Antimicrobial Copper Installations

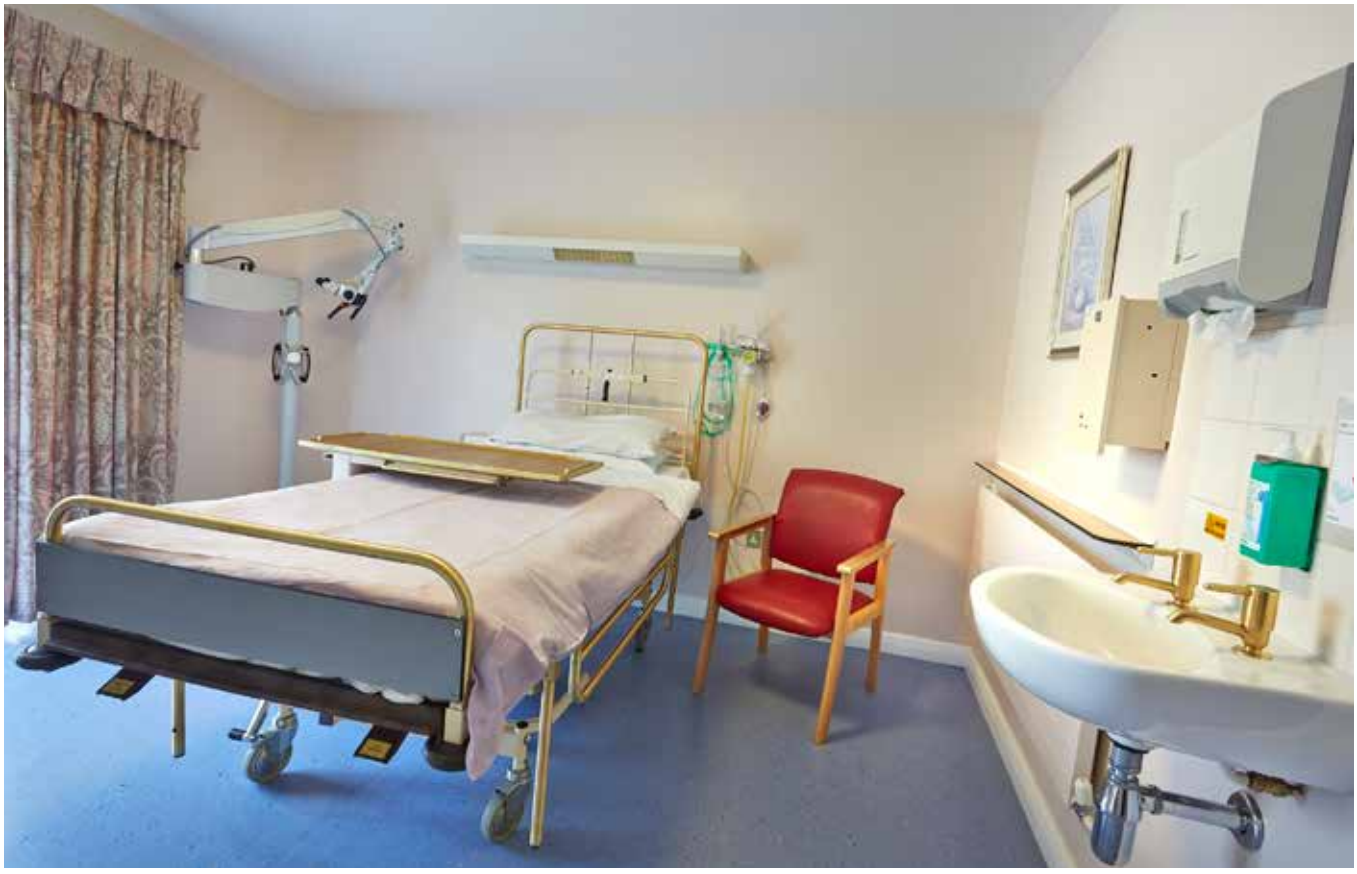
Healthcare

CDA Publication 210

2014

Antimicrobial Copper

Cu+



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About This Publication

Antimicrobial Copper Installations gathers a small, representative selection of antimicrobial copper facilities around the world, detailing which surfaces are made from antimicrobial copper in each, and the rationale behind the installation.

