Antibiotics for UTI Prevention After Intradetrusor OnabotulinumtoxinA Injections

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Importance Urinary tract infections (UTIs) occur in 8.6% to 48.1% of patients after intradetrusor onabotulinumtoxinA injections.

Objective The objective of this study was to evaluate both choice and duration of antibiotic prophylaxis on the incidence of UTI within 30 days after in-office onabotulinumtoxinA injections.

Study Design We included a single-site, retrospective cohort of 305 patients with overactive bladder or bladder pain syndrome receiving postprocedure prophylactic antibiotics for in-office, 100-unit intradetrusor onabotulinumtoxinA injections from 2019 to 2023. Categories of antibiotic prophylaxis compared included (1) nitrofurantoin 100 mg twice daily for 3 days, (2) nitrofurantoin 100 mg twice daily for 5 days, (3) trimethoprim-sulfamethoxazole 160 mg/800 mg twice daily for 3 days, and (4) "other regimens." Primary outcome was incidence of UTI within 30 days. Variables were compared via χ^2 test. Crude/adjusted odds were estimated using binary logistic regression.

Results Incidence of UTI was 10.4% for 3-day nitrofurantoin, 20.5% for 5-day nitrofurantoin, 7.4% for 3-day trimethoprim-sulfamethoxazole, and 25.7% among "other regimens" ($P = 0.023$). Differences among primary regimens were substantial but not statistically significant: 3-day trimethoprim-sulfamethoxazole had 31% lower odds of UTI versus 3-day nitrofurantoin (odds ratio [OR], 0.689; $P = 0.518$). Compared with 3-day nitrofurantoin regimen, the 5-day nitrofurantoin regimen had twice the odds of UTI (OR, 2.22; $P = 0.088$). Those receiving "other regimens" had nearly 3 times the odds of UTI (OR, 2.98; $P = 0.018$). Results were similar adjusting for age and race. Overall urinary retention rate was 1.97%.

Conclusions Prophylactic antibiotic choice and duration of treatment potentially affect UTI incidence after in-office, intradetrusor onabotulinumtoxinA injections. Nitrofurantoin and trimethoprim-sulfamethoxazole for 3 days have the lowest UTI incidence.

Urogynecology 2024;30:272–279

DOI: 10.1097/SPV.0000000000001466

WHY THIS MATTERS

Intradetrusor onabotulinumtoxinA is considered an advanced therapy for overactive bladder and is also an off-label treatment option for bladder pain syndrome. Urinary tract infections (UTIs) have been reported to occur in 8.6% to 48.1% of patients after intradetrusor onabotulinumtoxinA injections, but there is no standardization of antibiotic regimens for the procedure for prophylaxis and current studies are inconclusive. This single-site retrospective cohort study shows that the choice and duration of postprocedure antibiotic prophylaxis affected the incidence of UTI after in-office intradetrusor onabotulinumtoxinA injections. Three-day postprocedure nitrofurantoin twice daily and 3-day postprocedure trimethoprim-sulfamethoxazole 160 mg/800 mg twice daily regimens had the lowest incidence of UTI, 10.4% and 7.4%, respectively, but these differences were not statistically significant. Oral nitrofurantoin and trimethoprim-sulfamethoxazole for 3 days started on the day of the

Overactive bladder (OAB) significantly affects quality of life for 17% women in the general population and more than 45% of women older than 65 years.[1–3] Many patients will try advanced treatment options for OAB such as sacral neuromodulation or onabotulinumtoxinA (Botox, Allergan Inc) after behavioral and lifestyle modifications, pelvic floor physical therapy, and oral

procedure showed nonstatistically significant decreased odds of UTI over the longer 5 day course of nitrofurantoin. The shorter duration could be considered as prophylaxis if using an oral, multiday regimen.

pharmacologic therapy fail.[4–11] A large body of evidence has demonstrated the efficacy of onabotulinumtoxinA for treatment of both idiopathic and neurogenic OAB, and it has increasingly become the advanced therapy of choice.[12–18] Similarly, interstitial cystitis/bladder pain syndrome (IC/BPS) affects approximately 2.7% to 6.5%, or 3 to 8 million women across the United States.[19] The American Urological Association states that intradetrusor onabotulinumtoxinA injections may be administered if other IC/BPS treatments have not provided adequate improvement in symptoms and quality of life either alone or in combination with hydrodistention.[20,21]

