Podium Session 2: Functional Urology, Pediatric Urology, Other
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POD 2.1

The impact of anticholinergic overactive bladder medications on dementia risk in younger people

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Introduction: Overactive bladder (OAB) is commonly treated with anticholinergic medications, but concerns about their long-term cognitive effects, particularly dementia, have emerged. While the link between anticholinergics and dementia has been studied in older populations, evidence for younger individuals is limited. This study examined whether OAB anticholinergics are associated with new-onset dementia in individuals under 65, compared to beta-3 agonists.

Methods: A retrospective, propensity-weighted cohort study was conducted using Ontario, Canada population-based data. New users of OAB anticholinergics (oxybutynin, solifenacin, tolterodine, trospium, darifenacin, propiverine, fesoterodine) or beta-3 agonist (mirabegron) were identified through the Ontario Drug Benefit database. Patients aged 18–64 without pre-existing dementia were included. Propensity score weighting balanced baseline characteristics. Dementia incidence, defined via validated administrative data, was analyzed using a Fine-Gray sub-distribution hazard model adjusted for age and sex.

Results: Among 57 975 patients (48 454 anticholinergic, 9521 beta-3 agonist), the median followup was 5.9 years. Dementia occurred at a rate of 7.8/1000 person-years, with a median diagnosis age of 62 (IQR 56–66). After weighting, no significant difference in dementia risk was observed between anticholinergics and beta-3 agonists (HR 0.99, 95% CI 0.86–1.15, p=0.92). Subgroup analysis of patients ≥48 years also showed no significant difference (HR 1.08, 95% CI 0.93–1.25, p=0.33).

Conclusions: The use of OAB anticholinergics was not associated with a significantly increased risk of dementia in individuals under 65 compared to beta-3 agonists. These findings suggest that anticholinergics may remain a viable treatment option for younger patients without an increased cognitive risk. Further research is needed to confirm these findings and explore potential cognitive risks of OAB medications in different age cohorts and populations.

POD 2.2

Gender disparities in billing practices: Evidence from urologists in a single-payer system

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Introduction: There is a well-documented earnings gap between male and female physicians, even for hourly surgical billing in fee-for-service setting like the Ontario Health Insurance Plan (OHIP). We investigated whether differences in billing behavior help explain this gap among urologists in Ontario.

Methods: We used a cross-sectional, population-based design and administrative OHIP billing records on urologists with claims from 2010–2018. Prior evidence suggests possible gender bias in referrals. As such, we identified six scenarios of billing-consequential intraoperative decisions largely unaffected by referral bias. For each, we compare the likelihood of billing the more lucrative codes. Using logistic regression, we estimated the odds ratio, controlling for patient and surgeon characteristics, as well as year and hospital fixed effects.

Results: Our study included 313 urologists (23 females and 290 males). Consistent with earlier studies, we confirmed the existence of an hourly surgical billing gap ($55.87, p<0.001). We analyzed six pairs of common billing patterns where one is

POD 2.2. Table 1. Pairs of fee code combinations

		No. obs.	% more lucrative	
			Female	Male
1.	Excision of single tumor over 2 cm (Z633, $437.20) or multiple tumors (Z634, $437.20) compared to excision of single tumor 1–2 cm (Z632, $271.35)	100 751	0.848	0.876
2.	Ureteroscopy to upper third of ureter or renal pelvis (E822, $37.70) during ureteroscopy (Z628, $125.65)	123 583	0.722	0.652
3.	Nephroscopy (Z626, $95.95) during ureteroscopy (Z628, $125.65)	123 583	0.376	0.466
4.	During ureteroscopy (Z628), placement of ureteric stent past obstructing lesion (E773, $49.90) compared to insertion of ureteric stent (E818, $24.90)	86 077	0.360	0.499
5.	Cystolitholapaxy (S521, $260.85) during transurethral resection of prostate (TURP) (S655, $450.60)	79 242	0.055	0.075
6.	Resection or incision of bladder neck (E787, $260.40) during TURP (S655, $450.60)	79 242	0.023	0.053

POD 2.2. Table 2. Main results

		Female OR more lucrative procedure
All pairs jointly		0.658*** [0.631, 0.688]
1.	Bladder tumor excision	0.564***
2.	Ureteroscopy to upper third of ureter or renal pelvis	0.602
3.	Nephroscopy during ureteroscopy	0.442***
4.	Stent past obstructing lesion	0.150***
5.	Cystolitholapaxy during TURP	0.732
6.	Bladder neck incision during TURP	0.110***