About Copper Development Association

Copper Development Association is a non-trading organisation that promotes and supports the use of copper based on its superior technical performance and its contribution to a higher quality of life. Its services, which include the provision of technical advice and information, are available to those interested in the utilisation of copper and copper alloys in all their aspects. The Association also provides a link between research and the user industries and is part of an international network of trade associations, the Copper Alliance™.

The Organisations Behind Antimicrobial Copper

International Copper Association, Ltd (ICA) and its global network of Copper Centres, collectively known as the Copper Alliance, have been building expertise in the science and practical application of copper's antimicrobial properties for the last 20 years, establishing a solid foundation of compelling scientific evidence and experience. This network of non-profit organisations operates the industry stewardship scheme granting permission to use the Antimicrobial Copper logo and Cu^{+} mark.

Cu Copper Development Association
Copper Alliance

Antimicrobial Copper Cu^{+} ™

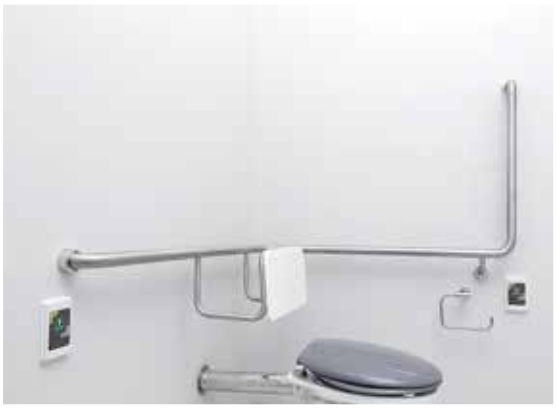
Sandringham Hospital

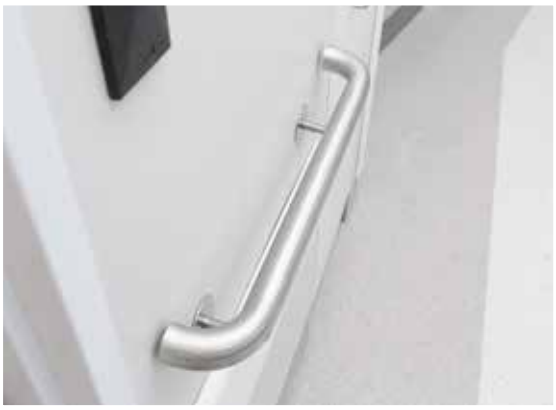
Victoria, Australia

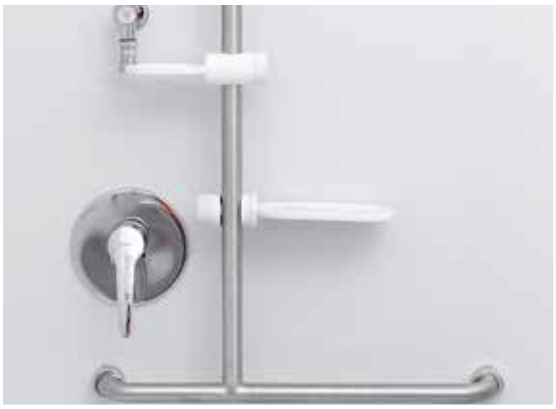
Background

Sandringham Hospital is a 105-bed community hospital with a strong focus on meeting the healthcare needs of its local community. It plays a key role in the delivery of women's and children's health in the region, has a busy emergency department and also provides a range of services including physiotherapy, aged care and occupational therapy.

With this breadth of services and an even wider range of patients, infection prevention and control is a priority for the facility. Antimicrobial copper touch surfaces were installed throughout to augment existing hygiene measures.







Installation

The antimicrobial copper surfaces installed at Sandringham Hospital include:

- Bed rails
- Bedhead service cover plates
- Cupboard handles
- Door furniture
- Dressings trolleys
- Grab rails
- Hand rails
- Light switches

Items such as the hand rails and bathroom grab rails were supplied in a silver-coloured copper alloy, offering a durable and attractive way to reduce the spread of infection via these frequently-touched surfaces.

