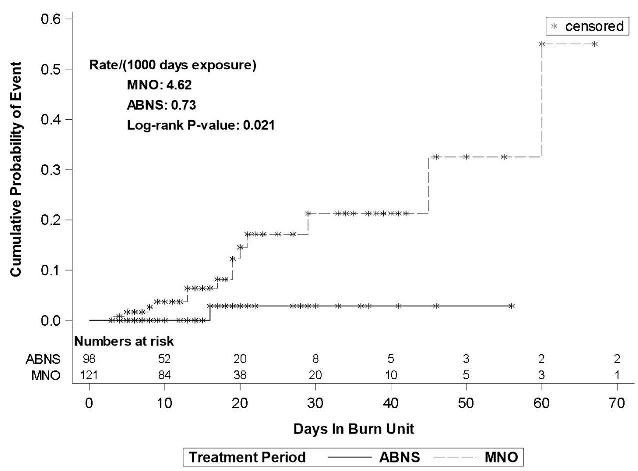
to one event in the ABNS arm (p=0.0021). The figure displays the product-limit time to event estimates for developing HA-MRSA bacteremia at the >80% adherence level (p= 0.021). Lower adherence levels (50%, 60%, 70%) did not show significance (p>0.05) in the time-to-event analysis. **Conclusion:** Providing ABNS >80% of the time resulted in a significant decrease in HA-MRSA bacteremia events in burn patients compared to an MNO. The daily application throughout hospitalization may offer additional protection against MRSA in patients hospitalized for extended periods of time.

Antimicrobial Stewardship & Healthcare Epidemiology 2025;5(Suppl. S2):s3–s4
doi:10.1017/ash.2025.192

Figure: Product-limit Estimate of Time to HA-MRSA Bacteremia by Treatment Group (MNO vs ABNS)



Presentation Type:
Oral Presentation - Top Poster Abstract
Subject Category: Antibiotic dosing / Pharmacy

Optimizing Daptomycin Dosing: Environmental Benefit and Cost Savings

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Background: The pharmaceutical industry is estimated to have a larger environmental footprint than the automotive industry. Discarded and unused doses of pharmaceuticals generate financial waste and pollution, and exacerbate antibiotic shortages. The antibiotic daptomycin is dispensed in standard-sized single-use vials and dosed based on patient weight. Residual daptomycin in the vial after dose preparation must be disposed of and cannot be used for another patient. We hypothesized that daptomycin dosing nomogram use would reduce daptomycin waste, environmental impact, and financial costs. **Methods:** We performed a retrospective chart review quantifying daptomycin waste, defined as disposed of unused daptomycin, at Harbor-UCLA Medical Center, a 400-bed Level 1 Trauma Center, from 1/1/2023 to 12/31/2023. We then adjusted dosing using a daptomycin dosing nomogram. We modeled the difference in daptomycin waste (mg of daptomycin disposed of unused), pharmaceutical waste (weight of excess daptomycin vials required due to wasted antibiotic), and cost between the two dosing strategies. Our model assumed a daptomycin vial weight of 16.8g and cost of $30 per 500mg daptomycin vial. We conservatively estimated pharmaceutical waste as waste only from daptomycin vials, ignoring all other supplies and materials necessary to prepare daptomycin. **Results:** During the 1 year time period at our Medical Center, 138,882mg daptomycin was wasted. This level of daptomycin waste equates 4671g excess pharmaceutical waste and $8332 spent on unused, discarded daptomycin. In our model, we found that nomogram implementation would have reduced mean monthly daptomycin waste from 11,002mg to 1387mg (p<0.001). This reduction would have decreased the proportion of daptomycin wasted from a mean of 19% to 3% of all consumed daptomycin (Figure 1). Nomogram use would also have saved $7333 and averted 4111g of pharmaceutical waste in 2023. **Conclusion:** A daptomycin dosing nomogram would have prevented 122,322mg of daptomycin from being wasted and saved over $7000 at a 400 bed Medical Center over one year. Given the 4111 g of pharmaceutical waste is a conservative estimate, and ignores waste from other supplies/materials as well as upstream waste and emissions from daptomycin manufacturing, the overall generated environmental impact prevented by nomogram use is likely significantly higher. Our findings demonstrate that intentionally designed dosing strategies aimed at reducing drug waste can save hospital costs and reduce the environmental footprint of clinical care. When implemented at large health systems these strategies are likely to result in substantial cost savings and reduction in the negative environmental impact associated with pharmaceuticals.

