practiced were family practice and nurse practitioners. Antibiotic prescribing rates of higher-volume prescribers were highest among dentists (1,118 prescriptions per 1,000 beneficiaries).

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Evaluation of a Sepsis Alert System at a Veterans Affairs Medical Center
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Background: Automated sepsis alerts have become a widely implemented screening tool aimed at early detection of clinically unstable patients. Prior research has shown mixed results depending on the type of screening tools used and the patient population studied. This study aimed to evaluate the predictive value of an alert system created for identifying patients with sepsis to determine utility in clinical practice prior to implementation. Additionally, clinical management of those with and without sepsis was compared to measure potential added benefit of this system in clinical decision making. **Methods:** A TheraDoc® software sepsis alert was generated for non-ICU patients meeting >2 SIRS criteria within a 24-hour time period (temperature >38°C or 90, respiratory rate >20 or partial pressure CO2 12,000 or 10% bands/immature cells) during March 2023. Alerts were excluded if they were duplicates (using identical criteria or a second alert within 24 hours), triggered by labs collected >48 hours prior, or death or discharge occurred before the time of alert. The primary outcome was positive predictive value (PPV) of sepsis identification, confirmed by ICD-10 codes and diagnostic studies (cultures, imaging). Secondary outcomes included clinical management (antibiotic utilization [AU] and choice, infectious disease [ID] consultations and culture collection). Antibiotics were categorized as broad-spectrum using National Healthcare Safety Network (NSHN) criteria. Secondary outcomes were compared between sepsis and SIRS without infection groups (SIRS) by chi-square analysis. **Results:** After applying exclusion criteria, 116 of 166 alerts were analyzed; 55 of 116 alerts had confirmed sepsis (PPV 47.4%). Patients with sepsis were more likely to have an ID consult (16% [9/55] vs 7% [4/61]) and cultures collected (70.9% [39/55] vs 39.3% [24/61]) compared to SIRS patients, however these differences were not statistically significant. AU was higher with confirmed infections compared to SIRS patients (94.5% [52/55] vs 32.8% [20/61], $p < 0.05$) along with use of broad-spectrum antibiotics (73% [38/52] vs 40% [8/20] $p < 0.05$). **Conclusions:** While automated alerts may enable early identification of sepsis, use of SIRS criteria alone has poor specificity, which was borne out by the low PPV in this study. Our study found that management of sepsis patients (as measured by AU and culture ordering) was better than expected and combined with the low PPV of this alert system resulted in our team rejecting widespread adoption of SIRS-based sepsis alerts.

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Subject Category: Antibiotic Stewardship
Timing Is Everything: Recognizing the Importance of Infusion Duration in Preoperative Antimicrobial Prophylaxis
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Background: For preoperative antimicrobials to be most effective in preventing surgical site infection, they must be administered early enough to reach a minimum tissue concentration that is specific to each drug. However, antibiotics have widely ranging infusion durations, from intravenous push over a few minutes to slow infusion over two hours. Heterogeneity in recommended infusion administration instructions, importance of infusion completion prior to incision, and complexity of healthcare systems present just some of the barriers to achieving appropriate preoperative antibiotic prophylaxis. We compared the percentage of infusion completion prior to case start before and after a multidisciplinary intervention. **Methods:** We performed a retrospective analysis of all patients undergoing a colorectal surgical procedure as defined by the National Healthcare Safety Network at a single university hospital from 10/19/22-10/18/23. A recognition that some antimicrobials were not finished infusing prior to surgery start prompted a multidisciplinary group including antibiotic stewardship, colorectal surgery, perioperative nursing, and anesthesiology to create and deploy an order set shortening metronidazole infusion duration from 60 to 30 minutes and initiating infusion in the preoperative area instead of the operating room. No change to the cefazolin intravenous push over 3-5 minutes was made. Goal antimicrobial infusion was defined as completed infusion within 120 minutes prior to incision, and calculations were made based on infusion start time and case start times. Rate of infusion completion was compared from the pre-intervention period to a post-intervention period from 10/19/23 through the end of the year. **Results:** For all colorectal surgeries in the pre-intervention period, 95% (n=418/440) of cefazolin doses and 0.002% (n=1/427) doses of metronidazole met goal infusion timing. At-goal infusion timing increased to 99% (n=84/85) of cefazolin doses and 68% (n=56/82) of metronidazole doses in the post-intervention period, resulting in a statistically significant improvement for metronidazole (Fischer's exact test $p < 0.00001$). The average time to metronidazole infusion completion changed from 45 minutes after procedure start to 58 minutes before procedure start. **Conclusions:** Multidisciplinary team engagement and deployment of an order set incorporating changes in duration and workflow for metronidazole infusion improved all antimicrobial preoperative infusions for colorectal procedures. Increased awareness of completing antimicrobial infusion prior to the incision may improve preoperative antimicrobial administration.
Disclosure: Lindsay Donohue: Advisor - Abbvie

