



# **Department of Urology Research Day 2024**

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# Keynote Speaker

## Dr. Anne Pelletier Cameron



Anne P. Cameron, MD, FRCSC, FPMRS is the James Montie Legacy Professor of Urology, Vice Chair and Service Chief for the Department of Urology at the University of Michigan. After completing her medical degree at the University of Ottawa and residency in Urology at Dalhousie University, she came to the University of Michigan for a fellowship in Female Pelvic Medicine and Reconstruction. Dr. Cameron is active with the Society of Women in Urology serving as their past President and active with the AUA serving as the new Chair for to OAB Guideline Committee. Dr. Cameron has also been very active with SUFU serving as their current secretary/treasurer and is their journal Neurourology and Urodynamics' Deputy Editor in Chief.

# Research Day Program: April 9

**Keynote Presentation by Dr. Pelletier Cameron**  
Neurogenic lower urinary tract dysfunction

Location:  
Weather Watch Room  
5<sup>th</sup> Floor, Dickson Building  
4:30-5:30 pm

Learning objectives:

At the end of this session, participants will be able to understand novel techniques to aid in the management of patients with neurogenic bladder.

Zoom Information:

<https://us02web.zoom.us/j/83746710640?pwd=VnlUaElsM3VHTFlzbVMxUitabFBJUT09>

Meeting ID: 837 4671 0640

Passcode: 197253

# Research Day Program: April 10

Location:  
Weather Watch Room  
5<sup>th</sup> Floor, Dickson Building  
7:30am-1:30pm

## Objectives

1. Upon completion of the conference, participants should be able to review antibiotic stewardship in the management of complex urinary tract infections in patients with neurogenic bladder.
2. At the end of this session, participants will be able to understand tips and tricks to advance an academic career through meaningful leadership positions.

## Zoom:

<https://us02web.zoom.us/j/81167580707?pwd=b3FycFdyVDNVaE1uR2xwQ3M5QmJBdz09>

Meeting ID: 811 6758 0707

Passcode: 045499

Welcome Reception: 7:30-8:00am		
Time	Presenter's Name	Presentation Title
8:00-8:50	Dr. Anne Pelletier Cameron	View from Above--How to find a place in national leadership
<b>8:50-9:00</b>		<b>Q&amp;A</b>
9:00-9:10	Dr. Wyatt MacNevin	Pediatric Testicular Torsion Management Practices: A Survey of Canadian Urologists
9:12-9:22	Cameryn Evans	Barriers to fertility preservation amongst transgender patients in Nova Scotia
9:24-9:34	Dr. Emily Chedrawe	Rates of fertility preservation access in Nova Scotia amongst males with cancer.
9:36-9:46	Dr. Martha Foley	Impact of the Prostate Cancer Empower Program (PC-PEP) on Quality-Adjusted Life Years (QALYs): A Secondary Analysis of a Randomized Clinical Trial
9:48-9:58	Dr. Wyatt MacNevin	Development of a Novel Low-Dose Computed Tomography Protocol for Pediatric Urolithiasis Assessment
10:00-10:10	Dr. Kieran Moore	Urologic Monitoring in Spina Bifida Patients Over 40 Years of Age
10:12-10:22	Nick Dawe	Institutional Analysis and Comparison of Laparoscopic Vascular Hitch and Dismembered Pyeloplasty in Pediatric Patients with Ureteropelvic Junction Obstruction
10:24-10:34	Dr. Liam Power	Increasing medical complexity of urologic inpatients over time: a comparative retrospective chart review
<b>10:34-10:44</b>		<b>Break</b>

<b>Time</b>	<b>Presenter's Name</b>	<b>Presentation Title</b>
10:44-10:54	Dr. Jesse Spooner	Natural history of patients with regional lymph node positive renal cell carcinoma: Results from the Canadian Kidney Cancer Collaboration
10:56-11:06	Dr. Budoor Salman	TURP and AEEP Postoperative Outcomes
11:08-11:18	Dr. Charlie Gillis	The natural history of node-positive bladder cancer in a multi-institutional Canadian cohort
11:20-11:22	Dr. Charlie Gillis	The comprehensive 6-month Prostate Cancer-Patient Empowerment Program (PC-PEP) improves urinary function among men with prostate cancer: Preliminary Results of a Phase 4 Pan-Canadian and International Implementation Trial
11:24-11:34	Dr. Kieran Moore	The risk of infertility in Wilms' tumor survivors: a Canadian national population-based study
12:36-12:46	Dr. Liam Power	A Canadian first: Spermatogenic recovery following bilateral orchidopexies for undescended testicles
12:50-1:00		<b>Break</b>
<b>1:00-1:30</b>		<b>Awards and Closing</b>

