boxes of antibiotics were recycled. All of 32 boxes of medicine could be classified into 19 specific types, of which there were 8 (42.1%) types of antibiotics, belonging to four broad categories: Cephalosporins, Penicillins, Macrolides, and Nitroimidazoles. In addition, there were also antifungal drug, antiviral agent, anti-inflammatory drug, and paracetamol tablets handed over by the villagers as antibiotics.

Conclusion. Using leaflets and social media to promote health education can reduce the risk of keeping antibiotics at home. Rural residents could not identify commonly used antibiotics even after health education. To conduct a broader intervention to recycle antibiotics, further study needs to focus on improving the antibiotic identification among the rural residents.

Disclosures. **All authors:** No reported disclosures.

2017. Age-specific Distribution of Antimicrobial Days of Therapy (DOT) Using National Database of Health Insurance Claims and Specific Health Checkups of Japan (NDB Japan): Comparison with Defined Daily Doses per 1,000 Inhabitants Per Day (DID)

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Background. Nationwide surveillance of antimicrobial use (AMU) is often assessed by defined daily doses per 1,000 inhabitants per day (DID) as a measurement unit. We previously reported the age-specific distribution of AMU using National Database of Health Insurance Claims and Specific Health Checkups of Japan (NDB Japan), which archives e-claim big data (*Infection*. 2018 46:207–214). The estimated AMU assessed by DID could be underestimated in patients with diminished renal function and in pediatric patients. Our objective was to analyze days of therapy (DOT) using NDB and to evaluate its utility by comparing with DID.

Methods. The DID value was calculated by the same method in our previous study.The DOT values was extracted from data in NDB and were standardized by a population and were described as per 1,000 inhabitant days (DOTID). The values of DID, DOTID and the ratios (DID/ DOTID), the indicator for reflecting the extent of daily dosage were compared between three groups stratified by age groups (younger than 15 years: children, 15–64 years old: productive age, and older than 64 years: elderly).

Results. The total DID (oral, parenteral) from 2013 to 2016 in three age groups was shown in the following table. The total DID (oral, parenteral) in three age groups in 2016 were 16.31, 0.27 in the children, 12.82, 0.39 in productive age, and 15.91, 2.13 in elderly, respectively. Similarly, the total DOTID (oral, parenteral) in three age groups in 2016 were 36.15, 1.20 in the children, 16.48, 0.80 in productive age, and 23.52, 3.62 in elderly, respectively. The total DID/DOTID (oral, parenteral) in three age groups in 2016 were 0.45, 0.23 in the children, 0.78, 0.49 in productive age, and 0.68, 0.59 in elderly, respectively. The gap between DID and DOTID in children was much larger than that of other age groups regardless of dosage form, suggesting that AMU assessed by DID could be underestimated, especially in children.The gap between DID and DOTID in elderly was comparable with that in productive age, suggesting that daily dosage in the elderly is similar to that in productive age.

Conclusion. These results demonstrated the utility of AMU surveillance using the DOTID as a tool and benchmark to assess the AMU, especially in children, and the ratio of DID to DOTID could be useful as an indicator for reflecting the extent of daily dosage.

	year	Oral			Parenteral		
		0-14y	15-64y	65y-	0-14y	15-64y	65y-
DID	2013	14.58	11.28	15.44	0.24	0.33	1.89
	2014	14.52	11.80	15.51	0.25	0.36	2.00
	2015	15.80	12.75	16.28	0.27	0.39	2.11
	2016	16.31	12.82	15.91	0.27	0.39	2.13
DOTID	2013	33.84	14.57	22.84	1.16	0.72	3.41
	2014	33.43	15.34	23.07	1.17	0.77	3.56
	2015	35.61	16.46	23.99	1.24	0.81	3.68
	2016	36.15	16.48	23.52	1.20	0.80	3.62
DID/DOTID	2013	0.43	0.77	0.68	0.21	0.47	0.55
	2014	0.43	0.77	0.67	0.22	0.48	0.56
	2015	0.44	0.77	0.68	0.22	0.48	0.57
	2016	0.45	0.78	0.68	0.23	0.49	0.59

Disclosures. **All authors:** No reported disclosures.

2018. The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance: Quantity and Quality of Antimicrobial Prescribing for Inpatients with Pneumonia in the Philippines in 2018

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Background. Pneumonia is the most common indication for prescription of antibiotics in hospitals in the Philippines. We describe the quality and quantity of antibiotic prescribing for hospitalized pneumonia patients in the Philippines in 2018 (www.global-PPS.com).

Methods. A point prevalence survey was performed from September to December 2018 in 28 public and private hospitals in Luzon, Mindanao, and Visayas regions. Ward- and patient-level data were collected using a standardized methodology and entered through a web-based application. We analyzed all antibiotic (ATC J01) prescriptions for inpatients with pneumonia.

