

average percentage of residents on antimicrobials before the pandemic was 16.3%, which decreased to 11.5% during the pandemic period ($P = .04$). During the prepandemic period, 40.2% of antibiotics prescribed were in the common for SSTI category and 38.3% were in the common for respiratory infections category ($P = .01$); during the pandemic period, 64.3% of antibiotics prescribed were in the common for SSTI category and 45.8% were in the common for respiratory infections category ($P = .01$). The 3 most prescribed antibiotics in the prepandemic period were amoxicillin (148 prescriptions), doxycycline (140 prescriptions), and levofloxacin (135 prescriptions). The 3 most prescribed antibiotics during the pandemic were doxycycline (141 prescriptions), levofloxacin (125 prescriptions), and trimethoprim-sulfamethoxazole (115 prescriptions). **Conclusions:** Survey results revealed that antibiotic prescriptions commonly used for respiratory infections increased 7.5% during the pandemic study period. Additionally, the average percentage of residents on antimicrobials fell 4.8% during this period. Both statistics reflect what has been seen nationally with a decrease in antibiotic use with an increase in respiratory antibiotics. This could be due to multiple factors including decreased reporting, a change in healthcare delivery during the pandemic, and facilities seeing an increase of respiratory tract infections. These data will be used to guide future TDH antibiotic stewardship efforts in the long-term care setting.

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Antibiotic-prescribing practices and associated outcomes after common urologic procedures in an integrated healthcare system

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Background: Many urologists continue antibiotics after common urologic procedure beyond the timeframes recommended by professional guidelines. In this study, we sought to evaluate the association between postprocedural antibiotic use and patient outcomes. **Methods:** We identified all patients who underwent 1 of 3 urologic procedures (transurethral resection of bladder tumor [TURBT], transurethral resection of prostate [TURP], and ureteroscopy) within the Veterans' Health Administration (VHA) between January 1, 2017, and June 30, 2021. A postprocedural antibiotic was any antibiotic potentially used for a urinary tract-related indication that was prescribed for administration after the day of the procedure. Outcomes were captured within 30 days of the procedure and included (1) return visits, defined as any emergency department or urgent care encounter or hospital readmission, and (2) *Clostridium difficile* infection (CDI), defined as a positive test for *C. difficile* and the prescription of an anti-CDI antibiotic. We used log-binomial models with risk adjustment to determine the association between postprocedural antibiotic use and outcomes. We constructed hospital-level observed-to-expected ratios for postprocedural antibiotic use, and we used these models to calculate the probability of each patient receiving postprocedural antibiotics. **Results:** Overall, we identified 74,629 patients; 98% were male; the mean age was 70 years (SD, 10). Among them, 50% underwent TURBT, 28% underwent TURP, and 23% underwent ureteroscopy. A postprocedural antibiotic was prescribed to 25,738 (35%) cases for a median duration of 3 days (IQR, 3–6). Return visits occurred in 13,489 patients (18%), and CDI occurred in 104 patients (0.1%). Patients exposed to postprocedural antibiotics had 16% more return visits (RR, 1.16; 95% CI, 1.13–1.20) and more than twice as much CDI (RR, 2.22; 95% CI, 1.51–3.26) than patients not exposed to postprocedural antibiotics. In log-binomial risk-adjusted analysis, the risk of return visits did not differ between the 2 groups (RR, 1.00; 95% CI, 0.97–1.04) but the risk of CDI was higher in patients who received post-procedural antibiotics (RR, 1.87; 95% CI, 1.00–3.51). Hospitals ($n = 105$) varied widely in their observed-to-expected ratios for prescribing postprocedural antibiotics, and the frequency of return visits was similar

Table 1. Observed-to-expected ratio (O:E) quartiles for post-procedural antibiotic prescribing across 105 VHA hospitals and the association with the frequency of return visits

O:E Quartile	O:E ratio for prescribing post-procedural antibiotics	Return visits within 30 days, median
1	0.49	17.2%
2	0.82	17.4%
3	1.14	18.7%
4	1.88	19.0%

regardless of the frequency at which postprocedural antibiotics were prescribed (Table 1). **Conclusions:** Postprocedural antibiotics were prescribed beyond recommended intervals after more than one-third of common urologic procedures, with a large degree of variability across hospitals. The use of postprocedural antibiotics was not associated with fewer return visits but was associated with a nonsignificant increase in CDI risk. Efforts to reduce postprocedural antibiotics are needed.

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Penicillin allergy reinstatement in a cohort of patients previously delabeled following formal allergy assessment

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Background: Penicillin allergies are frequently reported and are associated with adverse clinical and antimicrobial stewardship outcomes. Allergy delabeling, either by patient history or skin testing and oral challenge can facilitate removal of penicillin allergy label. However, penicillin allergies are often reinstated in the medical record and data is limited about how and why this occurs. In our center, the departments of allergy and infectious diseases utilize an allergist nurse practitioner for penicillin allergy delabeling. We investigated the prevalence of penicillin allergy reinstatement following removal and associated factors thereof.

