

Hygiene *for the* World

Cutting-edge expertise in hygiene and infection control

Issue 1 / March 2014

EDITORIAL

Consultants and senior physicians are often derided for setting a poor example when it comes to hygiene.



The theory is that their rate of hand hygiene compliance decreases proportionally as they ascend the hospital hierarchy, and nobody has seemed keen to speak up in their defence. Until now, that is. Dr. Hugo Sax, who heads up the Infection Control Programme at Zurich University Hospital and also works as an associate professor, would certainly be classed as being in his employer's higher ranks, so he speaks for many senior staff when he argues: "It's conceptually very difficult as somebody who saves lives to focus on disinfecting your hands in order to avoid causing harm." The fact is that patients and indeed doctors themselves have high expectations in regard to the art of medicine. So it can be hard to appreciate that hands that help to soothe pain or even save lives could themselves be carrying deadly germs.

Sax is right that this represents an inherent contradiction. However much our reason tells us to accept these two opposing aspects, anyone who has investigated human behaviour will understand the power of what people feel. And the instinctive feeling is that a doctor's hands are instruments of healing and not of sickness. That's why I strongly recommend reading the full interview in this issue of "Hygiene for the World" to learn more about this complex issue. It

seems astonishing how hard it is to actually change human behaviour. And when it comes to seemingly innocuous matters such as hand hygiene, it appears to become twice as hard. The intractable nature of this problem is nicely illustrated by a scientific experiment. Two groups of people were given a story to read. One of the stories had a "clean" and morally uplifting protagonist, while the other focused on a more morally questionable character. After reading their respective stories the test subjects were asked to choose a free gift. Most of those who had read the story with the more appealing protagonist chose a pen, while most of those who had read the other story chose a disinfectant hand wipe. It seems that hand hygiene can even clean up dubious morals!

In a hospital setting, those who fail to disencumber themselves by observing proper hand hygiene practices are actually taking a moral burden onto their shoulders. It is really as simple as that, and it applies to anyone who lays their hands on a patient, regardless of their position in the hospital hierarchy. As Hugo Sax reiterates in our interview, new methods constantly have to be found to encourage people to make this behaviour second nature. We're glad to be able to give professionals like him the opportunity to present their views in "Hygiene for the World". We need doctors like him who never tire of injecting new life into key topics and who have the required imagination, sense of humour and in-depth knowledge of what makes us all tick.

Very best regards, Markus Braun

Let's just call it performance feedback...

Other people might talk about monitoring and control, but Dr. Andreas Voss (pictured) prefers to talk about "performance reviews" – and he has plenty of sound reasons to support his argument that processes carried out in hospitals should also be recorded on camera to enable people to review them and check if mistakes have been made. Voss is a Professor of Infection Control at Radboud University Nijmegen Medical Centre in the Netherlands and a Clinical Microbiologist and Head of Infection Control at the Canisius-Wilhelmina Hospital (CWZ). He is one of Europe's leading experts in the field of infection control and hospital hygiene and a specialist in the epidemiology of antibiotic resistance and hand hygiene. We spoke to him about opportunities to improve hygiene in Europe, strategies for reducing the complexity of infection prevention, and the role of hygiene specialists in the Netherlands.



Professor Dr. Andreas Voss from the Netherlands is one of Europe's leading experts in the field of infection control and hospital hygiene. Photo: personal

Question:

Last summer the European Centre for Disease Prevention and Control (ECDC) published figures showing that 7.4 percent of patients in selected hospitals in the Netherlands are infected with some kind of hospital superbug.

In Germany that figure is just five percent. What does that tell us? Is Europe's brightest star in the field of infection control losing ground? Or is Germany simply catching up?

Dr. Andreas Voss:

There are also other figures that paint a completely different picture: they show a rate of less than five percent for healthcare-associated infections in non-university hospitals and around six percent in university hospitals in the Netherlands. At the Canisius-Wilhelmina Hospital in Nijmegen where I work we have a rate of just 2.8 percent. The biggest thing these figures have in common is a definition problem. Right across Europe different countries gather the data in different ways, and that makes the data situation far too patchy. But to come back to your question, Germany has made huge strides in recent years to reduce the rate of infections. I think that the huge improvements in hospital hygiene we are now seeing are partly due to that typically German ability to recognize that something needs to be done and then to do it extremely thoroughly.

Question:

Sally Davies, the Chief Medical

Officer for England, recently said in an interview that multi-drug resistant Gram-negative bacteria pose as much of a global threat as terrorism, describing them as a "nightmare". What are your thoughts on this issue?