Hua Dong Hospital

Shanghai, China

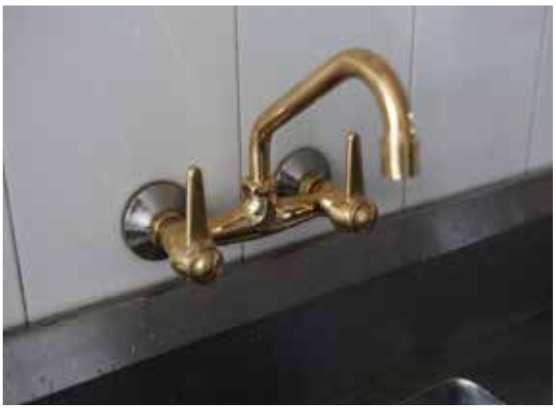
Background

Hua Dong Hospital in Shanghai is one of China's most prestigious hospitals, serving a large local population in addition to foreign visitors to the region. Known for constantly updating its medical equipment and employing top specialists, it has outfitted its Respiratory Intensive Care Floor with an extensive range of antimicrobial copper touch surfaces to protect the health of vulnerable patients, and help prevent the spread of infection between them and healthcare workers.

Installation

A total of two intensive care units and two wards in Respiratory Care are equipped with:

- Bed rails
- Bedside tables
- Dressings trolleys
- Electrical switches
- IV poles
- Overbed tables
- Taps
- Towel rails



As a centre of modern medicine, Hua Dong Hospital works in collaboration with the Shanghai Geriatrics Institute, Shanghai Association of Rehabilitative Medicine and Shanghai Medical University. It is committed to implementing the latest innovations in care and rehabilitation, and antimicrobial copper forms part of its ongoing research into improving patient outcomes.

Professor Yu, Director of Infection Control at Hua Dong Hospital, says of the installation: 'I believe antimicrobial copper will provide the hospital with a new way of reducing the risk of healthcare-associated infections.'

Hitachi Medical Centre

Ibaraki, Japan

Background

Hitachi Medical Centre is a 273-bed hospital located in Hitachi City, Ibaraki – a prefecture to the north-east of Tokyo. Opened in 1963, it has been a private hospital, an emergency facility and a general hospital. In 2013, it became part of the Medical School of Showa University and now seeks to offer cutting-edge medical care using the latest technologies.

As part of this commitment to staying up-to-date with medical advancements, Hitachi has equipped convalescent wards with antimicrobial copper surfaces.

Installation

During the construction of a new hospital building at Hitachi, staff considered the most contaminated surfaces around patients and opted to use antimicrobial copper in these areas.

Items made from antimicrobial copper are:

- Bed rails
- Head and foot rails
- Overbed tables

Sampling of the surfaces showed significantly lower bacterial burden than that found on non-copper equivalents.

'I was vaguely aware of copper's antimicrobial properties, but didn't think of using antimicrobial copper surfaces in my hospital until I saw medical facilities around the world installing it,' explains Shigefumi Goto, Executive Director of Administration and Management at Hitachi Medical Centre.

'Now our monitoring tests have shown the antimicrobial properties of our copper surfaces to be significant, I'm very glad I made the correct decision of installing them. We're so excited by these results, I hope to use more antimicrobial copper products in future. I'm thinking of beginning with antimicrobial copper door handles.'

Also regarding the future of antimicrobial copper at the hospital, Hisako Kawasaki, Director of Nursing, says: 'I would like to hold a seminar to share our knowledge of antimicrobial copper surfaces, resulting from the monitoring tests. We need to make sure all our nurses and doctors understand the efficacy of antimicrobial copper.'

Yonsei Severance Cancer Centre

Seodaemun, Korea

Background

Severance Hospital, of the Yonsei University Health System, is a hospital located in Sinchon-dong, Seodaemun District, South Korea. It is one of the oldest and largest university hospitals in South Korea, with 3,700 beds, and is affiliated with Yonsei University College of Medicine.

Within the hospital, Yonsei Severance Cancer Centre is remarkable for being Korea's first dedicated cancer facility, founded in 1969. Relocated to a new, 15-storey building in 2014, the Centre is also the first of its kind in Korea to protect patients with antimicrobial copper.

Installation

Items replaced with antimicrobial copper equivalents were:

- Bed rails
- Sinks
- Taps

'For paediatric patients with weak immune systems, infection prevention is an especially important issue,' notes Dr Chuhl Joo Lyu, Chairman of the hospital's Paediatric Oncology Department. 'Because of copper's inherent antimicrobial properties, we decided to install antimicrobial copper bed rails and sinks, which are very frequently-touched surfaces.

'By doing this, we expect to prevent cross-infection in the hospital and ultimately create an optimal environment for patient care.'

