China Must Reduce Its Antibiotic Use
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Antimicrobial resistance (AMR) has received increasing attention in recent years as a serious threat to global public health. Global efforts are needed in order to slow down the emergence of AMR; therefore, the WHO has called for judicious use of medically important antimicrobial drugs in humans and animals, and issued a global action plan on AMR.1 Some member states including European countries and the United States have released their own strategies and action plans on AMR in recent years. World leaders at the G20 Hangzhou Summit and UN General Assembly in 2016 agreed to combat AMR and to promote prudent use of antibiotics.2

As the biggest user of antibiotics in the world, China faces a serious AMR problem and has a responsibility to take action in minimizing the harms that may result.

ANTIMICROBIAL RESISTANCE IN CHINA

Based on our survey of antibiotic usage in China for 2013, total antibiotic production was 248,000 tons, and total usage was approximately 162,000 tons, of which 52% was used in animals and 48% in human (Figure 1). In comparison with developed countries, the antibiotic usage in China is massive with daily doses per 1000 inhabitants per day (DID) almost five times those of the United States and Europe.2 Moreover, the antibiotic usage for animals in China was 83,200 tons, while that for the States was 14,618 tons.2 In China, this substantial antibiotic use has given rise to the dissemination of antibiotic residues and antibiotic resistance in the environment.2,3 Antimicrobial resistance rates were reported by the WHO in the first global report on resistance surveillance.4 For the nine specific clinical pathogens described in this report, seven showed higher rates of resistance in China than the global mean. The Chinese animal surveillance revealed high resistance levels and increasing resistance trends in animal-origin bacteria. For example, we found a rising trend of bacterial resistance to cefotaxime, florfenicol and mequindox from the 1980s to 2014. Of particular note, emergence of plasmid-mediated colistin resistance was first reported in food-producing animals and has increased rapidly in recent years.5 It is considered as a potential emerging threat to public health as colistin is one of the last-resort antibiotics for the treatment of multidrug-resistant Gram-negative infections.5 In a word, AMR has become a serious threat to the global public health, and as estimated by O’Neill, the deaths attributable to AMR every year will be 4.73 million in Asia and 10 million in the world by 2050.6

CURRENT POLICY AND REGULATION

In the past decade, the Chinese government has taken some steps to curtail overuse of antibiotics. Since 2002, the Chinese Ministry of Health (MOH) had issued several national stewardships for promoting rational use of drugs. In 2012, the MOH released “The Administrative Measures for the Clinical Use of Antibacterial Drugs” (http://www.moh.gov.cn/mohzcfsg/s3576/201205/s4645.shtml). In agriculture, regulation of veterinary drugs was first announced by the Chinese Ministry of Agriculture.

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(MOA) in 1987. Since then, the MOA has issued several documents to strengthen the control of veterinary drugs and to limit the antibiotics that are permitted for use in animal feed as the national surveillance revealed high resistance levels and increasing resistance trend in animal-origin bacteria. In 2016, China issued a National Action Plan to Contain Antimicrobial Resistance (2016–2020) (http://www.nhfpc.gov.cn/yzygj/s3593/201608/f1ed26a0c8774e1c8fc89dd481ec84d7.shtml).

However, regulations governing antibiotic use are not strictly enforced in China. Despite all these measures, overuse, and misuse of antibiotics in clinic settings are still common in China. The overall rate of outpatients prescribed antibiotics was 50.3% between 2000 and 2012, which is much higher than that (15.3%) in the United States. A WHO survey showed that Chinese people have weak public awareness of rational use of antibiotics yet, and consumers also have an easy access to antibiotics without a prescription.8

■ MEASURES AND ACTION PLAN NEEDED

Considering alarming antibiotic usage and increasing AMR, China must act now to reduce antibiotic use and antibiotic resistance by taking the following measures.

(1) Education and Training: Improve public awareness and understanding of rational antibiotic use and AMR through effective communication and education programs. Promote prudent use of antibiotics in medical and veterinary schools, and establish continuing training programs on AMR for health care workers and animal husbandry workers.

(2) Infection Control: Promote a one health concept (human health, animal health and environmental health) to prevent microbial infections and AMR spread between humans, animals and the environment. Strengthen infection prevention and control in healthcare and livestock settings. Improve sanitation systems and waste management to guarantee good hygiene and environmental conditions.

(3) Regulation and Law Enforcement: Regulate the sale and use of antibiotics through use of prescriptions in both human medicine and veterinary medicine. Restrict and eventually ban the use of antibiotics in feeds for the purpose of growth promotion or disease prevention.

(4) Surveillance and Monitoring: Improve the surveillance network of AMR and antibiotic consumption in human medicine and veterinary medicine. Extend the surveillance to healthcare facilities and animal farms of varying size, and publish publically available annual surveillance reports.

(5) Research and Development: Encourage investment in research and innovation in AMR-related science, antibiotic drugs and alternative treatments, and promote international cooperation addressing AMR.

AMR is a global public health issue. As a member of world community, China needs to work together with other countries and international organizations to address this health issue. The antibiotic usage and resistance in China are worrisome; therefore, China must act now to reduce its antibiotic usage and resistance.

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Notes

The authors declare no competing financial interest.

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(1) WHO, Global action plan on antimicrobial resistance 2015, (Geneva, Switzerland).


