on-site care showed significantly higher antimicrobial prescriptions. Further investigation is needed into the underlying causes of prescribing rate variances and how these care delivery options may affect efforts to reduce inappropriate utilization of antimicrobials.

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1617. Age-specific Distribution of Antimicrobial Use Surveillance using National Database of Health Insurance Claims and Specific Health Checkups of Japan (NDB Japan) 2011–2013

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Background. Antimicrobial use (AMU) surveillance is one of the key actions in the Japanese national plan on antimicrobial resistance (AMR). National database of health insurance claims and specific health checkups of Japan (NDB), which archives e-claim big data, is one candidate for their data source, since universal healthcare system is established in Japan and e-claim data covers almost all citizens. However, no study has been performed using NDB for assessing AMU. Our objective was to analyze the quantities and patterns of total systemic antibiotic prescriptions using NDB and to evaluate its utility.

Methods. The data were analyzed in accordance with the Anatomical Therapeutic Chemical (ATC) classification using defined daily dose (DDD) as a measurement unit, as recommended by the WHO Collaborating Centre for Drug Statistics Methodology. The population-weighted total consumption was normalized and expressed as defined daily doses (DDDs) per 1000 inhabitants per day (DID). Trend analysis of DID from 2011 to 2013 and subgroup analysis stratified by age group (0–14, 15–64, 65 and above years old), and ATC classification were performed.

Results. The DID value of oral antimicrobial use in 2013 was 13.2, which was a 1.04-fold increase in comparison with that in 2011. The DID value of parenteral antimicrobial use in 2013 was 0.83, which was a 1.13-fold increase in comparison with that in 2011. The DID value of each antibiotics category calculated using the NDB was comparable to that calculated using sales data in our previous study (*J Glob Antimicrob Resist.*7:19–23, 2016), suggesting that the NDB is useful for analyzing the quantities and patterns of total systemic antibiotic prescription. AMU in those under 15 years old decreased from 2011 to 2013 regardless of dosage form, although those in the other age groups increased. While third-generation cephalosphorins were the most frequently used oral antibiotic subgroups in those under 15 years old, macrolides were the most frequently used oral antibiotic subgroups in the other age groups.

Conclusion. This is the first report evaluating age-specific distribution of AMU in Japan from 2011 to 2013 using the NDB. These results demonstrated the utility of AMU surveillance using the NDB as a tool and benchmark to assess the AMR action plan.

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

1618. Variation in Antibiotic Prescribing among Emergency Departments, Urgent Care Centers, and Retail Health Clinics in the United States, 2014

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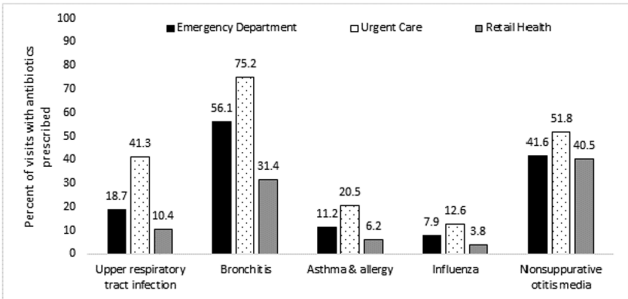
Background. At least 30% of antibiotic courses prescribed in physician offices' and emergency departments (EDs) are unnecessary, but little is known about other ambulatory settings. The study aimed to assess antibiotic prescribing for acute respiratory conditions across U.S. EDs, urgent care centers (UCs), and retail health clinics (RHs).

Methods. We included visits to EDs, UCs and RHs based on claims from individuals < 65 years old with medical and pharmacy benefits captured in the 2014 Truven MarketScan Commercial Claims and Encounters Database, a convenience sample of employer-based health insurance. Claims for dispensed systemic antibiotics were linked to the most recent ED, UC and RH visit within 3 days for oral antibiotics and on the same day for parenteral antibiotics. Diagnoses were assigned to each visit based on a previously-described tiered system to assign the most likely indication for antibiotics. Antibiotic-inappropriate respiratory conditions (i.e., viral respiratory infections, asthma, and allergy) were identified, and the percent of visits leading to antibiotics were calculated with 95% confidence intervals (CI) by setting.

