

# Blown Away!

Studies show turbo hot air dryers are a 'potential disaster'

Even though a lot of us don't do it, let's say you know that washing your hands is the first, and the best thing, you can do to stop sharing nasty bugs that are especially dangerous for patients.

And you know you should use soap, right? Because more than half the people who actually do rinse their hands in the washroom don't bother using soap.

Congratulations if you know this, and thanks for your help on the front lines of infection control.

Now Roberto Berardi would like to tell you something you may not know. Drying your hands is not only the last step in this exercise, it is critically important way to be sure deadly pathogens do not leave the washroom when you do.

He will also tell you to step away from those high-tech jet-speed hand dryers, which he calls bluntly, 'a disaster for hand hygiene'.

'The first principle is that paper towels absorb pathogens, dryers spread pathogens,' he said. 'This is not a matter of opinion. Once your hands are wet, the water has to go somewhere. Either it goes into a tissue that absorbs it, or it is partly dried by a jet of air that necessarily blows away micro droplets that need to go somewhere. They go off your hands and into the air!'

Berardi is the Chairman of a group with the curious name European Tissue Symposium (ETS) that studies how people wash up after using the toilet. If you have seen people



in white lab coats standing around the washrooms taking notes, that was the team from the University of Westminster who carried out a study on hand washing and drying behavior in public washrooms.

'It is not simple to measure adherence to guidelines on hand hygiene,' Berardi told *European Hospital*. 'There is direct observation, of course, which remains the gold standard. We can conduct surveys. We can also measure how much soap has been consumed or the amount of paper towels used. Each of them has some merit, but there is also a lot of interpretation.'

Recently he introduced a more scientific approach for ETS by shifting its focus from people to the patho-

gens they rinse off in the sink. At the ISSA/INTERCLEAN Trade Fair for Cleaning Professionals in Amsterdam this Spring two leading microbiologists specialised in healthcare associated infection delivered their findings from a pair of studies commissioned by ETS.

Mark Wilcox MD, Professor of Medical Microbiology at the University of Leeds & Leeds Teaching Hospitals, and Keith Redway from the Department of Biomedical Sciences at the University of Westminster, revealed the number of bacteria that remain on people's hands after washing is markedly higher and that high-speed jet dryers contaminate the washrooms where they are installed.

Both studies have been submit-

ted to peer-reviewed journals. As a result, Berardi said ETS is not able to yet share detailed findings from the studies. He did release some of the top level data in an announcement.

- Drying hands with conventional warm air dryers, the total number of bacteria actually was found to increase on average on the finger pads by 194% and on the palms by 254%.
- With jet-air dryers bacteria count increased on average on the finger pads by 42% and on the palms by 15%.
- Drying hands with a paper towel, the total number of bacteria was reduced on average on the finger pads by up to 76% and on the palms by up to 77%.

Blasting air at speeds of up to 500 kilometers per hour, jet air dryers blew micro droplets carrying micro-organisms up to two meters away. The model used to simulate viruses showed transmission from the hands up to three meters away.

Conventional warm air hand dryers spread airborne micro-organisms up to 25 centimeters from the dryer while paper towels showed no significant spread of micro-organisms, according to ETS.

Prof. Redway studied what he called vertical height dispersal patterns for hot air dryers where Zone One was at the level of an adult's head.

'We found that most of the contamination occurred in Zones Three and Four, which is where a child might be standing if it were waiting for its mother or father to dry their hands,' he said.

ETS is continuing to support research in an effort to clear up what Berardi calls misconceptions about hand hygiene. As an example he cites a survey that showed men in England believe hot air is the most hygienic



Roberto Berardi, Chairman of the European Tissue Symposium (ETS)

method because only clean air touches their hands after washing.

Hand washing is integral to breaking the cycle of transmission of harmful pathogens in healthcare from hospitals to nursing facilities to patient care at home, he said.

'People say that they don't have time to wash up before seeing patients, but the demands on their time will only increase if there is a cross contamination among patients,' he said. 'This excuse is far from acceptable. We need greater awareness, a fuller understanding of not adhering to these standards.'

Education is not a strong enough word for what Berardi would like healthcare administrators to do.

'We need continuous internal marketing, posters everywhere inside the hospital,' he said. 'There is a good awareness among people working directly with patients, yet other people inside the hospital may need more convincing of the importance of this issue and that guidelines have been established.'

'After that we need to monitor adherence, feedback on everything that is measured. What is not measured is not done,' he added.

So watch for the people in the white coats, coming soon to a washroom near you.

Awareness must rise and people's habits change

## ers are not enough

'potential disaster' in infection control

increasingly cause sepsis, an often fatal condition, also associated with significant economic damage.

