



Promoting antimicrobial stewardship based on the actual situation at healthcare facilities

Executive summary

- “Antimicrobial stewardship” refers to the coherent set of actions from the individual to the global level that promote the responsible use of antimicrobials.
- While overall antimicrobial consumption has been declining in recent years, Japan continues to have high broad-spectrum antimicrobial consumption.
- Global antimicrobial consumption has been rising, largely related to great consumption by low- and middle-income countries and the agriculture sector.
- It is crucial that antimicrobial stewardship be promoted without inhibiting the appropriate use of antimicrobials.

Introduction

While “antimicrobial stewardship” has become a common term among policymakers, the meaning of the word has evolved differently in different settings, and taken on a diverse range of forms, from hospital-based antimicrobial stewardship programs to veterinary antimicrobial stewardship.¹ The World Health Organization defines antimicrobial stewardship as “a coherent set of actions which promote the responsible use of antimicrobials.”² This definition of antimicrobial stewardship can be applied from the individual to the global level, as well as to human, animal, and environmental health.

“Antimicrobial stewardship” can be easily confused with “conservation” or “good clinical practice.”¹ “Antimicrobial stewardship” refers specifically to the use of antimicrobials, while “conservation” is a broader-concept and includes vaccination, infectious disease prevention, and public health interventions. Another concept, “good clinical practice” focuses on optimizing medical treatment and emphasizes social responsibilities less than antimicrobial stewardship. Finally, “diagnosis” is used to properly prescribe antimicrobials, and therefore diagnosis is a part of antimicrobial stewardship but not equivalent to it.

Background of the Issue: Japan

Between 2009 and 2013, antimicrobial consumption in Japan increased from 14.7 to 15.8 Defined Daily Doses* per 1000 inhabitants per day, but remains low compared to other high income countries.^{3,4} Nevertheless, Japan has a high consumption rate of oral broad-spectrum antimicrobials.⁵ Broad-spectrum antimicrobials are effective against several types of bacteria, and the development of antimicrobial resistance to these drugs can be particularly detrimental to treatment. Moreover, these drugs tend to be prescribed in out-patient settings where patients are more likely to have non-bacterial infections. Between 2012 and 2015, 56% of antibiotics prescribed in out-patient settings were for infections where antibiotics are rarely indicated.⁶ In addition, Japan has a high rate of oral macrolides and β -lactam consumption.

By the end of FY2020, the Japanese government aims to reduce antimicrobial usage by 33%, specifically by reducing oral cephalosporin, fluoroquinolone, and macrolides by 50%, and IV antimicrobials by 20% from 2013 levels.⁴ Between 2013 and 2018, daily antimicrobial consumption per 1000 individuals decreased by 10.7%, of which cephalosporin, fluoroquinolone, and macrolides each decreased by 17 to 18%.⁷

*Defined Daily Doses – assumed average maintenance dose per day for a drug used for its main indication in adults

Stakeholders and Countermeasures: Japan

Stakeholder	Countermeasure
Ministry of Health, Labour, and Welfare	<ul style="list-style-type: none"> • <i>Manual of Antimicrobial Stewardship</i> - provides guidelines for the use of antimicrobials, including general principles on antimicrobial resistance and detailed advice regarding acute respiratory tract infection and acute diarrhea.⁸ That said, as of 2019, only 14.2% of clinical doctors reported that they use the manual, and 85.9% of infectious disease physicians either knew about it but did not use it (43.7%) or were unaware of it (42.2%).⁹ Additionally, there has been research showing that trends in antimicrobial use did not change after the publication of the <i>Manual of Antimicrobial Stewardship</i>, suggesting that a more diverse set of interventions are needed.¹⁰ • <i>The Manual of Antimicrobial Stewardship</i> was updated in 2019 (2nd edition).¹¹ • <i>Medical reimbursement system</i> <ul style="list-style-type: none"> ▶ Reimbursements exist to promote stewardship programs in addition to reimbursement for infection prevention and control costs (¥3,900 per admission plus ¥1,000 for regional collaboration efforts).¹² To qualify for the reimbursement, the program requires that hospitals have an AST comprising of at least one physician, pharmacist, microbiology technologist, and nurse. ▶ Reimbursement for Pediatric Antimicrobial Use - this reimbursement is given for efforts to reduce unnecessary antimicrobial use, in addition to efforts to avoid prescribing antimicrobials.¹³
Antimicrobial Stewardship Teams (ASTs)	<ul style="list-style-type: none"> • ASTs are hospital-based teams consist of physicians, pharmacists, laboratory technicians, nurses, and others. ASTs educate physicians on the proper use of antimicrobials, and activities include the revision of guidelines and clinical pathways as well as the promotion of proper procedures such as de-escalation.¹⁴ Furthermore, teams also conduct surveillance and feedback to improve antimicrobial stewardship practices. • That said, a 2018 survey reported that many Japanese hospitals lack the personnel to create such teams.¹⁵