Urinary tract infection is a well-documented adverse event after intradetrusor injection of onabotulinumtoxinA. Prior studies have demonstrated that UTI occurs in 8.6% to 48.1% of patients, between 1 and 6 months after the procedure.[22–25] Despite the known high rates of UTI, research has been limited to only 4 small, retrospective studies regarding variable antibiotic regimens, timing of initiation, duration, dose, and choice of antibiotics at the time of intradetrusor onabotulinumtoxinA injections.[22–25] The onabotulinumtoxinA pharmaceutical package insert states that "oral prophylactic antibiotics, except aminoglycosides, should be administered 1 to 3 days pretreatment, on the treatment day, and 1 to 3 days posttreatment to reduce the likelihood of procedure-related UTI."[26] The American Urological Association best practice recommendations, extrapolated from data on transurethral resection of the bladder and prostate, do not specifically comment on antibiotic prophylaxis at the time of intradetrusor onabotulinumtoxinA injections, but do generally state that a single dose of an antimicrobial may be given in an attempt to reduce infections during cystourethroscopy procedures with minor break in mucosal barriers such as with biopsy or fulguration.[27]

Based on the lack of evidence on antibiotic prophylaxis after intradetrusor onabotulinumtoxinA injection, we investigated the association of both duration and choice of antibiotic with the incidence of UTI within 30 days of in-office onabotulinumtoxinA injection. We hypothesized that nitrofurantoin would have the lowest incidence of UTI compared with other antibiotic regimens owing to its known lower rate of resistance both nationally and based on our hospital's antibiograms compared with trimethoprim-sulfamethoxazole.[28]

MATERIALS AND METHODS

This was a single-site, retrospective cohort analysis of 305 patients at Walter Reed National Military Medical Center, a large academic hospital, from January 2019 to January 2023. This study is reported following the Strengthening the Reporting of Observational Studies in Epidemiology statement. The institutional committee on clinical investigations determined that the study was not human subject research in accordance with 32 Code of Federal Regulation 219.102 and Department of Defense Issuances 3216.02.

All patients treated for OAB or IC/BPS who received intradetrusor onabotulinumtoxinA injections within the Urogynecology Division were included for analysis. There were 6 urogynecologists managing patients during this time frame. Exclusion criteria included patients using a dose of 200 units of onabotulinumtoxinA (due to increased risk of urinary retention) and patients with a history of culture-proven recurrent UTI (determined by *International Classification of Diseases, Tenth Revision* code used at the time of the procedure). Patients were instructed to collect a urinalysis and urine culture 1 to 2 weeks before the procedure to allow treatment of a UTI before the procedure. If a UTI was diagnosed immediately before the scheduled procedure, then the procedure was deferred until after appropriate treatment had been completed. Intradetrusor onabotulinumtoxinA injections in the operating room were also excluded because of the additional surgical management of other conditions (ie, pelvic organ prolapse) that may influence the incidence of UTI and potential for intravenous antibiotic administration, which would not mimic typical outpatient antibiotic regimens. Four patients who did not receive antibiotics were also excluded from the statistical analysis.

Categories of antibiotic prophylaxis as the compared exposure include the following: (1) nitrofurantoin 100 mg twice daily for 3 days (3-day nitrofurantoin), (2) nitrofurantoin 100 mg twice daily for 5 days (5-day nitrofurantoin), (3) 3-day trimethoprim-sulfamethoxazole 160 mg/800 mg twice daily for 3 days (3-day trimethoprim-

