Professor Alexander W. Friedrich receives the 2019 Robert Koch Award for Hospital Hygiene and Infection Prevention

Thinking in Networks

The award-winner is a pioneer in cross-border cooperation in the fight against antibiotic-resistant bacteria and healthcare-associated infections

Berlin – Professor Alexander W. Friedrich, head of the Department of Medical Microbiology and Infection Prevention at the University Medical Center in Groningen (Netherlands) will be awarded the 2019 Robert Koch Foundation Award for Hospital Hygiene and Infection Prevention for his groundbreaking achievements in establishing prevention networks to fight multiresistant pathogens. “With Professor Alexander W. Friedrich, we are honoring an outstanding scientist who is particularly keen to promote international cooperation. His work has made a key contribution towards minimizing healthcare-associated infections and establishing new prevention concepts,” explained Jörg Hacker, Chairman of the Scientific Advisory Council of the Robert Koch Foundation and President of the German academy of natural scientists, the Deutsche Akademie der Naturforscher Leopoldina – Nationale Akademie der Wissenschaften. The award, which is worth 50,000 euros, will be presented on Tuesday, September 24, 2019 in the Lecture Hall Ruin of the Charité Berlin Museum of Medical History.

For Alexander W. Friedrich, there is no more time to waste. As the head of the Department of Medical Microbiology and Infection Prevention at the University Medical Center in Groningen (Netherlands) recently wrote: “Imagine that there is a fire in the house you are living in, in one or two of the apartments. Would not everybody be alerted and start helping our neighbors to stop the fire. We would know that the fire will reach our own apartment, too.” In so doing, he made an urgent appeal to all European countries to take action to counter the spread of antibiotic-resistant bacteria: “I strongly believe that we should start implementing prevention activities at all levels of healthcare in all countries. We should start doing it by mutual and multidisciplinary collaboration following the real-life transmission ways of microorganisms.”

The numbers speak for themselves. Or, in keeping with the fire imagery – the house is already up in flames. According to the most recent estimates, every year in Europe, around 670,000 infections occur due to antibiotic-resistant bacteria. Two-thirds of these are “healthcare-associated”; in other words, they are related to inpatient or outpatient treatment. The germs responsible can spread within a hospital and travel to other medical facilities by being transferred by the infected patient. These facilities can also be in other countries. For Friedrich, the only logical response to this situation was to collaborate across borders. In 2005, when he was still a senior consultant at the Institute of Hygiene at the University Hospital Münster, he initiated the first German-Dutch prevention network for fighting multiresistant
pathogens (MRE), in particular, methicillin-resistant Staphylococcus aureus (MRSA). The project was called "MRSA-net Twente/Münsterland" and it became a model for more than one hundred regional associations in which the various stakeholders in the healthcare system are involved today, including hospitals, patient transport services, registered doctors, laboratories, care homes for the sick and elderly, outpatient care services, rehabilitation facilities, health insurance companies and health authorities.

Since 2009, the "EurSafety Health-net" project initiated by Friedrich has been established alongside the entire German-Dutch border region in order to coordinate joint activities at bi-national level. The situation in the border region is still dominated by a huge gap in terms of the figures. In Germany, MRSA infections are many times more frequent than in the Netherlands, where action to combat the antibiotic-resistant microorganisms was already begun in the late 1980s. On the German side, the focus is on reducing the MRSA rate to the Dutch level. On the Dutch side, the main aim is rather to halt the influx of MRSA from Germany.

One milestone was the molecular-biological typing of individual MRSA strains, which made it possible to trace the transmission dynamic of antibiotic resistances in real life. Here, it emerged, for example, that individual hospitals, and in some cases even individual wards, act as hubs, and distribute certain pathogen types throughout the whole building, as well as to other facilities in the healthcare network via infected patients. "We want to track down these hubs. If treatment with antibiotics and hospital hygiene are properly implemented at these hubs, all parties benefit," says Friedrich. With this systemic epidemiological approach, it was possible to demonstrate the importance of the "revolving door" effect that occurs when MRSA patients are readmitted to a clinic.