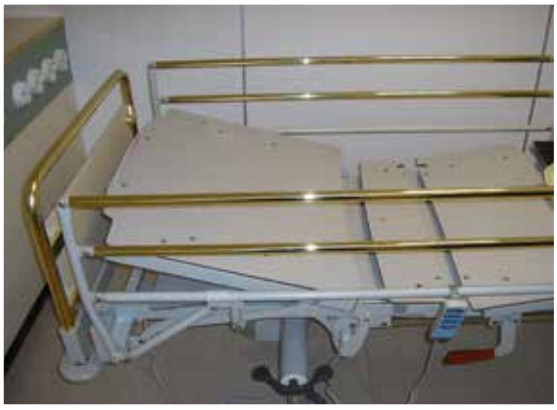
Tokuda Hospital Sofia

Sofia, Bulgaria

Background

Tokuda Hospital Sofia is a thousand-bed facility in Bulgaria, part of a major private healthcare chain. As the flagship development of Tokushukai Medical Corporation, which owns and operates over 280 medical facilities in Japan alone, the hospital prides itself on being an ultra-modern facility.

As a centre of research and innovation in the region, with high standards of treatment and care, Tokuda aims to set the standard for a contemporary hospital. As part of this commitment, it has installed a range of antimicrobial copper touch surfaces to augment its infection control procedures.



Installation

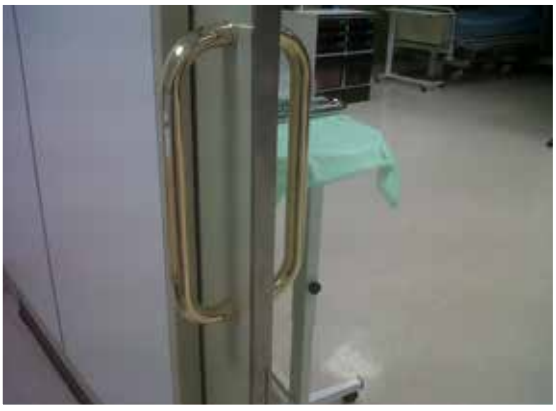
Tokuda's intensive care unit, housing patients especially vulnerable to infection, was considered the ideal area to benefit from the antimicrobial properties of copper and its alloys. Surfaces made from antimicrobial copper include:

- Bed rails
- Door handles
- Head and foot rails
- IV poles
- Overbed tables

The hospital based its decision on research led by Dr Panos Efstathiou, Special Advisor of the National Health Operation Center and Vice President of the Board of Directors of the Center for Disease Control and Prevention in Greece.

His work – conducted in cooperation with Athens University, Aretaieion Hospital and the Medical School of Athens – showed antimicrobial copper surfaces harboured >80% less microbial contamination than equivalent non-copper surfaces, reinforcing similar findings from UK, US and Chilean clinical trials.

Dr Georgi Symeonov, Chief of Anaesthesiology and Intensive Care and Executive Director of Tokuda Medical Centre, says of the installation: 'Tokuda Hospital Sofia maintains the highest standards of care, so we have embraced antimicrobial copper touch surfaces to enhance infection control and provide an even safer, more hygienic environment for our patients.



Isku Medical Centre

Lahti, Finland

Background

Isku-Yhtymä Oy is a family-owned Finnish company that offers interior design and furniture solutions for healthcare facilities, public spaces and private homes. When it developed an antimicrobial copper range to meet market demand for hygienic products, it began by installing the new items in its own occupational healthcare centre.

Situated in Lahti, Finland, the Centre provides healthcare services to Isku's employees as well as those of other local companies. Some 2,500 people currently use the facilities.

Installation

The antimicrobial copper touch surfaces at Isku Medical Centre are:

- Chair arms
- Drawer handles
- Laboratory work surfaces
- Sinks
- Cupboard handles
- Grab rails
- Reception desk

Riikka Mattila, Company Doctor and Director of Occupational Health Services at Isku Työterveys Apila Oy, says of the antimicrobial copper items: 'Copper surfaces have raised a lot of interest among our customers and we are happy to be able to improve both our operations and operating conditions with antimicrobial copper.'

Résidence d'Automne Care Home

Champagne-Ardenne, France

Background

Measures taken in care homes to help protect residents and staff from the spread of infection are a key element in providing quality care, particularly in the case of those infections that spread readily in environments where susceptible people share eating and living accommodation.

With proven efficacy against such disease-causing organisms – including norovirus, the common 'sickness bug' – antimicrobial copper touch surfaces can help prevent infections from spreading.