Methods: We performed a retrospective observational study of patients who previously had penicillin allergy removed by the allergist nurse practitioner between August 2020 and May 2021 (250 days). Patients were followed for a minimum of 8 months and up to 16 months after penicillin allergy removal. We then assessed whether the allergy was reinstated. Clinical characteristics were compared between patients with penicillin allergy reinstated and not reinstated using the χ^2 and Mann-Whitney *U* test. The primary end point was prevalence of penicillin allergy reinstatement following removal. **Results:** During the study period, 81 patients had penicillin allergy removed, but it was later reinstated in 19 patients (23%) (Fig 1). Median time to reinstatement was 94 days. Allergies were reinstated most frequently by nurses (53%) and medical assistants (37%). Reinstatement occurred in both outpatient (53%) and inpatient (47%) settings. In 18 of 19 cases, there was no acknowledgment that a prior assessment had determined the patient was not allergic to penicillin. Only 1 patient experienced a reaction prompting reinstatement of penicillin allergy. Once the allergy was redocumented, it was subsequently mentioned in a median of 17 notes per patient. Comorbidities did not differ between patients with allergy reinstated versus those without (Table 1). Patients with penicillin allergy reinstated were more often originally delabeled via history rather than skin test followed by oral challenge and were more likely to have been readmitted subsequently. **Conclusions:** Penicillin allergies were redocumented in almost one-quarter of patients, most frequently by a nonphysician team member and without acknowledgement of

Figure 1: Flow chart of Penicillin Allergy Outcome After Removal

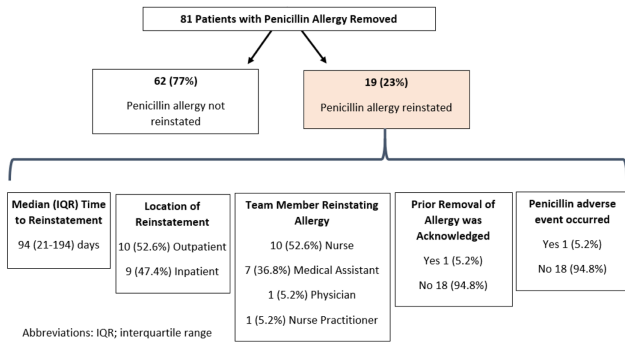


Table 1: Comparison of Patients Who Had Penicillin Allergy Reinstated Versus Those Who Did Not

Characteristics	Total (n=81)	Allergy Not Reinstated (n=62)	Penicillin Allergy Reinstated (n=19)	P value
Male Sex, n (%)	36 (44)	27 (43)	9 (47)	0.797
Age years median (IQR)	60 (49–68)	59 (48–68)	61 (52–69)	0.482
Age ≥65, n (%)	31 (38)	24 (39)	7 (37)	0.884
Self-Reported Race/Ethnicity, n (%)				
Black	38 (47)	27 (44)	11 (58)	0.273
White	38 (47)	30 (48)	8 (42)	0.631
Other	3 (3.7)	3 (5)	0 (0)	0.329
Unknown	2 (2.5)	2 (3)	0 (0)	0.428
Comorbidities				
Coronary Artery Disease or MI, n (%)	25 (31)	19 (31)	6 (32)	0.939
Congestive Heart Failure, n (%)	19 (24)	14 (23)	5 (26)	0.762
COPD, n (%)	25 (31)	16 (26)	9 (47)	0.075
Chronic Kidney Disease, n (%)	40 (49)	30 (48)	10 (53)	0.851
Diabetes	63 (78)	47 (76)	16 (84)	0.606
Solid Organ Cancer, n (%)	7 (9)	14 (23)	4 (21)	0.960
Leukemia or lymphoma, n (%)	8 (10)	6 (10)	2 (11)	0.588
Liver Disease, n (%)	15 (19)	9 (15)	6 (32)	0.105
Dementia, n (%)	0 (0)	0 (0)	0 (0)	NA
Solid Organ Transplant, n (%)	7 (9)	6 (10)	1 (5)	0.549
Psychiatric History, n (%)	22 (27)	16 (26)	6 (32)	0.621
Charlson Comorbidity Index, median (IQR)	6 (3–9)	6 (3–9)	6 (4.5–9)	0.344
Allergy Delabeling Mechanism				
Via History, n (%)	30 (37)	18 (29)	12 (63)	0.013
Skin Test and oral challenge, n (%)	51 (63)	44 (71)	7 (34)	0.013
Readmitted subsequently, n (%)	49 (61)	33 (53)	16 (84)	0.017

prior removal. Patients who undergo skin testing may be less likely to continue to report a penicillin allergy to medical staff compared to those whose allergy is removed based on history. Increased interactions with the health-care system may have contributed to having the allergy reinstated.