Antimicrobial Stewardship & Healthcare Epidemiology 2025;5(Suppl. S2):s4
doi:10.1017/ash.2025.193

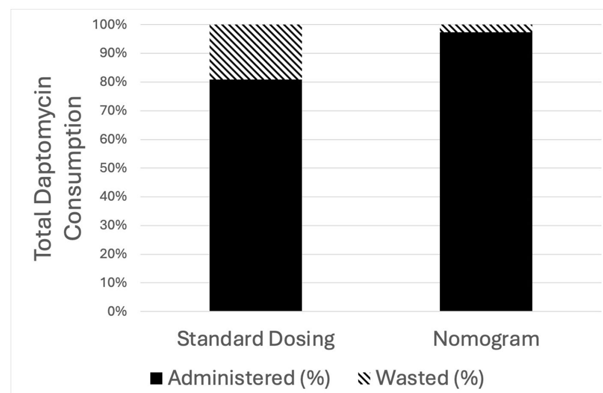

Figure 1: Comparison between percent of daptomycin wasted using standard dosing versus daptomycin nomogram dosing.

Presentation Type:
Oral Presentation - Top Poster Abstract
Subject Category: Antibiotic Stewardship

Medical School Ranking & Provider Outpatient Medicare Part D Claims for Antibiotics Among Older Patients in the US

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Background: The overuse of antimicrobials contributes to the development of antibiotic resistance, the development of Clostridioides difficile infections, and increased patient morbidity and mortality. The impact of U.S. News medical school ranking on provider antimicrobial prescription is largely unknown. Our study aimed to assess whether there was a relationship between graduating from higher-ranked medical schools and the rate of prescribing antibiotics among Medicare Part D providers in the US. **Methods:** The ecological study obtained data from the Medicare Part D Prescribers (FY2013-2021) and the Doctor and Clinicians National repositories. The study's main outcome was antibiotic days supplied per 100 beneficiaries. Secondary outcomes included antibiotic claims per 100 beneficiaries, days per claim, and antibiotic cost per 100 beneficiaries. A regression model was fitted to assess the relationship between provider medical school ranking and study outcomes. The study controlled for several state, provider, and patient variables. **Results:** A total of 197,540 providers were included (Table 1). No association was found between the medical school ranking and the rate of antibiotics days supplied per 100 beneficiaries (Table 2, Figure). Instead, the type of provider is associated with the prescription rates. Hospitalists and Emergency Medicine providers had fewer days supplied per 100 beneficiaries than Family Medicine providers. In contrast, students, more experienced providers (>20 years since medical school graduation), and females had more days supplied per 100 beneficiaries. Higher-ranking medical schools [1, 35], EM providers and hospitalists (vs. FM), and academic locations had lower claim rates per 100 beneficiaries, while students and experienced providers had higher claims. Days per claim were higher among providers from higher-ranked medical schools, more experienced providers, students, and academic locations, whereas they were lower among males, EM Providers, and Hospitalists. Costs per 100 beneficiaries were higher among students, academic locations, IM providers, and males; however, it was lower among EM and hospitalists. **Conclusion:** Our study showed no impact of medical school ranking on the overall rate of outpatient antibiotic prescriptions among Medicare Part D providers. While the claim rate per 100 beneficiaries was lower among providers from higher-rank medical schools compared to other providers, claims were prescribed longer, leading to similar days supplied and costs compared with other providers. This highlights the need for robust outpatient stewardship interventions and incorporating an outcome-based approach to antibiotic stewardship curricula in medical and mid-level provider schools.

