Presentation Type:
Poster Presentation
Subject Category: Antibiotic Stewardship
Appropriateness of Antibiotic Duration at the Time of Hospital Discharge
Carly Sedlock; Jason Gallagher; Marissa Cavaretta; Alexander Haines; Kevin Nguyen and Neelesh Agarwal

Background: Antimicrobial stewardship initiatives usually occur in the inpatient setting, and they are often lacking at transitions of care (TOC), including hospital discharge. We assessed the appropriateness of antibiotic treatment duration at the time of discharge from our institution. **Methods:** This retrospective chart review included 300 adult patients discharged on oral antibiotics for acute infections during a 3-month period in 2019. The primary outcome was the duration of antibiotic therapy (DOT). To assess appropriateness, we compared the prescribed DOT (1) to that recommended by clinical guidelines, (2) to the minimum supported by clinical trials, and (3) to the period beyond the point of clinical stability, defined as normal vital signs with improvement in symptoms present from diagnosis. Each indication and antibiotic was assessed using standards appropriate for the combination. **Results:** Results are shown in Tables 1 and 2 and Figure 1. **Conclusions:** Antibiotics were often given longer than necessary on hospital discharge. In this study, patients received a median 2 days of excess antibiotics compared to recommended guidelines and 6 days after reaching clinical stability. A pilot TOC stewardship program was initiated to address this problem.
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Disclosures: None

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Table 1. Patient Characteristics

	Value
Total (n)	300
Age, years (Median, IQR)	59 (48-68)
Male (n, percentage)	129 (43%)
Charlson Comorbidity Index (Median, IQR)	3.5 (1-6)
Duration of hospitalization, days (Median, IQR)	4 (2-5)
Route of inpatient antibiotic administration, number of patients	
IV (n, percentage)	218 (73%)
Oral (n, percentage)	228 (76%)
Was the oral antibiotic on discharge given in the hospital first?	
Yes (n, percentage)	211 (70%)

Table 2. Antibiotic Duration

	Days of therapy, median (IQR)								
	Total (n=300)	Cystitis (n=33)	CAP (n=67)	SSTI (n=80)	IAI (n=15)	COPD (n=58)	Pyelonephritis (n=30)	HAP (n=9)	Other (n=8)
Total duration	8 (6-11)	7 (5-7)	7 (7-9)	10 (8-14)	10 (8.5-17)	5 (5-7)	13 (10-14)	7 (7-8)	9 (7.8-13.3)
Duration of oral outpatient antibiotics	5 (3-7)	4 (2-5)	5 (3.5-5)	7 (5-10)	7 (5-9.5)	3 (2-4)	7.5 (5.3-10)	3.5 (3-5)	6 (4.5-7.8)
Excess duration compared to guidelines	2 (0-4)	3 (0-5)	2 (2-3.5)	3 (1-6)	3 (1.5-10)	0 (0-0)	1 (0-4)	0 (0-1)	7.5 (5-8)
Excess duration compared to minimum possible	3 (1-5)	4 (2-6)	2 (2-4)	4 (2-6)	7 (5-13.5)	0 (0-1.8)	4 (1.3-5.8)	0 (0-1)	7.5 (5-8)
Antibiotic duration received after point of clinical stability	6 (4-8)	5.5 (4-7)	6 (4.5-7)	8 (6-10)	8 (6.5-12.5)	4 (3-5)	9.5 (8-11.8)	5 (4-5)	7.5 (5.5-13)

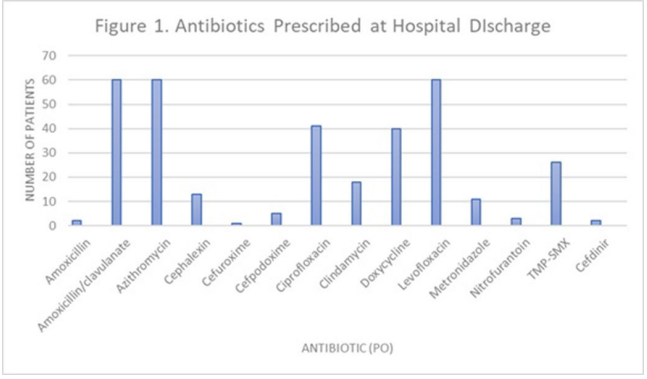

Figure 1.