# Abstracts

## Pediatric Testicular Torsion Management Practices: A Survey of Canadian Urologists

Wyatt MacNevin<sup>1</sup>, Morgan MacDonald<sup>1</sup>, Dawn L. MacLellan<sup>1,2</sup>, Daniel T. Keefe<sup>1,2</sup>

<sup>1</sup>Department of Urology, Queen Elizabeth II Health Sciences Centre, Halifax, NS, Canada.

<sup>2</sup>Division of Pediatric Urology, IWK Health Centre, Halifax, Nova Scotia, Canada

### **Purpose:**

Pediatric testicular torsion (TT) is a urological emergency which may result in testicular loss if left untreated. Testicular salvage is dependent on prompt intervention, and thus delays in diagnosis and management may threaten testicular viability. Knowledge of real-world Canadian practice patterns for pediatric TT, will allow optimization of practices based on resource availability and geographical limitations to improve care.

### **Materials and Methods:**

An electronic survey on pediatric TT management was distributed to Canadian urologists. Descriptive statistics were performed on respondent demographic factors, hospital policies and barriers to care, surgical approaches, and transfer practices. Respondent practice patterns were analyzed based on geographical location and training.

### **Results:**

Thirty four urologists responded with the majority of respondents operating a community practice. Ultrasonography (US) was frequently utilized to support TT diagnosis. Despite this, poor US access was often cited as a barrier to care with particular impact on rural urologists. Neonatal patients and patients less than 10 years old were commonly transferred to a pediatric hospital for definitive management due to surgeon discomfort and hospital policies. Reported transport methods commonly included use of the patient's own vehicle or ambulance based on availability and timing.

### **Conclusions:**

Neonatal patients and patients under 10 years old are most commonly reported to be transferred to pediatric hospitals for TT management. Patients located in rural locations and at centres with limited US access may be at risk for delayed diagnosis and treatment. Pathways for prompt management of suspected TT may better serve these younger pediatric patients.

## Barriers to fertility preservation amongst transgender patients in Nova Scotia

Cameryn Evans<sup>1</sup>, Renda Bouzayen<sup>3</sup>, Jesse Ory<sup>2</sup>

<sup>1</sup>Faculty of Medicine, Dalhousie University, <sup>2</sup>Department of Urology, Dalhousie University, <sup>3</sup>Department of Obstetrics and Gynecology, Dalhousie University

### Purpose:

Transgender/Non-Binary (TGNB) individuals represent a growing part of the population. Gender-affirming care significantly improves outcomes for TGNB individuals, but gender-affirming hormone therapies (GAH) carry a notable and potentially irreversible risk to fertility. Cryopreservation offers a way to preserve fertility before initiating GAH. The objective of our study was to investigate fertility preservation trends amongst TGNB patients in Nova Scotia.

### Materials and Methods:

Atlantic Assisted Reproductive Therapies (AART) in Halifax is the sole provider of fertility preservation services in Nova Scotia. We conducted a retrospective chart review to identify all individuals who underwent gamete cryopreservation between 2017 and 2023 at AART. We collected demographic data, referral information, reasons for cryopreservation, and semen analysis results. Individuals who cryopreserved for IVF were excluded. Total motile sperm counts (TMSC) were calculated from semen analyses.

### Results:

Our analysis identified a total of 33 individuals. Of these, 31 patients were assigned male at birth (AMAB) (average age = 24.7, IQR = 27.0 – 20.0) and 2 patients were assigned female at birth (AFAB). The rate of cryopreservation among this population has been increasing, with 11 freezing in 2023 (Figure 1). The average time from referral to cryopreservation was 194.9 days (range = 8 – 450). Of those AMAB, 22 were hormone naïve (average TMSC = 182.4, IQR = 221.8 – 78.0), 7 had some history of GAH (average TMSC = 143.2, IQR = 212.3 – 0), and 2 were actively taking GAH at the time of cryopreservation (average TMSC = 123.7) (Figure 2).

