Results. We identified 29 NTS isolates with azithromycin resistance representing 22 different serotypes from 19 states. The prevalence of azithromycin resistance among surveillance isolates increased from 1.4 per 1000 isolates tested in 2011–2014 to 3.7 per 1,000 in 2015–2016 (P = 0.014). In addition to azithromycin resistance, most isolates were multidrug resistant; 16 (55%) were resistant to agents from ≥5 antimicrobial classes. Of 16 sequenced isolates with resistance genes detected, 13 (81%) had mphA and 2 (13%) had mphE. Median patient age was 45 years (interquartile range 21–61.5; n = 29); 13 (46% n = 28) were male. Of 15 patients with travel histories, 5 (33%) traveled to Asia, 2 (13%) traveled to Latin America, and 1 (7%) traveled to Europe prior to illness onset.

Conclusion. Azithromycin resistance among NTS is increasing in the United States, though it remains rare. The rise is associated with the emergence of plasmid-mediated macrolide resistance genes mphA and mphE, raising concern for spread of resistance among bacteria. Resistance determinants may enter the USA via international travelers, while frequent clinical use of azithromycin may contribute to selective pressure domestically.

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674. Antibiotic Consumption Point Prevalence Survey in a Teaching Hospital in Guatemala
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Background. Antibiotics are among the most commonly prescribed drugs and are considered a major determinant in the development of resistance. Regionally no regulations for antibiotic use and resistance is an important and growing problem. Close vigilance to the use and indication of antibiotic prescriptions need to be reinforced in order to develop better guidelines for its management.

Methods. A point prevalence study of the prescription of antibiotics from all inpatients in the Surgery Department (SD), Intensive Care Unit (ICU), Pediatric Intensive Care Unit (PICU) and Neonatal Intensive Care Unit (NICU) was performed in November 2016. Data were collected using standardized method.

Results. Of 231 patients, 193 (83.75%) received one or more antibiotics. The highest rate of prescription occurred in the PICU (96%, 24/25) and SD (90%; 114/127) and the lowest in the ICU (68%; 19/28). The parenteral route was used in 100%.

Carbapenems were the most commonly prescribed antibiotic in critical care units (61.53%) and combination therapy with another broad-spectrum antibiotic was found in 50% of cases. Therapeutic prescription, with either clinical or microbiological diagnosis, was indicated in 81.81% of cases; 33.86% (64/189) of which were nosocomial.

A positive bacterial culture was identified in 65.4% (151/231) of charts. The rates of identified microorganism through bacterial cultures per department were NICU 95% (35), PICU 79% (19), ICU 68% (13), SD 46% (53).

Conclusion. These data indicates a high rate of antibiotic broad-spectrum use at the hospital. Considering that almost 20% of cases didn’t have an infectious disease diagnosis, antibiotic prescription seems to be strongly empirical. National antibiotic stewardship policies are required with a multifaceted strategy including education, regulation and greater financial support from the government to impact on antimicrobial resistance rates.

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675. Appropriateness of Antibiotic Prescriptions for Acute Sinusitis and Pharyngitis in Ambulatory Care Settings of an Integrated Health Care System
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Background. Outpatient antibiotic use constitutes over 80% of total antibiotic use. Acute sinusitis and pharyngitis are among the top three conditions which result in inappropriate antibiotic prescriptions. The objective of the study was to perform a comprehensive patient-level analysis to evaluate the appropriateness of antibiotic prescriptions and factors associated with inappropriate prescriptions in acute sinusitis and pharyngitis.

Methods. This was a retrospective cross-sectional study involving patients >1 year old with an initial visit for acute sinusitis or pharyngitis to a clinic, emergency department, or urgent care center of an integrated health care system. A random sample of cases occurring between May and October 2016 were reviewed manually for clinical, diagnostic, and treatment data. The primary endpoint was inappropriate antibiotic prescriptions, defined as lack of an indication for an antibiotic or antibiotic choice, dose, or duration of therapy discordant with Infectious Diseases Society of America guidance.

