Results. A total of 60 physicians, nurses, pharmacists, laboratory technicians, and infection control specialists were trained and participated in the PPS. The survey collected records of 816 patients in which 442 (54%) were females and 374 (46%) were males. In total, 356 (44%) patients received 551 antibiotics. Overall, 300 (75%) of 398 indications for antibiotic use were treatment and 72 (18%) were prophylaxis. A higher use of parenteral antibiotics (79%) was observed compared with oral antibiotics (21%). Antibiotic prescribing patterns differed across hospitals. The most commonly used antibiotics were metronidazole (12%) and amoxicillin/clavulanate (11%).

Conclusion. The PPS method provided a feasible and effective way to collect baseline data and identify target areas for interventions. Engaging national leaderships and building local capacity offered a sustainable way in optimizing antimicrobial use in resource-limited settings.

Fig. 1. PAHO/WHO Point Prevalence Survey Design

![Hospital inclusion criteria](image1)

- Acute care hospitals
- Acute care wards
- Pediatric
- Neonatal
- Adult
- Mixed

![Exclusion criteria](image2)

- Non-acute care facilities
- Nursing homes
- Rehabilitation centers
- Psychiatric centers
- Emergency departments
- Day surgery centers
- Renal dialysis
- Home care

![Timeline](image3)

- Data collection for the entire hospital was completed within 3 consecutive days from the first day of data collection
- Each ICU was completely surveyed within a single visit

![Data collection tool](image4)

- Electronic data collection tool in REDCap™
- Data validation and analysis in R

![Hospital level](image5)

- Hospital questionnaire
- Integrated ASP indicators
- Infrastructural Policy & practices
- Monitoring & feedback

![Patient level](image6)

- Age
- Gender
- Acuity
- Health status and exposure (e.g., surgery, prior admission)
- Type of ward

![Indication data](image7)

- Diagnosis
- Type of antibiotic
- Prophylaxis
- Route
- Medicator surgical prophylaxis
- ICU or ON
- Length of stay or interval between treatment

![Antibiotics data](image8)

- Antibiotic name
- Dose
- Days
- Frequency
- Duration
- Hierarchy
- Mixed class
- Reason for missed dose

![Laboratory service](image9)

- Use of laboratory
- Availability of culture and sensitivity results
- Result turnaround with patient
- Type of resistance

Fig. 2. PAHO/WHO Point Prevalence Survey Data Structure

![Hospital level](image10)

- Hospital questionnaire
- Integrated ASP indicators
- Infrastructural Policy & practices
- Monitoring & feedback

![Patient level](image11)

- Age
- Gender
- Acuity
- Health status and exposure (e.g., surgery, prior admission)
- Type of ward

![Indication data](image12)

- Diagnosis
- Type of antibiotic
- Prophylaxis
- Route
- Medicator surgical prophylaxis
- ICU or ON
- Length of stay or interval between treatment

![Antibiotics data](image13)

- Antibiotic name
- Dose
- Days
- Frequency
- Duration
- Hierarchy
- Mixed class
- Reason for missed dose

![Laboratory service](image14)

- Use of laboratory
- Availability of culture and sensitivity results
- Result turnaround with patient
- Type of resistance

Fig. 3. PAHO/WHO Point Prevalence Survey Methodology

Preparation

- Identify local investigators
- Identify multidisciplinary teams including physicians, nurses, pharmacists, laboratory technicians, and infection control specialists
- Obtain ethical approval

Data collection

- Follow standardised patient sampling methods
- Include all ward members/healthcare providers in data collection process
- Provide ongoing supervision

Preliminary results

- Provide preliminary analysis results to assist in further evaluation
- Facilitate discussion on ASP with hospital leaderships based on the interim results

Dissemination of results

- Disseminate results objectively to national audiences
- Provide technical support to develop and implement ASP
- Engage support ASP partners for ASP assessment and evaluation

2035. Clinical and Economic Outcomes in Patients with Complicated Urinary Tract Infection (cUTI) and Complicated Intra-Abdominal Infection (cIAI) in Peru: Impact of Gram-Negative Organisms (GNO) Resistant to Antibiotics Luis Hercilla, MD;2 Giovanni Perez, MD;2 Ricardo Illescas, MD;2 Jose Hidalgo, MD,3 Eresvita Ramirez;2 Vanessa Moreno, MD;3 Gerardo Galdos-Cardenas, PhD;1 Raúl Gutiérrez-Rodríguez, MSc;1 Lourdes Rodriguez, MD;3 Juan Carlos Orenge, PhD;1 Homero Monsanto, PhD;1 Sabogal Hospital, Callao, Essalud, Peru;1 Sabogal Hospital, Lima, Callao, Peru;2 Almenara Hospital, Lima, Essalud, Peru;1 Almenara Hospital, Lima, Peru;1 Puercan Clinical Research, Lima, Peru;1 Merck Sharp and Dohme- Medical Affairs, Lima, Peru;2 Center for Observational and Real-world Evidence (CORE) MSD-Latin America, Puerto Rico, New Jersey

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Background. Delays in appropriate therapy of infections affect clinical outcomes. The aim of this study was to compare the clinical and economic outcomes of patients with cUTI and cIAI due to cephalosporin- and carbapenem-resistant GNOs to similar infections caused by nonresistant GNOs.

