

Hospital Hygiene in Styria –It all began over 110 Years ago

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Summary: Hospital hygiene has existed in Graz for more than 110 years, and with a gap until 1948, continually developed further up to today's "Institute of Hospital Hygiene and Microbiology" of the Styrian hospital association (KAGes). I will discuss the highs and lows of ancient and modern times, and the current situation in Austria.

Key words: hospital hygiene, Styria, hygiene

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Towards the middle of the 19th century, Europe was still tightly in the grip of epidemics and infections. Cholera had started to spread from India in 1817 and was extending throughout the world. For decades it spread fear and terror throughout Europe and Russia, causing millions of deaths from cholera among the people who did not have the necessary defences against it. Bad airs, or miasmas, were still considered the cause. Even *Pasteur*, who would later achieve many triumphs in the fight against pathogens, at that time had a system in which the air from a hospital's cholera room could escape through pipes, which then went through a freezing solution to kill the miasmas. Statistics (1) show that, during the short war between Prussia and Austria in 1866, 6,724 soldiers of the Prussian army died of cholera, compared to the 5,235 who died of injuries. At the same time, this epidemic was responsible for about 30,000 deaths in Bohemia, 50,000 in Moravia, 10,000 in Lower Austria and 30,000 in Hungary. These statistics serve to provide a background to the situation at the time, a number of years after doctor and pharmacist *Max von Pettenkofer* had founded the first academic staff for the new field of hygiene at the University of Munich in 1856 (2).

At the beginning of the 19th century, Doctor *Johann Peter Frank*, who was well known because of his position as director of the new general hospital in Vienna, spoke clearly on the subject of hospitals "Can there be a greater contradiction than the hospital disease? - A disease that we only catch in the place where we are already thinking of our end. However, this is something that happens in large hospitals, where even the greatest efforts do not always succeed in restoring health."

Ignaz Philipp Semmelweis was the first to realise the importance of washing hands in chlorine water *before* examining pregnant women, a claim that many did not believe because of its simplicity. However it did not take long before people began to realise how very right he was. The English surgeon, *Joseph Lister*, was among the first to use antiseptics in surgery after the phenomenal results of *Louis Pasteur's* research. *Lister's* principles involved continuing to work as he had before, but to spray the body part being operated on with carbolic acid in an effort to do something about the mysterious micro-organisms there.

But it was *Robert Koch* who, with his groundbreaking works in the early 1870s, opened the door to the future and today. This led to the beginning of an upturn in disease prevention and cure in all divisions of medicine, surgery in particular, and it was from these many other discoveries that the medicine of today evolved. Even though it occurred about 130 years ago, this great change brought with it everything that we understand under the term of hospital hygiene today (3).

Professor *Wilhelm Prausnitz* (4), second director of the Institute of Hygiene at the Faculty of Medicine in Graz (academic staff formed in 1884), was delegated the task of developing the existing hygiene advisory into a new clinic in 1897. He had come to Graz from Professor *Pettenkofer's* institute in Munich in 1894. In 1897, the hospital hygienist function of consultant was not directly granted to him but was done ad personam. Thanks to the profound knowledge of the hygienists and engineering staff, the new building, which incorporated a new central regional hospital and university clinic, was known as one of the best in Europe for many decades. Only in recent decades did the next big push begin – and has lasted until today. But the basic structure, the starting point, is still clearly visible today (5,6).

When I came to the Institute of Hygiene in autumn of 1945 as a young doctor, I was immediately assigned the lecture for women studying to become nurses, which proved a great challenge for me. However, everything went well and just three years later, the director of the institute asked me to make the lecture available in written form. The resulting book, written in 1948 has been reworked and published a number of times since, with the 13th edition published in 2000 (7). This caused the new director, Professor *HM Jettmar* to take me on in the same year, 1948, as institute intern in the field of hospital hygiene, alongside all my other duties. There was no official “appointment”, no co-workers, no particular job instruction and no restriction of subject area – simply another role alongside my position of assistant lecturer at the Institute of Hygiene, which was not very practical.

When everything was running normally, the medical director of the hospital invited me now and again to technical discussions. Where particularly striking incidents occurred, I carried out extensive research, resulting in suggestions for improvement, which were put into place and observed. I would like to mention this as particularly positive as it was entirely voluntary. It started happening more often that the directors of the clinic would pass a few friendly words with me, mainly about their own long years of experience.

The superior, older, chief doctor often made it clear to me that he preferred to carry out everything related to the hygiene in his profession himself. That was until two particularly dangerous incidents occurred; two patients who, on the same day, had been operated on for relatively simple reasons, almost immediately after the operation contracted a rapid, deadly sepsis (beta-hemolytic *Streptococcus*). After the operating theatre had been manually disinfected (under the instruction of the Public Health Officer), two days later the theatre was reopened and could be used again for operations. However, the same happened again: two cases of the same sepsis, with the same pathogens after relatively simple operations. Then

they thought of me. I will refrain from going into further detail and just say that I was lucky that I could identify the cause of the problem from my inspection of the room. I mention this here only because this success as a hospital hygienist gave an unexpected boost to the general recognition I received from my colleagues. This was also partly because I had opened a practice as a general practitioner, in order avoid losing personal contact with patients, and from then on my colleagues in the hospitals no longer classified me as a dry theorist.

