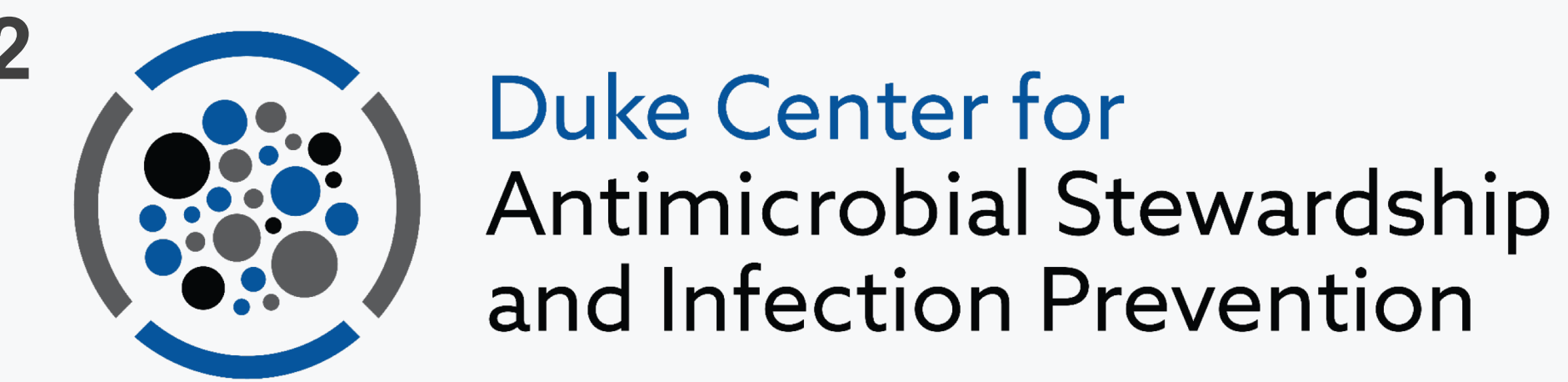


Antibiotic Prescribing Feedback: Description of Denominator Metrics to Standardize Prescribing Rates for Peer Comparison



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Abstract

Background: Prescriber feedback on antibiotic use (AU) paired with peer comparison reduces inappropriate antibiotic prescribing in the outpatient setting, but it is challenging to replicate in hospitals. Measuring overall AU in days of therapy (DOT) by prescriber does not adequately identify outliers because patient volumes differ greatly between providers. We employed various novel denominator metrics in order to facilitate peer comparison between prescribers in the inpatient setting and report prescriber-specific AU rates.

Methods: Antibiotic DOT were obtained for physicians at two community hospitals. Data were obtained from electronic medication administration records linked to ordering provider. Physician-specific data for patient days (count of patient days of which physician was attending of record), patients seen (daily count of patients on provider rounding list), patient admissions, and shifts worked, were obtained from routine hospital datasets. Changes in rates and rank were compared for denominator metrics.

Results: A total of 36,828 DOT were included for 56 physicians at two hospitals. Prescriber rank changed for all top 5 prescribers at each hospital after incorporating physician-specific denominator metrics as compared with DOT alone. The largest change in rank observed was 19 spots using admissions as a denominator.