Dr. Andreas Voss:

We certainly need to take the dangers of Gram-negative bacteria even more seriously than those posed by MRSA. But the source of the problem in this case is very different because the resistance we are seeing now has clear associations with livestock breeding practices.

Question:

Is it true that the resistant bacteria in animal feed can be traced back to humans? Does that mean that the people denouncing the increased use of antibiotics in livestock farming have got it wrong?

Dr. Andreas Voss:

For a long time we didn't properly understand the interaction between animals and human beings in this context. We're now starting to see that it takes place in many different ways. We certainly

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[1] Cancer and viruses:

Researchers are still trying to determine once and for all whether pathogens play a role in the development of cancer. The WHO currently estimates that viruses are responsible for 16 percent of cancer cases.

[1] **Dr. Andreas Voss** is regarded as a leading expert in the field of infection prevention. In an interview with "Hygiene for the World", he puts forward a strong case for greater control and monitoring in hospitals. He also suggests packaging the concept as "performance reviews" if that makes it easier for people to accept.

[2] **Dr. Hugo Sax** is the Head of Infection Control at Zurich University Hospital – and also a keen pilot. [3] He understands that his medical students could learn valuable lessons from cockpit procedures and takes a fun approach to training those key aspects. We spoke to him about risk management, the role of mental stress in hand hygiene compliance, and how it might be possible to break down obsolete structures in hospitals.

[4] **Masthead (Impressum)**

Questions & Answers

Question:

What role do viruses play in cancer development?

Answer:

The number of people with cancer will increase over the coming years. According to the World Health Organisation (WHO), the number of new cancer cases each year – which stood at 14 million in 2012 – is expected to almost double by 2030. The WHO report estimates that some 16 percent of cancer cases are caused by infections, a figure that could be reduced through vaccinations. The key pathogens in this context are considered to be the Hepatitis B virus, which can cause liver cancer, the human papillomavirus (HPV), which has been linked to various cancers including cervical cancer, and the *Helicobacter pylori* bacteria, which can increase the risk of stomach cancer in the event of persistent infections. Smoking, however, continues to be one of the primary causes of cancer. The WHO calculates that cancers related to tobacco use kill six million people a year worldwide.

Bringing pilot skills into a hospital setting

What factors really help to reduce the number of healthcare-associated infections? More guidelines? More hand hygiene initiatives? Sanctions? Or perhaps even better-targeted praise? PD Dr. Hugo Sax heads up the Infection Control Program at Zurich University Hospital. He has spent a number of years investigating different ways of changing people's behaviour and making treatment safer for patients. A specialist in internal medicine and infectious diseases, Dr. Sax is also a keen pilot who understands how important it is in certain professions to ensure that critical behaviours become second nature. The 'Hygiene for the World' editorial team spoke to Dr. Sax about mechanisms of risk management, structures in the healthcare sector, and why it is so difficult to change things in ways that genuinely benefit patients.

Hygiene for the World:

As well as being a doctor, a specialist in infectious diseases and the Head of Infection Control at Zurich University Hospital, you are also a keen pilot. When it comes to risk management

life depends on how you react, which is rarely the case for hospital personnel. But it shows how pilots put a lot of work into training to make sure they react properly in the cockpit. And those kinds of behaviours could also



Today's OR environments are as complex as a pilot's cockpit.
Photo: mario beauregard – Fotolia.com



PD Dr. Hugo Sax is a keen amateur pilot. Sometimes he wishes all his colleagues had a pilot's license because in dangerous situations aviation at least has a fixed terminology to communicate what is happening. That's something that Sax would like to see in hospitals, too. Photo: personal

and patient safety, hospitals are starting to learn lessons from aviation. Do you sometimes wish that all your colleagues had a pilot's license?

Dr. Hugo Sax:

Yes!! I recently flew with a junior doctor who is also a pilot. We suddenly found ourselves in a very tricky situation and it was interesting to see how we both responded under pressure. It was automatic, almost like a reflex. Obviously as a pilot you are in immediate danger in situations like that and you know that your

be usefully applied in complex organizations such as hospitals. When you get into a dangerous situation in the air, for example, we have an established terminology to communicate what is happening. Because putting a name to something makes it clearer – in fact it doesn't really exist until it is properly defined. That could also be a useful approach to take to the invisible dangers posed by the world of bacteria which we are confronted with in hospitals.

