

Brief interview with Prof. Dr. med. Uwe Frank

## **“In antibiotic therapy, we are running on empty”**

Three questions to Prof. Dr. Uwe Frank, Institute of Environmental Medicine and Hospital Hygiene, University Medical Centre Freiburg, Germany.

### **A colistin-resistant *E. coli* strain made the headlines just recently. Are we close to a “superbug” – the ultimate bacterium that even cannot be eliminated by reserve antibiotics?**

**Prof. Dr. Uwe Frank:** Media coverage may suggest that. But it is a fact that resistances to colistin are not new. The case described, however, showed that the bacteria were able to horizontally pass on their resistance gene to other pathogens. So, the one superbug with resistance to colistin is not our problem, we rather face an extensive wave of resistances that involves many more pathogens and antibiotic classes. As you know, colistin was revived, for example, for cases, in which our actual reserve antibiotics – the carbapenems – are not effective anymore. Carbapenems were developed to treat infections difficult to manage. In recent years, carbapenems have been increasingly used for infections with ESBL-producing strains (ESBL = extended-spectrum beta-lactamase), which led to a dramatic increase in resistances to carbapenems, also with *Klebsiella pneumoniae*. In intensive care units, we already find a growing number of *Klebsiella* isolates that produce ESBL. This means: we do not have to wait for superbugs from abroad, we cultivate our own resistances here. The consequence is that we are meanwhile running on empty in antibiotic therapy.

### **The usual suspect – MRSA – is in the retreat. What new dangers are visible on the horizon?**

**Prof. Dr. Uwe Frank:** Indeed, MRSA rates are slightly declining; however, we should not underestimate the situation of resistances of staphylococci. According to WHO, the mortality of patients with MRSA infection is 64 per cent higher than of those infected with susceptible staphylococci. Efforts should therefore not be slackened here. From 2011 to 2015, for example, we could continually more than halve the MRSA rate at the Heidelberg University Hospital from around 17 per cent to 8 per cent. In Germany, there is a slight upward trend of vancomycin-resistant enterococci. But VRE are no infectiological disaster. They mainly lead to colonisation, and may be a hazard for immunosuppressed patients, such as in haematological oncology.

However, the limited therapy options in case of VRE infections and the increase in such clinical isolates stress the need for effective infection control measures.

In my opinion, the increase in multidrug-resistant Gram-negative (MRGN) bacteria is a bigger problem. They play an ever more important role as cause of nosocomial infections – particularly within outbreaks – especially the bacteria that are resistant to four antibiotic classes (4MRGN).



**The European Antibiotic Awareness Day on 18 November raises the public awareness of this issue. What do clinics need to do to stop the development of resistances?**

**Prof. Dr. Uwe Frank:** The focus is on a rational use of antibiotics – which is not at all a given in hospitals. For the use to be adequate, staff should be familiar with the distribution of the pathogen spectrum, the resistance situation and the consumption data of the antibiotics. For antibiotic therapies it is recommended: “as broad as necessary, as narrow as possible.” This requires an exact infection diagnosis; there should be a microbiological test including antibiogram to adapt the therapy accordingly.

Furthermore, it is imperative to consistently implement hygiene measures to prevent the transmission of pathogens to other patients in the clinics. Hygienic hand disinfection lies at the core here. It has a high preventive potential and is effective against all multidrug-resistant bacteria. Medical staff should be trained regularly and intensively in both the use of antibiotics and hygiene.

Source

“Post-antibiotic era – already a reality in German clinics?” Speech by Prof. Dr. Uwe Frank, Institute of Environmental Medicine and Hospital Hygiene, University Medical Centre Freiburg, Germany held at the Lunchtime Symposium “Pathogens resistant to antibiotics: new hygiene strategies along the patient journey”, 17 November 2016, Berlin, arranged by the BODE SCIENCE CENTER, Hamburg, scientific centre of excellence of PAUL HARTMANN AG, Heidenheim.