### Conclusions:

The number of TGNB individuals is rising yet many barriers to fertility preservation persist for this group. Delaying gender-affirming therapies and cryopreservation can contribute to gender dysphoria and reduced quality of life. Likewise, sperm counts may be reduced if GAH begins prior to cryopreservation. Reducing wait times for these services will enhance healthcare equity and potentially improve the well-being of this underserved population.



## **Rates of fertility preservation access in Nova Scotia amongst males with cancer.**

Emily R. Chedrawe<sup>1</sup>, Cameryn Evans<sup>2</sup>, Renda Bouzayen<sup>3</sup>, Jesse Ory<sup>1</sup>

<sup>1</sup>Department of Urology, Dalhousie University, Halifax, NS, <sup>2</sup>Department of Medicine, Dalhousie University, Halifax, NS, <sup>3</sup>Department of Obstetrics and Gynecology, Dalhousie University

### **Purpose:**

Cancer, as well as its treatment, can represent a significant threat to fertility. Numerous cancer organizations reinforce the importance of discussing this with patients at the time of diagnosis, encouraging cryopreservation of gametes when appropriate. In Nova Scotia, all gamete cryopreservation is performed at one center (AART). The aim of our study is to better understand the impact of cancer, prior to treatment, on sperm quality. We also seek to understand the current use of cryopreservation in men with cancer in Nova Scotia.

### **Materials and Methods:**

A retrospective chart review of all cryopreserved sperm frozen at AART (Atlantic Assisted Reproductive Technology) since 2017 was reviewed. Data was collected for all patients who had cryopreservation for cancer. Non-parametric descriptive statistics were used to determine the type of cancer, treatment modality and its effect on total motile sperm count (TMSC). Mann-Whitney U test was used to compare groups.

### **Results:**

A total of 112 patients with cancer who had not yet undergone treatment were identified with a median age of 25 (IQR 17-33). The median time from referral to cryotherapy preservation was 5 days (IQR 1-7). Sixty-two patients had solid organ cancers, with the most common cancer being testicular (n=22), compared to 46 patients with hematologic cancers. There was no significant difference in TMSC between the solid (median 86.4 [IQR 16.8-193.5]) and hematologic (median 54.5 [IQR 5.7-129.9]) cancer groups (Figure 2). Fourteen men who were interested in cryopreservation were unable to freeze sperm due to azoospermia (8 with solid organ, 6 with hematological). A total of 17 (15%) patients had TMSC less than 5 million (10 with hematologic cancer, 7 with solid organ). The number of individuals freezing sperm has been increasing over time (Figure 1).

### **Conclusion:**

Our study characterizes the trends in fertility preservation among Nova Scotian men with a cancer diagnosis. There did not appear to be a difference in TMSC by cancer type. Access to cryopreservation was rapid in most cases. More work is required to bring this fertility-saving option to more individuals in Nova Scotia.

## **Impact of the Prostate Cancer Empower Program (PC-PEP) on Quality-Adjusted Life Years (QALYs): A Secondary Analysis of a Randomized Clinical Trial**

Martha Foley<sup>1</sup>, MD, Gabriela Ilie<sup>1,2,3</sup>, PhD, Ross Mason<sup>1</sup>, MD, Ricardo Rendon<sup>1</sup>, MD, MSc, Greg Bailly<sup>1</sup>, MD, David Bell<sup>1</sup>, MD, Cody MacDonald<sup>3</sup>, MSc, Robert D. H. Rutledge<sup>2</sup>, MD

<sup>1</sup> Department of Urology, Dalhousie University, Halifax, Nova Scotia, Canada, <sup>2</sup> Department of Radiation Oncology, Dalhousie University, Halifax, Nova Scotia, Canada, <sup>3</sup> Department of Community Health and Epidemiology, Dalhousie University, Halifax, Nova Scotia, Canada

### **Purpose:**

The impact of undergoing curative prostate cancer treatment can have an impact on patients' mental and physical wellbeing. The Prostate Cancer-Patient Empowerment Program (PC-PEP) program is an intervention focused on improving quality of life throughout treatment. Short-Form Six-Dimension (SF-6D) is a health utility index can be used as a surrogate marker of mental and physical wellbeing with direct correlation to quality adjusted life years (QALYs). SF-6D is comprised of 6 dimensions of health including: physical functioning, role limitations, social functioning, pain, mental health, and vitality. Our study aims to examine the impact of PC-PEP intervention on early compared to late intervention.