Results. In 2014, antibiotics were prescribed in 13.8% (95% CI 13.7–13.8) of 4,954,084 included ED visits, 38.8% (38.8–38.9) of 2,831,950 UC visits, and 36.3% (35.9–36.6) of 59,599 RH visits. Antibiotic-inappropriate respiratory conditions accounted for 5.4% of ED visits, 16.4% of UC visits, and 17.2% of RH visits. UCs had the highest percent of antibiotic prescriptions for all antibiotic-inappropriate respiratory conditions (45.3%, 95% CI 45.2–45.5), followed by EDs (24.5%, 24.3–24.6) and then RHs (14.4%, 13.8–15.1). This pattern persisted when examined by diagnosis (figure).

Conclusion. Antibiotic prescribing for antibiotic-inappropriate respiratory infections was common in these settings. UCs are a particularly important target for antibiotic stewardship.

Figure. Percent of visits for antibiotic-inappropriate respiratory conditions leading to antibiotic prescriptions according to diagnosis by setting — United States, 2014.



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

1619. Pharmacoepidemiology of Antibiotic Prescribing Among 135,000 Adult Outpatient Encounters in Northeast Ohio

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Background. Nearly 154 million ambulatory visits in the United States result in an outpatient antibiotic prescription (OAP) annually, 30% of which are unnecessary. Remaining prescriptions may benefit from improved antibiotic selection. At our institution, a quarterly OAP report associated with 4 common encounter diagnoses was developed. The objectives of this study were to assess OAP rate for each diagnosis, and to assess the rate of guideline-concordant selection when an OAP was issued.

Methods. OAP report from January 2016 – March 2017 was queried to conduct a retrospective pharmacoepidemiology study including data from 106 outpatient sites, 33 care institutes, and 1400 providers in Northeast Ohio. The report aggregated OAPs for all office and telephone encounters with a diagnosis code for otitis media, pharyngitis, sinusitis, or urinary tract infection. For each diagnosis, encounters that resulted in an OAP were then categorized as guideline-concordant or -discordant based on the antibiotic selected and includes consideration of labeled penicillin allergy and consensus guideline recommendations (Figure 1). All data were filterable to the practice site, care institute, or prescriber level.

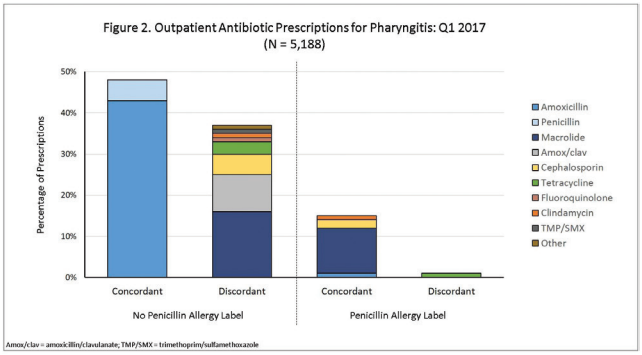
Results. A total of 135,177 patient encounters were captured during the study period (9766 otitis media, 39570 pharyngitis, 60940 sinusitis, 24901 urinary tract infection). Mean patient age was 50 (±15) years. At least 1 OAP was issued in 8444 (86%) otitis media, 16143 (41%) pharyngitis, 46343 (76%) sinusitis, and 15464 (62%) urinary tract infection encounters. For encounters in which an OAP was issued, the rate of guideline-concordant antibiotic selection by diagnosis was 46% for otitis media, 58% for pharyngitis, 64% for sinusitis, and 50% for urinary tract infection. Antibiotic selection for pharyngitis and sinusitis during Q1 2017 are detailed in Figures 2 and 3, respectively.

