grants) in –**
 - Commercial development of products and applications
 - Clinical trials that support ROI benefits
- ✓ **Consider opportunities beyond healthcare**
 - transit, education, lodging, travel, retail, fitness facilities etc*)

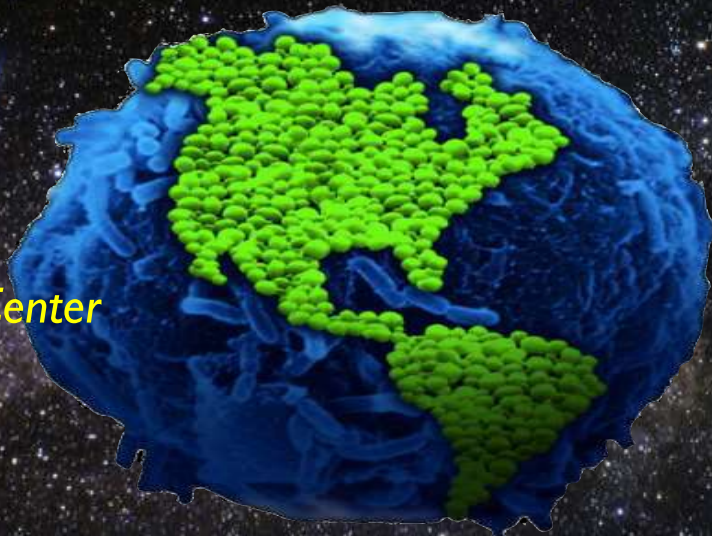
* Reassure customers that business is utilizing all technologies available to ensure their safety, especially during this global pandemic

OUT OF MANY, ONE



***HEALTHCARE ASSOCIATED INFECTIONS
AND ANTIMICROBIAL COPPER***

Thank you !



Medical University of South Carolina

- Dr. Michael Schmidt
- Dr. Cassandra Salgado
- Mr. Hubert Attaway
- Dr. J. 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

Bed Techs, Inc

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Mr. William Montgomery

Memorial Sloan-Kettering Cancer Center

- Dr. Kent Sepkowitz
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- Ms. Susan Singh

Copper Development Association

- Dr. Harold T. Michels,
- Mr. Jim Michel
- Mr. Wilton Moran
- Mr. Adam Estelle

Advanced Technologies Inc

- Mr. Chuck Stark
- Mr. Dennis Simon
- Ms. Katherine Zolman

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



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