Kevin Lukens’ feasibility study checked out the pros and cons of reusable and single-use systems for care utensils

The question of whether hospitals and care homes choose single-use or reusable products to dispose of patient excreta sometimes comes down to faith, sometimes decades-long habit, and sometimes simply clever marketing or the power of “trends” sweeping through health care and many other sectors. Ultimately the decision is whether to use bed pans, kidney bowls and urine bottles made from a hygienically reliable material such as stainless steel and clean them in a machine using a certified process, or opt for disposable care utensils made from pulp or plastic and dispose of them in the sewerage system after use. And the two key factors that it always comes down to are infection prevention and cost.

In 2015, the Dutch hospital group „Ziekenhuis Groep Twente“ (ZGT) was debating between two options: replacing its outdated bedpan washer-disinfectors with new models, or converting their entire system of reusable care utensils into a disposable model. Before they took the decision to install 23 washer-disinfectors from MEIKO in the hospital at their Almelo site and six new MEIKO machines at their Hengelo site, the hospital group management team commissioned a feasibility study to weigh up the opportunities and risks. The job of preparing the study fell to Kevin Lukens, a student of business administration and management, economics and law at Saxion University of Applied Sciences in the Dutch city of Enschede, who carried out the project as part of his Bachelor’s thesis. As well as conducting numerous interviews with professionals including infection control practitioners and hospital engineering experts, he also talked to technical staff, management, and financial and legal experts at ZGT.

To get a clearer picture of the pros and cons of disposable solutions, Kevin Lukens visited two other health care facilities in the Netherlands. Both have experience in using the kind of macerators that grind up disposable care utensils that were one of the options considered by ZGT. Lukens also identified hospitals in the UK that have spent many years working with single-use systems.

So what conclusions did he reach? „Despite the fact that macerators for disposable care utensils score higher in regard to corporate social responsibility and hygiene, this study has reached the clear conclusion that macerators are not, in fact, the best investment option. The current situation with bedpan washer-disinfectors is the best choice of investment,” writes Kevin Lukens in his study conclusions.

Lukens addressed the following questions in his investigations:

1. What does ZGT see as the most important criteria for investing in a waste macerator system?

Whether they’re made from pulp board or bioplastic, single-use care utensils are far more expensive than reusable solutions.

MEIKO takes top spots in Hanover care home

Kitchens that cater to large numbers of people obviously focus on producing good quality food — but their number one priority has to be hygiene. That’s why the Mittelfeld care home for the elderly in Hanover relies on MEIKO technology in its kitchens as well as in its utility rooms. Just like many commercial kitchens, space is at a premium. Turn to page 5 of this issue to find out how the care home managed to get a compact, cost-efficient and ergonomically designed dishwashing area that ticks all the right boxes.
Continued from page 1

Once is never enough

2. What options are available to ZGT for investing in a waste macer-ator system?

3. How do the different investment options rank based on the investment criteria that are most important to ZGT?

4. What experience do other hospitals and their employees have with using waste macerator systems?

5. Which of the investment options would be most suitable for ZGT, and what is the best way to implement this investment?

Response to question 1: A key criterion is that any investment in a bedpan macerator should reduce waste and foster the sustainable use of water and energy. The macerator should offer clear benefits over a bedpan washer in terms of hygiene and running costs. Other key requirements include non-contact operation, anti-clogging features, and a product that is already used at least one Dutch health care facility. It is also important that ZGT’s technical staff are able to maintain and repair the macerator themselves.

Response to question 2: ZGT considered the following options: the QRS Facilitair Pulpmatic pulp macerator, the Vortex Pulp Disposable Unit from NewCompliance, and a waste disposal unit from Pharmalifter B.V. The shredder from Pharmalifter can grind up a broad assortment of waste. The pulped solids are pumped into the hospital's existing wastewater pipes and channeled through a filter outside the building. Here the solids are filtered out of the water and ground up even more. The pulped solids are pumped into a filtration system where they are converted into biogas. The idea is that this should cover the whole system’s energy requirements. Any remaining solids that are not converted are disposed of as waste. The water subsequently passes through a series of filters to remove bacteria, drug residues, soap residue, and so on. The treated water can be re-used in the hospital itself through a return line, or simply channeled into the public sewerage system.

