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Antimicrobial resistance and antimicrobial stewardship in food producing animals

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Antimicrobial resistance (AMR) is a global concern. Over the last years, more quantitative data have become available related to the transmission of resistant bacteria (or resistance genes) between humans, animals and the environment. Most obvious is the transfer of AMR from animals to humans with food borne pathogens such as resistant *Salmonella* spp. (e.g. *S. Typhimurium* DT104) and *Campylobacter* spp. (e.g. fluoroquinolone resistance). Regarding livestock-associated methicillin resistant *Staphylococcus aureus* (LA-MRSA), it is without discussion that occupationally exposed people have a considerable chance to test positive for LA-MRSA. For transfer of other resistance markers (e.g. Extended Spectrum Beta-Lactamases) the transmission between animals and humans is more difficult to quantify as this is not simply dependent of the transmission of bacteria but also dependent on the transmission of plasmids containing the resistance genes. In the Netherlands, following the One Health approach, a consortium combined all recent ESBL-data from humans, animals and the environment. In this study it was estimated that between 1-10% of ESBLs in humans has a (direct) source in animals. It should be noted however that this only a specific type of resistance in a very specific context (a highly developed country at a time when AMU was decreasing) and these are estimates because transfer of AMR is very complex. In the presentation more examples will be presented as well as the actions undertaken to reduce veterinary AMU in the Netherlands with an emphasis on pig farming. These actions have led to an almost 60% reduction in AMU in pig farming. New initiatives are currently aiming to reduce AMU on the higher than average antimicrobial users via tailored interventions. AMR is high on the political agenda. After the publication of the WHO-Global Action Plan and the adoption of the resolution on containment of AMR by the General Assembly of the United Nations in 2016, countries were requested to prepare a National Action Plan (NAP) with a One Health approach to combat the emergence of AMR. A One Health approach is generally considered as essential for the containment of AMR, however, globally, hardly half of the countries has this One Health component in their NAP which underlines the urge for action.

One of the 5 pillars of the WHO-Global Action Plan requests for the implementation of surveillance systems for AMR and antimicrobial use (AMU) in all countries worldwide. Several countries have a reliable system implemented but there are clear gaps in data collection, in particular in Low and Middle Income Countries (LMICs). Therefore, there is limited information about AMU and AMR, particularly in these LMICs. Given the often unrestricted availability of antimicrobials without veterinary prescription, especially in rapidly growing economies with intensive livestock sectors, AMR is assumed to be high, which is confirmed by data from case-studies. With the global trade of food products and travel of people, it is of high importance to develop interventions for AMU and AMR not only in high income countries but also in LMICs. Nowadays AMU/AMR is high on the political agenda of national and supranational organizations. There is however, still a considerable gap between policy and practice. Changes are urgently needed at practical level but this will only occur when there is a political will. It is therefore of utmost importance to use the currently existing political momentum.