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Adherence to Antibiotic Stewardship Program Associated with Shorter Course of Treatment and Fewer Adverse Events
Patrick Mulligan; Nirav Shah; Mary Acree; Jennfer Grant; Urmila Ravichandran and Nader Ismail

Group Name: NorthShore University HealthSystem
Background: Prolonged antibiotic use has been attributed to an increased incidence of adverse drug events (ADEs). Cessation of unnecessary antibiotics would decrease length of treatment and may help prevent these adverse events. We evaluated whether an antibiotic stewardship intervention aimed at stopping unnecessary antibiotic usage would both shorten

Table 1.

NO INFECTION INTERVENTION RECCOMENDATIONS			
	FOLLOWED RECOMMENDATION		
	NO N=90	YES N=78	P-value
Demographics			
Age, in years	84.9 [76.1 - 90.3]	85.8 [74.6 - 89.8]	0.749
Female	75 (83.33%)	59 (75.64%)	0.296
Patient Ethnicity			
Hispanic/Latinx	3 (3.33%)	2 (2.56%)	1.000
African American	2 (2.22%)	3 (3.85%)	0.664
Asian	0 (0.00%)	3 (3.85%)	0.098
Caucasian	77 (85.56%)	60 (76.92%)	0.215
Other	11 (12.22%)	12 (15.38%)	0.712
BMI	26.09 (6.11)	26.25 (5.93)	0.870
APACHE II IP Score	12.21 (3.38)	12.09 (4.49)	0.847
Surgical Patient	9 (10.00%)	9 (11.54%)	0.943
ICU Admission	10 (11.11%)	2 (2.56%)	0.065
Inpatient	59 (65.56%)	49 (62.82%)	0.836
OUTCOMES			
Total ADEs [a, b]	21 (23.33%)	6 (7.69%)	**0.011**
Antibiotic Days (Inpatient only) [a]	1.99 (1.01)	1.40 (0.88)	**0.000**
Individual ADEs			
Cardiac	1 (1.11%)	0 (0.00%)	1.000
Dermatologic	1 (1.11%)	0 (0.00%)	1.000
Hematologic	10 (11.11%)	5 (6.41%)	0.427
Nausea	7 (7.78%)	1 (1.28%)	0.069
Neurologic	1 (1.11%)	0 (0.00%)	1.000
Non Cdiff Diarrhea	3 (3.33%)	0 (0.00%)	0.249
Renal	3 (3.33%)	0 (0.00%)	0.249

[a] Median (IQR)
[b] P-value < 0.05. All other p-values ≥ 0.05.

the duration of treatment and reduce ADEs. **Methods:** At NorthShore University HealthSystem, a 4-hospital, 832-bed system, we identified patients who were started on empiric antibiotics during a hospital admission between May 2, 2016, and June 30, 2018. Within 24 hours of antibiotic initiation, an infectious disease (ID) physician reviewed each patient chart. If the patient was unlikely to have a symptomatic bacterial infection, the ID physician left a note in the electronic medical record (EMR) recommending antibiotic cessation. Two physician reviewers retrospectively reviewed whether the treatment team accepted these recommendations and assessed potential ADEs for 30 days after the recommendation through inpatient and outpatient notes in the EMR. These ADEs were defined using previously published criteria. If the 2 reviewers disagreed on the presence of an ADE, an ID physician acted as the tie breaker. We compared the number of antibiotic days and the number of ADEs between cases in which the recommendations were followed and cases in which they were not. **Results:** We reviewed 168 cases: 78 (46.43%) followed recommendations and 90 (53.57%) did not. There were no significant differences in baseline patient characteristics between the 2 groups. There was a significant difference in total ADEs between the 2 groups: in 6 cases (7.69%) the recommendations were followed, and 21 (23.33%) they were not followed ($P = .011$). There was also a significant difference in antibiotic days between cases in which recommendations were followed (1.40 days) versus those in which they were not followed (1.99 days) ($p < 0.001$). **Conclusions:** Antibiotic-associated adverse events can cause harm to patients and increase healthcare costs, particularly when used for patients who are unlikely to have a bacterial infection. An antibiotic stewardship program to identify patients in an EMR who are unlikely to benefit from antibiotic use can decrease the length of total antibiotic usage and help prevent adverse events.