Based on this knowledge, five retirement homes in the Champagne-Ardenne region of France have installed antimicrobial copper surfaces and are conducting a large-scale study of their efficacy in the care home environment.

Installation

In five care homes – including Résidence d'Automne, which is part of Europe's largest care home group (Korian Médica), and Etablissement Les Charmilles, both pictured – the surfaces replaced with antimicrobial copper equivalents are:

- Door handles (1,000 sets)
- Hand rails (1,000 metres)

The trial will be conducted over three years and will involve 600 residents, with 300 in antimicrobial copper rooms and 300 in normally-equipped rooms. It will be guided by a scientific committee composed of physicians and infection specialists, with funding from across the region as well as the European Union.

Contamination levels on the antimicrobial copper door handles and hand rails will be compared with stainless steel equivalents, and infection levels amongst residents will also be monitored.

Dr Vincent Stoeckel, the scientific committee's main driver, explains: 'According to the World Health Organization, we are heading towards a post-antibiotic era, where common infections could become increasingly dangerous to at-risk populations, such as the sick or elderly.

'Copper is a proven solution, and positive results from this trial could pave the way for a significant advance in the fight against bacteria in care homes.'

Images courtesy of Steriall

Hagen General Hospital

Hagen, Germany

Background

Hagen General Hospital is a 566-bed facility and the largest hospital complex in Hagen. With 20 specialist departments and numerous centres of excellence, it offers patients a wide range of treatments and expertise.

Continuously renovated and expanded for over 50 years, the well-being of those using its facilities is at the centre of Hagen's strategies and, for this reason, it has chosen to protect some of its most vulnerable patients – in the children's intensive care unit – with antimicrobial copper surfaces.

Installation

The hospital takes a multi-dimensional approach to hygiene, one aspect of which has seen its children's intensive care ward equipped with antimicrobial copper touch surfaces. These include:

- Door handles
- Electrical sockets
- Light switches
- Window handles

Reinhard Tennert, Director of Hagen General Hospital, explains: 'It is important for us to get ahead with investing in supplementary hygiene measures, and to therefore be able to offer our youngest patients the best possible protection against infections carried by germs.

'Cases of illness resulting from a lack of hygiene are unethical, extremely expensive due to treatment costs of up to a quarter of a million euros per case of treatment, and furthermore have a negative effect on the image of the whole organisation.'

Images courtesy of Deutsches Kupferinstitut and N. Passoth

Aghia Sophia Children's Hospital

Athens, Greece

Background

Founded in 1896, Aghia Sophia Children's Hospital is the largest paediatric facility in Greece, and is among the largest in Europe, with 750 beds. It accepts children up to the age of 14 (and over, in exceptional cases) and provides a high level of scientific and medical training, consistently leading Greece in the quality of its medical examinations and operations.

As part of its commitment to protecting the health of those using its facilities, the hospital has installed antimicrobial copper touch surfaces throughout its neonatal intensive care unit to help reduce the risk of infections for some of its youngest and most vulnerable patients.

Installation

The antimicrobial copper surfaces equipped in Aghia Sophia are:

- Door furniture
- Drawer handles
- Trolleys
- Work surfaces

These items were tested over the course of two months, and the results indicated a reduction in contamination on the antimicrobial copper surfaces, compared to non-copper equivalents, of >80%, in line with the findings of clinical trials in the UK, US and Chile.

In addition, the researchers observed a 'halo' effect, whereby non-copper surfaces up to 50 cm away exhibited a reduction in contamination of >70% when compared to surfaces not in copper's proximity.

Aghia Sophia's Director, Emanouil Papasavas, says: 'Antimicrobial copper installations, and this scientific proof of their halo effect, are exciting innovations for healthcare practice worldwide.

'Antimicrobial copper surfaces reduce contamination, and thus the risk of acquiring infections from touch surfaces. This in turn could reduce operating costs in the units where they're installed, which would be an exciting additional benefit.'

Marina Anagnostakou, Director of the Neonatal Intensive Care Unit, adds: 'I believe the reduction in contamination on copper surfaces will result in a decrease in infections in this unit, meaning an improvement in the health of the infants we look after.'

WSSK Hospital

Wroclaw, Poland

Background

WSSK Hospital is a modern facility in Wroclaw with highly-qualified staff, offering modern operational techniques and high standards of treatment and care. The hospital is the centre for both medical and research activities in many specialities such as vascular surgery, transplantation, oncology, adult and paediatric cardiology, angiology, anaesthesiology, nephrology, urology, ophthalmology, ENT, gynaecology and obstetrics.