### **Materials and Methods:**

In a randomized trial of 128 men receiving prostate cancer treatment, 66 underwent immediate PC-PEP, whereas 62 entered a delayed waitlist-control group, initially receiving 6 months of standard care before starting PC-PEP, Table 1. Participants completed the SF-6D, a preference-based measure designed to calculate QALY's at baseline, 6-, and 12-months. Analyses were adjusted for Charlson Index, age, time randomization, treatment modality, relationship status, and prescribed medication for mental distress.

### **Results:**

At the start of the trial, QALYs were comparable between the two groups [-0.001 (95%CI: -0.034, 0.032), p=0.9]. QALYs decreased statistically significantly from baseline to 6 months among patients in the standard of care group [-0.037 (95%CI: -0.061, -0.013), p=0.003], but not among patient in the PC-PEP intervention [-0.009 (95% CI: -0.032, 0.015), p=0.5]. At 12 months, the QALYs of patients in the control group was statistically significantly lower than that of the PC-PEP group [-0.037 (95%CI: -0.070, -0.004), p=0.027], Figure 1.

### **Conclusions:**

This underscores the importance of early and proactive quality of life interventions in the management of prostate cancer.

## The natural history of node-positive bladder cancer in a multi-institutional Canadian cohort

Charlie Gillis<sup>1</sup>, Adrian Fairey<sup>2</sup>, Eric Hyndman<sup>3</sup>, Nimira Alimohamed<sup>4</sup>, Jay Nayak<sup>5</sup>, Girish Kulkarni<sup>6</sup>, Peter Chung<sup>7</sup>, Rodney Breau<sup>8</sup>, Jean-Baptiste Lattouf<sup>9</sup>, Michele Lodde<sup>10</sup>, Claudio Jeldres<sup>11</sup>, Raman Agnihotram<sup>12</sup>, Wassim Kassouf<sup>13</sup>, Peter Black<sup>14</sup>, Camilla Tajzler<sup>13</sup>, Ricardo Rendon<sup>1</sup>

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### Introduction:

Node-positive (N+) bladder cancer confers a poor prognosis, with a 5-year overall survival (OS) of 32-36% compared to 60-70% with TanyN0M0 disease. There is relatively limited evidence to guide management options for patients with N+ disease, with multiple treatment modalities often needed during the treatment course. This contemporary analysis of the management of patients with N+ bladder cancer highlights the natural history of this disease with respect to newer treatment modalities and guidelines recommendations.

### Methods:

A retrospective review of the prospectively maintained Canadian Bladder Cancer Information System (CBCIS) was conducted, identifying 290 patients older than 18 years of age diagnosed with clinical TanyN1-3+M0 bladder cancer. Descriptive statistics were obtained. Kaplan-Meier estimates and Cox regression were performed for OS with stratification for nodal involvement and treatment received.

### Results:

Of the 290 patients, T<sub>≥2</sub> disease was present in 76.6%. N1, N2, and N3 staging was found in 49.7%, 34.1%, and 16.2% of patients, respectively. Variant histology and lymphovascular invasion were found in 35% and 33.6% of patients, respectively. CIS was found in 26.6%. For initial treatment, 58 patients (20%) received neoadjuvant chemotherapy (NAC) followed by cystectomy. 94 patients (32.4%) received cystectomy only and 35 patients (12.1%) received radiation. Maximal TURBT with concurrent chemoradiation was performed in 44 patients (15.2%), while the remainder of patients (20.3%) received various other combinations of treatment modalities. Kaplan-Meier OS results are displayed by node status. There was no statistically significant difference in OS found between node status N1, N2, or N3 by Cox regression. On multivariable regression analysis, having N+ disease confers a HR of 1.68 (p = 0.028) for OS. Receiving NAC followed by cystectomy was associated with improved OS with a HR of 0.63 (p = 0.001) compared with cystectomy alone.

### Conclusion:

Node-positive disease confers a worse prognosis for bladder cancer patients, with no difference found in this series between N1, N2, and N3 disease. Patients who received neoadjuvant chemotherapy had improved survival compared to cystectomy alone.

## **Urologic Monitoring in Spina Bifida Patients Over 40 Years of Age**

Kieran J. Moore<sup>1</sup>, Stewart Whelan<sup>1</sup>, Dawn MacLellan<sup>2</sup>, Daniel T. Keefe<sup>2</sup>, Rodrigo LP Romao<sup>2</sup>, Ashley Cox<sup>1</sup>

<sup>1</sup>Department of Urology, Dalhousie University, Halifax, NS, Canada, <sup>2</sup>Division of Pediatric Urology, IWK Health Centre, Halifax, NS, Canada.