Response to question 3: This question was answered on the basis of the criteria from question 1. Lukens assessed the investment options for each supplier and scenario, taking into account the key criteria for the bedpan macerator. He used the Likert scale to rate the decision-makers

Questions & Answers

Question: What does the term “route of transmission” mean in regard to infections?

Answer: The first step is to distinguish between endogenous and exogenous infections. Endogenous bacteria originate from the patient’s own flora. For example, some people are MRSA carriers on their skin, which means they could potentially infest themselves during surgery. In contrast, exogenous bacteria are introduced from the external environment. They can be transmitted via droplet contact, direct or indirect physical contact, exchange of bodily fluids, and blood-sucking insects such as ticks.

Devoted to the hospice movement: Miriam Arens helped set up the palliative care unit at University Hospital Cologne and now runs the Johannes-Nepomuk-Haus hospice in the same city. She was a driving force behind one of Germany's first hospices. Today she is the director of one of the most outstanding hospices in the country and she and her colleagues rely on MEIKO technology.

Hygiene doesn’t seem to be a problem

Kevin Lukens

Feedback was obtained from two British hospitals that have spent decades working with pulp products and macerators. Clogging and/or malfunctions occur on a regular basis as a result of people feeding unsuitable materials into the macerator such as latex gloves and incontinence aids. Mentrum hospital in Amsterdam also uses a macerator, and staff members there report the same kinds of problems. Kevin Lukens, a member of staff who is obliged to reach into the waste water up to their elbows, conducted an investigation at the Reinier de Graaf Gasthuis hospital. Based on people’s experience with these machines, Lukens concludes that all three systems would meet ZGT’s requirements.

Response to question 4: Feedback was obtained from two British hospitals that have spent decades working with pulp products and macerators. Clogging and/or malfunctions occur on a regular basis as a result of people feeding unsuitable materials into the macerator such as latex gloves and incontinence aids. Mentrum hospital in Amsterdam also uses a macerator, and staff members there report the same kinds of problems. Kevin Lukens, a member of staff who is obliged to reach into the waste water up to their elbows, conducted an investigation at the Reinier de Graaf Gasthuis hospital. Based on people’s experience with these machines, Lukens concludes that all three systems would meet ZGT’s requirements.

Response to question 5: Hygiene and cross-contamination – two critical, problematic issues that cause concern among bedpan washers – do not seem to be a problem after all according to this study. Based on his interview with R. Ret (2015), a specialist in in- fection prevention, Lukens clearly states that the bedpan washers meet the required cleaning and disinfection standards for bedpans and urine bottles. The interview also reveals that bedpans and urine bottles do not need to be sterile, meaning that disposable products are unnecessary.

In summary, once you compare the final weighted results of the investment options, it becomes clear that none of the three proposed single-use systems are the best choice for ZGT. It turns out that the current set-up with bedpan washer-disinfectors is, in fact, the organisation’s best investment.

Kevin Lukens

Questions & Answers

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Depending on the mode of entry, doctors make a further distinction between enteral infections, in which pathogens enter an organism through the gastrointestinal tract, and parenteral infections, in which pathogens gain access via an alternative route. Parenteral infections may involve the percutaneous route of transmission (path of entry via the skin), the permcroal route (via the mucous membranes), the inhalation route (airways), the urogenital route (urinary tract), the genital route (sexual organs), and the intrauterine route, which refers to the infection of an unborn child during pregnancy.