Note: This table presents the odds ratio for a female urologist billing the more lucrative combination of codes, controlling for the urologist's graduation year, characteristics of patients (Charlson comorbidities index, gender, age category, BMI >40, and ASA levels), and year and hospital fixed effects. 95% confidence intervals are in brackets. *p<0.10, **p<0.05, ***p<0.01.

more lucrative than the other (Table 1). For the full sample, females were less likely to bill the better-remunerated combination (OR 0.658, p<0.001). Analyzing each pair separately, we found that the OR is <1 for all six pairs, with four statistically significant (Table 2).

Conclusions: While referral bias has been the leading explanation for the hourly earnings gap, our study uncovers an additional factor: billing behavior. By focusing on intraoperative decisions unaffected by referral bias, it demonstrates that billing practices contribute to this gap among urologists. These gender-based disparities may also have implications for patient care and the overall functioning of the health system, underscoring the need for further analysis not only within urology but in other surgical specialties as well.

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POD 2.3

The interpretability of the neurogenic Bladder Symptom Score

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Introduction: Over the past 10 years, the Neurogenic Bladder Symptom Score (NBSS) has been used to evaluate urinary symptom burden in people with neurologic disease. It has been validated in multiple datasets and translated into 10 languages. The objective of this project was to improve the interpretability of the score by defining mild, moderate, and severe symptom categories.

Methods: We used existing datasets from the original NBSS validation study (n=230 patients with spinal cord injury [SCI], multiple sclerosis [MS], and spina bifida), and a large cross-sectional study of people with SCI (n=1479) who completed the NBSS. We used the previously validated categories of the ICIQ-UI, IPSS, and the SCI-QOL bladder complications scale to define patients with mild, moderate, or severe symptoms, and mapped these to the NBSS scores for the related NBSS domains of incontinence, storage/voiding, and consequences, respectively. We validated the newly created NBSS score categories using the global problem rating, duration/type of multiple sclerosis (MS), and self-reported hospitalization for urinary infection. ANOVA was used to test for significant differences between NBSS domain scores based on the patient categorization from the external questionnaires. A p-value <0.05 was considered significant.

Results: The NBSS domain scores all had significant moderate to strong correlations with their respective external questionnaire (ICIQ-UI, IPSS, and SCI-QOL bladder complications). The 25th and 75th percentile of the relevant NBSS domain score for people who simultaneously scored in the 'moderate' category of the ICIQ-UI, IPSS, and SCI-QOL bladder complications were obtained. The resulting NBSS incontinence score categories of 0–16 (mild), 17–22 (moderate), and 23–29 (severe) were each significantly different from each other. Similar results were found for the NBSS storage/voiding score categories of 0–12, 13–16, and 17–22 with the IPSS total score, and the NBSS consequences categories 0–4, 5–9, and 10–23 with the SCI-QOL bladder complications scale. The NBSS incontinence and storage/voiding categories were both significantly associated with the global bladder problem rating but not significantly associated with the duration/type of MS, or whether the patient had a urologist. The NBSS consequences categories were significantly associated with the SCI-QOL bladder management difficulties score, the SF12 physical and mental scores, the incidence of UTIs, as well as the incidence of hospitalization for UTIs. When comparing SCI and MS patients, both the NBSS incontinence and storage/voiding categories continued to demonstrate a significant association with the global problem score for the MS subgroup. The NBSS incontinence categories — but not the NBSS storage/voiding categories — were significantly associated with the global problem score for the SCI subgroup.

Conclusions: Using the domain-specific ranges derived above, we propose NBSS total score cutoffs of ≤32 (mild), 33–47 (moderate), and ≥47 (severe) as a way to conceptualize the symptom burden of patients with a neurologic disease with urinary impact. It is important to also look at the individual subscale cutoffs when interpreting the total NBSS score.

POD 2.4

Evaluating the impact of urologic intervention among pediatric patients with spina bifida

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Introduction: Patients with spina bifida (SB) are at higher risk for renal failure; however, population-level patterns of renal morbidity and the role of urologic interventions are poorly understood, despite being critical for informed care decisions. By virtue of a large pediatric cohort, this study aimed to determine the incidence of chronic kidney disease (CKD) and the role of urologic intervention among SB patients.