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Subject Category: C. difficile
Comparison of Medicare Claims-based Clostridioides difficile infection classification to chart review using a linked cohort
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Background: Medicare claims are frequently used to study Clostridioides difficile infection (CDI) epidemiology. Categorizing CDI based on location of onset and potential exposure is critical in understanding transmission patterns and prevention strategies. While claims data are well-suited for identifying prior healthcare utilization exposures, they lack specimen collection and diagnosis dates to assign likely location of onset. Algorithms to

Table: Concordance of Emerging Infections Program (EIP) and Medicare Claims CDI Epidemiologic Case Classification. Concordant classification in bold.

	EIP Classification				
Claims Classification	CA**	COHCFA*†	HO*‡	LTCFO*§	Total
No CDI identified	313	131	81	125	650
CA*	**581**	44	52	18	695
COHCFA†	43	**345**	43	40	471
HO‡	227	227	**684**	132	1,270
LTCFO§	15	18	38	**294**	365
Total	1,179	765	898	609	3,451

Claims - Community associated (CA) : a) CDI ICD-10-CM code from outpatient dataset, or b) during an inpatient visit in which: 1) CDI was the primary diagnosis; 2) the primary diagnosis was diarrhea, abdominal pain, or nausea and CDI was coded in a secondary position; or 3) CDI was coded in a secondary position and the hospital length of stay was ≤ 3 days. Patient had no prior inpatient or LTC stay w/in 12 weeks before diagnosis.

†*Claims – Community onset healthcare-facility associated (COHCFA):* a) CDI ICD-10-CM code from outpatient dataset, or b) during an inpatient visit in which: 1) CDI was the primary diagnosis; 2) the primary diagnosis was diarrhea, abdominal pain, or nausea and CDI was coded in a secondary position; or 3) CDI was coded in a secondary position and the hospital length of stay was ≤ 3 days. Patient had a prior inpatient stay or LTCF stay within 12 weeks before index claim date with CDI ICD-10-CM code.

‡*Claims – hospital onset (HO):* Secondary ICD-10-CM code of CDI without a primary diagnosis of diarrhea, abdominal pain, or nausea for a hospital stay lasting >3 days.

§*Claims – long-term care facility onset (LTCFO):* Beneficiary resides in LTCFO when infection occurred or transfers from LTCFO to hospital with (a) ICD-10-CM code of CDI as principal diagnosis for inpatient claim, or (b) CDI diagnosis for hospitalization lasting 3 or fewer days.

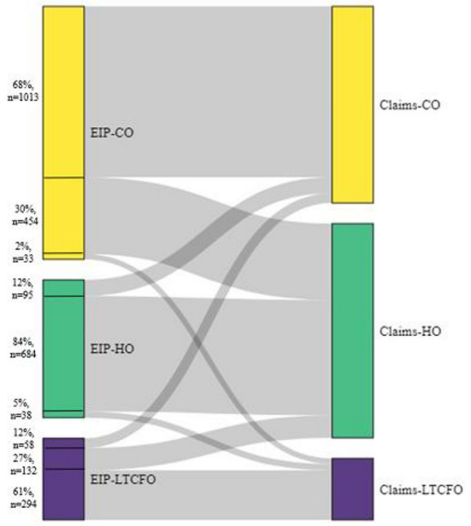
**_EIP – community associated (CA):_ Positive stool specimen collected from a patient in an outpatient setting or within 3 days of patient's hospitalization, who have no prior history of a stay in a healthcare facility within the 12 weeks prior stool specimen collection.

*†_EIP - Community onset healthcare-facility associated (COHCFA):_ Positive stool specimen collected from a patient in an outpatient setting or within 3 days of patient's hospitalization, who spent at least one night in a healthcare facility within the 12 weeks prior to stool specimen collection.

*‡_EIP – hospital onset (HO):_ Positive stool specimen collected more than 3 calendar days after hospital admission.

*§EIP – _long-term care facility onset (LTCFO):_ Patient was residing in a long-term care facility three days prior to positive specimen collection or specimen was collected in a long-term care facility.

