Water & Sanitation: An Essential Battlefront in the War on Antimicrobial Resistance - DTU Orbit (07/01/2019)

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Water and sanitation represents a key battlefront in combating the spread of antimicrobial resistance (AMR). Basic water sanitation infrastructure is an essential first step to protecting public health, thereby limiting the spread of pathogens and the need for antibiotics. AMR presents unique human health risks, meriting new risk assessment frameworks specifically adapted to water and sanitation-borne AMR. There are numerous exposure routes to AMR originating from human waste, each of which must be quantified for its relative risk to human health. Wastewater treatment plants (WWTPs) play a vital role in centralized collection and treatment of human sewage, but there are numerous unresolved questions in terms of the microbial ecological processes occurring within and the extent to which they attenuate or amplify AMR. Research is needed to advance understanding of the fate of resistant bacteria and antibiotic resistance genes (ARGs) in various waste management systems, depending on the local constraints and intended re-use applications. WHO and national AMR action plans would benefit from a more holistic ‘One Water’ understanding. Here we provide a framework for research, policy, practice, and public engagement aimed at limiting the spread of AMR from water and sanitation in both low-, medium- and high-income countries, alike.

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