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Antibiotic Resistance

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Antibiotic Resistance

Infections occur frequently in critically ill patients in the ICU. They may be the reason for admission and could also be due to immunosuppression associated with critical illness. Antibiotics are essential tools for treating both common and complex infections. It is recommended that antibiotics should be administered as soon as possible once an infection is identified. However, managing these infections continues to become more and more challenging because of the increasing prevalence of antibiotic-resistant strains. Nearly [50% of isolates in ICUs](#) are resistant to at least one antibiotic. Antibiotic-resistant infections are difficult to treat and increase morbidity and mortality. They also add costs to healthcare systems. Addressing this threat is essential and requires infection prevention and slowing the progression of antibiotic resistance.

In our latest cover story, our contributors discuss the problem of **antibiotic resistance**, the frequency, type and extent of antibiotic-resistant bacteria, the impact of this problem on patient outcomes, the importance of effective antimicrobial stewardship programmes to facilitate responsible use of these drugs and their proper implementation in ICUs, the role of rapid diagnostic testing, and important strategies to reduce the spread of antimicrobial resistance.

Sofie Dhaese, Jerina Boelens, and Jan De Waele discuss pharmacodynamic and pharmacokinetic principles and how they play a central role in antimicrobial dose-optimisation to combat antimicrobial resistance. Miriam Machado, Benoit Guery, and Jordi Rello provide an overview of antimicrobial stewardship in critical care units and emergency departments and highlight the key aspects of reducing multidrug resistance.

Gabriela Bautista-Aguilar, Jorge Peña-Juárez, Edgar Pérez-Barragán and co-authors discuss the frequency of severe infections by antibiotic-resistant gram-negative bacteria in ICU patients and their impact on patient morbidity and mortality. Iaswarya Ganapathiraju and Ryan Maves highlight the need to address the problem of antimicrobial resistance and talk about the importance of faster diagnosis of bacterial infections and an overview of rapid diagnostic testing.

Sara Haddad, Johnny Zakhour, Anthony Kerbage and Souha Kanj define diagnostic stewardship and discuss how it can be implemented in intensive care units to improve patient outcomes. Ines Lakbar, Gary Duclos, and Marc Leone provide an overview of antimicrobial resistance and its impact on clinical outcomes in the ICU. Haifa Algethamy reviews practices currently available to reduce the spread of antimicrobial resistance and novel therapies presently being developed.

In other feature articles, Etrusca Brogi, Chiara Piagnani, Marta Pillitteri, and Francesco Forfori discuss the importance of clearly defining sepsis, improving early recognition strategy, and increasing the understanding of innate and adaptive immune system derangements that facilitate the development of sepsis.

Antibiotic resistance continues to be one of the most significant public health challenges today. The increasing prevalence of antibiotic-resistant strains makes the management of infection in critically ill patients a difficult task. Responsible antibiotic prescribing can help control the development of antibiotic resistance but how well antimicrobial stewardship programmes are designed and implemented is extremely important. There is also a need to develop new and improved antibiotics to improve patient outcomes, but this must be supported by efforts dedicated to preventing infections and slowing the development of antibiotic resistance.

As always, if you would like to get in touch, please email JLVincent@icu-management.org.

Jean-Louis Vincent



Jean-Louis Vincent

Editor-in-Chief
ICU Management & Practice
Professor
Department of Intensive Care
Erasmus Hospital
Université libre de Bruxelles
Brussels, Belgium

JLVincent@icu-management.org

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