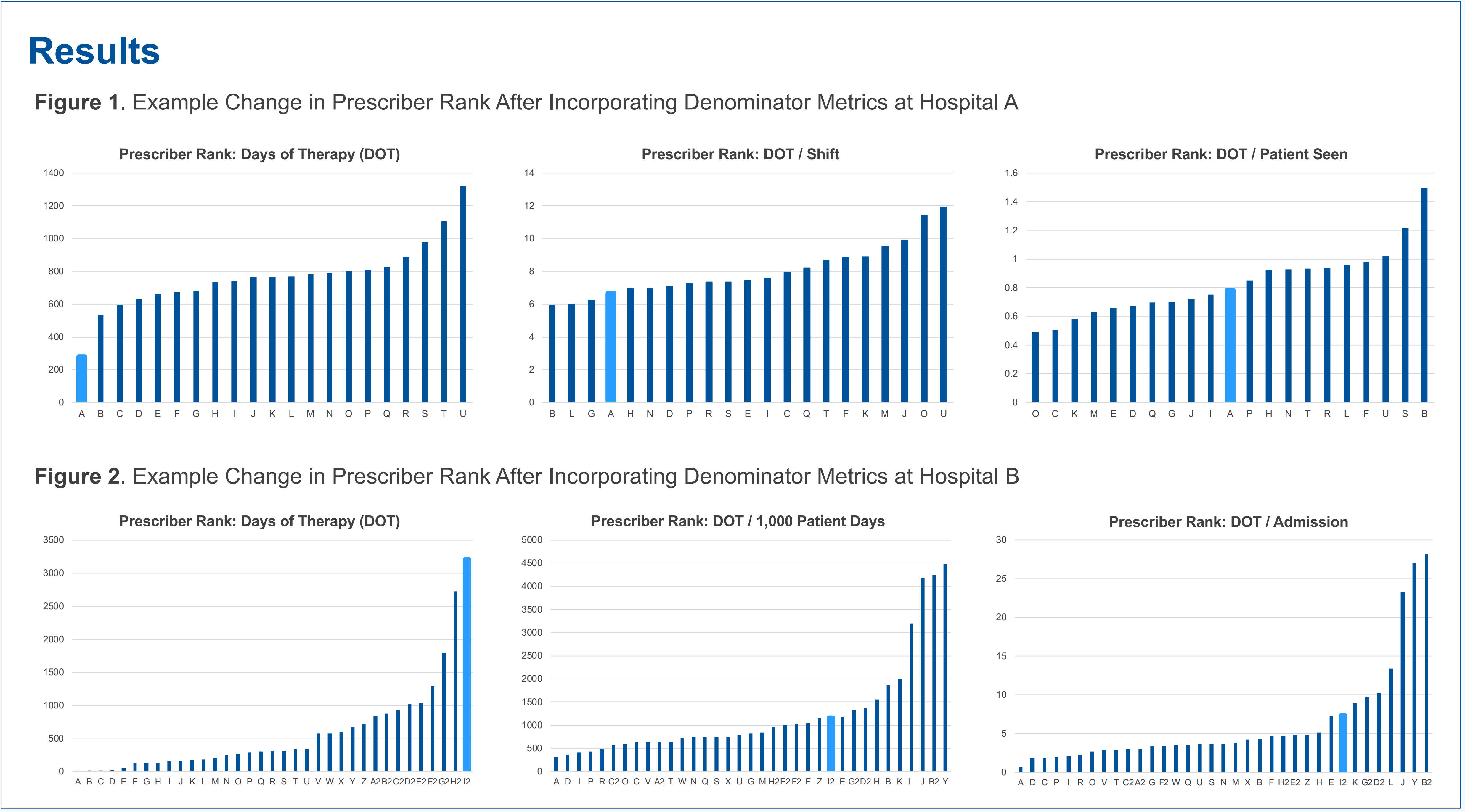
Conclusion: Incorporating physician-specific denominator metrics to account for differences in patient volume and work habits enhances peer comparison and results in significant changes in prescriber rank. Choice of meaningful denominator is highly dependent on staffing model for hospital physicians.

Methods

- Antibiotic days of therapy (DOT) were obtained for physicians at two community hospitals participating in the Duke Antimicrobial Stewardship Outreach Network from electronic medication administration records (eMAR) linked to ordering physician.
- Physician-specific data for patient days (count of patient days of which physician was attending of record), patient admissions, and shifts worked were obtained from routine hospital datasets.
- Changes in rates and rank were compared for denominator metrics.

Table 1. Description of Metrics Included

	Dates	Metrics Available	Metric Data Source	Physicians Included
Hospital A	1/1/2017 – 6/30/2017	Inpatient Days of Therapy	eMAR	N=21
		Shifts Worked	Hospitalist Administration Data Set	
		Patients Seen	Hospitalist Administration Data Set	
Hospital B	1/1/2017 – 12/31/2017	Inpatient Days of Therapy	eMAR	N=35
		Patient Days	Hospitalist Administration Data Set	
		Admissions	Hospitalist Administration Data Set	



Background

- Individualized antibiotic prescribing feedback with peer comparison has been shown to reduce inappropriate antibiotic prescribing in the outpatient setting, but it is difficult to replicate in the inpatient setting.
- Measuring overall antibiotic prescribing does not adequately identify outlying prescribers because patient volumes and work habits differ greatly between physicians.
- Targeted review of individual physician prescribing offers valuable data, but it is resource intensive and lacks peer comparison.
- We employed various novel denominator metrics in order to facilitate peer comparison between physicians in the inpatient setting and report prescriber-specific antibiotic prescribing rates.

Results

Table 2. Comparison of Metrics: DOT vs. DOT/Shift vs. DOT/Patient Seen vs. DOT/Admission vs. DOT/1,000 Prescriber Patient Days (PD)

Denominators: Shifts Worked and Total Patients Seen				Denominators: Admissions and 1,000 Prescriber Patient Days (PD)			
Hospital A				Hospital B			
Prescriber	DOT (%)	DOT / Shift	DOT / Patient Seen	Prescriber	DOT (%)	DOT / Admission	DOT / 1,000 PD
U	1323 (8.2)	11.9	1.0	I2	3208 (15.5)	7.32	1161.9
T	1106 (6.9)	8.6	0.93	H2	2731 (13.2)	4.76	956.2
S	981 (6.1)	7.4	1.2	G2	1796 (8.7)	9.71	1322.5
R	891 (5.5)	7.4	0.94	F2	1297 (6.3)	3.38	1035.9
Q	828 (5.1)	8.2	0.7	E2	1034 (5.0)	4.79	1007.8

Conclusions

- The distribution of workflow among physicians between community hospitals varies substantially.
- Incorporating physician-specific denominator metrics to account for differences in patient volume and work habits enhances peer comparison and results in substantial changes in physician rank.
- Choice of meaningful denominator is highly dependent on staffing model for hospital physicians.