HW:

Are you confident that it's possible

to transfer the mechanisms of risk management from aviation into the hospital environment?

Dr. Hugo Sax:

That's the big question, the question of whether you can really transfer experiences. It's certainly true that the situation of being simultaneously faced with complexity, difficult decisions and mental stress applies in both environments, i.e. the cockpit and hospitals. But as a pilot you are also experiencing other strong emotional factors such as the beauty of the world above the clouds. Here at Zurich University Hospital we're actually running a joint program with Swiss Aviation Training to provide communication training for staff members and medical students. It involves a kind of video game where two teams of two people fly to Venus in a spaceship. The simulation software gradually introduces increasing amounts of stress which requires the four astronauts to communicate with each other effectively. For example, they have to complete mission-critical tasks such as charging up batteries and transporting them to the flight deck in lifts. If you fail to clearly state that you mean Battery 4 and not Lift 4 you can end up triggering chaos and putting the whole mission in jeopardy. After the game we analyse how many mistakes people made and take a look at

how well people communicated under pressure. The analogy with medicine is identifying how well you work under stress. We also see these kinds of misunderstandings in communication in the field of hygiene. Our mental model, the concept that we have in our head, is a key component. We're probably all familiar with the sensation of leaving a room to do something and then forgetting what it was we wanted to do when we reach our destination. Sometimes you have to go back in order to recover the thought that led you to embark on the task in

Ideally hand hygiene in hospitals is something you do automatically

the first place. That also illustrates how mental models are very much dependent on context.

HW:

Is it also a kind of mental overload that gets in the way of hand hygiene?

Dr. Hugo Sax:

Hand hygiene is not something that challenges us intellectually. When you disinfect your hands your thoughts are generally on other things. In fact it's an element

of hospital hygiene that should simply become automatic. Our sensory apparatus – our eyes, ears and nose – should receive a signal that prompts us to disinfect our hands. When we approach a patient's bed we should disinfect our hands without having to even think about it. The process shouldn't draw on any mental resources. That's why in our hospital we've also placed bottles of disinfectant solution right next to patients' beds. That makes them clearly visible when you approach the patient so it provides a trigger for an automatic response.

We are gradually making progress in implementing this kind of automatic behaviour in hospital settings. A few years ago we were still writing down guidelines and then shutting them in a drawer. Now at least we are using Power-Point presentations, running hand hygiene initiatives and working on ways of helping people to constantly recall the importance of hand disinfection. The next step would be actual behavioural training...

HW:

In many countries nursing staff struggle to find time to get everything done. What's the use of risk management, aviation as a role model and knowledge of human attitudes towards hand hygiene if you don't have enough resources in place for effective care?



The way pilots are trained to behave can set an example for many situations in healthcare settings. Photo: Marcito - Fotolia.com

Dr. Hugo Sax:

Obviously a lack of properly trained personnel is a risk factor for higher rates of hospital-acquired infections. But I'm still convinced that people's behaviour is affected by how a system is designed. That ranges from your physical work environment to processes and procedures all the way through to

I think I can safely claim that we are conducting pioneering work in this respect at Zurich University Hospital. We're working hard to ensure that the functions of quality management, patient safety and infection control are firmly anchored within the institution. Our department is already ISO 9001 certified but now we have taken

HW:

Are the structures in today's hospitals really so off the mark?

Dr. Hugo Sax:

On the one hand you have the need for absolute control in a hospital, just like in commercial aviation where every screw has a number, every action is recorded in a protocol, and everything is genuinely made absolutely safe. That's because the idea of an Airbus crashing nowadays with so many passengers on board is completely unacceptable. But at the other end of the spectrum of a potential risk management strategy we also have a situation similar to that of guerrilla warfare, where people are repeatedly having to make spontaneous decisions based on their expertise. In medicine we're constantly moving between these two extremes depending on the situation. When an ambulance delivers an emergency case to the OR for surgery then you're responding on the basis of your expertise. You can't obtain a bacterial culture to determine whether it would be better to postpone surgery because the badly-injured accident victim in front of you might be carrying MRSA. We're constantly trying to maintain a balance and it's a huge challenge to be a guerilla hero in the OR one moment and a safety-conscious nitpicker the next! To design an effective safety

culture you have to take those realities into consideration.

HW:

What kind of culture should you have in regard to mistakes to really learn from them?