Antimicrobial Stewardship & Healthcare Epidemiology 2025;5(Suppl. S2):s4–s5

doi:10.1017/ash.2025.194

Table 1- Characteristics of Providers, Patients, and Antibiotic Claims (FY 2013-2021)

Characteristics	
Provider (n=197,540)	
Gender	n (%)
Male	88,529 (44.8)
Female	109,011 (55.2)
Specialty	n (%)
Emergency Medicine	18,788 (9.5)
Family Medicine	40,930 (20.7)
Hospitalist	5,105 (2.6)
Internal Medicine	43,826 (22.2)
Nurse Practitioner	50,906 (25.8)
Physician Assistant	30,930 (15.7)
Student	7,055 (3.6)
Academic location	n (%)
Yes	69,253 (35.1)
No	128,287 (64.9)
Graduation School Ranking	n (%)
US MD [1, 35)	11,193 (5.7)
US MD [35, 58)	10,965 (5.5)
US MD [58, 85)	11,562 (5.9)
US MD [85,118]	6,505 (3.3)
Unranked MD	11,043 (5.6)
Ranked DO	5,608 (2.8)
Unranked DO	13,207 (6.7)
IMG MD	45,277 (22.9)
Ranked Mid-Level	6,080 (3.1)
Unranked Mid-Level	76,100 (38.5)
	Mean (SD)
Years of professional experience	11.2 (9.9)
Patients	Mean(SD)
Beneficiaries per provider	219.1 (211.3)
Age (years)	70.0 (4.1)
% Female beneficiaries per provider	60.9 (8.9)
% Black beneficiaries per provider	15.8 (17.9)
% Hispanic beneficiaries per provider	10.3 (16.3)
% With dual insurance	35.9 (18.7)
Risk score	1.6 (0.6)
Claims	Mean(SD)
Total antibiotic days supplied per provider	1,084 (1,676)
Rate of antibiotic days supplied/ 100 beneficiaries per provider	341.1 (497.1)

MD: Doctor of Medicine; IMG: International Medical Graduate; DO: Doctor of Osteopathy; SD: Standard Deviation

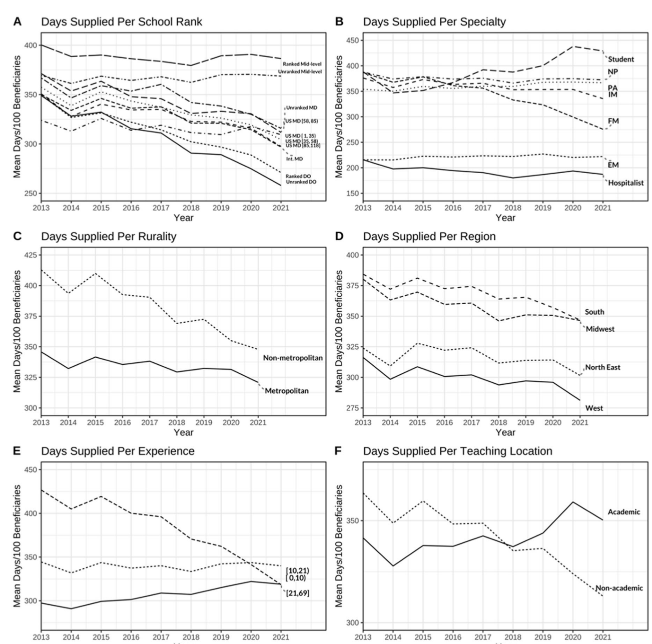
Table 2- OLS Estimates for Days Supplied, Rates of Claims, Days Per Claim, and Cost Per 100 Beneficiaries for FY2013-2021