Methods: We performed a retrospective cohort study using population-based databases of all individuals born in Ontario, Canada, between April 1992 and March 2023, and identified those with SB. Patients were followed until August 2023, death, or termination of health insurance. The primary outcome was the incidence of CKD compared to age-matched controls. Secondarily, we conducted an adjusted hazard ratio model to identify the impact of urologic interventions on end-stage renal disease (ESRD).

Results: A total of 4 394 457 individuals were included: 12 896 (0.3%) with SB and 4 381 561 (99.7%) without. The mean age of enrollment for SB patients was 4.82 (SD±6.42) and the median followup was 15 years (IQR 7–23). The CKD incidence rate was 2.68 (95% CI 2.46–2.91) and 0.30 (95% CI 0.30–0.31) per 1000 person-years for SB patients and non-SB patients, respectively. A total of 1144 (8.9%) of SB patients underwent urologic intervention (catheterization, Botox, sphincterotomy, diversion, augment, re-implant, nephrectomy, and/or cystectomy). Sixty patients with SB developed ESRD, on average 5.6 years following the onset of CKD. SB patients who had urologic intervention prior to CKD were less likely to develop ESRD (HR 0.72, 95% CI 0.44–1.18), as were those with a chronic catheter (HR 0.88, 95% CI 0.37–2.07).

Conclusions: Pediatric patients with SB are significantly more likely to develop CKD compared to their age-matched counterparts. There appears to be an important role for early urologic intervention to mitigate development of ESRD, signalling a critical need to invest in preventative pediatric urologic care.

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POD 2.5

Utility of primary care physicians in a urology men's health clinic

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Introduction: Urology clinics may receive referrals for clinical issues that do not require surgical specialist management. Additionally, with the ongoing expansion of therapeutic options in men's health, referring family medicine physicians may not be aware of all potential treatments. Delayed time from referral to specialist consultation represents a significant issue in Canadian healthcare. We aim to assess whether men's health-trained primary care providers (PCPs) with foundational training in men's health working within a urology clinic can address common urologic referrals and reduce the need for specialist management.

Methods: A retrospective chart review was performed involving all patients referred by personal PCPs to urology who were screened by a urologist as appropriate for initial consultation by a PCP at a multidisciplinary men's health clinic from January 2022 to April 2023 in Winnipeg, Canada. Patient demographics, medical concerns, management, referral to treatment time, and need for urologist followup were captured. There were no inclusion or exclusion criteria.

Results: A total of 654 patients were identified. Treatment data for all were collected: 556 patients (85%) were managed by an in-house PCP alone and 98 (15%) required urologist consultation following PCP assessment. Figure 1 depicts issues seen by PCP following urologist triage. Figure 2 indicates issues with subsequent urologist referral. In an analysis of treatment by primary referral medical concern, 100% of low testosterone, 87% of erectile dysfunction, and 17% of orchialgia cases were managed at the PCP level alone and did not require urologic surgeon assessment.

Conclusions: PCPs in a multidisciplinary clinic can provide care for a range of urologic issues that are commonly referred to urology clinics. This study demonstrates the utility of PCPs in the optimization of the urology consultation process. Presenting issues may be predictive of the need for subsequent urologist management and guide multidisciplinary clinic triage.