Results. Of 540 patients reviewed, 130 patients with sinusitis and 275 patients with pharyngitis were included for analysis; the median age was 46 and 13 years, respectively. In total, antibiotics were prescribed at 117 (90%) visits for sinusitis and 130 (47%) visits for pharyngitis. In cases where the antibiotic was prescribed only for sinusitis or pharyngitis, the prescription was overall inappropriate in 92 of 113 (81%) cases of sinusitis and 53 of 111 (48%) cases of pharyngitis. The reasons for classification as inappropriate prescriptions are shown in the Figure. Antibiotics were given when not indicated in 54 of 113 (48%) cases of sinusitis and 16/111 (14%) cases of pharyngitis. The most common prescribing error in sinusitis was longer duration of therapy while dosing errors were more common in pharyngitis.

Figure 1: Inappropriate antibiotic prescriptions in acute pharyngitis and sinusitis

Conclusion. Inappropriate antibiotic prescriptions are common in both acute sinusitis and pharyngitis, but more so in sinusitis. The types of prescribing errors differed markedly between the two infections. This suggests individualized approaches to improve antimicrobial use for these infections are necessary.

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676. Protecting Our Most Vulnerable: Why Antimicrobial Stewardship for Senior Living Is a Must: Results from Four Large Senior Living Centers
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Background. Antibiotics are frequently prescribed among senior living residents, with the over diagnosis of infections playing a significant problem. Elderly are vulnerable to the harms of inappropriate antibiotic use.

Methods. We evaluated the use of systemic antibiotics, the diagnosis of facility-onset urinary tract infection (based on McGee’s criteria), and C. difficile infections in the 4 large (>250 resident beds) Senior Living Centers in 4 different states. All measures were normalized per 1,000 resident-days and evaluated over 9 months between July 2015 and March 2016. In addition, we visited the 4 facilities and qualitatively evaluated factors that may influence antibiotic use.

Results. There were 27,255 antibiotic-days at a rate of 106.8 per 1,000 resident-days. Non-quinolone antinurary agents accounted for 65 (.25%); azithromycin for 2.5 (20.2%), cephalosporins 16.8 (15.7%), penicillins 8.0 (7.5%), and tetracyclines 8.2 (7.7%), and macrolides 6.31 (5.9%) antibiotic-days per 1,000 resident-days. There were marked differences in the use of urinary antimicrobials between the 4 facilities (Figure 1). Facility A and B had more than 6 times antibiotic use compared with facility D, and had the highest rates for UTI (Table 1). Clostridium difficile infections were highest in facility A compared with other facilities. The two facilities lowest antimicrobial use had strong physician-nursing partnership with engaged medical directors.

Conclusion. Considerable opportunities reside in Senior Living to optimize testing and appropriate antibiotic use. Engaging both nurses and physicians, in addition to regular evaluation of use with feedback are key to standardizing the care and improving the outcomes.

Table 1: Antimicrobial Use, Urinary Tract Infections, and Clostridium difficile Infections at the 4 Facilities.

| Facility       | Antibiotic-Days | Urinary Tract Infections | Clostridium difficile Infections |
|---------------|----------------|--------------------------|---------------------------------|
| A             | 11,087         | 9,439                    | 5,109                           |
| B             | 106            | 143                      | 31                              |
| C             | 16             | 4                        | 6                               |
| D             | 676            | 52871                    | 67,007                          |

Antibiotic-Days per 1,000

| Facility       | Resident-Days | Resident-Days | C. difficile per 1,000 |
|---------------|--------------|--------------|-----------------------|
| A             | 173.5        | 163.1        | 0.09                  |
| B             | 1.66         | 2.47         | 0.48                  |
| C             | 0.25         | 0.07         | 0.01                  |
| D             | 0.80         | 0.00         | 0.00                  |

