
CONSISENT INFECTION CONTROL
NEEDS HYGIENIC IT-SOLUTIONS


MeDiSol

Supporting Member of DGKH e.V.

ABOUT THE PUBLISHER

Rein EDV GmbH (MeDiSol) is a manufacturer and distributor of medical IT products such as encapsulated panel PCs for the OR, hygienic keyboards, medical displays, and much more.

In the development of our proprietary products, as well as in selecting accessories, we place a particular focus on hygiene characteristics. In order to integrate even more know-how about hygiene into our products, we have become active in January 2008 as sustaining members in the German Society for Hospital Hygiene DGKH.

SCIENTIFIC COUNSELING

We thank Prof. Dr. Reinier Mutters, Director of Hospital Hygiene, Marburg University Hospital (Germany), for his support in creating this brochure.

His scientific focuses include matters of infectiology and hygiene in the context of multi-resistant (MR) pathogens, the issue of hygienically safe materials and devices (construction and reprocessing) as well as oral microbiology, a relevant area in dentistry.

HOSPITAL-ACQUIRED INFECTIONS INCREASE

INVESTMENTS IN FIGHTING HOSPITAL-ACQUIRED INFECTIONS ARE ECONOMICALLY VIABLE

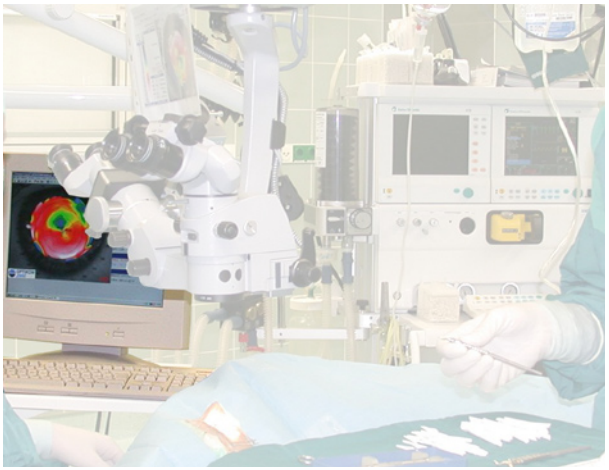
Hospital-acquired infections (HAI) have developed into a well-know challenge on a world-wide scale. The number of these infections is on the rise, and the pathogens – bacteria in most cases – show increasing resistance to antibiotics.

The probability of acquiring a disease based on such a nosocomial infection at a German acute-care hospital is between 5.7% and 6.3%.

Each year, 600,000-700,000 patients acquire a condition due to infections which they acquired at a hospital. Treating such diseases turns out to be more and more difficult and cost-intensive because pathogens are becoming increasingly multi-resistant.

In 1% of infected patients, this is the reason leading to death; in 3-4% of cases, HAI contribute significantly to lethality.

For these reasons, each measure leading to a reduction of HAI is a meaningful investment – an investment in patients' wellbeing as well for the benefit of the hospital. The burden of follow-up costs caused by these infections is enormous: An average extension of patient stays by 10 days means 6.4-7 mn additional days spent in the hospital, with costs running up from 300 mn to close to 1 bn Euros.



A common PC keyboard in an OR is not rarely to find. Regardless it never can be hygienic.

This is why strategies and instruments aiming at the prevention of infections rank top in the area of measures ensuring quality at hospitals.

A HIGH PROFILE – IN THE MEDIA, TOO

The phenomenon of multi-resistance occurs in a large number of groups of bacteria. MR pathogens include rather cryptic terms such as ESBL (extended spectrum Beta-lactamase) forming types, MRPSAE (multi-resistant Pseudomonas aeruginosa), MRSP (multi-resistant Streptococcus pneumoniae), VRE (Vancomycin resisant enterocoi) as well as the multiple variants of resistant Staphylococcus aureus (MRSA, caMRSA, VISA, GISA).

It is in particular methycillin-resistant Staphylococcus aureus (MRSA) which creates attention in hospitals, and which is discussed very frequently in the media. The searchword MRSA, entered in the leading search engine Google, shows more than 4 mn hits. MRSA is not, however, the only risk.

The most common conditions based on HAI:

» Infections of the urinary passage
» Infections of the airway
» Post-operative wound infections
» Sepsis
» Infections of the gastro-intestinal tract

A particularly large number of patients are infected during surgical interventions which produce large wounds. These cases provide a perfect platform for pathogens. But already during the hospital admission process, it is presumed that five percent of patients are infected.

The reason for the success of the pathogens derives, to a large extent, from the exaggerated and improper administration of antibiotics in Germany during the past 20 years.

This results in the selection and generation of highly resistant types which spread easily due to disregard for, and fragmentary implementation of hygiene systems.

With the aim of curbing the spread of risk-prone pathogens, ever more diligent hygiene plans have been created since for quite some time, cost-intensive air cleaning systems are installed and maintained, and building-related measures are taken to physically separate units. Despite these activities, the number of infections is increasing further.

COST-INTENSIVE "GUESTS" AT THE HOSPITAL

Apart from unnecessary suffering of patients, there are additional reasons which justify taking all measures aiming at avoiding contamination based on MR pathogens – cost and image.

In quality reports, German hospitals campaign today with statements regarding below average POI rates. Many infections require subject to reporting; they enter statistics, and they are published.

In addition, German health insurers will not cover, in the context of current regulations in the DRG system, costs which result from prolonged treatment and/or therapy of infected and colonized patients.