Background of the Issue: Global

Between 2000 and 2015, global antimicrobial consumption increased by 65% from 21.1 to 34.8 billion Defined Daily Doses (DDDs).¹⁶ In 2015, global antimicrobial consumption ranged from 4.4 to 64.4 DDDs per 1000 inhabitants per day.¹⁷ This trend has been driven by increased consumption in low- and middle-income countries, as well as greater antimicrobial use in agriculture. For instance, between 2000 and 2015, antimicrobial consumption in India increased by 63% from 8.2 to 13.6 DDDs per 1000 inhabitants per day.¹⁶ Furthermore, agriculture is expected to account for two-thirds of the global increase in antimicrobial consumption by 2030.¹⁷

The consumption of antimicrobials has been linked to antimicrobial resistance. European Union countries with higher rates of antimicrobial consumptions had higher rates of penicillin non-susceptible *S. pneumoniae*.¹⁹ However, in OECD countries, it is estimated that as much as half of all antimicrobials are inappropriately prescribed.¹⁴ For that reason, antimicrobial stewardship has been designated as one of the three pillars of the World Health Organization's strategies for curbing antimicrobial resistance.²⁰

Stakeholders and Countermeasures: Global

Stakeholder	Countermeasure
World Health Organization(WHO)	<ul style="list-style-type: none"> • Global Action Plan on Antimicrobial Resistance – supported the development of National Action Plans around the world that set country-specific goals for promoting antimicrobial stewardship.²⁰ • The COVID-19 pandemic may encourage the inappropriate use of antimicrobials and accelerate antimicrobial resistance. WHO has called upon nations to act on antimicrobial stewardship in light of COVID-19.²¹
Center for Disease Control and Prevention (CDC)	<ul style="list-style-type: none"> • Called upon all hospitals to implement antimicrobial stewardship programs. Between 2014 to 2017 the number of programs almost doubled.²²
Public Health England, Royal College of General Practitioners, other professional societies	<ul style="list-style-type: none"> • TARGET Antibiotics Toolkit – toolkit designed to educate clinicians and commissioners on antimicrobial stewardship, and to help fulfill the requirements for continuing professional development and revalidation requirements for physicians.²³
Infectious Diseases Society of America	<ul style="list-style-type: none"> • Published guidelines on the appropriate treatment of Gram-negative infections even by non-specialist clinicians.²⁴

Stakeholder	Countermeasure
Country-specific initiatives	<ul style="list-style-type: none"> • Federation of Infectious Disease Societies of South Africa (FIDSSA) - The South African Antibiotic Stewardship Programme (SAASP) provides leadership on antimicrobial stewardship for public and private sectors across South Africa. Harmonizes antibiotic prescription guidelines, as well as implements situational and evidence-based antimicrobial stewardship programs.²⁵ • National Hospital of Tropical Disease (NHTD), Oxford University, Public Health England - Vietnam Resistance (VINARES) strengthen surveillance and evidence base to promote the rational use of antimicrobials and create a comprehensive and coherent national action on antimicrobial stewardship.²⁶ • The Pioneering Antimicrobial Subscription to End Upsurging Resistance (PASTUER) Act: U.S. program to promote the implementation of antimicrobial stewardship programs and the provision of data by hospitals.²⁷

AMR Alliance Japan Recommendations

- Although policies discouraging the inappropriate use of antimicrobials are crucial to the promotion of antimicrobial stewardship, the Government should further consider on how to promote antimicrobial stewardship in such a way that does not discourage appropriate use.
- AMR Alliance Japan proposes the following measures intended to encourage the use of the Manual of Antimicrobial Stewardship in medical facilities among non-infectious disease specialists:
 - ▶ Add text explaining when antimicrobials can be used for common illnesses
 - ▶ Add lists of effective antimicrobials by patient condition
- AMR Alliance Japan requests that the Japanese Government consider revising the medical fee system to fund the following measures encouraging antimicrobial stewardship.
 - ▶ The establishment of infectious disease departments in all university hospitals and central hospitals, and the dispatch of specialists to handle infectious disease treatment (including the treatment of hospital-acquired infectious diseases, and support for infectious disease treatment in smaller communities). This should be accompanied by the creation of a system to dispatch doctors and pharmacists to both Antimicrobial Stewardship Teams (ASTs) and Infection Control Teams (ICTs) in university and central hospitals thereby enabling coordination between the teams.
 - ▶ The establishment of ASTs in every medical facility across the country, and the creation of a system that ensures that the efforts of specialists in these teams are properly rewarded.
 - ▶ Guidance for medical facility management to ensure that profits earned from the medical fee system are used to sustain and further improve the quality of infectious disease treatment and ASTs.
 - ▶ The creation of an incentive, much like the premium to support pediatric antimicrobial stewardship measures, that can appropriately reward initiatives that promote antimicrobial stewardship at pharmacies and clinics that treat adults.
- AMR Alliance Japan requests that text be added to the language on specific uses for pharmaceuticals currently being considered by the Government for inclusion in the Act on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical Devices in order to make allowances for changes in the way that antimicrobials are used out of a consideration for AMR.

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