P-value

C. difficile per 1,000 Resident-Days

P-value

<0.001
Results. On January 20, 10% (67/666) of residents received 82 antimicrobial agents of which 45% were given to treat an infection (Figure 1). On July 20, 7% (49/677) of residents received 58 antimicrobial agents of which 51% were given to treat an infection. Skin and soft-tissue infections (SSTIs) were the most common infectious indication, accounting for 24% and 27% of residents given an antimicrobial for infection in January and July, respectively (Figure 2). Respiratory tract infections (RTIs) accounted for 3% of residents given an antimicrobial for infection in January compared with 16% in July ($P < 0.01$). For treatment of infections, there was no significant difference between the use of systemic (oral and intravenous) agents in January (63%) compared with July (48%, $P = 0.2$, Figure 3); cephalosporins (32%) were the most common agents used. In July, topical antimicrobials were more common (52%) of which mupirocin and clindamycin were most common.

Conclusion. In pPACFs, antimicrobial agents were less commonly given for infections than for non-infectious indications and prophylaxis. SSTIs were the most common infection and topical agents were more commonly used to treat infections in July. Surprisingly, treatment of RTIs was more common in July. This study suggests that care guidelines could be useful in promoting AS efforts for pPACFs.

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678. Point Prevalence Survey on Antimicrobial Use in Pediatric Post-acute Care Facilities
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Background. Antimicrobial use data in adult nursing homes have been used to direct antimicrobial stewardship (AS) efforts for this healthcare setting. However, little is known about antimicrobial use in pediatric post-acute care facilities (pPACFs). The purpose of this study was to describe antimicrobial use in pPACFs.

Methods. We performed a point prevalence study of antimicrobial use in six geographically diverse pPACFs on two study dates: January 20 and July 20, 2016. Eligible facilities cared for residents 21 years old. Collected data were extracted from residents' medical records and included antimicrobial agents given on the 2 study days; the indication for use, categorized as treatment of an infection, non-infectious use, e.g., dysmotility or prophylaxis; and route of administration. Chi-squared tests were performed as applicable; P values < 0.05 were considered statistically significant.

Results. A review of patient's folders showed that 141/894 patients (15.7%) had received antibiotics prior to admission and 477/894 (53.4%) of patients received antibiotics 24 hours after admission to establish the frequency and pattern of antibiotic prescription in relation to the use of microbiology investigations.

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679. Geographical Analysis of Antimicrobial Consumption Surveillance using the National Database of Health Insurance Claims and Specific Health Checkups of Japan (NDB JAPAN) 2011–2013
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Background. Antimicrobial resistance has not received the necessary attention it deserves in Africa. While many developed countries have successfully established antimicrobial stewardship programmes in hospital settings, several low-resource countries, including Ghana continue to struggle with getting stewardship programmes up and running. The Infection Prevention and Control team (IPC) and the Accident and Emergency Department (A&E) of the Komfo Anokye Teaching Hospital (KATH) in Ghana in a collaborative effort to pilot and establish an antimicrobial stewardship programme, conducted a baseline study with the aim of describing current practices in the A&E prior to the start of the programme.

Methods. This study was conducted at the A&E Department of KATH, in Kumasi, Ghana. Initially, all clinical staff of the Directorate were invited to participate in the survey to determine their practices in relation to antibiotic use. Patient folders were also reviewed 24 hours after admission to establish the frequency and pattern of antibiotic prescription in relation to the use of microbiology investigations.

Results. Of 75 staff members (including doctors, nurses and pharmacists) who responded to the survey, only 8% of the respondents were not directly involved in prescribing, dispensing or administering antibiotics. Majority (61.9%) of the respondents did not know about an existing antibiotic policy in the A&E department while 30.9% were not sure if one existed. Most (66.7%) of the respondents expressed worry about excessive antibiotic use and half (50.6%) of the respondents said antibiotics were being abused in the department. When asked directly, 49% (37/75) said there should be a change in the way antibiotics are used in the department.

Conclusion. This study reveals a high and inappropriate use of antibiotics. Urgent steps are needed to establish an antibiotic stewardship programme that will improve the appropriate use of antibiotics.

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