### **Purpose**

Spina bifida (SB) is associated with several chronic urological conditions. Advances in treatment and surveillance protocols have increased life expectancy in this population. We describe a unique cohort of adult SB patients to evaluate specific urologic endpoints such as renal function, urinary tract infections (UTI), nephrolithiasis, and adherence to screening protocols in adult SB patients.

### **Materials and Methods**

A retrospective chart review of SB patients over 40 years of age was conducted. Patient visits included a dedicated multidisciplinary SB team at a tertiary academic centre, the regional referral hospital for over 2 million Canadians. Descriptive statistics were used.

### **Results**

Fifty-five patients over 40 years of age were studied. Most patients were female (66%) with a median age of 51 (IQR 47-56). An underlying diagnosis of myelomeningocele (91%) was typical, with 76% having a ventriculoperitoneal shunt. Twenty patients ambulated independently and 53% were independent for all instrumental activities of daily living. Clean intermittent catheterization (CIC) was the most common method of bladder management (51%), while 21 patients (40%) used antimuscarinic medications and 9 received intravesical botulinum toxin injections (16%). Rates of UTI (49%), nephrolithiasis (33%), and chronic kidney disease (CKD, 9%) were reported. Four deaths occurred, of which, three were secondary to urologic causes. Most patients had upper tract imaging (82%) and serum creatinine (84%) measurement within one year of the most recent follow-up. Urodynamic studies (UDS) were completed in 29% of patients within five years.

### **Conclusions**

Adult SB patients over the age of 40 represent a new and growing patient population. Bladder drainage with CIC and antimuscarinics remains common. Preserved renal function was observed with low rates of CKD. However, this population was at increased risk of nephrolithiasis and UTIs. Adherence to screening with serum creatinine and upper tract imaging was high, while periodic UDS seems to be lacking.

# Institutional Analysis and Comparison of Laparoscopic Vascular Hitch and Dismembered Pyeloplasty in Pediatric Patients with Ureteropelvic Junction Obstruction

Nick Dawe<sup>1</sup>, Wyatt MacNevin<sup>1,3</sup>, Emily MacNeil<sup>2,3</sup>, Daniel T. Keefe<sup>1-3</sup>

<sup>1</sup>Faculty of Medicine, Dalhousie University, Halifax, NS; <sup>2</sup>IWK Health Centre, Halifax, NS; <sup>3</sup>Department of Urology, Dalhousie University, Halifax, NS

## **Purpose:**

Ureteropelvic junction obstruction (UPJO) has historically been treated by dismembered pyeloplasty (DP). Emerging evidence demonstrates that vascular hitch (VH) is an alternative surgical technique that can be used to treat UPJO secondary to extrinsic obstruction without concomitant intrinsic obstruction. The VH procedure has produced similar success rates, shorter hospital length of stay, lower use of stents, and lower opioid use compared to DP. The purpose of this study was to compare outcomes of laparoscopic VH to DP in pediatric patients treated at the IWK Health Centre between 2021 to 2024.

## **Materials and Methods:**

This study included pediatric patients (age 0-18 years) who underwent laparoscopic VH or DP for UPJO at the IWK Health Centre between August 2021 to January 2024. Baseline characteristics [(age, sex, laterality, baseline renal function, anteroposterior diameter (APD) of the renal pelvis)] and outcome measures (operative time, length of stay, opiate administration, ureteral stent/urethral catheter use, postoperative anteroposterior diameter of the renal pelvis, need for secondary anesthetic) were collected. Statistical analysis will follow as data collection is expanded.

## **Results:**

Four patients underwent VH procedure compared to 5 patients receiving DP. The age at time of surgery, follow up duration, and length of stay in hospital was comparable between the groups. No patients in either group returned to the emergency room within 30 days of surgery or underwent reoperation. Improvement in pre- vs post-operative APD was comparable between groups. Use of ureteral stent was reduced in VH group (0%) compared to DP group (100%), with a mean duration of 5.2 weeks. Similarly, post-operative urethral catheter was reduced in the VH group (0%) compared to DP group (60%); mean catheter duration was 18 hours. Procedure time was shorter by a mean of 32.5 minutes for VH compared to DP (197.5 minutes vs. 230 minutes). Patients were more likely to be administered opioids after undergoing DP than VH (60% vs 25%), and of patients administered opioids post-operatively, more doses on average were administered to patients who underwent DP than VH (2.66 doses vs. 1 dose). 100% of patients with DP required a second anesthetic procedure to remove the ureteral stent compared to 0% of VH patients.