Infections can be transmitted directly, i.e., from person to person, or indirectly via a range of carriers including blood-sucking insects, water, food, and objects of all kinds. These are known as vectors. A Merit list represents important routes of transmission is droplet contact, where pathogens are transferred to the new host in the form of tiny droplets when shaking hands or sneezing. Another key route is direct contact, i.e., picking up an infection by touching something, a route which requires different numbers of bacteria to trigger an infection depending on the type of microorganism. Contact infection is caused by the transfer of contaminated water, faeces, mucus, , sputum, pus, blood, etc. The exchange of bodily fluids such as blood, breast milk, saliva, sweat, ejaculate, and vaginal secretions creates a smooth transition to contact infection.

In the case of transmission by blood-sucking insects, experts distinguish between two different categories of vectors, biological and mechanical.
Can the sewerage system cope? Why some things are off-limits

Many countries prohibit solids from being fed into the sewerage system even if they are pulped with a macerator first. This is made clear in a working report from the German Association for Water, Wastewater and Waste (DWA) compiled by its hospital wastewater working group: “Feeding defibered cellulose containers into the sewage pipes puts more of a strain on the sewerage system than the disposal of faecal matter using reusable systems.” The findings published by the independent DWA reveal that one litre of waste water from a system that uses disposable products contains somewhere in the region of 600 to 900 millilitres of settleable solids – at least at the point at which it is released into the sewerage system.

In addition, European standard DIN EN 12056-1 concerning sewage quality and quantities stipulates that waste macerators should not be connected up to the sewerage system. The British lobby group Water UK has also investigated how macerators affect the sewerage system. Their report “Macerators: the impact of a new sytem” notes that these machines significant-ly increase the risk of blocked sewers, overflow, pollution, unpleasant odours, and plagues of rats and other rodents. It goes on to say that macerators do not support efforts to achieve sustainable waste management and that Water UK will therefore be lobbying the legislator to ban their use.

In her “Comparative analysis of bedpan processing equipment” Christine Lobé (Québec, Canada) focuses on the envi-

rimental aspects of using macerators and disposable care utensils. She cites the Health Department of Western Australia which notes that the local water authorities have decided to levy an annual fee per machine on hospitals that use macerators which discharge into the public sewerage system.

INTERVIEW

Throwaway solutions? We value our customers more than that!

Disposable or reusable – it all comes down to a simple calculation.

At first glance it certainly seems like an appealing scenario: pots and pans to peelings from a hospital kitchen are collected by a company that produces bioplastic from plant-based leftovers. The bioplastic is then turned into care utensils such as bedpans and urine bottles. Instead of being cleaned after use, these care utensils are simply shredded and flushed through the hospital’s sewerage system together with their bacteria-laden contents. And down in the sewers, microorganisms diligently turn the ground-up bioplastic and human excrement into biogas which can then be used to fuel the ovens in the hospital kitchen. It sounds almost too good to be true – and of course it is. Our world is far more complex than that. It is made up of long-established systems and structures including outdated sewage pipes that often struggle to cope with shredded pieces of bioplastic bedpans. What’s more, experiments have shown that things don’t always turn out as expected. We are already seeing that not all plastics made from renewable resources are actually biodegradable. And not all biodegradable plastics are made from renewable resources. Confusing, right?

The German Federal Environment Agency has established that bioplastics production is not, in fact, more environmentally friendly than normal plastics production. And that’s a bit disappointing when you think that medical devices such as bioplastic bedpans can only be used once. So, are reusable products a better alternative? A very simple calculation suggests that they are. An average hospital has 243 beds according to figures released by the German Federal Statistical Office in 2010. Hospitals in Germany typically purchase one bedpan washer-disinfector per 12.5 beds and 10 bedpans – gener-ally made of stainless steel – for each bedpan washer. That’s ac- 

cording to MEIKO’s experience over the last 90 years. So we could expect an average hospital to have 194 bedpans and 19.4 bedpan washers. Once again, experience suggests that this average hospital will run 32,333 wash cycles a year for bedpans alone (not including urine bot-tles). And experience has also taught us that a MEIKO bedpan washer-disinfector has an aver-age service life of 17.5 years.
Living like at home at Laverhof Care Home

The World Alzheimer Report documents the fact that in the year 2015, a person came down with dementia every 3.2 seconds. Currently, around 47 million people live with dementia. Unfortunately, current medical treatments only have a modest positive effect on treating the course of dementia. What remains is influence through care. What the teams do at the four Laverhof facilities here in the Netherlands is exemplary. Laverhof stands for “living like at home”. And that’s exactly how the 96 people who live in St. Barbara in Schijndel (North Brabant) feel.

