

Antimicrobial resistance: a collective responsibility

Antimicrobial resistance (AMR) is an important health problem, also in industrialized countries like Switzerland, leading to social and economic losses. Possible options to tackle the challenge of AMR were discussed during a satellite symposium at the annual meeting of the Swiss Societies for Infectious Diseases.

It has been reported that the estimated number of deaths from AMR is going to rise from 700'000 in 2020 to 10 million in 2050. [1] "This means that in 2050 every 3 seconds one person is dying due to AMR if this problem is not tackled", stressed the chairman Christian Garzoni, MD, infectious disease and internal medicine specialist from Lugano.

The first speaker, Adrian Egli, MD, PhD, FAMH, Institute of Medical Microbiology, University Zurich, made clear that the impact of deaths due to AMR is massive in Switzerland as well. "In 2021, there were 105 deaths due to third-generation cephalosporin-resistant *E. coli*, equalling 2345 DALYs", he emphasised, not without reminding the audience that 1 DALY (disability-adjusted life year) is equivalent to 70'000 Swiss Francs.

Role of modern diagnostic techniques

One possible starting point to tackle the life-threatening situation of AMR is to improve diagnostics. "So far species identification from a sample and resistance testing was a very time consuming process", said Prof. Egli. With Panel PCR (polymerase chain reaction) testing, there is now a much faster way. "We still need to culture the sample, but about 2 hours after positive blood culture, panel PCR delivers information about species and resistance". He also mentioned that a study, conducted in Basel showed that the faster diagnosis due to panel PCR led to a 24 hour earlier start of an optimal therapy. Starting treatment earlier can lead to a reduced mortality, as Kumar et al. showed in 2006. [2] Prof. Egli also called for an exchange between the treating physicians and the microbiologists: "If something is unclear in the lab results, then call your microbiologist."

Right treatment for the right patient

The second speaker, Najy Alsayed, MD, MSc, Global Therapeutic Area Head Infectious Diseases, Menarini Group, started his talk by pointing out that more than 80% of AMR-related deaths are due to 6 key pathogens. [3]

"This is an important finding, not only for clinicians or microbiologists, but also for the pharmaceutical industry in order to provide efficient and targeted treatment options". He also pointed to the fact that the number of antimicrobial drugs developed and approved is decreasing. [4] But although new antibiotics may have been approved in a certain country, a study found this does not necessarily mean that patients have access to them. [5] "With most antibiotics that have been launched since 2010 being on the reserve list, there is only limited access and sales", said Dr. Alsayed. He thinks that the current restricted prescription model needs fixing at both ends.

With recently developed antibiotics such as Quofenix® (Delafloxacin), Vaborem® (Mero-penem/Vaborbactam) and Tenkasi® (Oritavancin), healthcare professionals have the possibility to tackle some of the most important pathogens classified by the WHO as bacteria with critical and high priority according to their antibiotic resistance. [6–9] Dr. Alsayed thinks that having efficient and targeted treatment options at hand does not only reduce the risk of AMR development but also helps to save money that would otherwise have to be spent on further therapeutic interventions and patient management. "In summary, we need the possibility to treat the right patient with the right drug at the right time", he concluded.

Source

Satellite Symposium "Antimicrobial resistance: a collective responsibility". Joint annual meeting of the Swiss Societies for Infectious Diseases (SSI), Swiss Society for Hospital Hygiene SSHH with fibs and Swiss Society of Tropical and Travel Medicine SSTTM, 15th September 2023, Zurich.

References

- 1 O'Neill J. Tackling drug-resistant infections globally: final report and recommendations. 19 May 2016. Available at: https://amr-review.org/sites/default/files/160518_Final%20paper_with%20cover.pdf
- 2 Kumar A et al. Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. *Crit Care Med* 2006;34:1589–96.

3 Murray CJL et al. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet* 2022;399: 629–655.

4 Boston Consulting Group 2017 – Breaking through the Wall: A Call for Concerted Action on Antibiotics Research and Development.

5 Outterson K et al. Patient Access in 14 High-Income Countries to New Antibacterials Approved by the US Food and Drug Administration, European Medicines Agency, Japanese Pharmaceuticals and Medical Devices Agency, or Health Canada, 2010–2020. *Clin Infect Dis* 2022;74(7):1183–1190.

6 Breijyeh Z et al. Resistance of Gram-Negative Bacteria to Current Antibacterial Agents and Approaches to Resolve It. *Molecules* 2020;25(6):1340.

7 Product Information Vaborem®, www.swissmedinfo.ch, 06/2023

8 Product Information Tenkasi®, www.swissmedinfo.ch, 08/2021

9 Product Information Quofenix®, www.swissmedinfo.ch, 04/2023

Take Home Messages

- AMR is an important health problem, also in industrialized countries like Switzerland, leading to social and economic losses as well as a high mortality.
- Fast identification of bacterial species and resistance mechanisms from a sample by panel PCR provides the opportunity for an early start of therapy which has a positive impact on prognosis.
- Having access to an antibiotic that is best suited to the respective clinical situation prevents unnecessary therapies that might promote resistance and helps to save costs.