## **Conclusions:**

Our institutional findings support that laparoscopic VH is a feasible alternative to DP to treat UPJO secondary to extrinsic obstruction by a crossing vessel without concomitant intrinsic obstruction in pediatric patients. Our findings are consistent with published literature that has demonstrated VH to be associated with less pain, shorter procedure duration, comparable outcomes, and reduced use of ureteral stents and urethral catheters. A limitation of this study is the small number of patients, which will be expanded in a prospective database. Long-term outcomes remain to be seen. Our institutional findings will be further validated in a multi-institutional retrospective analysis comparing outcomes of these two surgical techniques.

## **Increasing medical complexity of urologic inpatients over time: a comparative retrospective chart review**

Liam Power<sup>1</sup>, Kaveh Masoumi-Ravandi<sup>2</sup>, Ross Mason<sup>1</sup>, Andrea Lantz Powers<sup>1</sup>, Thomas Skinner<sup>3</sup>,  
Greg Bailly<sup>1</sup>, Ashley Cox<sup>1</sup>

<sup>1</sup>Department of Urology, Dalhousie University, Halifax, Nova Scotia, Canada, <sup>2</sup>Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia, Canada, <sup>3</sup>Department of Urology, Queen's University, Kingston, Ontario, Canada

### **Purpose:**

Medical complexity is increasing in Canada over time. Key markers of medical complexity include the presence of multimorbid chronic disease, polypharmacy, and the involvement of multiple medical specialties in patient care. These factors contribute to increased risk of poor patient outcomes, and increased health care resource utilization. How medical complexity affects urological care is currently not well understood.

### **Materials and Methods:**

We conducted structured retrospective chart reviews of inpatients admitted to the urology service at the QEII Hospital in Halifax, NS, Canada from Sept 2006 to March 2007 and Sept 2019 to March 2020.

### **Results:**

244 structured chart reviews have been conducted to date (Historic, n=103; Recent n=141). Multiple markers of medical complexity were significantly increased in the recent cohort. A significantly higher proportion of the recent cohort came to hospital with existing home supports (11% versus 2%,  $X^2=7.706$ ,  $p=0.006$ ). Patients in the recent cohort had significantly higher odds of having a non-urology specialist service consulted during admission (OR=2.466, 95% CI=1.299-4.683), and significantly lower odds of a simple discharge home (OR=0.376, 95% CI=0.180-0.785). Length of stay did not differ significantly between cohorts (4.46 versus 4.17 days, for recent versus historic,  $p=0.416$ ). When combining cohorts, number of prescription medications, number of hospital admissions in the year prior, and number of chronic diagnoses were found to correlate significantly with length of stay.

### **Conclusions:**

Markers of medical complexity among urological inpatients have increased over time. Inpatient management now requires more interdisciplinary care, and patient disposition is more challenging, with patients being less likely to be discharged directly to home. These results may help to inform resource allocation and provide areas of focus for future research and interventions to improve care for an increasingly complex patient population seen by urologists.

## Natural history of patients with regional lymph node positive renal cell carcinoma: Results from the Canadian Kidney Cancer Collaboration

Jesse TR Spooner<sup>1</sup>, Christopher Bitcon<sup>1</sup>, Wyatt MacNevin<sup>1</sup>, Rodney Breau<sup>2</sup>, Lori Wood<sup>1</sup>, Simon Tanguay<sup>3</sup>, Antonio Finelli<sup>4</sup>, Lucas Dean<sup>5</sup>, Miles Mannas<sup>6</sup>, Jay Nayak<sup>7</sup>, Luke Lavallee<sup>2</sup>, Jean-Baptiste Lattouf<sup>8</sup>, Frédéric Pouliot<sup>9</sup>, Lalani Aly-Khan<sup>10</sup>, Daniel Heng<sup>11</sup>, Naveen Basappa<sup>5</sup>, Bimal Bhindi<sup>11</sup>, Ricardo Rendon<sup>1</sup>

