Executive summary

Health Council of the Netherlands. Antibiotics in hospitals: prophylaxis and antibiotic stewardship. The Hague: Health Council of the Netherlands, 2015; publication no. 2015/12

In the summer of 2013, the Minister of Health, Welfare and Sport asked the Health Council for advice regarding the use of antibiotics in human health care. The Minister's questions focused on two main issues. Firstly, the Minister asked the Health Council to address aspects of antibiotic therapy that may contribute to antibiotic resistance, with selective decontamination mentioned as a specific example. Secondly, the Minister requested advice about potential measures that may be implemented within the framework of the antibiotic stewardship programme deployed in Dutch hospitals and, additionally, about the utility and necessity of reserving certain antibiotics for specific cases.

Prophylaxis

Antibiotics are not only used to treat existing infections, but also to prevent infections. The latter application is called prophylaxis. In hospitals, prophylaxis is primarily used to prevent wound infections after surgery, for a number of chronic conditions, and in neonatology.

The Committee that drafted the advisory report notes the scope of prophylaxis remains largely invisible, one of the reasons for this being that the existing registries for antibiotic use do not distinguish between therapeutic or prophylactic use. Additionally, specialist guidelines on prophylactic antibiotic use are not always consistent, local interpretations sometimes deviate from these guidelines, and the guidelines are sometimes insufficiently implemented.

A final point the Committee wishes to address within this context is the use of antibiotics for purposes other than combating infectious diseases. The Committee asks the professions in question to consider researching whether such use of antibiotics outweighs the risks of resistance development.

Selective decontamination

Selective oropharyngeal decontamination (SOD) and selective digestive decontamination (SDD) – collectively referred to as selective decontamination (SD) – are prophylactic treatments primarily utilised by intensive care units (ICU). The goal of SD is to prevent bacterial infections resulting from the use of mechanical ventilation by preventive administration of a combination of antibiotics. In this advisory report, the Committee discusses SD separately, as this treatment modality uses an antibiotic that is a last resort for the treatment of infections caused by multiresistant bacteria.

The Committee provides an overview of the scientific data on SD, the majority from research conducted in the Netherlands, emphasising the reduction of ICU mortality as a (potential) advantage of SD and the development of resistant microorganisms as a (potential) disadvantage. Opinion within the Committee is divided on the quality of evidence supporting the effects of SD on patient survival in the ICU. One part of the Committee considers the evidence for a significant reduction in mortality to be convincing. Another considers the effect too small and the study limitations too significant to support the conclusion that SDD and SOD are demonstrably effective. Additionally, current research has shown a reduction in resistant microorganisms, although an increase cannot be ruled out. Opinion within the Committee is also divided regarding the risk of such an increase. Based on currently available data, the Committee cannot provide a clear answer to the question of whether the (current, more individual) potential advantages of SD outweigh the (future, more public health-related) potential disadvantages. Therefore, it cannot make a recommendation on the merits of this treatment modality.

At the same time, the Committee notes that SD is increasingly common in Dutch hospitals. Considering the public health interests at stake (maintenance of low resistance in the Netherlands), the Committee therefore recommends professional organisations and hospitals consider a number of preconditions in their decision-making regarding SD, including careful monitoring of resistance development and consideration of situations where SD use should be reconsidered.

Antibiotic stewardship

Antibiotic stewardship is an internationally embraced concept of intramural, multidisciplinary cooperation designed to promote responsible use of antibiotics and reduce inappropriate use, in order to improve patient outcome, improve treatment cost-effectiveness and reduce the disadvantages of antibiotic use, including resistance. A programme for antibiotic stewardship was launched in the Netherlands on 1 January 2014.

The Committee feels additional areas for attention in this programme include specific attention for prophylaxis. Additionally, optimising mutual agreement and local interpretation of guidelines and standards related to correct antibiotic usage is important. Finally, the Committee recommends defining lists for reserved antibiotics at the local level, in accordance with the example illustrated in the Practice Guide Antimicrobial Stewardship in the Netherlands.