Results. Of all hospitalized patients, 16.2% (n = 1516) received one or more antibiotic (J01) for treatment of pneumonia, majority (78.3%) of which were for community-acquired pneumonia (CAP). In adults, the most commonly used antibiotics were azithromycin (19.5%), ceftriaxone (19.0%), and piperacillin/enzyme inhibitor (13.2%) for CAP and meropenem (19.8%), piperacillin/enzyme inhibitor (18.9%), and levofloxacin (8.6%) for healthcare-associated pneumonia (HAP). In neonates and children, cefuroxime was used most often (20.1%) for treatment of CAP, followed by ampicillin (16.7%) and amikacin (15.3%). Children and neonates with HAP were most commonly treated with amikacin (18.7%), meropenem (15.7%), and ampicillin (10.4%). Overall, 16.0% of all antibiotic prescriptions for pneumonia were based on microbiological results, 11.3% for CAP and 33.9% for HAP. Microbiology-based prescriptions were most commonly targeted at ESBL-producing Enterobacteriaceae (8.4%). Further analysis of quality indicators showed that up to 80.0% of all prescriptions for pneumonia were compliant to local guidelines and reason in notes was documented for 81.0% of prescriptions. However, the stop or review date of antibiotic treatment for pneumonia was less documented (27.8%).

Conclusion. Global-PPS data provided valuable insights into the quantity and quality of antibiotic prescribing for pneumonia inpatients. These results will be fedback to the Department of Health, medical societies, and hospitals for prioritization of targets and policies toward the improvement of the Philippine antimicrobial stewardship program.

Disclosures. **All authors:** No reported disclosures.

2019. Multicentric Antimicrobial Point Prevalence Survey in Four Tertiary Care Hospitals in Southern India

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Background. Antibiotic consumption data are scarce in the subcontinent. Defined Daily Doses (Doses) and Days of Therapy (DOT)-based metrics both have inherent disadvantages limiting their application in resource-limited settings primarily in terms of resource hours.. Point Prevalence Study (PPS) offers an offer an initial feasible step for describing antimicrobial use and identifying targets to reduce inappropriate use. Aim of the present study was to use PPS to identify quantitative and qualitative aspects of antimicrobial consumption.

Methods. A cross-sectional hospital-based PPS was conducted in 4 tertiary care hospitals—Aster Medcity (Kochi, Kerala), Aster MIMS (Calicut, Kerala), Aster Ramesh (Guntur, Andhra Pradesh), and Aster CMI (Bengaluru, Karnataka)—based on a standardized format derived from the GLOBAL-PPS initiative and WHO resources.

Results. The total number of patients surveyed was 944.42.7% patients had a standing antibiotic order, out of which 19.80%patients were receiving reserve antimicrobials (WHO classification). 76.23% of prescriptions were used empirically, 16.08% were used as prophylaxis meanwhile 7.67% had a culture-based indication. The overall DOT (per 1000 patient-days) for all antimicrobials in the 4 centers were 86.54, 64.19, 93.71 and 85.93 respectively with a cumulative mean DOT of 82.59. Reserve antimicrobials DOT were 26.28, 14.83, 28.08 and 19.61, respectively, with a mean of 22.2. The most common class of antimicrobial prescribed was β lactam -β lactamase inhibitors (BL/BLI) 27.3% while Carbapenems (8.16%) was the most common amongst reserve antimicrobials. Out of all the prescriptions only 7.67% had indications documented. Documented errors of dosing were seen in 8 patients. Adherence to monitoring for ADE was done in 92.57%.

Conclusion. The study reveals antibiotic use in almost 40% of patients under survey with a DOT of 82.59 per 1000 patient-days. Improving empirical use of antimicrobials, BL/BLI focused intervention and improved documentation has been identified as potential areas for intervention based on this study.The study also highlights the scope of PPS as an effective tool in resource-limited setting to define and refine antimicrobial use and contribute toward antimicrobial stewardship as well as other activities aimed reducing antimicrobial resistance across a range of settings.

Table 1. Comparison among 4 different hospitals in South India regarding antibiotic consumption

	Hosp 1	Hosp 2	Hosp 3	Hosp 4
1. Total no: patients admitted (IP)	341	307	118	178
2. Total no: patients on ABX	150	113	56	85
(a) Single ABX	93	70	36	54
(b) Two ABX	41	28	16	13
(c) > Two ABX	16	15	4	17
(d) Antifungals	22	5	2	5
4. Total no: of patients on Reserve ABX	29	19	13	19
Patient's with Dosing errors	4	2	2	0
Patient's with adherence to monitoring	142	96	52	84

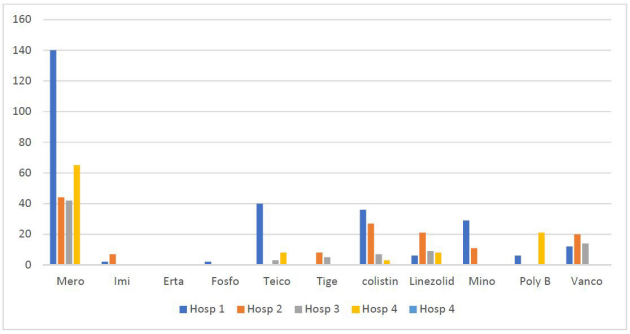

Fig.1 Combined DOT of Reserved Antibiotics among 4 different hospitals in Southern India

Disclosures. **All authors:** No reported disclosures.