sulfamethoxazole), and (4) "other regimens." All regimens were started immediately after the procedure. The "other regimen" category included all other regimens not precisely 1 of the first 3 categories, with the most common reasons being due to drug allergy, a complex urology history, prescription filled by a health care professional outside of the division for symptomatic infections, or a prescription dosage error. Antibiotics used in the "other regimens" category include cefdinir, cephalexin, levofloxacin, fosfomycin, and trimethoprim alone for 1 to 3 days after the procedure. Our primary outcome was incidence of UTI within 30 days of the onabotulinumtoxinA injection, defined as new-onset lower urinary tract symptoms associated with a positive urine culture result or treatment with antibiotics empirically by our clinic or another clinic within our military health system within 30 days of the procedure. Patients were screened for UTI and urinary retention symptoms at the time of their routine follow-up appointment. A urinalysis and urine culture were sent if concern for a UTI was present, or a postvoid residual urine volume was obtained if there was concern for retention. Urinary retention rates were recorded and defined as new-onset retention if symptoms were present with a postvoid residual volume of 150 mL or greater requiring clean intermittent catheterization within 30 days of the procedure. Injection protocol was 100 units of onabotulinumtoxinA diluted in 10 mL of preservative-free injectable saline in either 20 injection sites with 0.5 mL per injection or 5 injections sites with 2 mL per injection site spread throughout the posterior bladder wall sparing the trigone.

Categorical variables were summarized using count (percent) and compared using the chi-Square test. Crude and adjusted odds ratios (ORs) were estimated using binary logistic regression. Data were analyzed using SPSS version 28 for Windows. All comparison groups were chosen based on the top 3 regimens used by the urogynecologists within the department. The primary antibiotic prophylaxis exposure regimen for comparison was the 3-day nitrofurantoin regimen, as it was most used at our facility. All data was retroactively collected by the clinical investigation team through a single electronic medical record.

RESULTS

A total of 301 patients met eligibility for this study. Demographic and clinical characteristics were similar among the 4 regimen categories, with the exception that White patients were significantly more likely to receive "other regimens" (Table 1). The overall incidence of UTI for the cohort was 12.9%. There was a statistically significant association between antibiotic regimen and incidence of UTI within 30 days, regardless of whether diagnosis was based on culture or symptomatic treatment ($P = 0.023$). The overall incidence of culture-proven UTI was 9.3%. Incidence of the primary outcome was 10.4% in the 3-day nitrofurantoin regimen, 20.5% in the 5-day nitrofurantoin regimen, 7.4% in the 3-day trimethoprim-sulfamethoxazole, and 25.7% among those receiving other regimens ($P = 0.023$; Table 2). Compared with the 3-day nitrofurantoin regimen, those receiving 5-day nitrofurantoin had 2 times higher odds of UTI (OR, 2.22; $P = 0.088$). These differences among the 3- and 5-day nitrofurantoin and the 3-day trimethoprim-sulfamethoxazole regimens, although substantial, were not statistically significant. The only results reaching statistical significance were those comparing the 3-day nitrofurantoin group to the "other" antibiotic group. Those receiving "other" regimens had nearly 3 times higher odds of UTI (OR, 2.98; $P = 0.018$). Patients receiving 3-day trimethoprim-sulfamethoxazole had nonstatistically significant 31% lower odds of UTI within 30 days (OR, 0.689; $P = 0.518$) when compared with the 3-day nitrofurantoin regimen. Adjusting for age and race did not account for the differences between regimens (Table 2). The incidence of UTI did not vary significantly with age, race, or active-duty status. The incidence of UTI did not vary significantly based on how the infection was diagnosed (culture vs symptomatic treatment; Table 3). Because patients receiving the 5-day nitrofurantoin regimen had more than 2 times higher odds of UTI, the investigational team reexamined the 39 patients prescribed the 5-day nitrofurantoin regimen to determine if any confounders could explain the increased risk of infection in that group with the same antibiotic choice. Ultimately, no specific variables were identified.

DISCUSSION

This retrospective cohort study provides further evidence that both prophylactic antibiotic choice and duration potentially affect UTI incidence after in-office, intradetrusor onabotulinumtoxinA injections. Three-day regimens of both nitrofurantoin and trimethoprim-sulfamethoxazole given orally twice daily had the lowest UTI incidence (10.4% and 7.4%, respectively). Although not statistically significant,

