Conclusions. Our study highlights unsafe injection practices and lack of frequent SSP utilization among people admitted with IDU-associated infections in Maine. Especially given increasing stimulant use in our state and nationally, these results also highlight the need to promote harm reduction even among individuals prescribed medication for opioid use disorder. Particularly in rural areas where patients may live more than 10 miles from an SSP, expansion of harm reduction services should be a priority.

Disclosures. All Authors: No reported disclosures

1419. National ambulatory health resource utilization and geographic disparities in influenza in the United States, 2009 to 2016
Eric H. Young, PharmD3; Richard Crowell, PharmD3; Anjeanette Gonzalez, PharmD3; Kelly R. Reveles, PharmD, PhD; 1University of Texas at Austin College of Pharmacy, UT Health San Antonio, San Antonio, Texas; 2UT Austin College of Pharmacy, UT Health San Antonio, San Antonio, Texas; 3University of Texas at Austin, San Antonio, Texas
Session: P-65. Public Health

Background. Influenza can affect up to 10% of adults and 30% of children and, in specific populations, can lead to severe illness and death. Although epidemiological surveillance on influenza patterns have been expanded since 2009, it is also imperative to observe specific trends for influenza immunization and treatment to inform and potentially prevent future outbreaks. The primary objective of this study was to describe influenza prevalence, immunization, and treatment among outpatients in the United States (US).

Methods. This was a cross-sectional study using the Centers for Disease Control and Prevention’s National Ambulatory and Hospital Ambulatory Medical Care Surveys from 2009 to 2016. All patient visits were eligible for inclusion, and prevalence rates were described as influenza visits per 1,000 patient visits. Patient visits were categorized by year, month, and US geographic region. Influenza vaccinations and treatments were defined by their respective Multum code(s) and diagnosis was identified using International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) and ICD-10 codes for the appropriate survey years. Data were presented descriptively.

Results. Over 7 billion visits were included for analysis. Overall, influenza rates varied over the study period with the highest rate in 2009 (50.0) and lowest in 2015 (0.9). Immunization rates were highest in 2014 (25.4) and lowest in 2016 (12.5). The South had the highest influenza rates (3.6) and proportion of influenza visits that included treatment (45.6%), as well as the lowest immunization rates (17.6). The Northeast had the lowest influenza rate (1.5), while the West had the lowest proportion of influenza treatment (24.9%) and highest immunization rates (23.4). December and February had the highest rates of influenza (5.2 and 5.7, respectively), while rates of immunization were the highest in September and October (48.9 and 71.7, respectively).

Conclusion. Immunization rates were highest in the fall months and influenza rates were highest in the winter months. Overall, this study found that regions with lower influenza vaccination had higher influenza rates, and vice versa. Future campaigns should promote immunizations against the influenza virus particularly in underserved regions (e.g., South).

Disclosures. All Authors: No reported disclosures

1420. A One Health Approach Examining the Potential Linkage between Agricultural Livestock and Human Antibiotic Resistance at the Watershed Level
Linsey M. Donner, MPH; CPP; MLS (ASCP)CM; Xu Li, PhD; Daniel D. Snow, PhD; Jodi L. Sangster, PhD Civil Engineering; Zachery R. Staley, PhD; Loralie J. Armand, BS; Wayne A. Mathews, MS, PA-C, CAQ-EM; Shannon Bartlett-Hunt, PhD; 2University of Nebraska Medical Center, Omaha, Nebraska; 3University of Nebraska-Lincoln, Lincoln, Nebraska; 4University of Nebraska - Lincoln, Lincoln, Nebraska; 5University of Nebraska Medical Center, Omaha, Nebraska; 3Univ of Nebraska Medical Center, Omaha, Nebraska
Session: P-65. Public Health

Background. Antibiotic resistance is a significant public health threat and widespread use of antibiotics in agriculture is increasing the concern about agricultural contributions to the dissemination of antibiotic resistant bacteria. Of concern is the level of exposure to antibiotics and antibiotic-resistant bacteria in the watershed. Consequently, adopting a One Health approach to measure antibiotic levels and identify antibiotic resistance gene (ARG) transfer at the human, animal and environmental interfaces is essential to better understand how antibiotic resistance is spread.

Methods. In this project, antibiotic levels were measured using passive organic chemical integrative samplers (POCIS) for 30-day periods from August – November 2018 from Elkhorn River and Shell Creek watersheds in Nebraska (Figure 1). In addition, whole genome sequences of bacterial isolates cultured from the watersheds were assessed to identify ARGs present on mobile genetic elements (MGE) that had >95% similarity to mobile ARG present in isolates recorded in the NCBI GenBank database was identified using ResFinder.

Results. The study demonstrated significant antibiotic levels present throughout the watershed, with five of them associated with human usage (Table 1). In addition, seasonally based drug-resistant bacterial species was associated with specific antibiotic levels in the watershed (Figure 2). Mobile ARGs were detected in 87.5% of isolates collected from the Elkhorn River and 80.0% within Shell Creek (Figure 3).