The community of Schijndel, where Laverhof is centrally located, has around 24,000 residents. The former mother house of the Zusters van Liefde (Sisters of Charity) congregation is still located here. The sisters, who consider spirituality, community and missionary work to be their mission, are very old today and are spending their twilight years in a special community in the Laverhof. They have left their mark on the region, maintained schools and nursery schools and run a care home. The concept for the 96 people in eight living groups was also strongly influenced by them. „After the cloister was destroyed in the Second World War, the nuns rebuilt it and then turned into a nursing home for the sisters”, reports Tiny Jansen. The trained electrician once worked at a large mineral oil company in Rotterdam. Today, Tiny Jansen takes care of everything that has to do with technology at St. Barbara. He has his contacts everywhere, knows his way around the entire house and is involved in many things that don’t have anything to do with technical support but rather, how to meet people here.

„That takes place very respectfully and in a very quiet way”, reports Tiny Jansen. Because of this, we are also not permitted to take a tour of the living groups. „Many of the people here have dementia”, says Tiny Jansen, who - just like his colleagues responsible for care - has the opinion that one should disrupt them as little as possible and not confuse them. But how can that be reconciled with the proviso that living at Laverhof is like living at home? „That has to do with a number of things on the periphery. In some instances, the residents here bring their own furniture with them, the household linens, but the residents’ clothing is also washed here. The cleaning work is not outsourced to an outside company, but is taken care of by our own employees - just like at home.” Therefore, the people who live here always encounter the same people who work here. That creates a special kind of community. And the residents who do not have dementia get as much activity as is only possible at the Laverhof. As needed, the former refectory is turned into a community hall - and joy, festivals and clubs liven up the historic walls. Those who know that suddenly see the “Schakel” (“link”) with completely different eyes. Namely, in the middle of the area of the care home, there is a pub of the same name. There is a pool table there, people can watch television together, there is a PC and those who are thirsty receive a glass of water for free. Maybe the Schakel is also a little bit reminiscent of the time when Schijndel was known for its hops production...

Tiny Jansen knows that he works in a care home that is one of the exemplary ones. It belongs to a foundation, as is often the case in Holland. He and his management view this as an investment in the future: „We are building for 30 years and not just for three. Therefore, we are placing an emphasis on quality and the long lifetime of the devices.” In view of the fact that the World Alzheimer Report predicts that there will be more than 74 million people with Alzheimer’s in the year 2030, that is more than prudent.
Attractive employer offers great working atmosphere in care sector

The care sector in Germany has long grappled with a recruitment crisis. But some nursing homes don’t have this problem – they can easily find people to fill whatever vacancies come up. Obviously this is partly due to parameters such as pay and working conditions, but another key factor is how the care home believes its residents and patients should be treated. Geriatric nurses and care workers are more likely to choose an employer that has an excellent reputation because they “want to be proud of where they work”, according to a study carried out by the Leuphana University of Lüneburg (“Attractive employers in the care sector – how to attract and retain qualified staff”). When Frank Tost has a vacancy, it never takes long to fill. The Mittelfeld care home for the elderly in Hanover has an outstanding reputation. Run as a not-for-profit, limited liability company, it has just 106 beds, some 100 of which are occupied at any one time on average. “None of our residents have the most severe forms of dementia, however,” says care home director Frank Tost, “in part because our building isn’t designed for their needs.” Yet this long-established home in Hanover city centre has been home to some residents for up to 20 years: “That was a while ago, and the duration of people’s stays tends to be considerably shorter nowadays, but we still pride ourselves on being a traditional care home where elderly people can live their lives as actively as possible.”