These costs can easily run up to approx. 10,000 Euros even for patients who convalesce rapidly.

THE VECTOR HANDS

The non-organic environment is not devoid of micro-organisms either: surfaces in hospitals are used by many bacteria as a depot from which they are transmitted by vectors to other areas.

On such surfaces, bacteria can survive for a long time. For MRSA, four weeks are not an issue.

The most important vector is the human being, and hands play a major role. An area, as an aim of a transmission, can be a patient or a member of staff who then will again act as vector for other people.

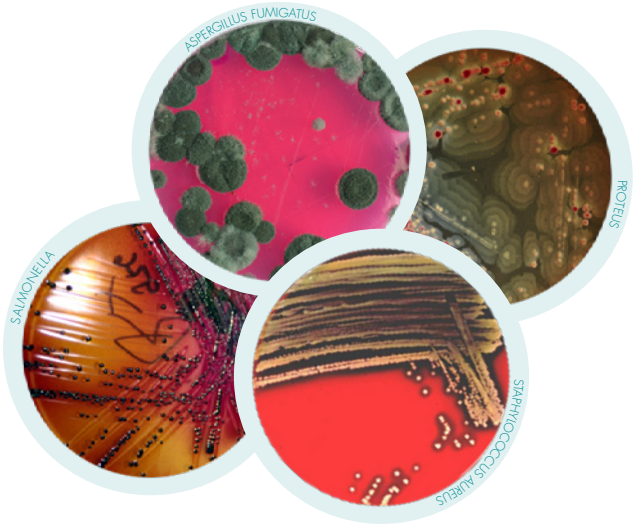
This therefore starts a cascade which leads, in a brief period of time, to the massive spreading of the pathogens, resulting in increased infection rates. Such a scenario can be prevented by adequate disinfection measures carried out for relevant surfaces and for hands.

The following public accusation comes from DGKH President Prof. Dr. Walter Popp:

» **Berlin:** *Each year, at least 20,000 patients die in Germany for the mere reason that staff will not clean their hands as required. This reproval was made by Prof. Walter Popp, President of DGKH, against the hospitals and the German Länder who act as the inspection authorities.* «

Source: Tageszeitung Rheinische Post vom 14.03.2008 (translated from German)

What follows from this is that all hand contact surfaces which have not been properly disinfected will contribute to cross-contamination.



Wipe Test: L=after desinfection, R=Germs without desinfection

RISKS OF COMMON IT EQUIPMENT IN A HOPITAL

MRSA AND IT

It is well known that MRSA can be detected in inanimate environments (such as hand contact surfaces) of patients and of staff.

On computer keyboards too, MRSA has been detected. It is in particular conventional keyboards which present special characteristics.

Their design includes a multitude of vertical and horizontal surfaces as well as slits which cannot be reached. They present a very complex situation in the context of surface disinfection. Their case in hand contact surfaces which are difficult to clean and disinfect is indeed special.

As far as hygiene is concerned, the challenge is that it has to be possible for surfaces which are close to the patient, and surfaces which show frequent hand contact, to be disinfected.
This holds true, in particular, for IT components and systems.

It is not enough to handle contamination of inanimate contexts by hands of staff primarily as an organization issue, or through strict adherence to hand disinfection / hand hygiene.

It is only the disinfection of contact surfaces of computer keyboards and of input devices which promises success.

INFECTION CONTROL AND IT SYSTEMS

It is not merely computer keyboards and data entry devices such as the mouse which can turn into a hygiene risk. Systems and monitors are hygienically relevant as well.

Conventional computers and monitors show - besides breaches, gaps, and open screw systems – air ventilation systems. It has been demonstrated that these will aspirate, beside dust particles, micro-organisms, accumulating them inside the system.

The particular faculty of surviving sometimes long periods of time on dry surfaces helps potent pathogens accumulate and be released into the environment in large numbers.

In case this environment is an OR, an ICU, an oncology ward, or a sterilization department, this has to be interpreted as an extremely high infectiology risk.

This is why PC systems, too, are categorized as critical. They need to lend themselves to easy disinfection, ad are not supposed to be propagators of pathogens.

This can be achieved by creation of suitable surfaces ND avoidance of cooling fan systems.

FOUND IN THE ONLINE-FAQ OF ROBERT KOCH INSTITUTE

The FAQs of the German Robert Koch Institute (RKI) feature topical information regarding the use of computers and keyboards in areas which are hygiene critical:

Which criteria should be taken into consideration regarding the use of personal computers (PCs) and notebooks in patient care areas of healthcare organizations?

The following are two quotes from RKI's FAQs:

» *This allows the conclusion that the use of hardware without (cooling) fans is to be recommended in critical areas (OR, ICU). This is the rational inference from the considerations above. No studies or other observations concerning nosocomial infections caused by such fans have been published as yet.* «

Quelle: www.rki.de, abgerufen am 15.04.2008, translated from German

» *Conventional keyboards can usually not be disinfected due to their complex design. There is a risk of defects occurring rapidly. Manufacturers have already become active, however, regarding the availability of flat surfaces which are impermeable to liquids and which lend themselves to disinfection procedures. It is therefore recommended that devices be bought which are designed appropriately.* «

Quelle: www.rki.de, abgerufen am 15.04.2008, translated from German

You will find the entire article - in German - on Robert Koch Institute's website under:
www.rki.de » Startseite » Infektionsschutz » Krankenhaushygiene » FAQ

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