Over 150 medical doctors work at the hospital including Professor Wojciech Witkiewicz, Hospital Director and world-class surgeon. Professor Witkiewicz was keen to reintroduce copper into the hospital environment as he recalled his early days at another hospital furnished with copper equipment including toilet seats, hand rails and mixing bowls.

Installation

Surfaces in the Nephrology Ward replaced with antimicrobial copper equivalents include:

- Bed rails
- Grab rails
- Light switches
- Toilet flush plates
- Treatment trolleys
- Door handles
- IV poles
- Shower chairs
- Toilet seats

The Bostonian Sleep Clinic

Lincolnshire, UK

Background

The Bostonian is a private sleep clinic in Lincolnshire that forms part of the Sleeping Disorders Clinic based in Harley Street, London. The clinic offers diagnoses and treatments for Allergic Rhinitis, ear, nose and throat problems, Obstructive Sleep Apnoea and snoring.

Michael Oko, ENT Consultant and Clinical Lead, and Department of Health Advisor on Obstructive Sleep Apnoea, saw the potential of antimicrobial copper surfaces to reduce the risk of infections spreading via touch surfaces between patients, staff and visitors and championed the replacement of frequently-touched surfaces in bedrooms, bathrooms and corridors.

Installation

The items targeted for replacement were:

- Bed rails
- Chair arms
- Corridor hand rails
- Electrical switches
- IV poles
- Overbed tables
- Radiator shelves
- Toilet flushes
- Cabinet handles
- Coat hooks
- Door handles
- Grab rails
- Light switches
- Push plates
- Shower door handles

Most of the items are made from brushed brass, chosen for its elegant appearance and excellent durability.

'Replacing the surfaces most often touched by staff, patients and visitors with antimicrobial copper equivalents will help reduce the risk of infections spreading via these surfaces,' Michael Oko says. 'It can be used as an adjunct to other infection control measures – such as regular hand washing and surface cleaning and disinfecting – to improve patient safety.

'Reducing the rate of infections means a substantial reduction in a patient's length of stay, a reduction in their mortality risk and a reduction in overall treatment costs. Upgrading touch surfaces to antimicrobial copper is a simple intervention which makes sense from a patient safety point of view as well as a financial one.'

Images courtesy of Vetobac

Homerton University Hospital

London, UK

Background

Homerton is an NHS Foundation Trust based in the East London Borough of Hackney, providing general hospital and community services to Hackney and the City of London, and specialist care in obstetrics, neonatology, foetal medicine, fertility, bariatric surgery and neurorehabilitation across London and beyond.

During the renovation of a specialist Adult Rehabilitation Unit, antimicrobial copper door furniture was installed throughout.

Installation

The products are intended to provide an unobtrusive adjunct to the hospital's existing infection control procedures. A copper alloy with a silver colour was chosen as it combines the antimicrobial efficacy of copper with the appearance of stainless steel, complementing the architect's vision of the new facility.

The antimicrobial copper door furniture installed is:

- Disabled turn and indicator sets
- Lever handles
- Pull handles
- Push plates

Images courtesy of Allgood plc

Dr Nobayashi's Endodontic Office

São Paulo, Brazil

Background

The first dentist in Brazil to install antimicrobial copper surfaces was Dr Cristina Nobayashi, based in São Paulo. Specialising in endodontic procedures, her facility serves a wide range of patients with varying medical histories, making cross-contamination a matter of concern.

Installation

The facility's treatment room has been outfitted with antimicrobial copper surfaces including:

- Dental light handles
- Drawer handles

Dr Nobayashi notes that a common practice in dental offices to prevent bacterial build-up on surfaces is covering them with plastic wrap. Since installing the copper items, she has stopped using plastic, confident that the surfaces are continuously reducing bacterial burden, in between regular cleans. She also noted satisfaction with the positive feedback received from patients, praising this added infection control measure.

Following coverage of this installation by São Paulo's Association of Dental Surgeons, a second local facility – AG Ondontologia Moderna – also equipped its treatment room with antimicrobial copper surfaces.

'I was interested in antimicrobial copper and decided to apply the measure to handles throughout my office,' explains dental surgeon Guilherme Barrella. 'I like the fact that there is no longer a need to cover these with plastic wrap after each consultation. The presence of bacteria is infinitely lower on this new material.'

