New and Innovative Applications for Metals

COPPER

Tony Lea
International Copper Association
"SUPERBUGS"

Princeton schools report 3 MRSA infections

Princeton Borough — The Princeton Regional School District has Mercer County’s only reported cases of antibiotic-resistant staph infections outbreaks caused by MRSA have been festering for years among certain groups of people, such as hospital patients, nursing home residents, athletes, recruits and people with weak immune systems, according to the state’s top epidemiologist.

It’s possible they got it from home, it’s possible they got it from school, it’s possible they got it anywhere.

JOHNSON NSUBUGA, MERCE COUNTY EPIDEMIOLOGIST

Staph warning sent to day care families

Researchers working at the Centers for Disease Control and Prevention reported this month that nearly 18,000 Americans died in 2005 from MRSA, and about 50,000 were infected. Doctors have been reporting for years that MRSA was cropping up with alarming frequency. The same is true for other bacteria. In Rochester, N.Y., doctors recently reported nine children with staphylococcus aureus, or MRSA.

Dirty Hospitals

By Katharine Greider

Photographs by Kiyoshi Togashi

Attack of the Superbugs

Capricious regulation is another problem, adding to uncertainty and, in turn, the cost of development. For drugs inspired by many common bacterial strains, the FDA historically required so-called non-inferiority trials. This meant a new antibiotic needed to prove it was generally no worse than existing treatments in order to win regulatory approval. Otherwise, competing trials to prove a new antibiotic was better than a standard process would be superior to existing drugs. By 1986, and,
HOSPITAL ACQUIRED INFECTIONS

“Infections acquired during hospital stays kill more people than breast cancer, auto accidents and AIDS combined”

Dan Childs, ABC News, Medical Unit
HOSPITAL ACQUIRED INFECTIONS

- 7,000,000 infections per year worldwide (bioMérieux Corp press release 2007)
- 100,000 deaths annually in the US (Klevens et al. Pub Health Rep 2007)
  - Costing $35-45 billion (Scott et al, CDC report, 2009)
- 50,000 deaths annually in Europe (bioMérieux Corp press release 2007)
- More than 50% of patients worldwide in ICUs have an infection (JAMA, 2009; 302(21))
  - Patients with infections twice as likely to die (JAMA, 2009; 302(21))
BACTERIA COUNT AFTER CLEANING

Bacterial Count: CFU/100cm²
Choice of touch surface material is important in the fight against bacteria

Touch surfaces should be continuously killing bacteria
Introducing
Antimicrobial Copper
MRSA viability at 20°C

- C11000
- AgB
- AgA
- TS

CFU per Coupon vs. Time (mins)
ANTIMICROBIAL COPPER WORKS

Kills > 99.9% of bacteria within 2 hours of exposure.

The most effective touch surface material.

No other material comes close.

1. Acinetobacter baumannii
2. Adenovirus
3. Aspergillus niger
4. Candida albicans
5. Campylobacter jejuni
6. Clostridium difficile
7. Enterobacter aerogenes
8. Escherichia coli O157:H7
9. Helicobacter Pylori
10. Influenza A (H1N1)
11. Legionella pneumophila
12. Listeria monocytogenes
13. MRSA
14. Mycobacterium tuberculosis
15. Poliovirus
16. Pseudomonas aeruginosa
17. Salmonella enteritidis
18. Staphylococcus aureus
19. Tubercle bacillus
20. Vancomycin-resistant enterococcus (VRE)
<table>
<thead>
<tr>
<th>Feature</th>
<th>Antimicrobial Copper</th>
<th>Antimicrobial Coatings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legally permitted to make public health claims</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Continuously Kills Bacteria (in typical indoor environments)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Never Wears Out (ongoing action)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Recognized as Safe to Use</td>
<td>✓</td>
<td>✗</td>
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</tbody>
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CLINICAL TRIALS AROUND THE WORLD
CALAMA CLINIC CHILE
~ 90% reduction on copper surfaces

Average Bacteria
(CFUs/ 100 sq. cm)

Prado et al, Poster Presentation, 14th International Conference on Infectious Diseases, 2009
US TRIAL SITES
Funded by The U.S. Department of Defense
Trials at three sites:
Memorial Sloan-Kettering Cancer Center
Medical University of South Carolina
Ralph H. Johnson VA Medical Center
U.S. TRIAL SITES
~ 90% reduction on copper surfaces