<sup>1</sup>Dalhousie University, Halifax, NS, Canada, <sup>2</sup>University of Ottawa, Ottawa, ON, Canada, <sup>3</sup>McGill University, Montreal, QC, Canada, <sup>4</sup>University of Toronto, Toronto, ON, Canada, <sup>5</sup>University of Alberta, Edmonton, AB, Canada, <sup>6</sup>University of British Columbia, Vancouver, BC, Canada, <sup>7</sup>University of Manitoba, Winnipeg, MB, Canada, <sup>8</sup>University of Montreal, Montreal, QC, Canada, <sup>9</sup>Laval University, Quebec City, QC, Canada, <sup>10</sup>McMaster University, Hamilton, ON, Canada, <sup>11</sup>University of Calgary, Calgary, AB, Canada

### Introduction:

The presence of lymph nodes (LN) in renal cell carcinoma (RCC) is a known poor prognostic factor. The natural history of pT(1-4)N1M0 renal cell carcinoma has been difficult to study due to low sample sizes. For instance, a large, multi-institutional, prospective trial (EORTC 30881) had only 4% pN1M0 patients in their analysis of patients undergoing radical nephrectomy with and without LN dissection.<sup>1</sup> This study aimed to analyze the natural history of patients with pN1M0 RCC using a multi-institutional Canadian cohort.

### Methods:

The Canadian Kidney Cancer information system (CKCis), a multi-institutional, prospective cohort database, was used to identify patients with pT(1-4)N1M0 disease since January 2011. Patients underwent surgical resection (partial or radical nephrectomy) with or without formal retroperitoneal lymph node dissection (RPLND). Primary outcomes included overall recurrence-free survival (RFS), cancer-specific survival (CSS), and overall survival (OS).

### Results:

Of 10 641 cM0 surgical RCC patients, 113 (1.1%) patients had pT(1-4)pN1M0 disease (64.42% with clear-cell histology, 5.77% with chromophobe, 27.89% with papillary, and 1.92% with clear-cell papillary histology), with a median followup of 3.1 years (IQR 1.2–6). Mean (SD) age was 63 (+12) years and 69% (n=78) were male. Of the 113 pN1 patients, 37 (35.58%) had clinical adenopathy on preoperative images. Pathologic stages T1/T2 were seen in 12 patients (10.71%), and 100 patients (89.29%) had pT3/T4 disease. Grade 3/4 RCC was observed in 94 patients (88.68%). Tumor necrosis of the primary lesion was seen in 78 patients (69.64%). Disease recurrence was identified in 76.99% (n=87) of patients, with a median time to recurrence of 4.8 months (IQR 3.6–7.2). Almost half (49.4%) had non-LN distant metastases, 20.7% had LN-only metastases, 18.4% had both local and distant non-LN metastases, and 11.5% had only local metastases. The median OS was 4.4 years (IQR 3.4–6.5) and the median CSS was 5.5 years (IQR 3.8–non-estimable).

### Conclusions:

This study highlights the unfavorable natural history of patients with renal cell carcinoma pT(1-4)N1M0 in a contemporary Canadian cohort. The results are particularly important in the era of adjuvant and salvage use of immune checkpoint inhibitors and highlight the need to closely monitor these patients, as their prognosis is poor with high rates of recurrence within the first year.

## TURP and AEEP Postoperative Outcomes

Budoor Salman<sup>1</sup>, Christi Joyce<sup>2</sup>, Jon Moore<sup>1</sup>, Jesse Ory<sup>1</sup>

<sup>1</sup>Department of Urology, Dalhousie University, Halifax NS, <sup>2</sup>Dalhousie Medical School, Dalhousie University, Halifax NS

### Purpose:

Introduction: Benign prostatic enlargement (BPE) affects Canadian men as the population ages, with resultant lower urinary tract symptoms (LUTS) impacting 50-90% of men beyond the age of 60. Transurethral resection of the prostate (TURP) and Anatomic Endoscopic Enucleation of the Prostate (AEEP) are procedures available for men with LUTS. Our objective was to investigate how AEEP performs compared to TURP in the post-operative period.

### Materials and Methods:

A retrospective chart review was performed comparing AEEP and TURP procedures from 2020 to present at our institution. 2 Surgeons perform all AEEP procedures in our center. 10 Urologists perform TURP at our center. Postoperative PVR measurements were obtained in the immediate post op period and at 3 months. The resection rate was calculated at grams per minute. Student's t-test was used to compare early and 3 month PVR values and the resection rate between groups.