Roberto del Rio Children's Hospital

Santiago, Chile

Background

Roberto del Rio Children's Hospital is the oldest paediatric facility in Chile. The five-storey, public facility is part of Chile's Health Network, and one of just three hospitals in the country specialising in children's medical care.

Roberto del Rio aims to provide healthcare of the highest quality, generating knowledge through research and serving patients, families and communities through a safe environment. To help provide such an environment, the facility has installed a suite of antimicrobial copper products in its intensive care unit to help reduce the spread of infections.

Installation

The surfaces replaced with antimicrobial copper equivalents were:

- Bed rails
- Cot rails
- Door furniture
- Hand rails
- IV poles
- Sinks
- Taps
- Work surfaces

The initiative was developed in conjunction with the Chilean Ministry of Health with the goal of revolutionising hospital hygiene standards.

'This initiative will benefit children who are hospitalised in a critical condition as they will be in a healthier environment,' explains Dr Ignacio Hernandez, Director of Roberto del Rio Children's Hospital.

Pullman Regional Hospital

Washington State, United States

Background

Pullman Regional Hospital is a 95,000-square-foot, state-of-the-art, Level IV Trauma Centre located at the heart of Palouse, a vast geographic area spanning south-eastern Washington and northern Idaho. The hospital has a reputation for applying cutting-edge technology to deliver the best care possible to the community it serves.

Despite its already low infection rate, Pullman Regional is making every effort to achieve an infection rate of zero and provide a safe environment for patients, their families and staff. This commitment led to the installation of antimicrobial copper touch surfaces.

Installation

In high-use areas throughout the hospital, the following items have been replaced with antimicrobial copper equivalents:

- Cabinet pulls
- Electrical access switches
- IV poles
- Tap handles

Scott Adams, Chief Executive Officer of Pullman Regional Hospital, says of copper's antimicrobial efficacy: 'It was really exciting to realise that we could do something that was fairly simple to implement and have such a dramatic impact.'

Jeannie Eylar, Chief Clinical Officer, notes: 'It gives me a lot of pride to be a part of an organisation that is very progressive in how we can always look for new things to do to add that extra layer of safety for patients and employees.'

Ed Harrich, Director of Surgical Services, says of the facility's future plans: 'Eventually we'd like to do all the chairs, the counter tops, the bed rails and handles.'

Ronald McDonald House of Charleston

South Carolina, United States

Background

Ronald McDonald Houses are world-renowned for the care they offer to families and children in need. The Ronald McDonald House of Charleston in South Carolina chose to replace many frequently-touched surfaces with antimicrobial copper equivalents to create a safer living and working environment for its guests and staff.

Houses such as this provide seriously ill children and their families with a second home during the child's treatment and recovery, with amenities provided at no cost to the families. The Charleston facility can host up to 25 families a night, and volunteer staff are available 24 hours a day to assist them however possible.

Installation

The most frequently-touched surfaces in Charleston House were replaced with antimicrobial copper equivalents. These included:

- Cabinet handles
- Door locksets
- Sinks
- Table tops
- Chair arms
- Handrails
- Taps

The new surfaces – made from solid copper and copper alloys – continuously kill the harmful pathogens that cause infections.

'When we learned about copper's proven antimicrobial properties, we were anxious to be the first Ronald McDonald House to test the touch surfaces,' says Barbara Bond, Executive Director of the Charleston House. 'I hope our results will help spur a public health trend towards the use of antimicrobial copper materials.'

Dr Michael Schmidt, Professor and Vice Chair of the Department of Microbiology and Immunology at the Medical University of South Carolina, was the lead investigator in the multi-site clinical trial that first demonstrated antimicrobial copper surfaces reducing the risk of patients acquiring healthcare-associated infections.

He says of the Charleston House installation: 'This practical application of antimicrobial copper will provide a strong, 'real world' example that will give a clear understanding of the public health benefits of copper surfaces, not only in a healthcare setting, but also in hotels, restaurants and other public gathering places.'

A new-build Ronald McDonald House in Taipei was the second such institution to install antimicrobial copper touch surfaces.

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Copper Development Association
5 Grovelands Business Centre
Boundary Way
Hemel Hempstead, HP2 7TE, UK

www.copperalliance.org.uk
info@copperalliance.org.uk

www.antimicrobialcopper.org

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