Abstract #

Antibiotic Use (AU) Adjustment by Infection-Related Patient Volume Across a Health System

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dason DUKE ANTIMICROBIAL STEWARDSHIP OUTREACH NETWORK

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Background

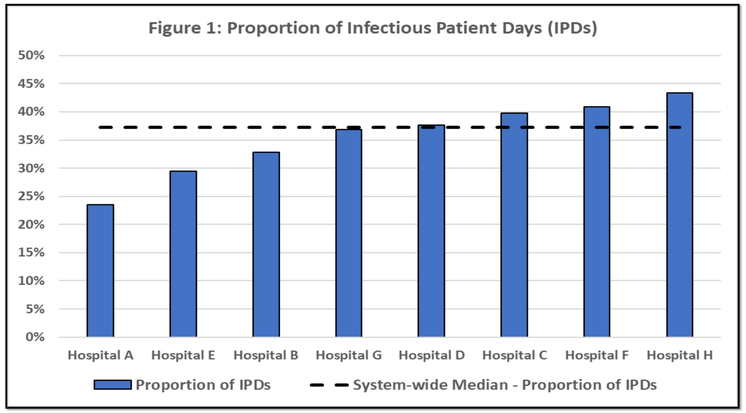
- Benchmarking antibiotic use (AU) within a health system can help allocate shared resources such as ID expertise
- However, even hospitals within a health-system can have vastly different patient populations and thus antimicrobial needs
- One method of adjusting AU is to estimate the burden of infection diagnoses at the facility-level

Methods

- We performed a retrospective analysis of hospital administrative data from 8 hospitals from a single health system that use the same coding department for the calendar year 2020
- Antibiotic administration data, admission/discharge/transfer data is routinely collected for this health system in our antimicrobial stewardship outreach network
- Primary ICD-10 codes were determined infectious (**I-PDX**) vs non-infectious by coding department
- Actual length of stay (LOS) for all I-PDX encounters = Infectious Patient Days (**IPD**)

Table 1: Characteristics of Hospitals AU Metrics

Metric	Median (IQR)
Days of Therapy (DOT)	36,972.5 (21,830.5-52,484.75)
Proportion of I-PDX	37.27% (31.9-40.1)
Patient Days (PD)	60,072.5 (36,733.75-82,355.75)
Infectious Patient Days (IPD)	18,958 (10,655.25-2,448.5)
Total Encounters	13,160 (7,775.2.25-17,951.25)
Infectious Encounters	3,296.5 (1,885-4,148.25)



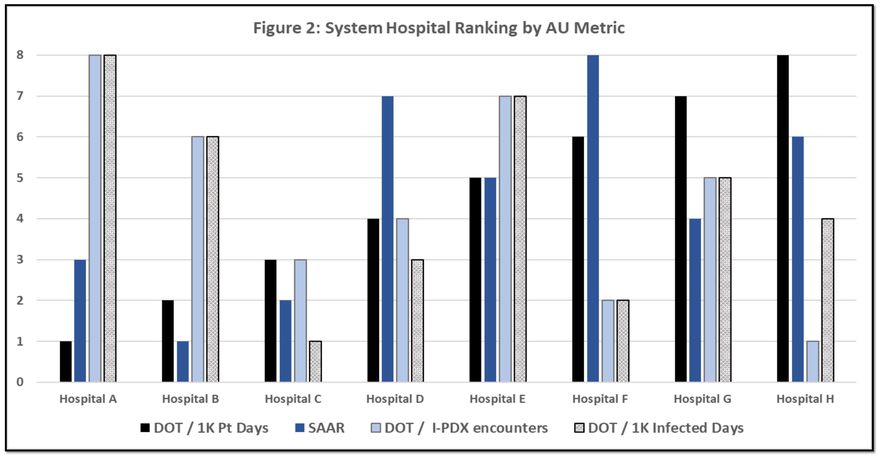


Table 2: Hospital A, AU Rate using novel denominators

Metric	AU Rate (system mean)	Rank
DOT / 1000 PD	563.9 (621.5)	1
DOT / % I-PDX encounters	3.37 (2.64)	8
DOT / 1000 IPD	2,401.7 (1,795.5)	8

Results

- Using the denominators I-PDX and IPD changed the ranking of every hospital compared to DOT/1000 PD
- **Table 1** shows the median DOT and Proportion of I-PDX and the median for the new denominators, IPD and Infectious Encounters
- **Figure 1** shows the variation of the different hospitals in their relative proportion of I-PDX
- Hospital A, who changed rank from 1st to 8th with the IPD denominator, performs the most cardiac procedures and has busiest obstetrics ward in the system, therefore the lowest I-PDX proportion (**Figure 1 and Table 2**)
- Hospital H changed rank from highest in the system for DOT/1000 PD to lowest when the denominator I-PDX Encounters was used. This hospital is in a more rural area and has the highest proportion of Infectious Patient Days (**Figures 1 and 2**)

Conclusions

- These metrics provide an example of a parsimonious adjustment of AU using patient level data already collected at any facility
- Future optimization might include indirect standardization using PDX categories and other patient level factors readily collected

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