According to Jena University Hospital, 154,000 new cases of sepsis are reported annually in Germany alone and, with 60,000 patients who die of sepsis, the condition ranks third in causes of death, after cardio-vascular diseases and cancer.

Worldwide a patient dies from sepsis every three to four seconds, it kills more than six million infants and young children and 100,000 new mothers every year ([www.worldsepsis-day.org](http://www.worldsepsis-day.org)). And, particularly disconcerting: during the last ten years, the number of hospitalisations for sepsis doubled as the US Centres for Disease Control reports.

Studies have shown that 20 to 30 percent of these infections could have been avoided by carefully designing workflows and by adequate hygiene measures.

While there are no statistics on the number of chronically ill

patients also carrying MRSA upon hospital admission, studies do indicate that this is significant. Due to the multimorbidity of an ageing population, with frequent hospital stays, there are hygiene-relevant relationships between the patients' different locations.

### New techniques show hygiene flaws

Today microbiology and hygiene are inseparable. Be it in healthcare facilities or restaurants, hospital wards or kitchens, the body of rules and regulations is ever growing and has led to the development of the profession of 'hygiene manager', who supervises compliance in care homes and hospitals.

In a hospital, the hygiene manager's job description entails developing policies and guidelines, training and advising staff and controlling crucial workflows and procedures in order to reduce the number of hospital-acquired infections.

The aim is to decrease the number of cases of pneumonia, wound infections, sepsis and urinary tract infections, which all contribute significantly to extended hospital stays and rising costs. Therefore, strict hospital hygiene not only makes medical sense, but also makes financial sense – a must in the era of DRG. Hygiene is part of a hospital's quality management and thus

should be communicated clearly on the hospital website and in other institutional publications.

About 70 hygiene managers cover roughly 2,000 German hospitals. According to the new Infection Protection Act, which has been in force since 2011, their task is to develop and implement hygiene plans. Qualification and certification, however, remain major unresolved issues.

Hygiene has been on the healthcare agenda for a long time and theoretically everybody knows what needs to be done. However, as long as handshakes are common and the most basic hygiene measure are not implemented due to lack of time and personnel, the best certification won't help. The German Hospital Federation responded to an inquiry with a terse statement: 'We do not see how the number of hygiene managers needed can be trained in the immediate future.'

To raise infection awareness, the hygiene manager at the Teaching Hospital of the University Witten/Herdecke founded a hygiene working group. A hygiene specialist monitors compliance with the guidelines, from the quantity of disinfectants used, to strict uniform regulations, particularly in the intensive care unit and operating theatres, and the isolation and antibacterial care of MRSA patients.

In Germany, comprehensive recommendations on effective

hygiene measures are urgently needed. Hospital hygiene managers in Baden-Württemberg suggested developing different hygiene standards depending on the type and level of resistance and type of in-patient care being provided. Categories could include standard hygiene measures, second-level measures covering white coats, gloves, patient-related care utensils and private washrooms (isolation) and single-occupancy room and cohort isolation. Responsible administration of antibiotics plays as much a role in such scenarios as strict hand hygiene compliance.

Modern devices also help all parties to maintain hygiene standards. For example, Dyson, the British manufacturer, offers a new generation hand dryer that complies with the strict HACCP bacteriological rules. The touch-free 'hands-in' Airblade, launched this year, features new technology that removes bacteria, avoids spray water, is fast (15 seconds) and dries hands in a skin-friendly way. The Airblade does not blow contaminated air into the washroom and, unlike paper towels, does not generate wet and used towels in open bins, which emit additional bacteria. EH asked Richard Mallett, Managing Director of HACCP Europe, whether the Dyson Airblade complies with highest hygiene standards. 'The device is fitted with a HEPA filter, a bacteria filter that captures bacteria from the air before it's blown onto the hands. Thus the air that's used to dry the hands is of better microbiological quality than the ambient air sucked in by the device. Moreover, hand



Richard Mallett, Managing Director HACCP Europe

dryers that do not warm up the air might have an additional advantage: they reduce the likelihood of bacteria proliferating inside the device. And surfaces that are treated with an antibacterial coating significantly reduce bacterial colonisation.'

### Current hygiene standards

'The EU rules do not prescribe a certain procedure to dry hands; they only require hands to be washed and dried in a hygienic manner with drying being the important factor, since wet hands lead to further contamination,' Mallett explained. 'Conventional hand dryers have a lower air volume and weak air rush.'

Time, EH pointed out, is an issue. Grabbing a paper towel is quicker than using an air dryer, Mallett: 'We examined and evaluated different devices and materials for use in sensitive hygiene environments, inter alia hand dryers. To date, we have issued a single worldwide approval for hand dryers: for the high speed Dyson Airblade, which uses non-heated, HEPA-filtered air to dry hands in 10 to 12 seconds.'