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Racial and ethnic differences in penicillin allergy reporting and allergist referral

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Background: Antimicrobial resistance (AMR) is a global public health crisis. A key strategy to combat AMR is to use targeted antibiotics, which is difficult in patients who report an allergy to penicillin. Increased risk for resistant infections, mortality, and healthcare costs are associated with penicillin allergies; however, up to 90% of those with a reported penicillin allergy do not have a true allergy. We investigated racial and ethnic differences related to penicillin allergy delabeling by analyzing rates of penicillin allergy reporting and referral for allergist consultation. **Methods:** Tufts Medical Center is a teaching medical center in Boston, Massachusetts. This study cohort contains all patients seen in 2019 by

Table 1A: Factors Associated with Penicillin Allergy Reporting

Characteristic	PCN Allergy (N=21,918)		OR	Univariate		Multivariable		
	No (n=19,527)	Yes (n=2,391)		95% CI	P-Value	OR	95% CI	P-Value
Mean Age, (SD)	50 (18)	53 (19)	1.11	(1.09, 1.14)	<.0001	1.06	(1.04, 1.09)	<.0001
Sex (%)					<.0001			<.0001
Male	8,767 (92)	768 (8)	Ref			Ref		
Female	10,760 (87)	1,623 (13)	1.72	(1.57, 1.88)		1.58	(1.44, 1.74)	
Race (%)					<.0001			<.0001
White	11,982 (87)	1,744 (13)	Ref			Ref		
Black	3,216 (90)	371 (10)	0.79	(0.70, 0.89)		0.77	(0.69, 0.87)	
Asian	4,329 (94)	276 (6)	0.44	(0.38, 0.50)		0.47	(0.41, 0.53)	
Hispanic (%)					0.08			-
No	18,756 (89)	2,314 (11)	Ref			-	-	-
Yes	771 (91)	77 (9)	0.81	(0.64, 1.03)		-	-	-
Median Allergy Count, (Range)	0 (0-29)	1 (0-34)	1.35	(1.31, 1.38)	<.0001	1.28	(1.25, 1.31)	<.0001

Table 1B: Factors Associated with Allergist Referral in People with Penicillin Allergy

Characteristic	Referral Allergy (N=2,391)		OR	Univariate		Multivariable		
	No (n=2,142)	Yes (n=249)		95% CI	P-Value	OR	95% CI	P-Value
Mean Age, (SD)	53 (19)	52 (17)	0.95	(0.89, 1.02)	0.171	-	-	-
Sex (%)					<0.001			0.009
Male	715 (93)	53 (7)	Ref			Ref		
Female	1,427 (88)	196 (12)	1.85	(1.35, 2.54)		1.52	(1.10, 2.10)	
Race (%)					0.033			0.013
White	1,582 (91)	162 (9)	Ref			Ref		
Black	315 (85)	56 (15)	1.74	(1.25, 2.41)		1.74	(1.25, 2.43)	
Asian	245 (89)	31 (11)	1.23	(0.82, 1.86)		1.35	(0.89, 2.05)	
Hispanic (%)					0.994			-
No	2,073 (90)	241 (10)	Ref			-	-	-
Yes	69 (90)	8 (10)	1	(0.47, 2.10)		-	-	-
Median Allergy Count, (Range)	1 (0-34)	1 (0-22)	1.17	(1.12, 1.22)	<.0001	1.16	(1.11, 1.21)	<.0001

clinicians at Primary Care Boston, the main primary care practice at Tufts Medical Center. Demographic data, documented allergies, and referral history were collected from the electronic medical record. We performed univariate and multivariable analyses using logistic regression models. Covariates found to be statistically significant ($P < .05$) in the univariate analyses were included in the multivariable model. **Results:** In total, 2,391 (11%) patients reported a penicillin allergy, but only 249 (10%) were referred to an allergist (Table 1). Black patients and Asian patients were less likely to report a penicillin allergy than White patients. We detected no differences related to Hispanic ethnicity. Black patients with penicillin allergy were more likely to be referred to an allergist. **Conclusions:** There were low rates of allergist referral for penicillin allergy delabeling in this cohort. We identified racial differences in both penicillin allergy reporting and allergist referral. Allergist consultation is an important opportunity to combat AMR and should be considered for all patients reporting a penicillin allergy. Future work should evaluate equitable access to allergy delabeling resources.

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Antimicrobial use patterns during the COVID-19 pandemic at an academic medical center

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Background: The COVID-19 pandemic has made a significant impact on antimicrobial use patterns across health systems. We have described antibiotic use patterns at an academic medical center in Richmond, Virginia, before and after the onset of COVID-19. We also examined the impact on the proportional consumption of carbapenems (PoCC) metric. PoCC represents meropenem utilization relative to the narrower-spectrum antipseudomonal agents cefepime and piperacillin-tazobactam. Our institution practices antimicrobial restriction for meropenem. All other antibiotics included in the study data can be freely ordered by any provider. **Methods:** We evaluated antimicrobial use data from September 2018 through August 2021 using days of therapy (DOT) per 1,000 patient days. We included 18 months of data before and after the first recorded COVID-19 admission at our institution in March 2020. Mean comparisons were performed using the Welch 2-sample *t* test. The Bonferroni correction