The carers’ top priority is to maintain residents’ physical and mental agility for as long as possible. That applies equally to the home’s palliative care ward, an eight-bed unit that forms an integral part of the facility. “We know how unusual it is to run a care home and a palliative care unit in tandem. But the level of demand suggests we’re on the right track,” says Tost. “Most of our carers who are trained in palliative care find their work on this ward hugely enriching,” he adds. The palliative care unit was established with EU funding and support from the German Paritätische association of social movements, as well as money raised by the “Aktion Mensch” television lottery.

Every cent counts, especially in the not-for-profit sector, and that can sometimes make life challenging for Frank Tost. “Most of our carers who are trained in palliative care find their work on this ward hugely enriching,” he adds. The palliative care unit was established with EU funding and support from the German Paritätische association of social movements, as well as money raised by the “Aktion Mensch” television lottery. But the level of demand suggests we’re on the right track,” says Tost. “Most of our carers who are trained in palliative care find their work on this ward hugely enriching,” he adds.

The Mittelfeld care home is now the proud owner of an UPster K-S 160, a perfect example of how this recently introduced range of machines – first launched in late 2015 – provides ultra-compact solutions that fill a genuine gap in the market. “We’ve already worked together with MEIKO in other areas and were pleased with the results, so we decided to get in touch with them,” says Tost. And the proposal put forward by MEIKO’s sales representative ultimately won the day. The Mittelfeld care home is now the proud owner of an UPster K-S 160, a perfect example of how this recently introduced range of machines – first launched in late 2015 – provides ultra-compact solutions that fill a genuine gap in the market. “We’ve already worked together with MEIKO in other areas and were pleased with the results, so we decided to get in touch with them,” says Tost. And the proposal put forward by MEIKO’s sales representative ultimately won the day.

A typical set-up, but with limited space in the wash-up area

The Mittelfeld care home for the elderly looks welcoming the moment you see it, comfortably nestled in the well-established infrastructure of the city centre. Photos: Markus Dietze

Frank Tost manages the Mittelfeld care home in Hanover – and he’s proud of its excellent reputation among people working in the industry.

Photos: Markus Dietze

We changed the dishwashing system – but we’re keeping the washer-disinfectors

The Mittelfeld care home also relies on MEIKO technology in its utility rooms. The UPster K-S 160 brings real versatility to the kitchen environment. And the Mittelfeld care home also relies on MEIKO technology in its utility rooms. The UPster K-S 160 brings real versatility to the kitchen environment. And the Mittelfeld care home also relies on MEIKO technology in its utility rooms.
**Stubbornly persistent and worryingly resilient**

**Fact file on Acinetobacter baumannii: a hospital pathogen that is causing increasing concern**

Anyone who works in infection control, microbiology or infectious diseases will come across bacteria of the Acinetobacter genus on a relatively frequent basis. But, as with all pathogens, these encounters are far from welcome. As well as being a Gram-negative bacterium—a group of bacteria that is spreading at an alarming rate—Acinetobacter is nearly always resistant to penicillin, chloramphenicol and many other antibiotics.

The most common member of this genus encountered in everyday clinical settings is Acinetobacter baumannii. This bacterium can cause wound infections, pneumonia, urinary tract infections and even meningitis. Its startling impact is vividly illustrated by an epidemiological involving a multi-drug-resistant strain of Acinetobacter that unfolded in an intensive care unit at Enschede hospital in the Netherlands. Virtually the entire unit had to be shut down, and the majority of the patients were without the medical care they needed. A multi-drug-resistant strain of Acinetobacter baumannii also apparently infected patients in two mobile ICUs. In January 2015, 31 patients were infected with Acinetobacter baumannii at Kiel University Hospital. Twelve of them died, even though the victims had initially been expected to survive the infection.

