

Overcoming Financial Challenges by Improving Quality of Care and Patient Satisfaction: *Killing Infectious Bacteria with CuVerro® Copper Alloy Surfaces*

Hospital Acquired Infections (HAIs) can cost U.S. healthcare providers billions of dollars annually and negatively affect the reputation of the providers, leading to reduced admissions. An estimated 1.7 million HAIs occur annually, resulting in approximately **100,000 deaths**.¹ The annual direct hospital cost of HAIs is estimated at **\$45 billion**.² For a typical 250-bed hospital, it is estimated that the direct costs to treat HAIs are **\$21 million**.³ As part of the Affordable Care Act, healthcare providers are becoming more accountable for these costs as an increasing number of government payment penalties and reporting requirements are instituted by the Centers for Medicaid and Medicare Services (CMS). Addressing these financial challenges by improving quality of care and patient satisfaction can be as simple as creating a cleaner built environment with CuVerro® bactericidal copper alloy surfaces.

CMS Penalties Are on the Rise⁴

Specifically, the **Hospital Value-Based Purchasing Program (HVBP)** will increase penalties to a hospital's reimbursement for Medicare and Medicaid patients by +50% (vs. 2013) to 1.5% of base operating Diagnosis Related Group (DRG) payment amounts for 2015. A hospital will incur this penalty if it fails to meet the VBPP criteria, of which 60% of the weighted value includes infection Outcome Measures and Patient Experience of Care. This penalty will increase to 2% by 2017. Under the **Hospital Acquired Conditions Reduction Program**, hospitals that rank in the lowest performing quartile of hospital-acquired conditions (HACs) will be penalized 1% of what otherwise would have been paid under the IPPS. In addition, hospitals will be penalized 3% for readmissions metrics and 1% for non-reporting of infection data to the National Healthcare Safety Network.

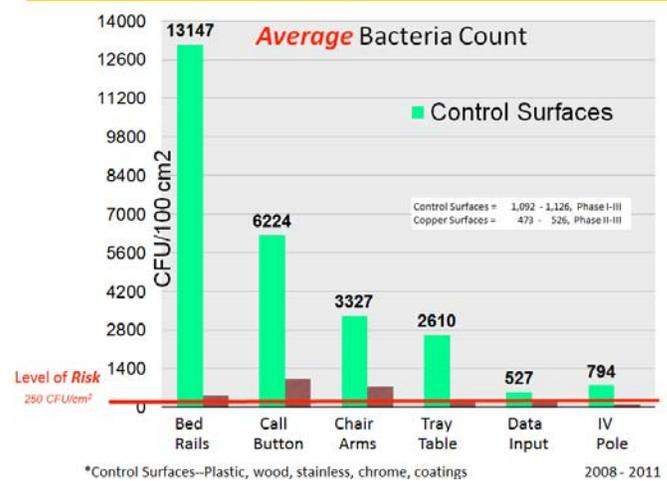
| HVBP Infection Outcome Measures Added | |
|---------------------------------------|--------------|
| Infection | Penalty Year |
| CLABSI | 2015 |
| CAUTI | 2016 |
| SSI | 2016 |
| MRSA | 2017 |
| HACs Reduction Program Measures Added | |
| Infection | Penalty Year |
| Central Line Catheter | 2015 |
| CLABSI/CAUTI | 2015 |
| MRSA | 2015 |
| SSI | 2016 |

In 2013, 1,427 hospitals received reduced payments.⁵ Killing bacteria is becoming a zero tolerance mandate and will improve the bottom line.

Bio Burden Levels Matter

In establishing a hygienic standard for hospital cleanliness, researchers consider a concentration of less than 250 colony forming units per 100cm² on a surface immediately after terminal cleaning as an acceptable benchmark to reduce the acquisition of infectious bacteria by patients.⁶ CuVerro bactericidal copper alloy surfaces exhibit significantly lower levels of bacteria compared to typical built environment surfaces including plastic, wood, and stainless steel (*see chart below*).⁷

Comparison of Copper to Control Surfaces*



By lowering the bio burden, a cleaner surface is created, thus reducing the risk of infectious bacteria transmission.

