Antimicrobial Copper Installations

Case Studies - Healthcare

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Antimicrobial Copper

Courtesy Allgood plc

Craigavon Area Hospital, Craigavon, Northern Ireland

Background

Craigavon Area Hospital provides a wide range of acute inpatient services and outpatients services, and first opted to install Antimicrobial Copper door furniture in a new, multi-million pound trauma and orthopaedic facility completed in 2010. Since then, it has also installed Antimicrobial Copper door furniture in a maternity ward, and most recently throughout an upgraded main operating theatre suite in 2012.

Installation

The Trauma and Orthopaedic Centre, officially opened by the Minister for Health on 21st April 2010, provides state-of-the-art theatre facilities where patient dignity, infection control and a healing environment were key elements of the brief. The Centre, which contains three ultra-clean laminar-flow theatre suites, a seven-bed recovery ward and a fifteen-bed orthopaedic ward, has been hailed by the Minister for Health as a 'world class facility' and has set the standard for future theatre development in Europe and further afield.

For the ironmongery specification, at the client's request, MB Architectural supplied bronze ironmongery for the door handles.

The project brief stated the ironmongery specification required a proven yet unique lever handle which had to provide longevity and a proven track record in helping deter the spread of harmful microbes.

Antimicrobial Copper door handle

Copper and copper alloys have a natural ability to destroy harmful microbes rapidly, so a solid bronze lever and pull handle were specified.

To match the specified bronze lever handles, MB Architectural specified and supplied a concealed bearing hinge in bronze to the doorset supplier to keep the feel and also the aesthetics of the bronze flowing throughout the hospital.

Trauma and Orthopaedic Centre, Craigavon Area Hospital

MB Architectural also provided the door automation specification which had to be sympathetic towards users, many of whom have mobility difficulties.

In the operating theatre suite, 60 doors have been equipped with bronze door furniture. Douglas Masterson, of MB Architectural, says of the projects: 'Infection control was of paramount importance to the client, and they wanted Antimicrobial Copper because of its proven efficacy against the pathogens that cause healthcare-associated infections.'

FSB bronze was ultimately chosen due to the high copper content. Bronze also offered an attractive visual statement that Craigavon is going one step further to protect the health of its patients, and the hospital was so pleased with the performance of these products that they specified them again in a new installation.'

Centre Inter Générationnel Multi Accueil, Laval, France

Background

The Centre Inter Générationnel Multi Accueil (CIGMA) in Laval, France - opened in early 2011 - consists of a nursery for 35 infants and a 60-bed care home for dependent elderly people.

Installation

The facility is equipped throughout with copper handrails and door handles. These surfaces are constantly touched by the residents, children and care staff, and are therefore potential hotspots for the spread of germs and illnesses. With normal cleaning, the antimicrobial copper surfaces will kill viruses, bacteria and funghi that could otherwise remain on the surfaces, thus contributing to a healthier environment for all.

CIGMA's director, Michel Porhel, explains: "Whether we are talking about elderly people or young children, CIGMA cares for those who suffer from certain illnesses such as flu or gasto-enteritis. Therefore, the prevention of infectious illnesses is an absolute priority for us, both in the care areas and in the living spaces. Taking into account the clinical trials, the choice of copper as a permanent factor in the fight against bacterial infections was important for us."

Set in the heart of an eco-district, the CIGMA building of nearly 6,000 square metres has been designed with green credentials in mind. Using renewable energy has been an important consideration - geothermal energy is used for heating, solar energy for hot water, and a 'green roof' tops the building's excellent environmental performance. It is currently in the process of obtaining a certificate for high energy performance and renewable energy (HPE-EnR).

According to Michel Porhel, "CIGMA in Laval is exemplary. From the beginning, strict environmental and sanitary constraints have been set. As with the copper, all the materials were selected for the advantages they provide as much as for technical considerations and their effect on the residents and young children."

A healthcare worker uses an antimicrobial copper door handle.

Antimicrobial copper lever door handle.

Roberto del Rio Children's Hospital, Santiago, Chile

Protecting Children with Antimicrobial Copper

Roberto del Rio Children's Hospital – the oldest paediatric facility in Chile installed antimicrobial copper surfaces in its intensive care and treatment rooms to reduce the risk of healthcare-associated infections.

The initiative was developed in conjunction with the Chilean Ministry of Health, and aims to revolutionise hospital hygiene standards using surfaces that have been shown to continuously reduce microbial contamination by greater than 90%. The installation was a first for Latin America, following a growing number of installations in Europe, Asia and North America.

'This initiative will benefit children who are hospitalised in critical conditions as they will be in a healthier environment,' explained Doctor Ignacio Hernandez, Director of Roberto del Rio.