Acinetobacter baumannii is an extraordinarily resilient pathogen. It can lurk unnoticed on door handles, in small cracks, on telephones and keyboards, and on patients’ beds and bedside tables. It can even survive in low humidity conditions, and it is perfectly capable of forming biofilms. As well as showing tremendous resilience, A. baumannii is also a tough infection to treat. It is already resistant to four classes of antibiotics (penicillins, cephalosporins, fluoroquinolones and carbapenems), and over half of the A. baumannii samples tested in southern Europe are multi-drug-resistant according to the European Centre for Disease Prevention and Control (ECDC). Five percent of A. baumannii infections cannot even be treated with colistin, an antibiotic that has been available for more than 60 years but that is almost never used due to its toxicity. Germany’s Robert Koch Institute notes that the Infectious Diseases Society of America (IDSA) now regards A. baumannii as one of the six pathogens of most concern due to the diminishing treatment options. The combination of all these facts makes it particularly hard to tackle epidemics involving this strain of bacteria.

Acinetobacter baumannii is an environmental opportunistic pathogen that does not normally colonise human skin. It is typically found in soil and water, though the multi-drug-resistant variant is almost exclusively in hospitals and is particularly prevalent among ventilated patients. Patient-to-patient transmission mostly occurs via health care staff’s hands, contaminated surfaces and medical devices, though airborne transmission of Acinetobacter baumannii may also be possible. The risk of transmission significantly exceeds that of Methicillin-resistant Staphylococcus aureus (MRSA) (Robert Koch Institute Epidemiol. Bull. 2013; 32: 295). Mortality rates, especially in cases of septicaemia with carbapenem-resistant strains, can sometimes exceed 40 percent.

Nine percent of all infections on intensive care wards worldwide are currently caused by Acinetobacter spp., with particularly high rates of Acinetobacter baumannii infections (17 to 19 percent) observed in Eastern Europe and Asia.

**News from the world of medicine**

**Bacteria attack tumour cells**

Bacteria can make people sick—but they can also help seriously ill patients get better. As part of the battle against cancer, scientists are now deploying specially programmed bacteria to selectively poison cancer cells in tumours.

U.S. researchers modified the genetic sequence of Salmonella to make them suitable as an anti-cancer therapy. As reported in the scientific journal Nature, the bacteria invade the tumour and then proliferate, releasing toxins.

The genetically modified Salmonella colonise the tumour, where they are programmed to self-destruct. First, the bacteria produce a protein that spreads throughout the tumour. Once this protein reaches a certain threshold, it triggers the production of a substance that ruptures the bacterial cell wall. Some Salmonella survive the colony’s collective suicide and re-seed the population within the tumour. At this point, their genetic modification causes them to produce a toxin that kills cancer cells. This toxin is released when the bacteria disintegrate. Experiments with cancer-bearing mice have shown that the anti-cancer Salmonella inhibit the growth of bowel and liver cancer cells, though without actually killing off the tumours. In the most favourable cases, the mice saw a 50 percent increase in their life expectancy.

The synchronised disintegration of a population of Salmonella is certainly impressive. The bacteria are a bit like drones that have been programmed to execute a certain program. But there are still some unanswered questions, for example whether the concept can be translated into clinical practice.” says Mathias Hekkenwalder from the German Cancer Research Center (DKFZ) in Heidelberg, who was not involved in the study himself.

**Viruses and the body clock**

Our body clocks are controlled by ‘clock genes’ such as BMAL1. Researchers at Cambridge University in the UK have now discovered that susceptibility to viral infections depends on our body clocks. Their study revealed that the herpes virus replicates far more rapidly in mice if the animals are infected in the morning, which is the start of their rest phase. The researchers infected the mice with the herpes virus at four different times of day. In mice infected at the very start of the day, virus replication was around ten times greater than in mice infected in their active phase. This link could also explain why shift workers are more susceptible to viral diseases.

The researchers also suggested that the clock gene might have an effect on pandemics. The gene is less active in the winter months, precisely when diseases such as influenza are more likely to spread. The clock gene might also influence how effectively vaccines work. As reported in the journal Vaccine, a team of researchers led by Anna Phillips at Birmingham University in the UK found that flu vaccinations given in the morning instead of the afternoon result in a greater increase in antibodies one month after the jab.

