Editorial

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Crusade Against Antibiotic Resistance

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Antibiotic resistance is the ability of bacteria to resist exposure to antibiotics designed to kill them or inhibit their growth. Unfortunately, in recent decades overuse and misuse of antibiotics as well as social and economic factors have accelerated the spread of antibiotic-resistant bacteria, making drug treatment ineffective.(1) Overuse of antibiotics causes susceptible bacteria to be killed and allows drug-resistant bacteria to proliferate. Antibiotic resistance is rising to dangerously high levels in all parts of the world. New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases. A growing list of infections – such as pneumonia, tuberculosis, septicemia and foodborne diseases – are becoming harder, and sometimes impossible, to treat as antibiotics become less effective. (2)

World Antimicrobial Awareness Week takes place every year from 18 to 24 November. The slogan has previously been, "Antibiotics: Handle with Care" but changed to "Antimicrobials: Handle with Care" in 2020 to reflect the broadening scope of drug resistant infections. Currently, at least 700,000 people worldwide die each year due to antimicrobial resistance (AMR). Without new and better treatments, the World Health Organization (WHO) predicts that this number could rise to 10 million by 2050, highlighting a health concern not of secondary importance.(1)

The problem was foreseen by Alexander Fleming in his Nobel speech in 1945 when he concluded that ´the time may come when penicillin can be bought by anyone in the shops. Then there is the danger that the ignorant man may easily under dose himself and by exposing his microbes to non-lethal quantities of the drug make them resistant´. But, as late as in 1968, the US Surgeon General William H Stewart stated that ´it is time to close the book on infectious diseases and declare the war against pestilence won´.(3)

PREVENTIVE STRATIGIES-

1) Alternatives to antibiotics- The selective and decreased antibiotic use, both in hospitalised patients and outpatients,

Establish the probiotic strains and doses that provide the best results and safety in immunocompromised patients.

Assess efficacy and potential side effects of probiotics as a means of reducing the emergence of resistance.

Assess evidence favouring the effectiveness of probiotics through larger, randomized and double-blind studies.

2) Responsibilty of prescribers- Knowledge is lacking about major variations in prescription rates between primary care practices.

Communication research on the dialogue between the patient and the doctor should be stimulated.

Bacterial culture and susceptibility testing, a necessary component of rational antimicrobial prescribing, is uncommon in many developing countries. Susceptibility testing of specimens will provide much-needed surveillance data to support empiric prescribing.

Synthesis of qualitative and quantitative studies may enable more in-depth explanations of knowledge and beliefs.

Interventions are called for to improve prescribing behavior and rebuild patient-physician trust.

Qualitative research could address how social norms and standards of care can influence prescribing behaviour.

3) Antimicrobial stewardship - Mixed evaluation models are needed supplementing quantitative methods with qualitative approaches.

Behavioural science is lacking in the development and evaluation of antimicrobial stewardship programmes.

Account should be taken of the cultural and social norms around prescription and clinical practice.

Stewardship programmes outside hospital settings, e.g as community or public campaigns have not been assessed.

Provide solid and generalizable data on cost and cost-effectiveness of hospital stewardship programmes.

3) Antibiotic resistance – a policy and health systems issue- Strengthen the evidence base for the effectiveness of the numerous policies across the human and animal sectors.

Stimulate the development of new antibiotics and evaluation of alternatives.

Research comparable and in analogy with that regarding other global health threats should be encouraged.

Preserving antibiotic effectiveness ensuring universal access, is an ethical obligation warranting in-depth research.

Analogies with other global concerns can help us understand scope and consequences of no-action.

4) Understanding what drives antimicrobial resistance-Analyse the population impact of different drivers of antibiotic resistance.

Assessing the direct effects of antibiotic use on resistance need clinical studies on bacterial culture and colonization.

Assess relations between antibiotics prescribed in primary care and infections that require secondary care treatment.

Clarify the effects of antibiotic dose, duration and adherence on resistance.

For interpretation of intervention studies we need randomized studies with proper control groups.(4)

References-

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