Reduce Healthcare Costs – The Business Case

Direct Costs to Treat HAIs. For a typical 250 bed hospital, it is estimated that the direct annual cost to treat HAIs is **\$21 million**. This is based on the increase in the length of stay (LOS) of a patient who acquires an infection while in the hospital versus a patient that leaves the hospital without an infection and a 5%⁸ HAI incidence rate.

| | Average Length of Stay (LOS) | % In-Hospital Mortality | Average Charge |
|--------------|------------------------------|-------------------------|----------------|
| Without HAIs | 5.2 days | 1.5% | \$9,377 |
| With HAIs | 24.4 days | 9.0% | \$52,096 |

Agency for Healthcare Research and Quality – August 2010.
Adult Hospital Stay with Infections due to Medical Care.⁹

CMS Penalties and Non-Reimbursement. For a typical 250-bed hospital with 2015 Medicare Inpatient PPS reimbursement of \$50 million the total annual penalty payment at risk is almost **\$4 million** (*see chart next page*).¹⁰

For a typical 250-bed hospital – 2015 Medicare inpatient PPS reimbursement of \$50 million

| Fiscal Year 2015 | | |
|--------------------------------|-------------------|--------------------|
| Program | % payment at risk | \$ at risk |
| Infection reporting to NHSN: | 2% | \$1 million |
| Readmissions: | 3% | \$1.5 million |
| Bottom quartile of infections: | 1% | \$500,000 |
| Value-based purchasing | 1.5% | \$750,000 |
| Nonpayment for HAIs* | NA | \$20,000 |
| Total payment at risk: | | \$3,770,000 |

CuVerro a Clean Solution



High incidence rates of HAIs can also lead to negative publicity, lower patient satisfaction, and reduced patient admissions.

Additional Cleaning Practices. Standard practices to reduce bacteria in the hospital environment have relied on episodic cleaning and hand sanitation. Standard cleaning alone is not always effective. Less than 50% of all surfaces are adequately cleaned after terminal cleaning. Fewer are kept clean (below the level of risk) on a daily basis.¹¹ In addition, bacteria continue to be persistent after episodic cleaning. After standard cleaning procedures, the bacterium begins to colonize and grow as soon as the sanitizer has dried. With each minute, more and more bacteria are exponentially growing on the surfaces. Therefore, to mitigate persistent growth of bacteria on common touch surfaces a hospital would need to increase the frequency of its cleaning. Additional annual costs associated to doubling the frequency of cleaning and episodic terminal cleaning machines can cost in excess of **\$1.7 million.**¹²

Improving the Bottom Line. The estimated one-time cost to outfit a patient care room with CuVerro affiliate products is \$5,000 (product costs only).¹⁴ This represents a limited investment when considering the cost of patient beds, call systems, and other healthcare products required in patient care rooms.

For a 250-bed hospital, the **Direct Cost to Treat HAIs (\$21M) + CMS Penalties (\$4M) + Additional Cleaning Practices (\$1.7M) = \$26.7 million** in annual risk related to infections. A one-time investment in CuVerro for that same hospital is **\$1.25 million** (\$5k x 250 beds). A reduction in FTE costs alone would yield a payback in less than a year. The decision is clean and clear.

Join CuVerro in the movement to continuously kill bacteria in the healthcare environment. Improve the quality of care, patient satisfaction, and bottom line for your facility. To learn more or see the full list of product offerings, visit cuverro.com

CuVerro Kills Bacteria¹³ Between Cleanings

Now there is a new tool to help fight this threat – CuVerro bactericidal copper alloy surfaces. These EPA-registered surfaces dramatically improve environmental hygiene by continuously killing 99.9% of harmful bacteria (including **antibiotic resistant bacteria** such as **MRSA and VRE**) and continue to be effective 24/7 when cleaned regularly.

Engineered for durability, strength, and manufacturability, CuVerro is a registered pesticide with the EPA. Its proven bactericidal properties allow CuVerro to KILL bacteria on contact while others (like coatings and additives) simply inhibit bacterial growth. Its continuous bactericidal action never wears off or washes away, making CuVerro ideally suited for commonly touched surfaces where transmission of infectious bacteria is a concern.

Range of Products Made With CuVerro. From door handles and IV poles to grab bars and sinks, CuVerro is helping healthcare facilities take an aggressive stance in the fight against bacteria that can cause HAIs. CuVerro bactericidal copper alloy surfaces meet nearly every required characteristic for ideal surfaces in healthcare environments, and products made with CuVerro can be easily installed to fit seamlessly in almost any healthcare space.