**Could cancer be contagious after all?**

Cancer is not generally considered to be contagious—but scientists already know of eight types of cancer in animals that can be transmitted within a species, and even across species. When researchers collected a population of liver cancer in animals that were dying from cancer along different parts of the Spanish and Canadian coastlines, they noticed that the tumour cells were genetically different from the host’s healthy cells. Surprisingly, the biopsies also revealed that the tumours in the different shielding shared the same line of cancerous cells, suggesting that these tumours were being transmitted from one mollusc to another. Eight contagious cancer cell lines have already been identified, one in dogs, two in the marsupials known as Tasmanian devils, and five in four species of shellfish.

**Communicable cancer in humans is very rare, with most cases involving pregnancy or transplanted organs. However, Elizabeth Murchison from the University of Cambridge notes that ‘the risk of cancer is inborn in multicellular organisms and the basic evolutionary drive of this disease respects no individual limits and not even species boundaries’.”**

**Soap is perfectly good enough**

Hand hygiene is essential in hospitals and care homes, and of course it’s also an important part of healthy people’s daily lives. The evidence shows that regular hand-washing protects against infections by a
Say goodbye to biofilms!

Infection control experts have long been aware that water, HVAC and other building systems in hospitals and care homes play a major role in promoting the spread of healthcare-associated infections – and it’s not just Legionella bacteria that have them worried. Toilets equipped with a flushing rim are regarded as one of the key reservoirs of water bacteria (Engelhart S. et al.: Toiletten als Reservoir für 4-fach resistente P. aeruginosa (Toilets as a reservoir of P. aeruginosa, a bacterium resistant to four classes of antimicrobial agents)). Presentation given at the 12th Hospital Hygiene Congress organised by the German Society of Hospital Hygiene (DGKH), Hygiene und Medizin 2014 [39, suppl., p. 13].

Logically enough, this applies not just to toilets, but also to the flushing rims used in utility room sluice sinks. “That’s why we decided to modify the design of the sluice sink in our combined sluice units,” says Marcus Danner, key account manager at MEIKO, the Offenburg, Germany-based manufacturer of cleaning and disinfection appliances. The new sluice sinks with rim flushing are still made from deep-drawn stainless steel just like before, but now they are seamlessly welded into the top cover and have two jet nozzles instead of a rim opening. These produce a continuous, spiral-shaped sheet of water optimally designed to rinse away dirt. “By eliminating the rim opening we used in the washer-disinfector. It’s fairly common for us to install appliances which we know won’t be used regularly. In those cases, we can programme rim flushing to take place at whatever intervals are required,” says Danner.

The role of biofilms

Biofilms are essentially an ancient survival strategy adopted by bacteria. Experts estimate that cyanobacteria began forming biofilms as long as 2.5 billion years ago. Cyanobacteria were also the first organisms to produce oxygen, giving rise to the emergence of higher norms of life, as Trampuz et al. explain in their article “Sonication of removed hip and knee prostheses as a pre-treatment step prior to thorough steam disinfection and sterilisation” in the English Journal of Medicine 2007.

The coexistence of bacteria in a biofilm makes them resistant to adverse external influences. Trampuz notes that biofilms can be found in places ranging from hot sulphur springs in Yellow- stone National Park to Antarctic glaciers.

Biofilms predominantly form in aqueous systems where microorganisms grow at interfaces. These interfaces may be liquid-solid, liquid-liquid, or liquid-gas. Besides microorganisms, biofilms mainly consist of water. Substances excreted by the microorganisms combine with the water to form hydrogels, creating a mucous matrix in which nutrients and other substances are dissolved. Biofilms are found just about everywhere: in soils and sediments, on stones, on and in plants and animals (mucous membranes), in glacier ice, in boiling springs, on rocks in the desert, even in diluted sulphuric acid and diluted sodium hydroxide. They are also present in aviation fuel and oil tanks, on spacecraft and in submarines, in places heavily contaminated by radiation and, unfortunately, in hospitals. Biofilms provide bacteria with a reservoir which can lead to chronic and recurring infections, including sepsis. Biofilms may be present on catheters, implants and medical instruments, and the use of synthetic materials in medical devices such as implants actually favours their formation.