Methods. A retrospective cohort study of patients admitted to two tertiary care hospitals in Lima-Callao, Peru between January and December 2017. Patients with resistant strains were compared with those with nonresistant strains for the failure of initial antibiotic regimen (defined as worsened clinical status, change of initial antibiotic treatment, or in-hospital mortality), median length of stay (LOS), hospitalization ward cost and total hospitalization cost.

Results. A sample of 300 consecutive culture-positive patients were included: 429 (86%) with cUTI and 71 (14%) with cIAI (table). The proportion of inappropriate therapy in patients with resistant infections is high. The cost of care for carbapenem-resistant cUTI was highest. The appropriate initial antibiotic choice may minimize the impact of GNO resistance on outcomes of patients with cIAI and cUTI.

Disclosures. All authors: No reported disclosures.

2036. A Quasi-Experimental Survey Study of Antimicrobial Stewardship Education for Registered Nurses Maressa Santarossa, PharmD, BCP, BCIDP1; Christina Walk, RN;2 Cara J. Joyce, PhD, MS;2 Fritzie S. Albarillo, MD;3 Loyola University Medical Center, Chicago, Illinois;4 Loyola University Chicago, Maywood, Illinois

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Background. Antimicrobial stewardship (AS) efforts have led to improved patient outcomes, reduction in unnecessary costs, and decrease in antimicrobial resistance (AB). Loyola University Medical Center (LUMC) is a quaternary care-system that has a comprehensive multidisciplinary Antimicrobial Stewardship Program (ASP). Registered nurses (RNs) have been shown to be a vital part of ASP, however their role and engagement in ASP should continue to be investigated and explored.

Methods. In February 2018, a voluntary online survey was created and disseminated to all RNs at LUMC to evaluate their baseline knowledge and perception of AS and AR, as well as to further investigate their role in ASP at LUMC. Based on the results of the survey, our AS team implemented a multi-faceted education program. This included a series of lectures which were emailed to all RNs, as well as live education sessions by the AS team during nursing huddles. In March 2019, a second survey was distributed to all nurses with the primary goal of evaluating changes in the knowledge and perception of AS and AR after targeted education efforts. The secondary goal was to gather feedback to target further efforts of engaging RNs in AS.

Results. A total of 179 RNs completed the first survey and 117 completed the second survey. In both surveys, over 90% of RNs agree that they play an important role in AS, and that AS can decrease AR and adverse effects of antimicrobials. The majority in both surveys also agreed that AR can be caused by misuse/overuse of antimicrobials and this can be harmful to patients. Familiarity with AS practices among RNs remains an issue, however this increased from 70% strongly agree/agree in the first survey to 74% in the second survey. Sixty-nine percent of RNs recalled reading the PowerPoint education slides, while only 38% recalled being educated in person by the AS team. A similar number of RNs (58% and 60%, respectively) prefer to be educated in person vs. through email.

Disclosures. All authors: No reported disclosures.
Conclusion. Hospital-specific surveys on nurses’ perception and knowledge on AS and AR can be used to guide future ASP interventions, as well as to evaluate the effectiveness of these interventions. Our ASP at LUMC implemented strategies to improve nursing education and engagement in AS and evaluated this strategy using a pre-/post-survey.

Disclosures. All authors: No reported disclosures.

2037. A Novel Strategy of Antimicrobial Stewardship in Shanghai: Preliminary Practice with Integration of Three Surveillance Networks

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Background. The bacterial resistance surveillance networks, antimicrobial clinical use surveillance networks and provincial hospital-acquired infection (HAI) surveillance have been well established in China. They aim to inform the current situation of bacterial resistance, antimicrobial use and HAI, and to guide the rational use of antimicrobials. However, these three networks presently are running separately. To increase the data value in antimicrobial stewardship (AMS) practice, those three surveillance networks are integrated in Shanghai.

Methods. The Committee of Rational Use of Antimicrobials and AMS of Shanghai Municipal Health Commission, consisting of health administrators, clinical physicians and microbiologists, clinical pharmacologists and infection control experts, was formed in 2017. The oversight committee developed a comprehensive AMS score index mainly based on the surveillance data of the three networks to evaluate the AMS requirements in the hospitals. The AMS score index consists of 3 surveillance network indexes: resistance weight index; antimicrobial weight index and HAI weight index; each of the indexes is further divided into two parts, namely the surveillance quality score and data-related score. For example, the data-related score in the resistance index was calculated for the prevalence of 6 most important MDR/XDR bacteria (CRKP, CRAB, CRPA, ESBL, MRSA, VRE). A multi-disciplinary AMS team was convened to provide expert on-site visit of the hospitals and offered AMS support in the form of practical guidance and advice.

