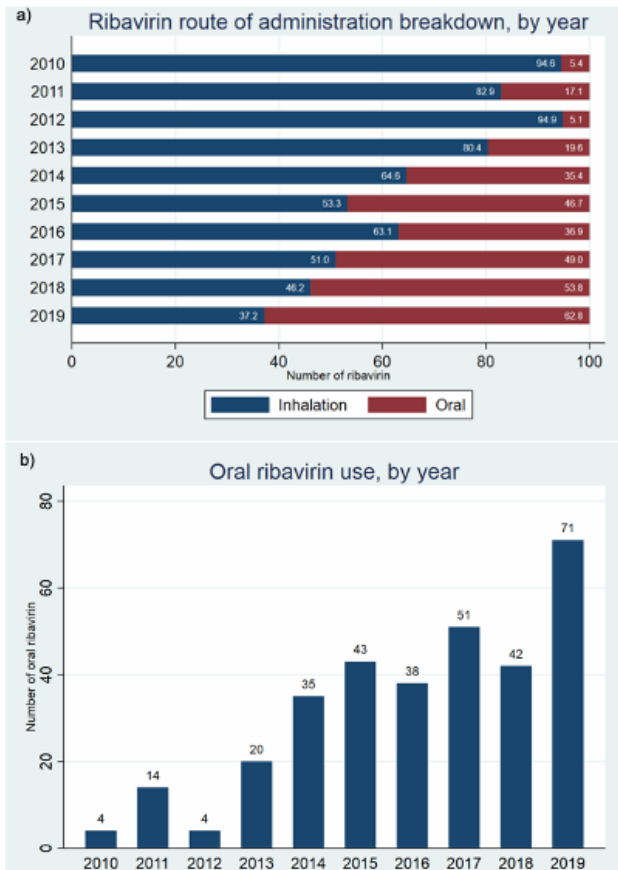Figure 2: (a) Route of administration (inhalation versus oral), by year during the study period and (b) use of oral ribavirin over time during the study period

Conclusion: Although overall prescribing rates of ribavirin in hospitalized children have remained stable, use varies widely across centers and the proportion of oral ribavirin use has increased over time. Comparative effectiveness studies are needed in the pediatric population to evaluate outcomes of children treated with aerosolized vs. oral ribavirin.

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1357. Urinary Symptom Management in Children with Neuropathic Bladder Presenting to the Emergency Department
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Session: P-60. Pediatric Antimicrobial Stewardship (inpatient/outpatient pediatric focused)

Background. Children with neuropathic bladders are at high risk for developing urinary tract infections (UTIs). The accurate diagnosis of UTI is complicated by altered sensation and the ubiquity of bacterial colonization. As a result, overdiagnosis and overtreatment for presumed UTIs is common. The objective of this study is to estimate potential overdiagnosis and unnecessary antibiotic treatment in children with neuropathic bladder presenting to the Emergency Department (ED) with urinary symptoms.

Methods. Retrospective cohort study of patients with neuropathic bladder presenting to the Children's National Hospital ED between October 2008 and December 2019. Chart review was used to determine presenting symptoms, urinary evaluation, and antibiotic treatment. We used the validated urinary symptoms questionnaire (USQNB-IC) to categorize ED visits as 'evaluation warranted' if the patient presented with at least one of the actionable symptoms on the USQNB-IC. We used the Spina Bifida Association's (SBA) published definitions for UTI to determine which patients warranted presumptive antibiotic treatment.

Results. There were 211 visits by 82 patients (43% female), with a mean of 4.6 visits per patient (IQR 6). Mean age at ED visit was 5.2 years (SD 4.2 years). The most common presenting symptoms were fever (57%), emesis (32%), abdominal pain (24%), foul-smelling urine (11%), and cloudy urine (8%). Of the total visits, 122 (58%) had a urinary evaluation and 31% were treated with antibiotics. Sixteen ED visits (8%) resulted in a urinary evaluation that was not warranted. Of the 122 ED visits with urinary evaluation, 32 patients (26%) did not meet SBA criteria for UTI but were treated empirically with antibiotics.

Table 1: Urinary evaluation in children with neuropathic bladder seen in CNH ED between October 2008 and December 2019.

