

Use and misuse of antibiotics in the Middle East

Antibiotics are an important front-line instrument in the fight against various infectious diseases. However, they are often used irrationally—meaning that their misuse, and the subsequent development of antibiotic resistance, is an important health-care issue worldwide. In *The Lancet*, Paul Little and colleagues published findings from their randomised trial, showing that internet training can lead to important reductions in antibiotic prescribing for respiratory tract infections. Their results are relevant to health-care workers in the Middle East, where antibiotics are commonly overused, usually for prophylactic treatment when not indicated.

Overuse of antibiotics is of both clinical and economic importance. Findings from a study of surgical procedures done in a Turkish teaching hospital showed that perioperative antibiotic prophylaxis was given in more than 90% of the 625 procedures done; in 78 (13%) of procedures antibiotics were indicated but not used, in 44 (7%) of procedures they were used but not indicated. Antibiotic misuse extended to the postoperative period, too. In a nationwide study done in 2010 in Kuwait, 135 (50%) of 270 patients with upper respiratory tract infections were given antibiotics—such use of antibiotics was indicated in only eight patients. Findings from a study done in six teaching hospitals in Shiraz, Iran, also showed that antibiotics are inappropriately used: 993 (99%) of 1000 patients received at least one antibiotic. Antibiotics were given to 85 (98%) of 87 patients for whom such treatment was not indicated, costing an average of US\$100 per surgical procedure.

In many Middle Eastern countries, antibiotics can easily be obtained over the counter. Findings from a study done in 2010 in Riyadh, Saudi Arabia, showed that antibiotics could readily be obtained without a prescription in 244 (78%) of 327 pharmacies. In a survey of 405 community pharmacists in Jordan, 381 (94%) suspected that their staff dispensed drugs without prescription, mostly antibiotics, cough or cold preparations, and benzodiazepines.

Inappropriate use of antibiotics has contributed to the development of microbial resistance in the region. The irrational use of antibiotics is not restricted to human

beings. Antibiotics are reportedly overused in veterinary medicine, poultry, and fishery industries, which causes the emergence of resistant microbial strains and their spread to people through the food chain. Findings from a 2010 study of tetracycline residues in food products of animal origin in Kuwait showed that the level of antibiotic residues was higher than the maximum permissible limit in 5% of poultry and 18% of milk samples examined (1517 samples examined in total). In April, 2012, the US Food and Drug Administration issued a promising voluntary plan to limit antibiotic use in agriculture and in turn limit the amount of antibiotics ingested by people.

Health-care personnel and pharmacists in the region have the great responsibility of informing people of the risks of inappropriate use of antibiotics. Media can have an influential effect on promoting this movement.

The problem of antibiotic misuse has several aspects and thus needs a multifaceted approach. One population that should be targeted is people who use antibiotics without prescription. Many people in the region believe that antibiotics should be prescribed to any person with fever. Sometimes, despite much guidance and advice from health-care workers, parents of ill children choose not to incur the extra cost or inconvenience of laboratory testing because the incorrect belief that a couple of antibiotic tablets can alleviate any illness is widespread.

Another population to target is physicians, some of whom are happy to prescribe antibiotics as requested by their patients. For all this complexity, it seems there is no single method that can be recommended to control the situation. Using a multifaceted approach, however, could be successful. Internet-based training of physicians and patients, as shown in Little and colleagues' study, is one successful approach. Strict enforcement and adherence to the existing regulations are, however, still needed, particularly in pharmacies, where more audit seems paramount.

Farrokh Habibzadeh

The Lancet Middle East Edition, NIOC Medical Education and Research Center, Shiraz, Iran

For Little and colleagues' study see *Articles Lancet* 2013; **382**: 1175–82

For the study of antibiotics in food products see *Food Addit Contam Part A Chem Anal Control Expo Risk Assess* 2010; **27**: 291–301

For the study done in Turkish teaching hospitals see *Int J Clin Pharm* 2012; **34**: 120–26

For the study done in teaching hospitals in Iran see *Iran Red Crescent Med J* 2011; **13**: 234–38

For the study done in Saudi Arabia see *BMC Public Health* 2011; **11**: 538

For the survey of Jordanian pharmacists see *Subst Use Misuse* 2010; **45**: 1319–29

For more on the development of antibiotic resistance in the Middle East see *Pak J Biol Sci* 2012; **15**: 156–59