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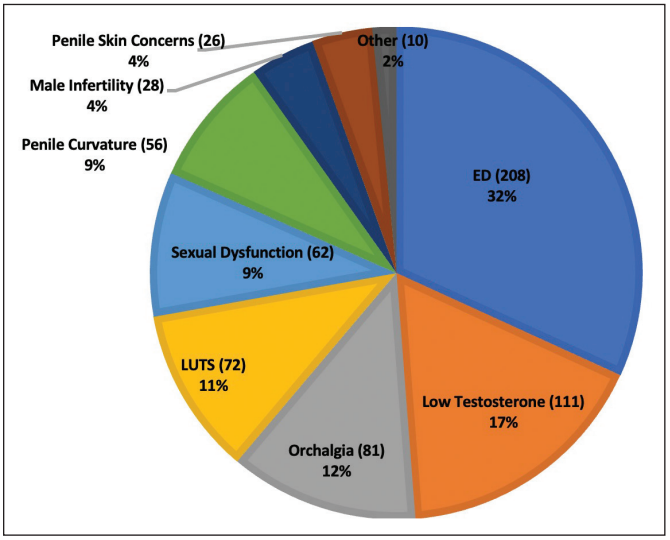
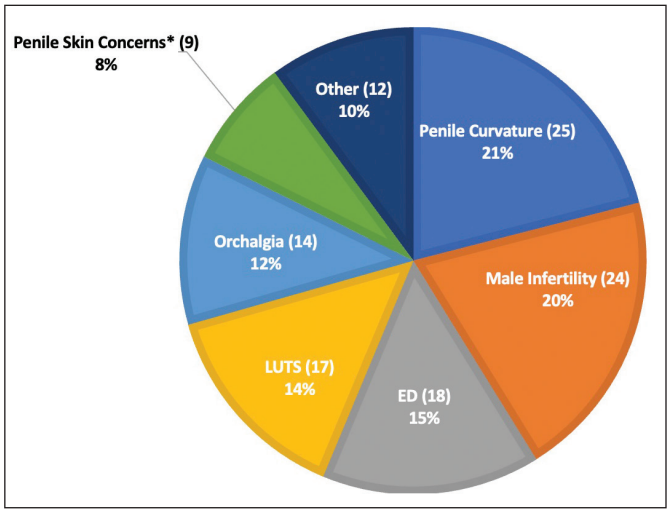


POD 2.5. Figure 1. Initial clinical issues seen for consultation by PCP. *Including penile skin color changes, phimosis, frenulum breve, and penile skin concerns NOS.



POD 2.5. Figure 2. Clinical issues in patients requiring subsequent treatment by urologists. *Including penile skin color changes, phimosis, frenulum breve, and penile skin concerns NOS.

POD 2.6

Assessing the role of inhaled methoxyflurane as an adjunct to local anesthesia in scrotal urologic surgeries: A randomized controlled trial

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Introduction: Local anesthesia (LA) is commonly employed in outpatient urologic surgeries to minimize risks and enhance accessibility. Despite its benefits, factors such as patient anxiety, needle phobia, and procedural discomfort can limit its effectiveness. Methoxyflurane, a short-acting inhaled anesthetic, has shown promise in mitigating pain and anxiety across diverse medical settings, positioning it as a potential adjunct to LA in scrotal surgeries.

Methods: This single-center, randomized controlled trial investigated the efficacy of combining inhaled methoxyflurane with LA compared to LA alone in patients undergoing scrotal surgeries, such as hydrocelectomy, spermatocelectomy, and epididymectomy. A total of 40 patients were randomized into two groups: the control group received only LA, while the experimental group was treated with both LA and methoxyflurane. Postoperative pain and anxiety levels were measured using the Visual Analog Scale (VAS) and a six-question short form of the State-Trait Anxiety Inventory (STAI). Statistical analyses included descriptive statistics and the Mann-Whitney U test to evaluate differences in pain and anxiety outcomes between the groups.

Results: Table 1 summarizes the demographic characteristics of both groups. Among the 40 participants, 20 were administered LA combined with methoxyflurane, while the remaining 20 received LA alone. Patients in the methoxyflurane group reported lower procedural pain (mean score: 1.35 vs. 1.65, p=0.33) and significantly reduced anxiety levels (mean score: 0.4 vs. 1.65, p=0.01). This group also experienced less peak intraoperative pain (mean score: 1.1 vs. 3.1, p=0.03). Importantly, all patients, irrespective of group, strongly preferred LA with or without methoxyflurane in future procedures (100%). No intraoperative complications were observed in either group.

Conclusions: The findings indicate that methoxyflurane, when combined with LA, can effectively reduce intraoperative pain and anxiety during scrotal surgeries. This approach can also potentially improve patient experience in outpatient urologic procedures. Further research with larger sample sizes is necessary to validate these findings and assess the long-term safety of methoxyflurane in this context.

POD 2.6. Table 1. Demographic characteristics of control group (LA only) vs. experimental group (LA + methoxyflurane)

Parameter	Local Anesthesia Only (Mean)	Local Anesthesia + Inhaled Methoxyflurane (Mean)	p-value
Age	56.5	56.9	p = 0.74
Charlson Comorbidity Index	0.75	1	p = 0.3
Baseline Anxiety (Short Form STAI)	9.7	10.8	p = 0.32
Baseline Pain	1.2	1.6	p = 0.88