In other areas, the direct comparison between Germany and the Netherlands brings a large number of fundamental differences to light, which cannot easily be offset, since they are systemic in nature. These include the fact that in Dutch hospitals, risk patients undergo far more radical precautionary screening, including patients who have previously been treated as inpatients in other countries, such as Germany. On suspicion alone, the patients are isolated in single rooms as a precautionary measure and, if the test for resistant pathogens is positive, treated specifically with antibiotics. This procedure, conducted at such a high level of thoroughness, is simply not possible in Germany, due to the far greater pressure on the number of beds. In addition, nearly every Dutch hospital employs one or more clinical microbiologists including doctors specializing in hospital hygiene, who have wide-ranging competencies. Furthermore, all of them have their own microbiological laboratory. Both measures are still a rarity in Germany.

In 2016, the "EurSafety Health-net" was transferred to a foundation, which continues to coordinate the newly created Euregional quality certificates. The same year saw the initiation of two follow-up projects. The "EurHealth-1Health" project also incorporates veterinary medicine and agriculture as well as the environment/water sector. One of the main goals, alongside the MRSA rate, is also to reduce the prevalence of infections to the lowest possible level using so-called carbapenem-resistant enterobacteria (CRE) ("CRE-free Euregio"). The "Health-i-care" project focuses on the development of innovative products and technologies to provide protection against infections with particularly resistant microorganisms and to avoid antibiotic resistances.

Last but not least, further training and promoting the next generation of young scientists is also of key importance for Alexander W. Friedrich. As a member of the executive committee of the European Society for Clinical Microbiology and Infectious Diseases (ESCMID) and as Clinical Director of the EUCIC training program, he has made a decisive contribution towards providing training for a first cross-border cohort of 36 young scientists from 17 countries since 2018. All trainees initially complete a basic course at the University Medical Center in Groningen, before going
on to further training in other countries in order to gain interdisciplinary and above all cross-border competence. Friedrich's vision for the future is a new generation of European infection doctors for whom the idea of Europe-wide collaboration has become normal. Countries and institutions will not win the fight against antibiotic resistances and hospital infections on their own. This has already been proven by the network prevention activities in the German-Dutch border region.

Alexander W. Friedrich has already received numerous awards for his work. In 2008, he received the Biomérieux Diagnostics Prize from the foundation of the German Society for Hygiene and Microbiology (DGHM); in 2009, he was awarded the Hygiene Prize of the Rudolf Schülke Foundation; in 2010, he received the Robert Koch Advancement Award of the city of Clausthal-Zellerfeld; in 2012, the health prize of the federal state of North Rhine-Westphalia (as the overall project manager of "EurSafety Health-net"); and in 2014, the Johann Peter Frank Medal of the federal association of public health service doctors, the Bundesverbandes der Ärzte des Öffentlichen Gesundheitsdienstes (BVÖGD), for his special achievements in the field of public health services in Germany.

Photo and CV of Professor Friedrich as well as photos of the award ceremony will be available for editorial use on September 24, 2019 at: www.robert-koch-stiftung.de/hygieneaward2019

Information on the award

In Germany, approximately 500,000 patients contract hospital infections each year. This statistic indicates that advanced medicine has reached its limits. Improvements in the implementation of hospital hygiene and the development of new strategies in therapy and the prevention of nosocomial infections are urgently needed. This is why the Robert Koch Foundation introduced the Prize for Hospital Hygiene and Infection Prevention in 2013, with the aim of drawing attention to exemplary achievements in the field of hospital hygiene and infection prevention. It is intended to serve as an incentive to improve the standard of hygiene in our hospitals through new scientific and application-oriented projects.

The Prize is financially supported by B. Braun Melsungen AG and BARMER.

About the Robert Koch Foundation

The Robert Koch Foundation is a non-profit foundation dedicated to the promotion of medical progress. It was founded in 1907 and is based in Berlin. The Foundation promotes basic scientific research in the field of infectious diseases, as well as exemplary projects that address medical and hygienic issues.

The Foundation confers a number of distinguished scientific awards each year: the Robert Koch Award – one of Germany's most distinguished scientific awards, the Robert Koch Gold Medal, three awards for young scientists and, since 2013, the Hospital Hygiene and Infection Prevention Award.

Robert Koch (1843 – 1910), after whom the award is named, was the founder of modern-day bacteriology, for which he was awarded the 1905 Nobel Prize for Medicine and Physiology. From 1891 until his retirement in 1904, Koch was Head of the Institute for Infectious Diseases in Berlin.

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