This all happened at a time when many colleagues were no longer taking the very precise observance of asepsis very seriously. The new miracle cure for infections, the antibiotic, would replace all that – or so they thought. What a mistake! A short time later the increasing resistance to antibiotics became clearer, and so an entirely new facet of hospital hygiene began.

In 1966 decisive changes were made to the function and organisational structures. Five years previously, I had taken over direction of the institute, I had turned down a number of professorships from other universities (including Vienna) – I had good reasons for this – and, after a year as the dean, was elected to the position of rector of the University of Graz. In the same year the Styrian Government offered me, ad personam, the position of hospital hygienist for all the Styrian hospitals from September 1st 1966. This position came with new rights that, in the previous 18 years, I had not had. After that I did not need any more “reasons” or advance notifications to intervene as a hygienist when check-ups or inspection of core aspects took place. In order to acquire a certain animosity, I never overstepped the line of collegiality – something that I would like to suggest to every hospital hygienist. With this I do not mean haggling over results, but the single advisable way to optimal, effective success – through mutual understanding.

The entire extent of the system’s weakness actually did start showing up then, and the suggestions for improvement became easier to realise than previously. Decisively important in this task were my extremely competent and enthusiastic team, led by Professor *Wolf Sixl* (8). (The literature mentioned is always just examples of the many publications available.) In 1983 Dr *T Miorini* (9) joined the team, initially as a doctoral candidate, but went on to become my co-worker from the beginning of 1987. Professor *F Reinthaler* (10) worked mainly with the thorny issue of hospital waste management. And so many other amazing colleagues! Above all, I should thank all the hard work that went into building a functioning standard of hospital hygiene. Initiatives from the nursing staff were also decisively important. The ward sister of that time, and later director of nursing, *Hedwig Eibel*, together with *Wolf*

Sixl, set up ongoing hygiene education for interested doctors, which led to the development of well-educated hygiene representatives in every hospital. In addition to this, together with the “Arbeitsgemeinschaft für Volksgesundheit” (a public health working group), a free edition of a booklet, with practical and current content on the field of hospital hygiene was published. The last booklet, the 45th edition, was published in 1994.

Some examples of the situation in the early years:

- At a clinical centre, during the investigation of each bedpan cleaning facility (without notice, on the same day), it transpired that not one of them functioned correctly. There were many different reasons: encrusted disinfectant supply, much too low temperatures in hot water installations, etc. One has to wonder how long it had been like this.
- A new, centralised disinfectant system for an entire clinic block showed that in the lower levels the concentration of disinfectant was too low, and in the higher levels that there was only the slightest trace of disinfectant in the water – an atmosphere which suits opportunistic pathogens (which include *pseudomonas aeruginosa*). The system was simply designed for a higher rate of flow and had far too many outlets.
- A sterile air filtration system, fitted at the beginning of the intake air duct of a new air-conditioning system for the operation wing, had gradually led to the air quality drastically declining. The operating teams often had to make a real effort not to collapse in the stuffy air that formed a dense shroud around them. The reason was simply that the “germ-tight” filter quickly became impermeable because of dust from the area. The surgeons, taking things into their own hands, and without enquiring further, removed the filter. For weeks things went much better – then the post-operative problems started to build up. The reason was that a number of pigeons started to mate and breed inside the open intake air duct. The solution was simple, and the new, proper filter still works today.
- New water softening plants (ion exchange) showed negative aspects – through the accumulation of germs in the system.
- With the introduction and widespread use of single-use instruments – an extremely important development without doubt – the problem of waste management in hospitals became immense. New problems needed new solutions – technicians and hygienists were in demand.

I could easily continue over a number of pages to give further examples of the situation almost forty years ago, but that would be going beyond the point. With the examples I have

given, I want to clearly show the meaning that hygiene has had and still has in our forward-pressing times, with its innovations for the functioning hospital.

The opacity of a modern technology that was constantly becoming more complicated came more and more to the fore (11, 12, 13, 14, 15, 16, 17). The increased sensitivity to higher temperatures of many apparatus for diagnosis or treatment also played its part in the emergence of new hygiene problems. On the other side, the hurdles provided by increased resistances, for example, to antibiotics, the advance of viral infections and the accompanying problems, and not least the trends towards maximal cutbacks in personnel. This last issue in particular is particularly relevant for the future. Straining personnel logically leads to an increase in the number of mistakes and a decrease in the humanity of staff, something that is so important in a hospital. In the end it was the patients that suffered. This new “cold-hearted hospitalism”, a result of excessive economising in personnel, was a profound error of our money-oriented times.

Therefore, I am extremely happy to have had the opportunity, at the end of my occupational activity as chairman of the board of directors of KAGes, to set up hospital hygiene as an entirely separate institution of Styrian hospitals.