TABLE 1. Baseline Characteristics by Antibiotic Regimen*

		Antibiotic Regimen Category										
		3-d Nitrofurantoin 100 mg BID (n = 173)		5-d Nitrofurantoin 100 mg BID (n = 39)		3-d TMP-SMX DS BID (n = 54)		Other regimens† (n = 35)		Total (N = 301)		
		Count	%	Count	%	Count	%	Count	%	Count	%	*P*
Age group, y)	<50	49	28.3	13	33.3	19	35.2	8	22.9	89	29.6	0.69
	50–59	48	27.7	7	17.9	11	20.4	6	17.1	72	23.9	
	60–69	24	13.9	7	17.9	6	11.1	7	20.0	44	14.6	
	70+	52	30.1	12	30.8	18	33.3	14	40.0	96	31.9	
Race	White	76	43.9	12	30.8	17	31.5	23	65.7	128	42.5	0.03
	Black	62	35.8	17	43.6	20	37.0	8	22.9	107	35.5	
	Other	35	20.2	10	25.6	17	31.5	4	11.4	66	21.9	
Active duty‡	No	133	76.9	32	82.1	37	68.5	29	82.9	231	76.7	0.33
	Yes	40	23.1	7	17.9	17	31.5	6	17.1	70	23.3	
Diagnosis	BPS	26	15.0	4	10.3	10	18.5	4	11.4	44	14.6	0.36
	MUI	0	0	0	0	2	3.7	0	0	2	0.7	
	NGB	4	2.3	1	2.6	1	1.9	1	2.9	7	2.3	
	OAB	31	17.9	4	10.3	7	13.0	5	14.3	47	15.6	
	UUI	112	64.7	30	76.9	34	63.0	25	71.4	201	66.8	
UTI within 30 d	Any UTI§	18	10.4	8	20.5	4	7.4	9	25.7	39	13.0	0.02
	Culture confirmed	13	7.5	5	12.8	2	3.7	8	22.9	28	9.3	0.01
Urinary retention	Yes	3	1.7	0	0	2	3.7	0	0	5	1.7	0.4

*Categorical variables were summarized using count (%) and compared using χ^2 tests.

†"Other regimens" includes cefdinir, cephalexin, levofloxacin, fosfomycin, and trimethoprim alone for 1 to 3 days after procedure.

‡Active duty is defined by any study participant who was identified within the electronic medical records as military service member on active duty orders at the time of their procedure within the U.S. Army, Air Force, Navy, Marines, or Coast Guard.

§Primary outcome: new-onset lower urinary tract symptoms associated with a positive urine culture result or treatment with antibiotics empirically within 30 days of procedure.

BID, twice daily; BPS, bladder pain syndrome; DS, double strength; MUI, mixed urinary incontinence, NGB, neurogenic bladder; OAB, overactive bladder; TMP-SMX, trimethoprim-sulfamethoxazole; UTI, urinary tract infection; UUI, urgency urinary incontinence.

3-day nitrofurantoin and trimethoprim-sulfamethoxazole showed substantial decreased odds of UTI over the longer 5-day course of nitrofurantoin, concluding that a shorter course may be just as, if not more, efficacious. This research potentially improves quality and process improvement as well as antibiotic stewardship surrounding clinic-based intradetrusor onabotulinumtoxinA injections.

As antimicrobial resistances among uropathogens continue to rise, it is imperative that physicians promote antibiotic stewardship by prescribing the most efficacious antibiotic for the shortest duration possible. Regarding the increased risk of UTI in the 5-day nitrofurantoin regimen, Llor et al,[29] in an antibiotic compliance study at the time of respiratory infections, showed that among patients assigned the same daily dosage, compliance was better with the shortest antibiotic regimens with the worst compliance with schedules of 7 or more days. This may have contributed to the difference between the 3- and 5-day nitrofurantoin regimens. Medication compliance was not evaluable in this retrospective study, but it was confirmed that all patients picked up their antibiotics.