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Successful Treatment of Invasive MRSA Infections in Children Using Area Under the Vancomycin Concentration-Time Curve Divided by the Minimum Inhibitory Concentration (AUC/MIC) to Measure Vancomycin Exposure

Leslie Chiang; Alice Pong; John Bradley; Paige Anderson and William Murray

Background: Vancomycin is the treatment of choice for invasive methicillin-resistant *Staphylococcus aureus* (MRSA) infections. Previous guidelines issued by the Infectious Diseases Society of America (IDSA) recommended targeting vancomycin serum trough concentrations of 15–20 mg/L; however, troughs <15 mg/L are also associated with increased odds of renal toxicity. To minimize toxicity, recently updated ASHP/IDSA/PIDS vancomycin dosing guidelines recommend the use of an area under the vancomycin concentration-time curve divided by the minimum inhibitory concentration (AUC/MIC) pharmacodynamic index to measure vancomycin exposure, with an AUC/MIC ratio >400 correlating with clinical efficacy. However, data on vancomycin therapeutic drug monitoring (TDM) in children are limited. Our institutional practice since January 2009 has been to use AUC/MIC, rather than serum trough concentrations, to guide vancomycin dosing. In this study, we describe clinical outcomes in vancomycin-treated children with invasive MRSA infections using this dosing method. **Methods:** We performed a retrospective chart review of children hospitalized with invasive MRSA infections between 2006 and 2019 at Rady Children's Hospital in San Diego, California. Clinical, microbiologic, and pharmacologic data including the site of MRSA infection, clinical failure or cure, occurrence of acute kidney injury (AKI), vancomycin MIC, vancomycin AUC, and serum trough concentrations were collected. **Results:** In total, 61 invasive MRSA cases were reviewed: 20 were admitted January 2016 through December 2008, and 41 were admitted January 2009 through June 2019 (Figure 1). Most patients did not have medical comorbidities. The most common types of infections were primary bacteremia (34%) and osteomyelitis (32%). Of 61 children, 50 (82%) had positive clinical outcomes regardless of vancomycin dosing method. Of 20 patients, 8 (40%) admitted prior to January 2009 developed AKI, compared with 5 (12%) of 41 patients admitted after January 2009. **Conclusions:** In our retrospective review, most patients had clinically successful outcomes regardless of which dosing strategy was used. We found higher rates of renal toxicity in patients who were admitted prior to 2009, with TDM based on measuring peak and trough concentrations, compared with those using AUC/MIC for TDM. Our findings suggest that AUC/MIC TDM for invasive MRSA infections may be associated with lower rates of renal toxicity.

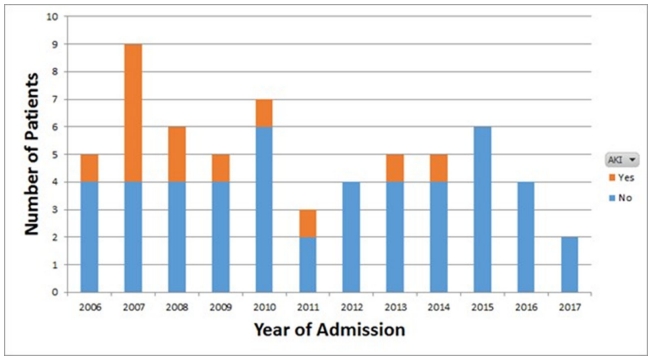

Figure 1.

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Diagnostic Stewardship in Lower Respiratory Tract Infections Using Procalcitonin

Amanda Gusovsky; David Burgess; Donna Burgess; Emily Slade; Chris Delcher; Alison Woodworth; Jordan Chael and Thai Osborne

Background: A team of infectious diseases physicians, infectious diseases pharmacists, clinical laboratorians, and researchers collaborated to assess the management of lower respiratory tract infections (LRTIs). In 1 sample from our institution, 96.1% of pneumonia cases were prescribed antibiotics, compared to 85.0% in a comparison group. A collaborative effort led to the development of a protocol for procalcitonin (PCT)-guided antibiotic prescribing that was approved by several hospital committees, including the Antimicrobial Stewardship Committee and the Healthcare Pharmacy & Therapeutics Committee in December 2020. The aim of this analysis was to develop baseline information on PCT ordering and antibiotic prescribing patterns in LRTIs. **Methods:** We evaluated all adult inpatients (March–September 2019 and 2020) with a primary diagnosis of LRTI who received at least 1 antibiotic. Two cohorts were established to observe any potential differences in the 2 most recent years prior to adoption of the PCT protocol. Data (eg, demographics, specific diagnosis, length of stay, antimicrobial therapy and duration, PCT labs, etc) were obtained from