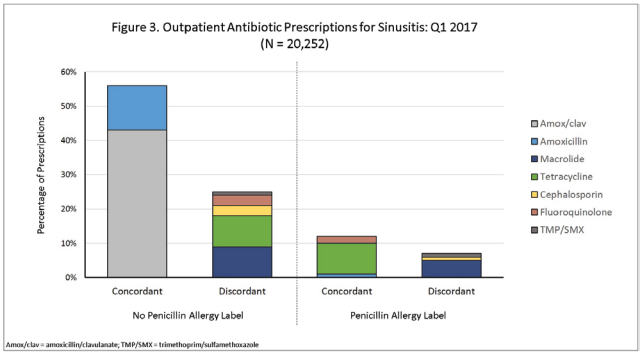
Conclusion. Audit of outpatient prescribing data revealed a high rate of OAP issuance for these four common diagnoses. The use of guideline-discordant antibiotics was also prevalent and commonly consisted of macrolides, fluoroquinolones, tetracyclines, and cephalosporins. These data provide an important baseline that underscores the need for outpatient stewardship and facilitates targeted prospective interventions.

Figure 1. Definitions of Adult Guideline-Concordant Therapy

Otitis Media	Pharyngitis	Sinusitis	Urinary Tract Infection
Guideline-concordant (no PCN[a] allergy) • Amoxicillin	Guideline-concordant (no PCN allergy) • Amoxicillin • Penicillin	Guideline-concordant (no PCN allergy) • Amoxicillin • Amoxicillin-clavulanate	Guideline-concordant (no PCN allergy) • Nitrofurantoin • TMP/SMX[c]
Guideline-concordant (PCN allergy label) • Amoxicillin[b] • 1st, 2nd, 3rd generation cephalosporin • Clindamycin	Guideline-concordant (PCN allergy label) • Amoxicillin[b] • Penicillin[b] • 1st, 2nd, 3rd generation cephalosporin • Clindamycin • Macrolide	Guideline-concordant (PCN allergy label) • Amoxicillin[b] • Amoxicillin-clavulanate[b] • Doxycycline • Fluoroquinolone	Guideline-concordant (PCN allergy label) • Nitrofurantoin • TMP/SMX[c]

[a]Penicillin; [b]Deemed concordant despite labeled allergy under the assumption of an appropriate allergy assessment and challenge; [c]Trimethoprim/sulfamethoxazole





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

1620. Outpatient Antibiotic Prescribing Among Older Adults in the United States, 2011 to 2014

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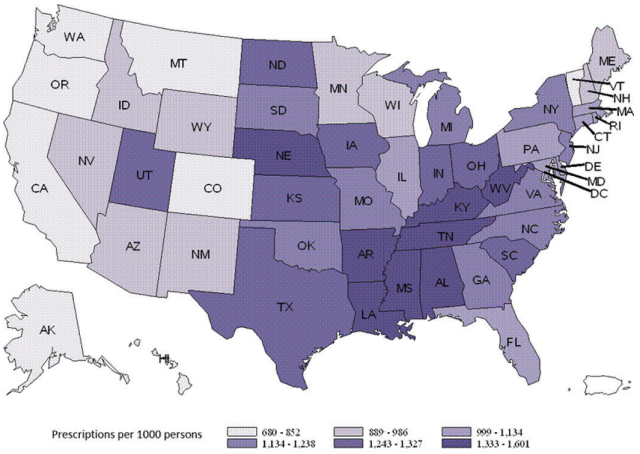
Background. Antibiotics are some of the most commonly prescribed medications for older adults, but antibiotic prescribing practices are poorly understood. We analyzed outpatient antibiotic prescribing data for older adults to identify potential targets for antibiotic stewardship.

Methods. Outpatient oral antibiotic prescriptions dispensed in the United States for older adults (i.e., ≥ 65 years) between 2011 and 2014 were extracted from the QuintilesIMS Xponent database. The number of prescriptions and U.S. Census denominators were used to calculate prescribing rates. A chi-square for trend test was used to evaluate annual trends in antibiotic prescribing rates. A descriptive analysis of prescribing rates according to antibiotic, age group, sex, state, census region, and provider specialty was completed.