Surfaces upgraded to antimicrobial copper include bed rails, trolleys, taps, hand rails and door furniture. All products bear the Cu^{+} mark, certifying that all the copper alloys used benefit from copper's inherent ability to rapidly kill bacteria, viruses and fungi 24/7, in between regular cleans.

Doctor Michael Schmidt, leader of the three-centre US trial, from which initial data shows a greater than 40% reduction in a patient's risk of acquiring a healthcare-associated infection when staying in a room containing antimicrobial copper surfaces, has said of Roberto del Rio: 'These are among the best public facilities using antimicrobial copper I've seen. I hope this initiative will be replicated by many health services around the world.'

ICU with extensive antimicrobial copper installation

WSSK Hospital, Wroclaw, Poland

Background

Following a growing number of hospitals around the world, WSSK Hospital, located in Wroclaw, south-west Poland, has implemented antimicrobial copper surfaces in its Nephrology Ward. The aim is to use the antimicrobial properties of copper in order to reduce the number of bacteria contaminating the most frequently-touched surfaces - such as door handles, bed rails and call buttons - that can cause serious infections amongst patients.

Decision

Professor Wojciech Witkiewicz, the Hospital Director, was keen to re-introduce copper into the hospital environment as he recalled his early days at another hospital furnished with equipment made of copper including toilet seats, hand rails and mixing bowls. 'This may be the answer to the recently observed increase in drug resistant strains found in hospitals,' he observes.

Installation

WSSK Hospital is a modern facility 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, gynecology and obstetrics. Over 150 medical doctors work at the hospital including Professor Witkiewicz, Hospital Director and world-class surgeon.

Antimicrobial Copper door handle

Antimicrobial Copper IV drip poles and bed rails

The following surfaces were upgraded to antimicrobial copper:

- Door handles
- Grab rails in bathrooms, showers and toilets
- Shower seat in a disabled bathroom
- Bathroom mat
- Toilet seats and flush handles
- Free-standing and bed-mounted IV poles
- Treatment trolleys
- Bed rails
- Light switches
- Ballpoint pens.

Evangelisches Geriatriezentrum, Berlin, Germany

Background

Evangelisches Geriatriezentrum Berlin (EGZB) is Germany's largest geriatric facility, with around 200 beds, and elected to specify antimicrobial copper door furniture throughout to augment its infection prevention procedures. The touch surfaces rapidly and completely kill bacteria and viruses that settle on them, reducing the risk of infections being passed between patients, staff and visitors.

Why the MD Chose Antimicrobial Copper

Dr Thomas Krössin, Managing Director of EGZB and the driving force behind the installation, explained why he chose copper, saying: 'The fight against multi-resistant strains of bacteria is one we will never win, but that is precisely why we must constantly rethink our strategies. Copper alloys are an interesting innovation in this area and complement standard hygiene strategies.'

Each year in Germany, up to 600,000 patients catch healthcare-associated infections and, despite the measures put in place so far, between 7,500 and 15,000 people die as a result. Patients with a weak immune system, such as new-born babies, intensive care patients, the chronically ill and the elderly are particularly at risk.

'Our weapons in the fight against nosocomial infections are becoming ever weaker as resistance to antibiotics grows,' Professor Martin Exner, Director of the Institute for Hygiene and Public Health at the University of Bonn and President of the German Society for Hospital Hygiene, has warned. 'That is why nosocomial infections pose one of the greatest medical challenges of the future for the whole of Europe.'

Antimicrobial copper lever handle

Antimicrobial copper door handle

An Additional Strategy for Infection Control

Experts have called for a multidimensional approach to infection control, and an increasing number of German hospitals – for example in Berlin, Hagen and Hamburg – have joined hospitals worldwide in using copper for touch surfaces such as door handles and light switches.

'Conventional hygiene strategies such as washing your hands more often and more thoroughly will not be enough in the future,' Professor Exner continued. 'They must be supplemented by additional strategies. Potential transmission channels for nosocomial infections in patient environments must also be kept under control. Copper can play an important part in this process.'

EGZB's installation is the largest-scale deployment of antimicrobial copper in healthcare to date, and joins a growing portfolio of installations in the UK and worldwide where copper plays a significant role in infection control.

University Medical Centre, Groningen, Netherlands

In late 2010, the new Cancer Centre of the University Medical Centre of Groningen (UMCG) was equipped with antimicrobial copper door handles to help prevent the spread of pathogens such as those causing hospital infections. Paul Becquevort, Director of Copper Benelux, the copper information centre for the Benelux countries, spoke with key players in this project about their experience.

Cancer Centre Manager (UMCG): Ms Grietha Bosma

Were you involved in this project from the start, and what was the reason for using antimicrobial copper?