Dr. Hugo Sax:

We constantly make mistakes. All of us. We might leave the keys in our house, knock a glass over, or forget a friend's birthday – whatever it is, the first thing we have to do is to recognize that we've made a mistake and then understand why it occurred. The question of whose fault it was is not nearly as important. Why? Because even when you're dealing with mistakes it's the underlying

would be the ideal goal. But, like many things, cultures form structural patterns that are astonishingly stable. When a new individual joins a group he or she immediately adapts to that group. But when somebody leaves the group the group's behaviour remains the same.

HW:

In your experience as a hospital physician, is it true that hand hygiene compliance decreases the higher you go in the hospital hierarchy?

Dr. Hugo Sax:

Washing our hands is a very deeply rooted ritual which is tied up with all sorts of symbolism. It's actually conceptually very difficult to perform the role of somebody who heals while fully appreciating that you could cause harm to the patient through the bacteria on your hands. It can be difficult to resolve this contradiction in how you perceive yourself. I can definitely imagine that this could be even harder for people with extensive medical experience who have more responsibility for patient outcomes. Resolving that dilemma requires insights into the intuitive ways in which behaviours are related. Everyone working in healthcare needs to actively get to grips with the risks of germ transmission if they want to influence their subconscious behaviour.

Hndäedefinsktieon?

Achten Sie vor **jedem** Patientenkontakt auf eine korrekte Händehygiene.

UniversitätsSpital
Zürich

Eine Aktion der Spitalhygiene



The German word for "hand disinfection" printed on a postcard with the letters in the wrong order. The aim of this initiative at Zurich University Hospital was to remind staff members of the importance of hand hygiene – and how sometimes you have to make mistakes in order to reach your goals!

your social environment and even the political system in which you live. We've come to realize that the challenge lies in changing the level of organization to provoke a change in people's behaviour.

the step of transforming this rather cumbersome system into a lean tool that is genuinely useful in our somewhat chaotic and fast-paced work environment – a tool that really helps us to prevent infections.

Washing our hands is a deeply rooted ritual tied up with all sorts of symbolism

structures that largely dictate the behaviour involved – and those same structures that cause us to repeat some mistakes again and again. But there's no doubt that it's a huge challenge to change the structures within an organisation. That's why people constantly try to look at mistakes in isolation instead of investigating and analysing the underlying structural causes. Establishing this latter approach as a corporate culture

Continued from page 1

Let's just call it performance feedback...

shouldn't be demonising farmers. They simply want to treat their animals properly. But we do need to take a close look at our own behaviour, for example when we grab bargains for a euro here in Holland. Paying one euro for a kilo of meat means we are contributing to the problem.

Question:

As part of the EurSafety Health-net project, one of your tasks is to build

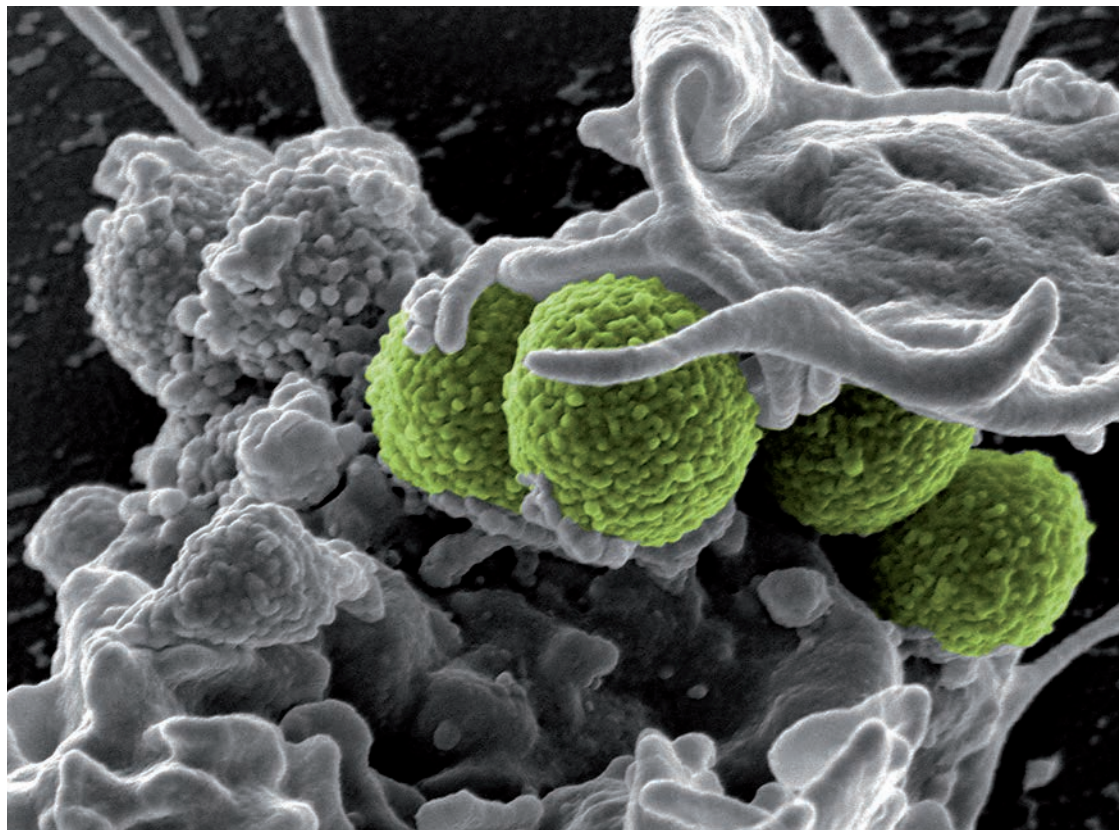
A camera in the OR would show whether teams are adhering to the proper guidelines