2020. Impact of Local Antimicrobial Stewardship Guidelines through a Cellphone App to Lower Hospital-acquired MDR Infections in a Private Hospital in Mexico City

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Background. Hospital-acquired multi-drug-resistant organisms (HA-MDRO) infections are associated with increased cost, length of stay, morbidity, and mortality. The prevalence of HA-MDRO has been increasing worldwide. We look to describe how the implementation of local guidelines as an app available for tablets or cellphones in our hospital in 2014 decrease the prevalence of HA-MDRO.

Methods. Local guidelines were implemented as an electronic application available and intended for hospital staff only. This app gives local patterns of resistance for bacteria with treatment recommendations alongside suggested antimicrobial drugs for empiric treatment. Descriptive statistics were performed.

Results. In 2013, before implementing the app, HA-MDRO were reported in 25% of hospital-acquired infection. After the introduction of the app, compliance in 2014 was 56.7% with HA-MDRO reported in 20%, 2015 use was 60.7% and HA-MDRO in 18%, 2016 compliance 68.7% and HA-MDRO in 16%, 2017 compliance in 73.7% and HA-MDRO in 14%, lastly in 2018 prevalence was 15% of HA-MDRO while use of local guidelines was 78.7%. Different type of infections (VAP, HAP, UTI, SSI, BSI) also decreased while following guidelines recommendations.

Conclusion. These programs are needed as a part of the healthcare program to control the HA-MDRO morbidity and complications. Simple friendly-user electronic applications such as the one implemented in our hospital led to higher compliance and lower hospital-acquired infections. Antimicrobial stewardship programs and local guidelines should be part of the standard of care of all hospitals.

Table 1. Yearly discharge and total of hospital-acquired infections.

	Yearly Discharge	Compliance to Guidelines	Hospital Acquired Infections	Positive Culture	% of Positive Cultures	MDRO	% of MDRO of hospital-acquired infection	% de MDRO of positive culture
2013	15,754	42.2	239	165	69	61	25	36
2014	14,747	56.7	197	138	70	40	20	28
2015	14,043	60.7	187	134	71	35	18	26
2016	13,978	68.7	193	142	73	32	16	22
2017	13,824	73.7	190	148	77	28	14	18
2018	14,017	79.8	152	124	81	23	15	18
TOTAL	86,363	63.3	1158	851	73	219	18	24.6

MDRO: Multi-drug resistant organism.

Disclosures. **All authors:** No reported disclosures.

2021. Comparison of Patterns of National Oral Antibiotic Use Between All Dentists and Medical Doctors in Japan in 2016 Using the National Database of Health Insurance Claims and Specific Health Checkups of Japan (NDB)

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Background. Antimicrobial resistance (AMR) is a global threat for both dentists and medical doctors. The Japanese national action plan on AMR targets a 50% reduction in the use of oral broad-spectrum antimicrobials by 2020 compared with its use in 2013. However, no study has compared the pattern of oral antimicrobial use (AMU) in outpatient settings between all dentists and medical doctors in Japan using the national database of health insurance claims and specific health checkups (NDB).

Methods. Data of oral AMU in outpatient settings prescribed by both all dentists (n = 104,533) and medical doctors (n = 319,480) in Japan in 2016 were evaluated using NDB collected by the Ministry of Health, Labor and Welfare of Japan; the data accounted for 98% of the total claim data in Japan. Antimicrobials were classified by the World Health Organization (WHO) defined Anatomical Therapeutic Chemicals Classification. WHO measures the number of AMU using defined daily dose per 1,000 inhabitant-days (DIDs).

The pattern of oral AMU between all dentists and medical doctors in Japan in 2016 was compared.

Results. The values of oral AMU in outpatient settings among all dentists (n = 104,533) and medical doctors (n = 319,480) in Japan were 1.20 and 12.11, respectively. The proportions of AMU among dentists were cephalosporins, 65.1%; macrolides, 18.9%; quinolones, 5.5%; and penicillin, 8.7%. In contrast, the proportions of AMU among medical doctors were cephalosporins, 23.1%; macrolides, 36.9%; quinolones, 22.2%; and penicillin, 8.1%. There were differences in the pattern of oral AMU between dentists and medical doctors ($P < 0.001$) (Table 1).

Conclusion. Although the value of total oral AMU among dentists was 9.9% of medical doctors, the proportion of cephalosporin use, which was thought to be inappropriate prescribing, was higher among dentists than among medical doctors. Further studies that are adjusted to patients' characteristics are needed.

Table 1. Comparison of oral antimicrobial use between all dentists and medical doctors in Japan

	Dentists n=104,533	Medical doctors n=319,480
Total	1.20	12.11
Cephalosporins	0.79 (65.1)	2.80 (23.1)
Macrolides	0.23 (18.9)	4.47 (36.9)
Quinolones	0.07 (5.5)	2.69 (22.2)
Penicillin	0.11 (8.7)	0.98 (8.1)
Others	0.02 (1.8)	1.17 (9.6)
Data show defined daily doses per 1000 inhabitants per days, DID (%).		

Disclosures. **All authors:** No reported disclosures.