Table 1. Pharmaceutical levels in the watershed

| Compound            | Frequency of Detection (%) | Range (ng/POCIS) |
|---------------------|---------------------------|------------------|
| Monensin            | 100.0                     | 3.42 - 718.69    |
| Lincomycin          | 95.8                      | 1.13 - 163.61    |
| Tylosin             | 79.2                      | 0.10 - 134.76    |
| Trimethoprim        | 62.5                      | 12.13 - 345.02   |
| Chlortetracycline   | 54.2                      | 2.41 -245.28     |
| Erythromycin        | 54.2                      | 0.15 - 145.60    |
| Anhydrotetracycline | 33.3                      | 2.33 - 164.53    |
| Sulfamethoxazole    | 29.2                      | 6.46 - 694.69    |
| Ractopamine         | 29.2                      | 0.18 - 1.86      |
| Tiamulin            | 29.2                      | 2.39 - 65.34     |
| Tetracycline        | 25.0                      | 0.85 - 27.26     |
| Sulfadimethoxine    | 20.8                      | 0.44 - 65.72     |
| Oxynitrofurazonyl   | 12.5                      | 41.12 - 88.07    |
| Sulfamethazine      | 8.3                       | 0.73 - 2.82      |
| Sulfadiazine        | 8.3                       | 0.13 - 0.71      |

ER Analyte only detected in Elkhorn River watershed.
SC Analyte only detected in Shell Creek watershed.
Conclusion: These results present evidence of transfer of highly mobile ARGs between environment, clinical, and animal-associated bacteria and highlight the need for a One Health perspective in assessing the spread of antibiotic resistance. The presence of significant levels of antibiotics persisting in this agricultural watershed points out the need for ongoing monitoring of compliance with the Food and Drug Administration (FDA) recommendation of veterinarian oversight of the use of antibiotics in the use of veterinary feed directive applications.

Disclosures. All Authors: No reported disclosures

1421. Assessing Serious Infections Common in Persons Who Inject Drugs in the United States and Tennessee
Michael Lowry, MD1; Christina Fiske, MD, MPH1; Peter F. Rebeiro, PhD, MHS1; 1Vanderbilt University Medical Center, Nashville, Tennessee
Session: P-65. Public Health

Background. The opioid crisis is a public health emergency in the United States (US) and Tennessee (TN), and injection drug use predisposes users to a variety of serious infections. We therefore examined infection rates among persons who inject drugs (PWID) from 2001-2014 in the US and TN.

Methods. We conducted an ecological study using publicly available data including discharge diagnosis codes: the Healthcare Cost and Utilization Project (HCUP). We identified all persons from 2001-2014 with ICD-9 codes for bacterial infections common among PWID: endocarditis (IE), osteomyelitis (OM), and skin/soft tissue infections (SSTI). We calculated rates of substance use and infection among all hospital discharges. Spearman’s rank correlation quantified the relationship between infection and reported hepatitis C seropositivity (HCV), Substance Abuse (SA) and opioid use disorder (OUD) rates. Poisson regression yielded incidence rate ratios (IRR) and 95% confidence intervals [-], and restricted cubic splines were fit to assess annual trends flexibly.

Results. Unadjusted rates of both substance use and infection among those discharged from hospitals were higher in the US overall than in TN from 2001-2014 (p<0.05) (Figure 2,3). Overall infections, HCV (IRR=1.14 [1.12-1.17]), SSTI, OM, and SpA increased annually in the US; overall infections, HCV (IRR=1.14 [1.10-1.15]), and SSTI increased in TN. OUD (IRR=0.96 [0.94-0.98]) and IE (IRR=0.97 [0.97-0.98]) decreased in the US (Table 1). In the US, there were strong positive correlations between any other infection and HCV (p=0.87), IE and OUD (p=0.7), SSTI and HCV (p=0.89), OM and HCV (p=0.69), and SpA and HCV (p=0.68); IE was negatively correlated with HCV (p=0.84). In TN, overall infections (p=0.68), and specifically SSTI (p=0.62), were correlated with HCV (Figure 1).

Table 1

Table 1. Poisson Regressions for the United States and Tennessee, looking at total infections, infections subtypes, Substance Abuse, Opioid Use disorder, and Hepatitis C infection.

Key: SA=Substance Abuse; OUD=opiod use disorder; HCV=Hepatitis C virus; IE=infective endocarditis; SSTI=skin/soft tissue infection; OM=osteomyelitis; SpA=spondyloarthritis

Figure 1

Figure 2

Conclusion: Serious infections common in PWID are increasing in TN and the US; they correlate with HCV rates, which have risen significantly in hospitalized patients. Interestingly, opioid use disorder incidence from discharge data declined from 2001-2014 for both TN and the US, which may be due to coding lapses or shifts in type of opioid use with no well-known billing code. However, we must continue monitoring and mitigating both substance use and its sequelae.

Disclosures. All Authors: No reported disclosures