Individual antibiotic mechanisms of action and their respective resistance rates likely play a role in our results relative to previous studies. Nitrofurantoin has several mechanisms of action that provide a primarily bacteriostatic antimicrobial effect; however, it can be bactericidal in urine. Metabolites of nitrofurantoin bind to bacterial ribosomes and inhibit bacterial enzymes involved in the synthesis of DNA, RNA, cell wall proteins, and other metabolic enzymes.[30,31] This broad-based mechanism of action enables the antibiotic to consistently maintain low resistance rates of less than 10%.[32] Sulfamethoxazole is a sulfonamide that works directly on the synthesis of folate inside bacteria; trimethoprim is a direct competitor of the enzyme dihydrofolate reductase, further halting the production

TABLE 2. Sample Characteristics by UTI Within 30 Days*

		UTI Within 30 d†		
		Count, n	Row Valid, %	*P*
Antibiotic regimen category	3-d nitrofurantoin 100 mg BID	18/173	10.4	0.02
	5-d nitrofurantoin 100 mg BID	8/39	20.5	
	3-d TMP-SMX DS BID	4/54	7.4	
	Other regimens	9/35	25.7	
Age group, y	<50	15/91	16.5	0.18
	50–59	6/73	8.2	
	60–69	9/45	20.0	
	70+	10/96	10.4	
Race	White	24/130	18.5	0.06
	Black	10/108	9.3	
	Other	6/67	9.0	
Active duty‡	No	32/233	13.7	0.56
	Yes	8/72	11.1	
Diagnosis	BPS	5/47	10.6	0.71
	MUI	0/2	0	
	NGB	0/7	0	
	OAB	8/48	16.7	
	UUI	27/201	13.4	

*Categorical variables were summarized using count (%) and compared using χ^2 tests.

†Primary outcome: new-onset lower urinary tract symptoms associated with a positive urine culture result or treatment with antibiotics empirically within 30 days of procedure.

‡Active duty is defined by any study participant who was identified within the electronic medical records as military service member on active duty orders at the time of their procedure within the U.S. Army, Air Force, Navy, Marines, or Coast Guard.

BID, twice daily; BPS, bladder pain syndrome; DS, double strength; MUI, mixed urinary incontinence, NGB, neurogenic bladder; OAB, overactive bladder; TMP-SMX, trimethoprim-sulfamethoxazole; UTI, urinary tract infection; UUI, urgency urinary incontinence.

of folate.[33] In conjunction, this synergistic mechanism of action makes trimethoprim-sulfamethoxazole very effective and predominantly bactericidal.[33] In our study trimethoprim-sulfamethoxazole had a slightly lower but not statistically significant UTI incidence compared with nitrofurantoin, despite its more pronounced bactericidal effect. However, this may vary regionally as trimethoprim-sulfamethoxazole may have a greater than 20% rate of resistance depending on local antibiograms.[34,35]

A patient's renal function also plays a role in antibiotic selection. Therapeutic levels of nitrofurantoin are achieved primarily in the urine. The renal elimination of nitrofurantoin is reduced in patients with low estimated glomerular filtration rates, which can increase the risk of treatment failure and potentially increase adverse effects due to increasing blood levels. Nitrofurantoin is ineffective because of inadequate urine concentrations in patients with creatinine clearance of less than 30 mL/min.[36,37] Based on this, we would consider the 3-day trimethoprim-sulfamethoxazole regimen the most optimal out of the 3 main regimens evaluated for those with chronic kidney disease.

Prior studies that described previously used antibiotic regimens regarding prophylaxis for intradetrusor onabotulinumtoxinA injection investigated different routes of administration as well as single-day versus multiday regimens. In a retrospective study, Houman et al[22] demonstrated that a 3-day oral course of ciprofloxacin starting the day before the procedure was superior to an intramuscular ceftriaxone immediately before the procedure with UTI rates of 20% versus 36%, respectively; however, this may be less generalizable because oral regimens are more commonly used.[38] Martin et al[25] studied 290 patients retrospectively undergoing intradetrusor onabotulinumtoxinA injections using all oral regimens with ciprofloxacin, trimethoprim-sulfamethoxazole, nitrofurantoin, and cephalexin. The study did not show statistical difference in UTI rates with either choice of oral antibiotic or frequency of dosage. Both Martin et al and our study used only oral regimens, which may explain similar rates of UTI (11.4% vs our overall 12.9%). Ciprofloxacin was the primary antibiotic studied and may not be as relevant given that fluoroquinolones are considered secondary treatment for UTI because of high resistance (up to 85.5%) and adverse effects, including tendinopathies, peripheral neuropathy, and central nervous system effects.[39,40] The study by Eckhardt et al[24] concluded that no route of administration (intravenous vs oral vs combined) was superior at preventing UTI. Although administering intravenous antibiotics may theoretically increase the tissue concentration of antibiotics throughout the procedure, this did not seem to decrease the risk of UTI in the 2 described studies using parenteral antibiotics, as both rates were higher than this study and Martin et al using oral antibiotic regimens.[23,24,41,42] These collective findings would suggest that oral antibiotic regimens are at least comparable to parenteral administration for this particular procedure.