Results. In 2011–2014, antibiotic prescribing rates remained stable in U.S. older adults (P = 0.89). In 2014, older adults were prescribed 51.6 million prescriptions at a rate of 1115 prescriptions/1000 persons. Within this cohort, the rate of prescriptions increased with age; persons aged ≥75 years had a rate of 1157 prescriptions/1000 persons compared with 1084 prescriptions/1000 persons in persons aged 65–74. Rates were highest in the South census region and lowest in the West (1228 vs. 854 prescriptions/1000 persons). Although azithromycin was the most commonly prescribed drug followed by amoxicillin and ciprofloxacin, the most commonly prescribed antibiotic class was the fluoroquinolones (245 prescriptions/1000 persons), followed by penicillins and macrolides. Among individuals aged ≥75 years, ciprofloxacin was the most frequently prescribed drug. Family physicians (23%), followed by internists (20%), prescribed the most antibiotic courses for older adults.

Conclusion. On average, U.S. older adults receive enough antibiotic courses for every older individual to receive a prescription each year. Fluoroquinolone use is a potential target for addressing the appropriateness of outpatient antibiotic prescribing practices among older adults. As with antibiotic use in other age groups, efforts to improve antibiotic prescribing may be most needed in the South.

Figure: Antibiotic Prescribing per 1000 Persons by State for Adults ≥65 years in 2014.



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

1621. Evaluating the Impact of Long-Term Outpatient Ertapenem (ETP) vs. Ceftriaxone (CTX) on Clinical Success and Development of Resistance for Documented *Enterobacteriaceae* Infections

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Background. Ceftriaxone and ertapenem are two commonly prescribed outpatient once-daily parenteral antimicrobials with activity against *Enterobacteriaceae*. However, there is minimal data evaluating the impact of long-term CTX and ETP therapy on development of resistance. Therefore, the goals of this study were to compare the development of resistance, incidence of *Clostridium difficile* colitis and clinical outcomes.

Methods. We conducted a single center, retrospective, case cohort study of all adult patients who completed at least 2 weeks of outpatient therapy. A list of adult patients receiving home ETP or CTX between 2011 and 2014 were screened for inclusion. The primary outcome was development of resistance during therapy or within 6 months of completing therapy, and secondary outcomes were mortality, readmission, clinical failure, *C. difficile*infection and antibiotic cost.

Results. 1,989 patients were screened and 188 were included: 115 patients in the ETP group and 73 in the CTX group. The most common reason for exclusion was lack of documented *Enterobacteriaceae* infection. Resistance developed in 13 (6.9%) of all patients, but there was no difference in the development of resistance between groups (ETP 7/115 (6.1%) vs. 6/73 (8.2%), P = 0.57). Similar rates of *C. difficile* colitis occurred between groups: 7 (6.1%) patients receiving ETP and 4 patients receiving CTX. There was no difference in mortality, clinical failure or readmission.

The total cost per treatment course per patient was significantly more expensive in the ETP group ($3,604 vs $221, P = <0.001).

Conclusion. ETP and CTX demonstrated similar rates of mortality, clinical failure, readmission, and the development of resistance or *C. difficile* colitis. However, ETP therapy was significantly more expensive, and could be a target for stewardship intervention in select patients receiving home antibiotic therapy.

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

1622. Evaluation of discharge antibiotic prescribing at a freestanding children's hospital: Opportunities for Stewardship

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Background. The focus of most antibiotic stewardship programs is inpatient prescribing, however, a substantial percentage of hospitalized children are discharged with an antibiotic to complete at home. Adult studies, even in hospitals with comprehensive stewardship programs, have identified high rates of suboptimal antibiotic prescribing at discharge. Similar studies in pediatrics are lacking.