"I am the project manager of the operational organisation of this centre, so I was involved in this decision right from the start. I looked at how the centre would be fitted out, as seen from the user perspective. Aside from the visual aspect, I mainly knew that these door handles had an antimicrobial effect. We were informed of this during the process of selecting the door handles."

Do you think that other hospitals can benefit from using copper?

"If the antimicrobial effect is important for them, then copper is very definitely an option."

Do you know how quickly copper neutralises bacteria?

"I read somewhere that copper kills these bacteria within two hours."

Building and Infrastructure (UMCG): Mr Peter van Dijken

Were you involved in this project from the start, and what was the reason for using antimicrobial copper?

"The Building and Infrastructure section is always involved in new build projects. We have general rules for materials with the aim of achieving the greatest possible uniformity, and for this project we accepted the proposal from AG Architects."

What was initially important - the visual or hygienic aspect?

"Although the choice was initially driven by the visual aspect, in the end the accompanying hygienic properties were the decisive factor for deviating from the usual choices and selecting copper."

Architect (AG Architects): Ms Anouk Vermeulen

You are an architect and co-owner of AG Architects, and you helped shape this new Cancer Centre project right from the start. Why did you opt for antimicrobial copper?

"We have been involved in this new build project since the initial discussions, and we wanted to create a specific ambience in this department that was not clinical, so no cold surfaces, and by chance a sales representative for these bronze door handles dropped by and I was immediately enthusiastic about the material, especially the warm aura, and I realised right away that the hygienic properties were an additional reason for recommending these door handles, despite them being a little more expensive than stainless steel."

Could you think of any other objects that could also be made with antimicrobial copper?

"Yes, along with door handles in hospitals you could consider telephone handsets and all sorts of public places with railings, backrests, etc. - you sometimes hear about how filthy these objects can become; I think that copper could be used in every public building with a great deal of visitor traffic."

Would you opt for copper touch surfaces again in the future?

"Yes, I would certainly consider it, although for me it depends to a large extent on the visual aura that is wanted for a particular project, but these copper antimicrobial materials opened up a new world for me."

Is your architectural firm now a believer in the use of antimicrobial copper?

"Yes indeed, we are enthusiastic about these copper door handles, and we will certainly consider using them in other projects."

Hua Dong Hospital, Shanghai, China

Background

Hua Dong Hospital in Shanghai – serving a large local population as well as foreign visitors to the region – is one of China's most prestigious hospitals. Known for constantly updating its medical equipment and employing top medical specialists, in summer 2012 the Respiratory Intensive Care Floor was fitted 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 were fitted with:

- IV drip poles
- Taps
- Dressings trolleys
- Electrical switches
- Beds
- Bedside tables
- Over-bed tables
- Towel rails

Research

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 ongoing research into improving patient outcomes.

The hospital's Infection Control Department, in conjunction with the Shanghai Centre of Disease Control, plans to conduct testing to assess the impact of the Antimicrobial Copper items on levels of contamination throughout the wards. They can expect to find the same as clinical trials in the UK, US and Chile that showed a greater than 90% reduction in contamination on Antimicrobial Copper surfaces compared to non-copper equivalents.

Professor Yu, Director of the Infection Control Department at Hua Dong Hospital, said she is looking forward to the test results now all the products are installed. She believes Antimicrobial Copper will provide the hospital with a new way of reducing the risk of healthcare-associated infections.

Antimicrobial Copper products installed at Hua Dong Hospital

Centre Hospitalier de Rambouillet, France

Background

The Centre Hospitalier de Rambouillet, in the Parisian region, is the first hospital in France to install antimicrobial copper touch surfaces to fight pathogens and reduce the risk of healthcare-associated infections (HCAIs) for its patients.

Bed rails, trolleys, taps, handrails, door handles and push plates made of copper and copper alloys have been fitted in the intensive care and paediatric units. Antimicrobial copper touch surfaces are proven capable of continuously eliminating bacteria, viruses and fungi - including MRSA, C. difficile and Influenza A - 24/7, from clinical environments.

Motivation

Rambouillet's Director, Jean-Pierre Richard, says: "Based on 15 years of scientific research carried out in laboratories and in hospitals that demonstrates copper's antimicrobial properties, we decided to equip our intensive care and paediatric units accordingly. We decided to affect a proactive risk prevention policy by using innovative materials that will have no impact on the way the medical staff work. The main purpose of this operation is to improve the well-being and safety of our patients."

Dr Patrick Pina, Head of Rambouillet Hospital's hygiene department, says of the measure: "Being confronted with germs and bacteria that are more and more resistant to antibiotic treatment means that disease prevention is now a priority for us. It is crucial for units like intensive care and paediatrics to take measures to prevent any propagation of pathogens that might lead to an epidemic among patients who are particularly vulnerable."