It is important to emphasize that the length of time used to define our postprocedure UTIs affects our incidence of UTI compared with previous studies. The overall incidence of UTI in our population was 12.9%, on the lower end of the range of results from prior

TABLE 3. Risk of Urinary Tract Infection by Antibiotic Regimen*

		Unadjusted				Adjusted for Age and Race			
			95% CI for OR				95% CI for OR		
Outcome	Antibiotic Regimen	OR	Lower	Upper	*P*	OR	Lower	Upper	*P*
UTI within 30 d†	3-d nitrofurantoin 100 mg BID	(ref)				(ref)			
	5-d nitrofurantoin 100 mg BID	2.22	0.89	5.56	0.09	2.50	0.98	6.37	0.06
	3-d TMP-SMX DS BID	0.69	0.22	2.13	0.52	0.75	0.24	2.36	0.63
	Other regimens	2.98	1.21	7.34	0.02	2.68	1.06	6.74	0.04
Culture-proven UTI within 30 d	3-d nitrofurantoin 100 mg BID	(ref)				(ref)			
	5-d nitrofurantoin 100 mg BID	1.81	0.61	5.41	0.29	1.99	0.66	6.06	0.22
	3-d TMP-SMX DS BID	0.47	0.10	2.17	0.34	0.50	0.11	2.32	0.38
	Other regimens	3.65	1.38	9.63	0.01	3.19	1.18	8.62	0.02
Treated empirically for UTI within 30 d	3-d nitrofurantoin 100 mg BID	(ref)				(ref)			
	5-d nitrofurantoin 100 mg BID	2.15	0.82	5.64	0.12	2.51	0.93	6.76	0.07
	3-d TMP-SMX DS BID	0.79	0.25	2.46	0.68	0.88	0.28	2.81	0.83
	Other regimens	3.40	1.36	8.49	0.01	2.94	1.15	7.55	0.02

*The table shows unadjusted and adjusted (for age and race) odds ratios for the primary outcome and 2 secondary outcomes, for each regimen compared with 3-day nitrofurantoin 100 mg BID. Crude and adjusted odds ratios were estimated using binary logistic regression.

†Primary outcome: new-onset lower urinary tract symptoms associated with a positive urine culture result or treatment with antibiotics empirically within 30 days of procedure.

BID, twice daily; CI, confidence interval; DS, double strength; OR, odds ratio; ref, reference; TMP-SMX, trimethoprim-sulfamethoxazole; UTI, urinary tract infection.

studies. Martin et al evaluated UTIs up to 30 days after intradetrusor onabotulinumtoxinA injections with a similar UTI incidence of 11.4%. Eckhardt et al and Bickhaus et al evaluated UTIs out to 90 days with reported incidences of 30% and 27%, respectively.[22–25] Thirty days postprocedure likely better reflects the results of prophylactic antibiotics given during or immediately after the procedure, as they are unlikely to influence UTI rates as far out as 90 days after the procedure.

Urinary retention is often thought to increase the rate of UTI after intradetrusor onabotulinumtoxinA injections. This study showed a urinary retention rate of 1.97%, which is on the lower end of the broad range of prior reported studies demonstrating urinary retention rates between 0% and 43%.[7] We excluded patients who received 200 units of onabotulinumtoxinA because this has been shown to have higher rates of urinary retention and possibly UTI, which may also account for our lower overall UTI rate.[12] Our retention rate is in line with the study by Martin et al,[25] where 59.7% of the 290 patients studied received 100 units of onabotulinumtoxinA and reported a urinary retention rate of 4.2%. Both studies defined urinary retention by an elevated postvoid residual volume with a need to provide bladder drainage (ours at 150 mL and Martin et al, unspecified). This may have decreased the overall rate as many patients may have had higher postvoid residual volumes without the need to catheterize, and other studies may have strictly gone by a postvoid residual volume cutoff. Regardless, this study provides further evidence that intradetrusor onabotulinumtoxinA injections in a clinical setting have a comparatively low retention rate requiring catheterization and that our UTI rate was likely not affected significantly by this potential confounder.

