Regional variation of antimicrobial use in Japan from 2013 to 2016

Yoshiki Kusama, Masahiro Ishikane, Chika Tanaka, Yuki Kimura, Erina Yamura, Kayoko Hayakawa, Norio Ohmagari

AMR Clinical Reference Center, Disease Control and Prevention Center, National Center for Global Health and Medicine, Tokyo, Japan

ABSTRACT

In Japan, National Action Plan on Antimicrobial Resistance 2016-2020 was developed in 2016. This plan aims 50% reduction of broad-spectrum oral antibiotics (cephalosporins, macrolides, and quinolones) from 2013 to 2020. National surveillance of antimicrobial use (AMU) is a necessary information to implement appropriate AMS. Some Western countries reported the differences of AMU at regional level, but there are no such studies in Japan. In 2013, national AMU targets a 50% reduction from 2020 in use of these oral broad-spectrum antimicrobials by 2020 from the level in 2013, regional variation in AMU in Japan is not well known. National antimicrobial sales data from 2013 to 2016 was obtained from IQVIA Japan (Tokyo, Japan), which captures 99% of total sales in Japan. Antimicrobials were classified by the World Health Organization (WHO) defined Anatomical Therapeutic Chemicals (ATC) Classification. WHO measures the number of antimicrobial use by Defined Daily Dose per 1,000 inhabitant-days (DID). From 2013 to 2016, the difference in DID amongst each prefecture was analyzed, and comparison amongst the 3 major regions of East, Central, and West Japan was performed using Mann-Whitney U test.

RESULTS

In Japan, National Action Plan on Antimicrobial Resistance 2016-2020 was developed in 2016. This plan aims 50% reduction of broad-spectrum oral antibiotics (cephalosporins, macrolides, and quinolones) from 2013 to 2020. National surveillance of antimicrobial use (AMU) is a necessary information to implement appropriate AMS. Some Western countries reported the differences of AMU at regional level, but there are no such studies in Japan. From 2013 to 2016, the median (max, min) AMU (DID) change was 0.4 (2.8, 1.6). During the study period, 34 prefectures were analyzed, and comparison amongst the 3 major regions of East, Central, and West Japan was performed using Mann-Whitney U test.

METHODS

National antimicrobial sales data from 2013 to 2016 at prefecture levels were obtained from IQVIA Services Japan K.K. (Tokyo, Japan), which covers 99% of the total sales in Japan. We standardized amount of antimicrobials sales by Defined Daily Dose (DDD) and described as DDDs per 1,000 inhabitants per day (DID). We classified antimicrobials by the World Health Organization (WHO) defined Anatomical Therapeutic Chemicals (ATC) Classification. We standardized amount of antimicrobials sales by Defined Daily Dose (DDD) and described as DDDs per 1,000 inhabitants per day (DID). The data of Japan’s population were obtained from the results of a population survey report that was published by the Ministry of Health, Labour and Welfare of Japan. From 2013 to 2016, the difference of AMU among 47 prefectures were analyzed, and comparison among East, Central, and West Japan was performed using Mann-Whitney U test.

DISCUSSION

Total national AMU from 2013 to 2016 in Japan were 14.9, 14.5, 14.7, and 14.6, respectively. The proportions of AMU of combined broad-spectrum oral antibiotics (cephalosporins, macrolides, and quinolones) were 77.7% in 2013, 76.8% in 2014, 75.8% in 2015, 75.2% in 2016. Significant regional variations of broad-spectrum oral AMU were observed in Japan.

REFERENCES