Figure: Sankey diagram depicting CDI onset classification using Emerging Infections Program (EIP, left) and Claims-based definitions (right). The proportion of cases with each EIP onset classification and corresponding claims classifications are shown in gray. Discordant classifications by onset category are displayed in non-straight lines. For example, 30% of cases classified as community-onset by EIP are classified as hospital-onset by claims. CDI cases reported to EIP without CDI identified within claims data not depicted.



classify CDI onset and healthcare association using claims data have been published, but the degree of misclassification is unknown. **Methods:** We linked patients with laboratory-confirmed CDI reported to four Emerging Infections Program (EIP) sites from 2016-2020 to Medicare beneficiaries using residence, birth date, sex, and hospitalization and/or healthcare exposure dates. Uniquely linked patients with fee-for-service Medicare A/B coverage and complete EIP case report forms were included. Patients with a claims CDI diagnosis code within ±28 days of a positive CDI test reported to EIP were categorized as hospital-onset (HO), long-term care facility onset (LTCFO), or community-onset (CO, either healthcare facility-associated [COHCFA] or community-associated [CA]) using a previously published algorithm based on claim type, ICD-10-CM code position, and duration of hospitalization (if applicable). EIP classifies CDI into these categories using positive specimen collection date and other information from chart review (e.g. admit/discharge dates). We assessed concordance of EIP and claims case classifications using Cohen's kappa. **Results:** Of 10,002 eligible EIP-identified CDI cases, 7,064 were linked to a unique beneficiary; 3,451 met Medicare A/B fee-for-service coverage inclusion criteria. Of these, 650 (19%) did not have a claims diagnosis code ±28 days of the EIP specimen collection date (Table); 48% (313/650) of those without a claims diagnosis code were categorized by EIP as CA CDI. Among those with a CDI diagnosis code, concurrence of claims-based and EIP CDI classification was 68% (κ=0.56). Concurrence was highest for HO and lowest for COHCFA CDI. A substantial number of EIP-classified CO CDIs (30%, Figure) were misclassified as HO using the claims-based algorithm; half of these had a primary ICD-10 diagnosis code of sepsis (226/454; 50%). **Conclusions:** Evidence of CDI in claims data was found for 81% of EIP-reported CDI cases. Medicare classification algorithms concurred with the EIP classification in 68% of cases. Discordance was most common for community-onset CDI patients, many of whom were hospitalized with a primary diagnosis of sepsis. Misclassification of CO-CDI as HO may bias findings of claims-based CDI studies.

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Age related Antibiotic Prescribing Trends of Clostridioides Difficile Incident Cases within Davidson County TN 2012-2020

Michael Norris, State of Tennessee Department of Health; Priscilla Pineda, Tennessee Department of Health; Malakai Miller, Tennessee Department of Health, Raquel Villegas, State of Tennessee Department of Health and state of TN

Age related Antibiotic Prescribing Trends of Clostridioides Difficile Incident Cases within Davidson County Tennessee 2012-2020 Michael Norris, MSN, Priscilla Pineda, MPH, Malakai Miller, MPH, Raquel Villegas, PhD, MS **Background:** Clostridioides difficile infection (CDI) is one of the most common healthcare-associated infections in the United States. Antibiotic use is considered a predisposing factor for CDI. The State of Tennessee collaborates with the CDC as part of an ongoing Emerging Infections Program (EIP). We sought to better understand the impact of antimicrobial use prior to the date of incident of CDI within the defined age groups of Davidson County, Tennessee. **Methods:** Surveillance data from the years 2012–2020 were examined for all positive CDI cases within Davidson County. A positive CDI case was defined as a laboratory confirmed case who is ≥ 1 year old living in Davidson County, Tennessee. Antibiotic use was assessed in the 12 weeks prior to CDI. Trends of overall antibiotic use, including the top five antibiotics prescribed by our defined age groups were examined. Analyses were performed using SAS version 9.4. Only fully abstracted cases are included in the study. **Results:** Among 7,346 positive CDI incident cases identified between 2012–2020, 5,467 (74.4%) received antibiotics 12 weeks prior to a confirmed infection. We looked at the trend of antibiotic prescription over time from 2012-2020 (77.0%, 76.7%, 74.3%, 80.7%, 76.3%, 75.1%, 73.7%, 74.8% and 71.5%) which has decreased since 2015. The prevalence of antibiotic use by age group 1-18 years, 19-44 years, 45-64 years, 65-74 years, and 75+ years was 53.4%, 68.8%, 74.5%, 79.2% and 83.1% respectively. The five most prescribed antibiotics were ceftriaxone ((11.1%), followed by vancomycin IV (10.9%), ciprofloxacin (10.2%), metronidazole (9.1%), and piperacillin (8.6%). Cases in the 45-64 years age group were more likely to be prescribed vancomycin IV, ciprofloxacin, metronidazole, and piperacillin-tazobactam compared to other age groups ($p < 0.0001$). There was no statistically significant association between ceftriaxone prescription and our defined age groups. **Conclusion:** In this study, almost three quarters of the CDI cases had received antimicrobial therapy in the 12 weeks prior to infection. Since antibiotic prescription is a potentially modifiable risk factor for CDI, a more in-depth study, combined with an antibiotic stewardship program implementation in all settings would be beneficial to reduce the risk of CDI complications of antibiotic usage.

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