Press release

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Innovative Technology and new Swiss Standards for Hospital Operating Rooms

Germ fighting innovations also reduce hospital costs

Two recent international studies by the WHO and OECD have ranked the Swiss health system as «good», but at the same time as also being «too expensive». Switzerland spends 11.5 percent of its Gross National Product for health and is in second place worldwide behind the USA which spends 15 percent. The enormous pressure to reduce health costs affects hospitals as well. On the one hand they must do their share to reduce costs while at the same time the quality of medical care must not be compromised. This past September, representatives of hospitals, government officials, health managers and planners, medical facilities architects and other involved persons in the health field came together at the Empa-Academy and held a conference on the topic of costs reduction with the help of new technical innovations and how new Swiss hospital operating rooms standards can ensure that the quality of care shall remain high.

While we received with joy the good news that health insurance premiums shall rise only very moderately in the coming year, we also were told the bad news, namely that health costs this year have risen greatly again, in comparison with last year's modest rise. How these ever rising costs can be cut down will certainly stir up the discussions. Hospitals, under an enormous pressure to reduce expenditures, were in the focus of interest at the conference titled «New Swiss Standards for Hospital Operating Rooms / Technical Innovations for Hospitals». Concerned parties met and discussed possibilities of savings through the use of innovative technologies and at the same time maintaining national minimum standards for medical care.

New Swiss Standards for Hospital Operating Rooms

New result-oriented financing systems urge hospitals to optimize their cost situation. But, according to Dieter Geissler of AGP Geissler, Hospital Consulting, the conference moderator, the fact that this has hardly led to any noticeable results to date, can be attributed, amongst others, to inefficient hospital structures and the lack of cooperation resp. balancing the hospital services among them. Obviously, local-political interests run contrary to pure business and national economic considerations.

Hospitals must ensure as high a quality standard of medical care as is possible, in spite of the pressure to reduce rising costs. For that, the various operational, building and medical-technical structures must be optimally coordinated with each other. For these reasons, Empa researcher Ovidio Pitzurra, who is also the president of the H-forte Foundation, formulated in the years 1994–1996 the GOP («Good Operating Practice») guidelines for hospitals and since the middle of 1996, these guidelines are considered to be the standards in the field. In October of 2006, a standards committee was formed under the same name – «Good Operating Practice». This committee concerns itself with compiling guidelines to guarantee security and quality in hospital operating rooms and set minimum requirements under the motto of «as much as is necessary and as little as is possible».
For example, Peter Glaus from the firm Hochstrasser Joss Glaus Consulting AG reported about microbial air contamination in The Graubunden Kanton Hospital operating room. Using the IMA method, developed by researchers at Empa together with the University of Perugia, identification of microorganisms during surgery was possible. Technical devices made by the MRC AG company, a spin-off of Empa, were used, and showed, according to Glaus, that air purifications installations functioned well and that the personnel conformed with hygienic requirements.

Silver and nanocoatings in the fight against hospital germs

In addition to the «Good operating Practice» guidelines, the conference also dealt with technological innovations, which can lower costs. Thus, for instance, commonly used theft prevention devices which function via RFID (Radio frequency identification) can also be employed to advantage in the health field for many applications, as for example simplifying bed management. Radio transmissions enable the system to recognize and assign medical instruments through a glued on RFID label. Even patients can thus be located.
A further problem are hospital germs which can cause infections in patients with a weakened immune system and against which antibiotics are ineffective because the germs have become resistant to the drugs. Empa researcher Enrico Körner presented a new method through which hospital effects can be coated with antimicrobial protection, for example surgical textiles coated with a nanometer thick silver coating which considerably reduces microbial colonization. In addition, the Plasma technique used for this allows for example to improve the biocompatibility of catheters by preventing reactions of rejection.
Entire medical machines can thus be coated with antimicrobial layers, according to Ulrich Sander from the Leica Microsystems (Schweiz) AG. Since microscopes in operating rooms cannot be sterilized, they were until now covered with sterile synthetic materials. Here too, an innovative nanothick silver coating hinders the spread of hospital germs.

Clemens Arpagaus from the firm of Atheco AG presented another novelty: Paint which is not toxic, so called «Bioni», with which mold and algae on walls and building fronts can be prevented and which is effective against hospital germs resistant to antibiotics. A substance with nanoparticles helps to reduce the use of conventional biocide, fungicide and conserving substances.

Further information:
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In order to combat hospital germs, medical textiles are equipped with a nanometer thick silver coating by using plasma technology. This coating considerably reduces the contamination with microorganisms. The photo shows a laboratory-experimental station at Empa.