Results. AMS score and detailed score such as the prevalence of CRKP were ranked among 50 hospitals within the networks. These scores will support the AMS team to find out the main drivers of resistance/antibiotic use and thereby support appropriate interventions during the on-site visit. For example, a hospital visited which had a high consumption of carbapenems (ranked third in Shanghai) and also had a high percentage of carbapenems used in the department of liver transplantation. The advice of the on-site visit team was to encourage a more diverse group of antibiotics so as to spare carbapenems.

Conclusion. Involvement of the multi-disciplinary team and integration of surveillance networks are very helpful in AMS practice.

Disclosures. All authors: No reported disclosures.

2038. Antimicrobial Stewardship (AS) Recognition, Confidence, and Organizational Factors: Multi-center Survey of Bedside Nurses

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Background. There is no literature on practices nurses associated with AS processes and how patient safety culture influences nursing AS understanding and confidence.

Methods. This cross-sectional study used an investigator-developed survey with optional comments to describe how bedside nurses recognize and perceive their confidence to perform AS practices that contribute to the antibiotic stewardship process and their perceived confidence to perform specific surveillance/quality improvement tasks. The survey was distributed to bedside nurses across one Children’s Mercy Hospital in the Midwest (Children’s Mercy Hospital & Clinics, Kansas City) and another Children’s Mercy Hospital in the Midwest (Children’s Mercy Hospital & Clinics, Kansas City, Missouri) and to bedside nurses at a large academic medical center in the Midwest (Children’s Mercy Hospital & Clinics, Kansas City, Missouri). The survey was conducted between October 2018 and June 2019. The survey included 106 questions focused on: (a) AS recognition and confidence; (b) barriers and facilitators; (c) practices nurses use to recognize and report AS opportunities; (d) AS education; and (e) organized antimicrobial stewardship programs in the facility. The survey took approximately 20 minutes to complete. The survey was completed by 567 bedside nurses. The survey was analyzed to answer the research questions of: (1) Recognize and confidence; (2) barriers and facilitators; (3) practices nurses use to recognize and report AS opportunities; (4) AS education; and (5) organized antimicrobial stewardship programs in the facility.

Results. A total of 558 inpatient nurses participated (response rate 13%). A significant positive association was identified between nurses’ beliefs about nursing practices that contribute to the antibiotic stewardship process and their perceived confidence to perform specific surveillance/quality improvement tasks. The survey was conducted between October 2018 and June 2019. The survey included 106 questions focused on: (a) AS recognition and confidence; (b) barriers and facilitators; (c) practices nurses use to recognize and report AS opportunities; (d) AS education; and (e) organized antimicrobial stewardship programs in the facility. The survey took approximately 20 minutes to complete. The survey was analyzed to answer the research questions of: (1) Recognize and confidence; (2) barriers and facilitators; (3) practices nurses use to recognize and report AS opportunities; (4) AS education; and (5) organized antimicrobial stewardship programs in the facility.

Conclusion. This is the largest multi-site study on nursing stewardship practice that includes organizational culture as a factor influencing behavior to steward. The results identify interprofessional collaboration is needed to improve organizational factors so nurses can serve as powerful AS collaborators in this important patient safety effort.

Disclosures. All authors: No reported disclosures.

2041. The Impact of a Multi-disciplinary Antimicrobial Stewardship Program on Carbapenem Use in an Academic Liver Transplantation Program

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Background. Carbapenems are often used as a last resort for patients with multidrug-resistant (MDR) infections. The high percentage of carbapenem use has been associated with increased occurrence of carbapenem-resistant Enterobacteriaceae (CRE) and carbapenem-resistant Acinetobacter baumannii (CRAB) in China. The Chinese guidelines for the management of CRE and CRAB recommend the judicious use of carbapenems. However, methods to truly influence the prescribing patterns for carbapenems were lacking. A multi-disciplinary antimicrobial stewardship program was introduced to promote the judicious use of carbapenems in our center.

Methods. A multi-disciplinary antimicrobial stewardship program was introduced in April 2018 at our center. The participating members included infectious disease physicians, medical/surgical residents, general surgeons, critical care nurses, infection control nurses, and infection control physicians. The program included: (1) antimicrobial restriction; (2) feedback to prescribers; (3) practical guidance and advice. The practice was evaluated using a pre-/post-survey.

Results. Serum carbapenem use before and after the introduction of the program was 28.5% and 13.2%, respectively. The high percentage of carbapenems used in the department of liver transplantation. The program aimed to promote the judicious use of carbapenems. The advice of the on-site visit team was to encourage a more diverse group of antibiotics so as to spare carbapenems.

Conclusion. Involvement of the multi-disciplinary team and integration of surveillance networks are very helpful in AMS practice.

Disclosures. All authors: No reported disclosures.