¹ Klevens R.M., Edwards J.R., Richards C.L., Horan T.C., Gaynes R.P., Pollock D.A., Cardo D.M. "Estimating Health Care-Associated Infections and Deaths in U.S. Hospitals, 2002." Public Health Reports. 2007; 122: 160-6. 2010. National Healthcare Quality Report (NHQR) U.S. Department of Health and Human Services Agency for Healthcare Research and Quality AHRQ Publication No. 11-0004 March 2011.

² R. Douglas Scott II, R. Douglas. "The Direct Medical costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention." Division of Healthcare Quality Promotion National Center for Preparedness, Detection, and Control of Infectious Diseases Coordinating Center for Infectious Diseases Centers for Disease Control and Prevention March 2009.

³ Calculation of \$21 million is based on 250 bed hospital x 39 patient stays per bed per year (American Hospital Association "Fast Facts on Hospitals," Annual AHA Survey 2013, admissions/# of staffed beds) x 5% infection rate (see reference 8) x cost of infection @ \$43,000 (see reference 9).

⁴ "CMS to Improve Quality of Care during Hospital Inpatient Stays." Center for Medicare and Medicaid Services. CMS, 4 August 2014. Web. 4 August 2014.

⁵ Rau, Jordan. "Nearly 1,500 Hospitals Penalized Under Medicare Program Rating Quality." Kaiser Health News. Kaiser Health News, 14 November 2013. Web. 14 November 2013.

⁶ Dancer, Stephanie J., White, Liza F., Lamb, Jim., Girvan, E Kirsty., Robertson, Chris. "Measuring the effect of enhanced cleaning in a UK hospital: a prospective cross-over study." BMC Medicine 7:28 (2009). Print.

⁷ US Army Medical Research and Materiel Command under Contract No. W81XWH-07-C-0053 & preliminary data from testing at Grinnell Regional Medical Center (Grinnell, IA).

⁸ A Srinivasan, MD, M Wise, PhD, M Bell, MD, D Cardo, MD, J Edwards, MS, S Fridkin, MD, J Jernigan, MD, A Kallen, MD, LC McDonald, MD, PR Patel, MD, D Pollock, MD, Div of Healthcare Quality Promotion, National Center for Emerging and Zoonotic Infectious Diseases, CDC. "Vital Signs: Central Line-Associated Blood Stream Infections --- United States, 2001, 2008, and 2009." Center for Medicare and Medicaid. CMS, 4 March 2011. Web. 4 March 2011.

⁹ J. Lucado, M.P.H., K. Paez, Ph.D., M.B.A., R.N., R. Andrews, Ph.D., C. Steiner, M.D., M.P.H. "Adult Hospital Stays with Infections Due to Medical Care." Healthcare Cost and Utilization Project. 2007. Healthcare Cost and Utilization Project. Web. 2010.

¹⁰ Boris, Adam. "A Revenue Leak Soon Turns to Flood: How Payment Penalties for High Infection Rates Could Drain Hospital Finances." Beckers Hospital Review. Beckers Hospital Review, 15 March 2013. Web. 15 March 2013.

¹¹ P. C. Carling, MD., M. M. Parry, MD., M. E. Rupp, MD., J. L. Po, MD, PhD., B. Dick, MS, CIC., S. Von Beheren, RN, BSN, MS, CIC for the Healthcare Environmental Hygiene Study Group. "Improving Cleaning of the Environment Surrounding Patients in 36 Acute Care Hospitals." Infection Control and Hospital Epidemiology 2008 Jan; 29 (1):1-7. Print.

¹² Carling, Phillip. Presentation at ICAAC. Boston, MA. 12-15 September 2010.

¹³ Laboratory testing has shown that when cleaned regularly CuVerro® surfaces demonstrate effective antibacterial action against MRSA (Methicillin-Resistant Staphylococcus aureus), Staphylococcus aureus, Enterobacter aerogenes, Pseudomonas aeruginosa, Escherichia coli O157:H7, and VRE (Vancomycin-resistant Enterococcus faecalis).

¹⁴ Estimate based on CuVerro affiliate product offerings including door lever, pass through door lever, push plate, kick plate, cabinet pulls, drawer pulls, grab bars, toilet flush valve lever, cabinet knobs, IV Pole, wall mounted sink and faucet, light switches and plates, outlet covers, automatic door push plate opener, keyboard and mouse, label for push soap and alcohol gel dispensers, overbed table, counter top.