No MRSA or VRE found on copper surfaces

Salgado et al, Poster Presentation, 5th Decennial International Conference on Hospital Acquired Infections, 2009
Antimicrobial Copper
UPGRADE TOUCH SURFACES TO ANTIMICROBIAL COPPER
COPPER ALLOYS NOT JUST COPPER COLORED

- 282 Antimicrobial Copper alloys registered with EPA
- Spanning a wide range of colors and surface textures
- Versatile material
- Easy to work with
COPPER INSTALLATIONS
OPPORTUNITIES BEYOND HEALTHCARE AND BEYOND TOUCH SURFACES

Touch Surface Applications

MEDICAL & HEALTHCARE
PUBLIC BUILDINGS
PUBLIC TRANSPORT
SCHOOLS
FOOD & HOSPITALITY
SPORTS FACILITIES

Other Uses

AQUACULTURE
HVAC
ANTIMICROBIAL COPPER

US Health care market copper potential

- Building
  - 143kg per bed
- Equipment
  - 125kg per bed
- 1.1 million beds
- Total potential 300kt (installed based)
MARKET POTENTIAL

Cu in all antimicrobial applications

Cu in all touch surfaces

US Healthcare installed base: 300kt copper equivalent

Annual installation

Cu Share
“In this day and age, you can’t afford not to use Antimicrobial Copper”

Once you realize touch surfaces should be continuously killing bacteria, Antimicrobial Copper is the clear choice.

By replacing and upgrading fixtures, fittings and other touch surfaces with Antimicrobial Copper options you will be continuously killing bacteria that cause infections in between routine cleanings.
Copper routs the superbugs

The magic metal that could bring hygiene back to our hospitals

By Fiona MacRae

MAKING door handles, taps and light switches from copper could help the country beat superbugs, scientists say.

A study found that copper fittings rapidly killed bugs on hospital wards, succeeding where other infection control measures failed.

In the trial at Selly Oak hospital, although the number of cases of MRSA and C difficile is falling, the two bugs still claim thousands of lives a year.

During the ten-week trial on a medical ward, a set of taps, a lavatory seat and a push plate on an entrance door were replaced with copper versions. They were swabbed twice a day for bugs and the results compared with a traditional tap, lavatory seat and push plate elsewhere in the ward.

The copper items had up to 95 per cent fewer bugs on their surfaces compared with the usual items.

In terms of the effect it will have in the environment, "It may well offer us another mechanism for trying to defeat the spread of infection," researcher Professor Peter Lambert, of Aston University, Birmingham, said.

The numbers decreased always on copper but not on the steel surfaces.

If further hospital-based trials prove as successful, the researchers would like copper fixtures and fittings installed in hospitals around the country.

In the trial, the number of bugs on the copper items were generally killed in minutes or even hours.

Copper-bottomed guarantee to beat hospital infections

The efficacy of copper and copper alloys has been rediscovered as a means of killing bacteria in hospitals, Tom Shelley reports.

Making surfaces in hospitals free from copper and copper alloys reduces the number of bacteria on them by up to 95 per cent.

"There is a 12-month trial, starting in January 2005, to monitor infection rates in cases where copper and copper alloys are used, and the proposal is to extend the trial to other hospitals in the West Midlands from January 2005, Dr Shadfy said.

A full-scale trial was carried out on a surgical ward at Selly Oak, comparing the number of surviving bugs on common surfaces such as toilet seats, door handles and light switches.

The results were promising, with 90 per cent fewer bugs on the copper surfaces.
Infection control is a multifaceted challenge

- Antimicrobial Copper needs to be seen as a supplement to, not a substitute for, standard infection control practices.
- One must continue to follow all current practices, including those practices related to cleaning and disinfection of environmental surfaces.
- Antimicrobial Copper alloy surfaces must not be waxed, painted, lacquered, varnished, or otherwise coated. The alloys tarnish to varying degrees, which does not impair their antimicrobial efficacy.
ICA PUBLIC HEALTH VISION

Copper is recognized as a key contributor to the preservation and improvement of public health, and its antimicrobial properties are accepted and understood as well as its electrical and thermal conductivity properties and its role as an essential nutrient for human health.
Thank You

www.antimicrobialcopper.com