	Evaluation warranted n(% of total visits)	Evaluation not warranted n(% of total visits)
Urinary evaluation	106(50)	16(8)
No urinary evaluation	16(8)	71(34)

Table 2: UTI treatment in children with neuropathic bladder seen in CNH ED between October 2008 and December 2019.

	Fulfilled SBA's UTI definitions n(% of visits with urinary evaluation)	Did not fulfill SBA's UTI definitions n(% of visits with urinary evaluation)
Treated with antibiotics	32(36)	34(28)
Not treated with antibiotics	5(4)	51(42)

Conclusion. Most children with neuropathic bladder presenting to the ED were appropriately evaluated and treated for presumed UTI. One-quarter of evaluated children received empiric antibiotics despite not meeting SBA criteria for UTI, indicating this may be a target for educational initiatives to promote antibiotic stewardship. Further research is needed to generate and validate clinical guidelines for emergency department providers to limit unnecessary testing and antibiotic therapy in this population.

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

1358. Using natural language processing to optimize case ascertainment of acute otitis media in a large, state-wide pediatric practice network
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Session: P-60. Pediatric Antimicrobial Stewardship (inpatient/outpatient pediatric focused)

Background. Antibiotics are the most commonly prescribed drugs for children and frequently inappropriately prescribed. Outpatient antimicrobial stewardship interventions aim to reduce inappropriate antibiotic use. Previous work has relied on diagnosis coding for case identification which may be inaccurate. In this study, we sought to develop automated methods for analyzing note text to identify cases of acute otitis media (AOM) based on clinical documentation.

Methods. We conducted a cross-sectional retrospective chart review and sampled encounters from 7/1/2018 – 6/30/2019 for patients < 5 years old presenting for a problem-focused visit. Complete note text and limited structured data were extracted for 12 randomly selected weekdays (one from each month during the study period). An additional weekday was randomly selected for validation. The primary outcome was correctly identifying encounters where AOM was present. Human review was considered the "gold standard" and was compared to ICD codes, a natural language processing (NLP) model, and a recursive partitioning (RP) model.

Results. A total of 2,724 encounters were included in the training cohort and 793 in the validation cohort. ICD codes and NLP had good performance overall with sensitivity 91.2% and 93.1% respectively in the training cohort. However, NLP had a significant drop-off in performance in the validation cohort (sensitivity: 83.4%). The RP model had the highest sensitivity (97.2% training cohort; 94.1% validation cohort) out of the 3 methods.

Figure 1. Details of encounters included in the training and validation cohorts.
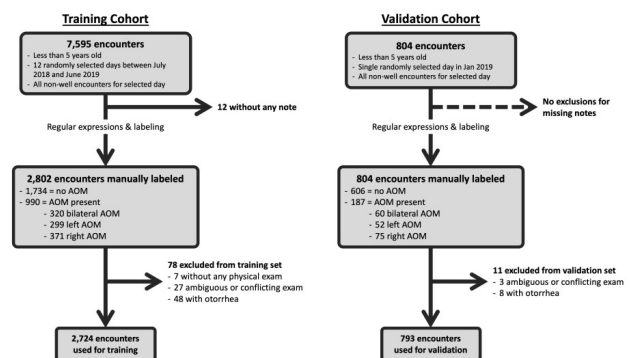

Table 1. Performance of ICD coding, a natural language processing (NLP) model, and a recursive partitioning (RP) model for identifying cases of acute otitis media (AOM)

		Sensitivity			Specificity		
		Estimate	%	(95% CI)	Estimate	%	(95% CI)
Training cohort (N = 2,724)	ICD codes	903/990	91.2	(89.2, 92.9)	1569/1734	90.5	(89.0, 91.8)
	NLP	922/990	93.1	(91.3, 94.6)	1621/1734	93.5	(92.2, 94.6)
	RP model	962/990	97.2	(95.9, 98.1)	1417/1734	81.7	(79.8, 83.5)
Validation cohort (N = 793)	ICD codes	165/187	88.2	(82.5, 92.3)	577/606	95.2	(93.1, 96.7)
	NLP	156/187	83.4	(77.1, 88.3)	578/606	95.4	(93.3, 96.9)
	RP model	176/187	94.1	(89.4, 96.9)	546/606	90.1	(87.4, 92.3)