networks and encourage knowledge transfer in the EUREGIO cross-border region between the Netherlands and Germany. But you are also viewed as a specialist in the field who considers many efforts to be doomed from the outset because it is so rare to see real change in how people act and behave. That's why you recommend careful monitoring. Is that the solution?

seen as sinister and hospital personnel tend to dislike initiatives such as performance reviews. We shouldn't just be looking at the figures, but also at people's performance. Installing a camera in an OR to confirm whether the whole team is acting according to the proper guidelines would be a genuine means of improving quality. We're testing it out in the Netherlands at the moment and we've got permission to do it in our hospital, too. And if we have a problem with our work being monitored then we'll simply have to call it performance feedback! Truck drivers, for example, don't have that luxury. They are monitored by GPS and accept that as normal. But if a doctor cuts you open at the end of a 36-hour shift then, strangely enough, he doesn't find it normal that anyone should be monitoring him and his performance. I'm fairly sure that we will see a shift in attitudes in the future as patients apply more pressure.

Question:

You've also called for a new strategy of simplification. You want to reduce the number of infection



Interaction between MRSA (Methicillin-resistant *Staphylococcus aureus*, green bacterium) and a human white blood cell. The bacterium pictured is MRSA252, one of the principal reasons for infections caused by healthcare-associated pathogens. Source: NIAID

People nowadays imagine that they have to write everything down. But what we really need to do is to train people properly in the basic principles. That's why we decided to develop an app in our hospital for all the employees, funded by an insurance company. The hygiene app comes in different versions: one for hospitals, one for general practitioners and one for developing countries. Technology has

project? Is that something that should be expanded?

Dr. Andreas Voss:

I used to be very pessimistic about projects funded by Europe. But I've become a bit more optimistic, though I'm still not fully convinced that cross-border regional projects are genuinely useful. My cautious optimism has been prompted by my colleague Alexander Friedrich who has worked so hard to make the EUREGIO project a success. So many boundaries have been broken that it would be silly of us to try to maintain them in our heads. It's extremely useful to learn from your direct neighbours. But in terms of Europe as a whole, I think we're simply too different. And I'm not convinced by the results of the ECDC.

Question:

Tell us about the role of hygiene specialist in the Netherlands. Do they have the status they deserve or should it be higher? Are there any countries in Europe that could serve as a role model?