The strengths of our study include our large sample size from a racially diverse military population collected from the Military Health System's electronic medical record. This centralized, nationally used system allows us to accurately capture UTI incidence, as any patient who receives a procedure at our facility typically receives all their postprocedure care within this system because of little to no direct patient cost. The 4 categories of antibiotic regimens assessed were selected based on the top 3 most used by the 6 urogynecologists within the division, which improved the study's internal validity. Only objective data points were used for our outcomes to reduce recall and observer bias throughout the retrospective data collection. The investigation team included multiple definitions of UTI to include symptom-based and culture-proven UTI to reduce selection bias as well as increase generalizability.

Our study is limited by its retrospective nature; however, current literature is limited with no randomized controlled trials regarding antibiotic prophylaxis for intradetrusor onabotulinumtoxinA injections. Although demographic and clinical characteristics were similar among our 4 regimen categories, our study was limited to a single academic institution and to an in-office setting. Although adjustments were made in

Simply Stated

The objective of this study was to evaluate both choice and duration of antibiotics given to prevent urinary tract infections (UTIs) at the time of onabotulinumtoxinA bladder injections for treatment of either overactive bladder or painful bladder syndrome. This single-site, retrospective cohort study evaluated 305 patients from 2019 to 2023 who were given different prophylactic antibiotic regimens after intradetrusor injection of 100 units of onabotulinumtoxinA in the office. Of the 4 different antibiotic regimens studied, the 3-day nitrofurantoin 100 mg twice daily and 3-day trimethoprim-sulfamethoxazole 160 mg/800 mg twice daily regimens had the lowest incidence of UTI, at 10.4% and 7.4%, respectively. Oral nitrofurantoin and double-strength trimethoprim-sulfamethoxazole for 3 days started on the day of the procedure showed decreased odds of UTI over the longer 5-day course of nitrofurantoin, also given twice daily. Although differences among the primary regimens were substantial, they were not statistically significant. The incidence of UTI did not vary significantly with age, race, or active-duty status. The shorter duration should be considered for prophylaxis if using an oral, multiday regimen. The overall urinary retention rate after the procedure was 1.97%.

our analysis based on age and race, other potential confounders such as hormone status, estrogen use, history of retention, diabetes, and kidney disease were not included in the analysis. Although alterations in the number of injections could theoretically affect UTI rates, results from DiCarlo-Meacham et al[43] showed no difference in UTI rates or need for catheterization between 5 and 20 injection sites. Given our division's prescribing patterns, we were also unable to assess once daily dosages as well as pretreatment or posttreatment initiation of antibiotics for prophylaxis, which may affect UTI rates.

Our study emphasized that postprocedure prophylactic antibiotic choice and duration can potentially affect UTI incidence after in-office, intradetrusor onabotulinumtoxinA injections. Although not statistically significant, oral 3-day nitrofurantoin and 3-day trimethoprim-sulfamethoxazole given after the procedure showed decreased incidence of UTI over the longer 5-day nitrofurantoin regimen. Shorter antibiotic duration should be considered for prophylaxis if using an oral, multidose regimen in accordance with good antibiotic stewardship. In addition, factors such as local antibiogram and a patient's prior urine culture and susceptibilities should be used in selecting an appropriate patient-tailored prophylactic antibiotic regimen. Further prospective, randomized trials comparing oral, single versus multidose, regimens as well as timing of administration could improve antibiotic stewardship and further determine antibiotic prophylaxis superiority at the time of intradetrusor onabotulinumtoxinA injections.

ARTICLE INFORMATION

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The authors have no sources of support that require acknowledgment.

The authors have declared they have no conflicts of interest.

The editors wish to thank Emily Slopnick, Tajnoos Yazdany, and Tatiana V. D. Sanses for their contribution to the review of this article.

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