Dr Pina is responsible for assessing the impact of this infection prevention measure on the rate of HCAIs in the hospital, and data generated will be used to inform the French Ministry of Health's evaluation of adoption of antimicrobial copper surfaces in healthcare.

He adds: "The assessment protocol we have developed will enable us to determine whether copper can play a central role in the prevention of infections in hospital. We hope our results will be as promising as the ones obtained in the United States."

A healthcare worker uses an antimicrobial copper handrail.

In July 2011, Professor Michael Schmidt of the Medical University of South Carolina presented at ICPIC, in Geneva, on the initial results of a study carried out in three American hospitals, revealing that replacing just six key touch surfaces with antimicrobial copper equivalents reduced patients' risk of acquiring a healthcare-associated infections by over 40%.

Director Jean-Pierre Richard explains: "There is growing evidence that the environment has a significant role to play in the transmission of infection, and alongside standard hygiene practices such as systematic hand washing, copper touch surfaces help to considerably reduce microbial contamination. Antimicrobial copper works as a supplement to standard infection prevention measures, working to reduce surface contamination in between cleans where non-copper surfaces will harbour bacteria and viruses until they are next cleaned."

Claude Rambaud, Chairwoman of the Lien - a patients' association - notes: "Every year, nosocomial diseases kill 3,500 people who go for treatment in French hospitals. This figure is comparable to the annual number of road accident victims! To summarise, the fight against these infections must be a cause for national mobilisation. If the results of the French study are conclusive, as has been the case with every study carried out thus far in hospitals around the world, we must take them into account and ensure copper is seen as a serious way of improving policies aimed at reducing risks in hospitals."

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, fetal medicine, fertility, bariatric surgery and neurorehabilitation across east London and beyond.

Installation

During the renovation of a specialist Adult Rehabilitation Unit at the hospital, Antimicrobial Copper door furniture was installed throughout. The products chosen were from Allgood's Contego range of Antimicrobial Copper door furniture, made from an alloy with a silver appearance, visually indistinguishable from stainless steel, providing an unobtrusive additional infection prevention measure.

The items, supplied in a brushed finish, were:

- Lever handles
- Pull handles

Adult Rehabilitation Unit, Homerton University Hospital

Graham Shirville, Managing Director of Allgood, says of the installation:

'The Contego range offered the client the antimicrobial protection of copper with the appearance of stainless steel, fitting in with the desired aesthetic whilst helping to protect patients from the pathogens that cause healthcare-associated infections.'

Antimicrobial Copper pull handles

St Francis Hospital and St Clair's Nursing Home, Mullingar, Ireland

Background

This 140-bed facility, along with its associated nursing home, St Clair's, elected to install antimicrobial copper as an additional infection prevention measure during a planned renovation. Antimicrobial copper door handles were installed throughout both facilities in a bid to reduce bacterial contamination on these frequently-touched surfaces.

St Francis is a private hospital in Mullingar, Ireland. Its acute care activities are based on surgical specialities through four theatres and scope rooms. Incorporated into the hospital is St Clair's Nursing Home, which is currently registered with 43 beds and has a strong reputation locally for the quality of care offered to residents. A full upgrade of all door furniture (250 doorsets, incorporating handles, push plates and privacy locks) to antimicrobial copper in the hospital and nursing home took place in January 2010.

Antimicrobial copper push plates

Solid Science Led to the Specification of Antimicrobial Copper Products

The General Manager and Director of Nursing, Noeleen Sheridan, explains the landmark decision:

'All healthcare facilities are acutely aware of the risks from the spread of germs and the high costs of negating them. As it is estimated that 80% of infections are spread by touch, keeping surfaces like door handles as germ free as possible will impact on the spread of infection. Our decision to specify antimicrobial copper products is based on this conviction, and the compelling evidence from the Selly Oak clinical trial.'

Antimicrobial copper door handle

'Copper touch surfaces serve as an extra line of defence in addition to the hospital's accredited hygiene measures. This initiative is part of our commitment to improving the quality of patient safety and care through effective risk management and infection control' she added.

Results After Two Years

Noeleen Sheridan and her staff are very pleased with the installation, praising the performance of the door handles and their contribution to infection control.

'The antimicrobial copper door furniture is doing the job it's supposed to do,' she says. 'We haven't had any infections since putting it in.

'We did have a few infections beforehand because we have a nursing home and private hospital in the same building, which is quite unusual. In a nursing home, you can't exclude anyone coming in from their home or other institutions where they may have picked up infections. Since the copper installation, though, we haven't had a single infection on site. Even patients who enter our facilities with an infection are recovering quickly, without antibiotics, and the infection hasn't spread to other patients.

'We're pleased with copper's performance and would consider it for future renovations or new facilities.'

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