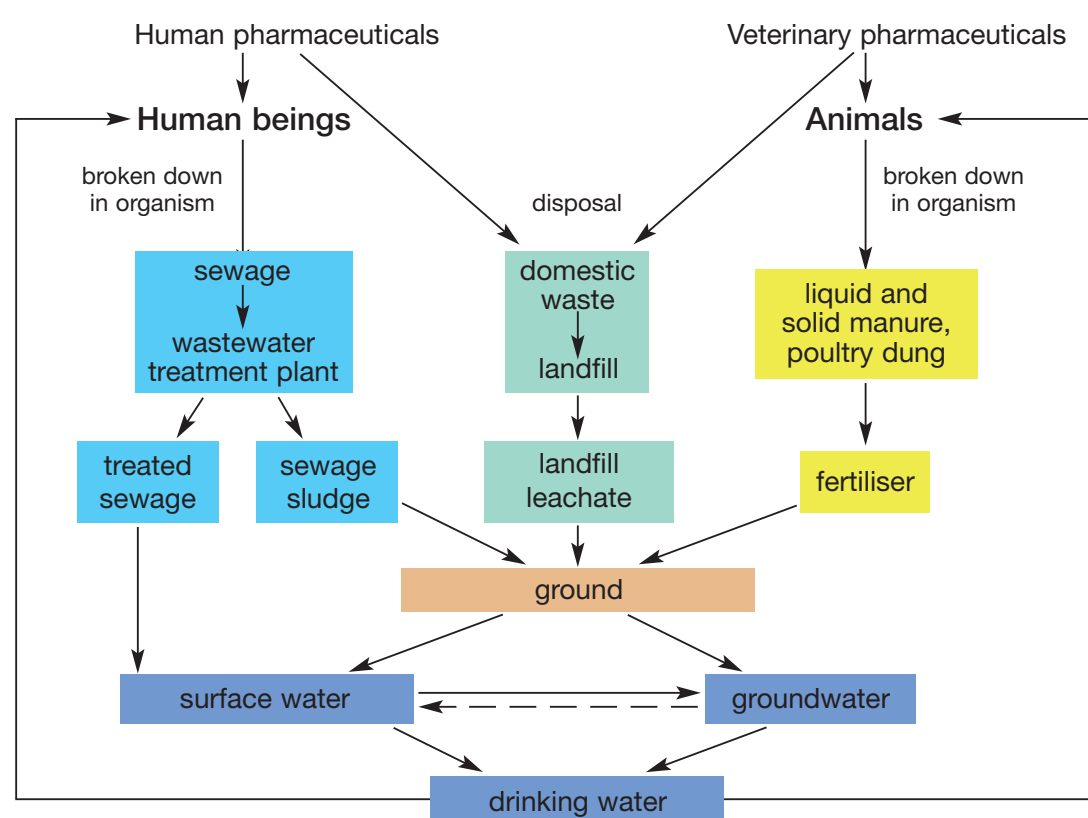
Dr. Andreas Voss:

I think they have a deservedly high status in our country. Our infection control specialists do a great job of performing their role, even though they spend fewer years studying the subject than their colleagues in Germany. But the big question is whether we have enough infection control experts and hygiene specialists. I would say the answer is definitely no! I think we could also learn a lot from the Scandinavian countries and from Switzerland too, but in Great Britain they unfortunately spend so much time writing down far too many figures that it prevents them from doing really excellent work.

Question:

What are your feelings about the approach taken in the EUREGIO

Introduction of pharmaceuticals and their residues in the environment



Dr. Andreas Voss:

Airlines monitor their pilots and the government closely monitors the meat industry and nobody is complaining! Although we claim to accept auditing in hospitals, there is a belief that it should only be carried out by people. Using electronic devices is somehow

guidelines by 50 percent. Can you really simplify a complex issue through those kinds of cuts?

Dr. Andreas Voss:

Obviously it's not easy. But do you think it's better to have 50 guidelines that nobody knows or 10 guidelines that everyone knows?

become sexy so let's use it to teach people what they need to know. In Holland we say that it's only worthwhile if you really get something fixed in people's heads.

CALENDAR

12–15 March 2014

IFIC Conference, Malta

28 March 2014

9th Thüringer Pfltag, Jena

30 March – 2 April 2014

DGKH Congress, Berlin

17–20 April 2014

CMEF, Shenzhen, CN

8–9 May 2014

FKT hospital engineering event, Dortmund

12–14 May 2014

AIPI Conference, Rivièr-du-Loup, CA

25–28 May 2014

CHICA, Halifax, CA

20–22 May 2014

Hôpital Expo, Paris

7–9 June 2014

APIC Conference, Anaheim, US

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Registry entry:

German Trade Register
Court of registry: 79098 Freiburg i. Br.
Reg. no.: HRA 470603

VAT ID no.:

VAT identification number as per §27a of German VAT Act
VAT ID no.: DE 142540206

Responsible for content

(as per § 55 (2) RStV):
The publisher MEIKO Maschinenbau GmbH & Co. KG, Englerstrasse 3, 77652 Offenburg, Germany

Editor: Doris Geiger

Person responsible under German Press Law: Regine Oehler

Design/layout: Mathias Klass, Klass-Design

Printed by: Dinner-Druck GmbH, Schlenweg 6, 77963 Schwanau