Under the direction of my successor (from December 1991), the hygiene specialist, Primarius Dr A Bogiatzis, the “Institute of Hospital Hygiene and Microbiology”, within the frame of the Styrian hospitals, was founded at the beginning of 1999. The institute was further developed thanks to the new director’s initiatives and with the support of the association and local government for this functional centre for hospital hygiene. The institute then became officially recognised as a place of education with accreditation according to the new laws of 2008. Of particular importance is the full installation of intensively-trained hygiene representatives in each individual regional hospital in Styria, with the centre in Graz. Even the scientific functions are not overlooked. For an example of many publications, see 17.

Finally, I would like to give an overview of hygiene specialist education in Austria. There is no specific training for “hospital hygienist” in Austria but this qualification is included in the title “hygiene specialist”, making it compulsory that hospital hygienists have the broadest possible basis in education.

What training covers:

Training involves completing a degree in medicine, four years with hygiene as a major at a recognised education centre and two years of minor subjects, for example, internal medicine.

However, there are only a certain number of places available at each officially-recognised training institute. Once the student has finished this course of study, he/she must sit a very in-depth oral exam covering all subjects of the course. The Austrian Medical Association sets up a board of examiners, consisting of high-ranking specialists representing the individual subjects, and sets a date for the exam for candidates who have applied, usually once a year. I believe that this system of appointing specialists in Austria is comprehensive, ideal and very well regulated.

References

1. Müller, R.: Medizinische Mikrobiologie, , Verlag Urban & Schwarzenberger 1950
2. Pettenkofer, M.: Nachruf, Mitt. d. Ärzte in Steiermark, 1901. Nr. 3/
3. Lesky, E.:Hospitalismus historisch gesehen, Hexagon-Roche 1977. Heft 1,5
4. Wilhelm Prausnitz zum 70. Geburtstag, Münch. med. Wschr. 1931. Nr. 1,
5. Faulborn, G.: Das Grazer Landeskrankenhaus, Leykam Buchverlag, Graz, 2001
6. Weiss,N.: Im Zeichen von Panther & Schlange, N, KAGes-Verlag Graz 2006.
7. Möse,J.R.: Hygiene u. Bakteriologie für Schwestern, U Moser Verlag, 1. Aufl. 1949.
8. Möse, J.R.: Hygiene und Mikrobiologie für Krankenpflege, Infektionsbekämpfung und Umweltschutz Styria-Verlag, 13. Aufl. 2000.
9. Sixl, W.: Zur Problematik der Alten- und Pflegeheime in der Steiermark, W Geogr. Med. Suppl. 1989. 5. 11-13.
10. Miorini, T, Sixl, W. Brosch, R.: W., Hospitalismus an einer Neonatologischen- Intensivstation, , Hyg + Med. 1988. 13. 219-222.
11. Reinthaler, F.: Trennung der Krankenhausabfälle im LKH Graz, F, Krankenhaushygiene + Infektionsverhütung 1985. 2. 74-83.
12. Möse, J.R.: Bedeutung von "technischen Mängeln" im Hospitalismusgeschehen, , Österr. Krankenhauszeitung 1981. 22. 319.
13. Möse, J.R.: Hospitalismus – aus der Sicht des Hygienikers, JR Hexagon-Roche, 1977. 5, Nr. 1, 18-24
14. Möse, J.R.: Hygiene im Wandel der Zeit, JR, Mitt. d. Österr. Sanitätsverw. 1995. 96, , 6
15. Möse,J.R.: Gesundheit in der Welt von Morgen, JR Österr. Krankenhauszeitung 1968.9, 7/8,
16. Möse, J.R.:Katastrophenhygiene in Ballungsgebieten, JR, Forum Städte-Hygiene 1990. 41. 15-18.
17. Möse, J.R.: Krankenhaushygiene unter den besonderen Bedingungen des Massenankfalls, , Mitt. d. Österr. Sanitätsverw. 1990. 91. 3.
18. Vander, K., Bogiatzis, A., Savic, T.: Fallbericht einer Infektion durch Citrobacter Koseri nach intraartikulärer Injektion, , Hyg + Med H 2005.1.2.

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Összefoglalás: Grazban a kórházhygiéne több mint 110 éve létezik, és egy 1948 körüli zökkenőtől eltekintve folyamatosan fejlődött, egészen a napjainkban a Stájerországi Kórházszövetség kereteiben működő Kórházhygiénés és Mikrobiológiai Intézet felállításáig. A szerző összefoglalja a régi és a modern idők hibáit és eredményeit és a jelenlegi osztrák helyzetet.

Kulcsszavak: kórházhygiéne, Stájerország, higiéné

(Szerk :Prof Möse a Grazi Orvostudományi Egyetem Közegészségtani Intézetének az emeritus igazgatója. Szakmai életéről és működéséről az **Egészségtudomány** LII évf. 2. számában a 74. oldalonadtunk összefoglalót)