The deep-drawn stainless steel sinks are seamlessly integrated in the rest of the unit.

Instead of a gap for flushing water, two jet nozzles now ensure an optimum rinse.

He adds that this shouldn’t be confused with the system disinfection feature used in the TopLine machines: “That’s a separate process which involves thorough steam disinfection of all the pipework and nozzles to make things as safe as possible for patients and staff.” Danner emphasises.

Note: The microorganisms involved frequently come from the skin of hospital staff and patients, but may also have their source in connections or openings for tap water. Water pipes, dialysis equipment and hard-to-clean endoscopes can also be affected. Some of the most frequently observed pathogens include Staphylococcus epidermidis, Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli, Acinetobacter baumanii and Candida albicans.
Where do people want to die? Of course, there are always frequent studies, surveys and questionnaires on this question. And there are answers. Fifty percent of Germans would like to die at home. In actuality, this desire is fulfilled for just 20 percent. Instead, every second older German dies in a hospital - which 75 percent actually don’t want at all. Ten percent of people could imagine themselves spending their last days and hours in a hospice. In reality, just three percent do so. The analyses are based on special evaluations by the German Statistics Bundesamt (Federal Statistical Institute) as well as calculations by the Health Risk Institute.

Miriam Arens is involved with the hospice work, documented in Germany. Since then, it has grown - the famous Dr. Mildred Scheel House stems from this and it is accompanied today by an institute for palliative medicine. “I accidentally arrived at this task”, Miriam Arens remembers today, and modestly says: “It was no calling for me. Rather, it was the desire to try out something new”. But in a way, it seems as if Miriam Arens was called to it. Born in Africa, in 1988, she transferred to the Caritas Association for the City of Cologne e.V. and belonged to the Caritas Association for the City of Cologne. The technical and organisational work, the missing contributions, the sacrifice and the expense are worth it: “Thankfully, our house also has a window view, and the bridges that are used as a symbol of transition”, says Detlef Silvers. Today, in comparison to the time before the renovation, every patient room is equipped with its own wheelchair-accessible shower-bath. In the cellar, there is a small “wellness oasis”, the main component of which is a medical bath, which offers the patients the possibility to have relaxing treatments. “An even greater luxury are our three bidet cleaning systems for a house with 10 beds”, jokes Detlef Silvers. In reality, the decision for the three devices from the MEIKO company was ultimately made because of the experience that they stood out in comparison to the competition, not just because of their better cleaning results, but also because, “with regard to the light budget of a hospice, they pay off in running operation through cost savings and the very low rate of malfunctions and repairs”, explains Silvers.

The selection of the devices from the MEIKO company was ultimately made because of the experience that they stand out in comparison to the competition, not just because of their better cleaning results, but also because, “with regard to the light budget of a hospice, they pay off in running operation through cost savings and the very low rate of malfunctions and repairs”, explains Silvers. The fact that Johannes Nepomuk House in Cologne is one of the exemplary hospices is due to the direct connection between the increasing importance of the hospice movement in Germany and the continuously growing networks that support this important work: a supporters organisation that is supported by citizens engagement, palliative care from resident physicians and through special stations in clinics as well as through the volunteers in the hospice associations and palliative-oriented care services. Detlef Silvers summarises: “Hospice work doesn’t exist due to one key person alone, but there are many that work together in an interdisciplinary and non-denominational way.”

### CALANDER

**14.–16.11.17**
MEDICA, Düsseldorf, DE

**30.1.–2.2.17**
Arab Health, Dubai, UAE

**12.–17.2.17**
APSIC, Bangkok, TH

**25.–17.4.17**
Afterpfeuge care sector fair, Nuremberg, DE

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