is closely followed by the developing countries to reach the same level of efficiency to meet the demands of growing population and lifestyle change.

The tendencies in the development of agricultural practices in animal industry suggest that the worldwide use of antimicrobials in food animals will grow rapidly, by at least 67% from 2010 to 2030 (Van Boeckel et al. 2015). Even a bigger growth of antimicrobial consumption by livestock is predicted for the developing economies. For example, in the BRICS countries, referring to Brazil, Russia, India, China, and South Africa, the quantity of antimicrobials ingested by livestock is predicted to double by 2030. The total amount of antibiotics produced for this purpose is predicted to reach 105 596 ± 3 605 tons in 2030 from 63 151 ± 1 560 tons in 2010 (Van Boeckel et al. 2015). About a third of this growth will be due to the change of farming practices, from small-scale and extensive family-owned farms to large-scale intensive farming operations (concentrated animal feeding operations [CAFOs]), that routinely use antimicrobials at subtherapeutic concentrations for prophylactic, metaphylactic, and growth-promoting purposes (Van Boeckel et al. 2015). This increase will be certainly followed by the corresponding increase in antimicrobial resistance, both in humans and in animals.

23.3 Antimicrobials and Antimicrobial Resistance

There is a considerable body of evidence suggesting an epidemiologic link between the antibiotic use in food animals and antibiotic resistance in humans (Landers et al. 2012). In a previously mentioned joint ECDC/EFSA/EMA report (ECDC, EFSA, and EMA 2015), an attempt to estimate associations between consumption of antimicrobials in humans and food-producing animals and antimicrobial resistance in bacteria from humans and food-producing animals has been implemented. This analysis suggested that the overall antimicrobial consumption, expressed in milligrams per kilogram of estimated biomass, was higher in animals than in humans. In both humans and animals, there were positive correlations between the consumption of certain antimicrobials and the corresponding resistance in bacteria. In some instances, however, there was a positive correlation between the consumption of certain antimicrobials in animals and resistance in bacteria from humans (ECDC, EFSA, and EMA 2015). Thus, as noted earlier (Landers et al. 2012), antimicrobial resistance in human-associated bacteria may be also affected by antimicrobial selection in other ecological compartments such as food-producing animals.

The number of antibiotic classes currently used in humans and animals is more than 15 (Aminov 2017). It is virtually impossible to overview all of them in terms of elaborating strategies to limit the dissemination of the corresponding resistances. Thus, the approach chosen here is to focus on one antibiotic