	Supplied Days Rate Estimate (SD)	**Claim Rate** Estimate (SD)	**Days per Claim** Estimate (SD)	**Cost Rate** Estimate (SD)
Education (Ref): US MD [1, 35)]				
IMG MD	-22.50 (7.91)	3.60 (0.45) *	-1.76 (0.15) *	9.52 (42.70)
Ranked DO	-8.20 (8.25)	3.37 (0.38) *	-1.28 (0.11) *	30.43 (48.73)
Ranked Mid-level	40.20 (21.18)	6.69 (1.10) *	-0.87 (0.28)	113.87 (131.93)
Unranked DO	-3.39 (8.98)	3.86 (0.58) *	-1.35 (0.11) *	29.53 (56.02)
Unranked MD	9.29 (7.53)	3.03 (0.41) *	-0.84 (0.08) *	65.56 (46.28)
Unranked Mid-level	35.78 (18.19)	8.04 (1.00) *	-1.46 (0.24) *	164.32 (128.51)
US MD [35, 58)]	-1.59 (8.83)	1.66 (0.51)	-0.50 (0.10) *	32.05 (38.81)
US MD [58, 85)]	10.49 (8.10)	2.60 (0.45) *	-0.70 (0.10) *	52.04 (53.96)
US MD [85,118]]	1.16 (9.63)	2.62 (0.67) *	-0.73 (0.11) *	34.76 (48.26)
Rural Areas	26.15 (8.19)	3.22 (0.72) *	-0.22 (0.06)	-58.65 (26.84)
Male Providers	-49.50 (4.77) *	2.33 (0.27) *	-1.46 (0.07)*	-130.83 (43.73)
Experience (years)#	9.34 (0.40) *	0.47 (0.03) *	0.12 (0.00)*	36.73 (5.26) *
Experience^2 #	-0.07 (0.01) *	-0.00 (0.00)	-0.00 (0.00)	-0.53 (0.07) *
Specialty (Ref): Family Medicine				
Emergency Medicine	-130.74 (9.17)*	-5.76 (0.94)*	-2.31 (0.16)*	-528.55 (64.05)*
Hospitalist	-232.72 (13.10)*	-10.55 (0.88) *	-3.46 (0.17)*	-529.63 (104.34)*
Internal Medicine	-16.50 (5.57)	-1.43 (0.39)	-0.07 (0.09)	186.45 (35.94) *
Nurse Practitioner	26.24 (15.06)	-0.65 (0.97)	0.72 (0.23)	-23.14 (140.41)
Physician Assistant	23.01 (15.45)	-0.82 (0.92)	0.81 (0.24)	-50.89 (135.54)
Student	99.74 (12.94) *	5.62 (0.76) *	1.36 (0.19)*	640.75 (107.65)*
Academic Location	11.22 (4.04)	-1.48 (0.29) *	0.51 (0.06) *	112.34 (25.09)*

The model controlled for prescriber gender, specialty, graduation year, teaching location, metropolitan area, the US state, and beneficiary characteristics (total number, demographics, risk scores, and dual public insurance).

* indicates a P value <0.0005
\# Experience was entered into the model as a continuous variable with a squared term given a non-linear relationship.
OLS: Ordinary Least Squares regression; FY: Fiscal Year; SD: Standard Deviation; Ref: Reference; MD: Doctor of Medicine; IMG: International Medical Graduate; DO: Doctor of Osteopathy

Figure Antibiotic Days Supplied Per 100 Beneficiaries Per Category (FY2013-2021)



This figure shows antibiotic days supplied per 100 beneficiaries per category, grouped by graduate school ranking (A), Specialty (B), Metropolitan Area (C), Region (D), years of experience (E), and teaching location (F).

MD: Doctor of Medicine; Int: International Medical Graduate; DO: Doctor of Osteopathy; NP: Nurse Practitioner; PA: Physician Assistant; IM: Internal Medicine; FM: Family Medicine: EM: Emergency Medicine