### Results:

40 men underwent AEEP and 36 underwent TURP. 18 and 25 men were in urinary retention pre-operatively in the TURP group and AEEP group, respectively. Median preoperative Qmax and PVR were 6.9 ml/s and 151 ml in the TURP group, and 6 ml/s and 157.5 ml in the AEEP group. In the immediate post operative phase, 86.11% of men in the TURP group and 100% of men in the AEEP group passed their TOV. Mean postoperative PVR was significantly higher in the TURP group compared to AEEP (202.86 ml [95% CI= 134.92-270.80, SD= 168.19], versus 98.93ml [95% CI= 60.16-137.71, SD= 107.55], p=0.006). Mean PVR at 3 months postoperatively showed no statistical significance between the TURP group compared to AEEP ( 61.86 ml [95% CI= 34.86-88.85, SD= 70.97], versus 34 ml [95% CI= 18.48-49.51, SD= 40.77], p=0.72). Average resected prostate weight was 13.45 grams in TURP and 76.56 grams in AEEP. The average resection rate (grams/min) was significantly lower in the TURP group compared to AEEP (0.27 g/min [95% CI 0.22-0.32, SD= 0.15], versus 0.56 g/min [95% CI= 0.49-0.63, SD= 0.209], p <0.001). 15% (6) patients in the AEEP group required takeback surgery within 30 days from their initial surgery compared to 2.8% (1) in the TURP group.

### Conclusions:

AEEP results in higher rates of TOV success and significantly lower PVR values in the immediate postoperative period. There was no significant difference at 3 month PVR measurements between the groups. AEEP had a significantly higher resection rate compared to TURP.



## **Development of a Novel Low-Dose Computed Tomography Protocol for Pediatric Urolithiasis Assessment**

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### **Purpose:**

Computed tomography (CT) is utilized for pediatric urolithiasis assessment in complex cases where ultrasonography is inconclusive. Despite success in the adult population, development and utilization of low-dose CT protocols in pediatric urology is limited. To address this need, a systematic review was conducted to characterize low-dose CT stone protocol use in pediatrics and to aid in the development and implementation of a novel low-dose protocol.

### **Materials and Methods:**

A novel low-dose CT protocol was developed based on systematic review of the literature and expert consultation. Data collection was performed on a pediatric patient cohort who underwent CT stone imaging at a single institution over the past 10 years. Comparative analysis was performed between the retrospective cohort and the prospective cohort who underwent CT stone imaging using the novel low-dose protocol. Patients were matched based on age and body mass index (BMI) to determine percent dose reduction between protocols.

### **Results:**

Radiation exposure ranged from 2.9-5.5 mSv for standard CT stone protocols and 1.0-2.72 mSv for low-dose pediatric CT protocols from systematic review of the literature. At our institution, standard dose protocols delivered radiation exposures of 5.26 mSv for patients < 45 kg and 5.59 mSv for patients > 45 kg. Patients who underwent novel low-dose CT imaging had average radiation exposures of 1.26 mSv (< 45 kg) and 3.43 mSv (> 45 kg). This corresponds to a radiation dose reduction of 76.1% for patients < 45 kg and 38.6% for patients > 45 kg while maintaining diagnostic accuracy.

### **Conclusions:**

Low-dose CT imaging for urolithiasis assessment in the pediatric population is underreported and underutilized, subjecting patients to increased radiation exposure. Through development of a novel low-dose protocol, significant dose reduction was achieved without compromising detection accuracy.

## **The comprehensive 6-month Prostate Cancer-Patient Empowerment Program (PC-PEP) improves urinary function among men with prostate cancer: Preliminary Results of a Phase 4 Pan-Canadian and International Implementation Trial**

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### **Introduction:**

The Prostate Cancer-Patient Empowerment Program (PC-PEP) is effective in improving urinary symptoms for patients undergoing primary treatment for localized prostate cancer. This implementation trial seeks to determine the effects of the PC-PEP intervention in patients who are at various stages in their prostate cancer management.

### **Methods:**

186 men with a variety of treatments for localized and metastatic treatment for prostate cancer were enrolled in the PC-PEP program, an online, comprehensive patient resource comprising physical, mental, and social support. Over six months, daily emails or texts reminded men to follow the program's PFMT videos 3 times per day. Videos included relaxation, quick-twitch and endurance exercises. Patients then completed weekly online compliance surveys. All participants completed the International Prostate Symptom Score (IPSS) questionnaire at baseline and six months.

### **Results:**

On average, the PC-PEP group reported performing PFMT 3.5 times per day (3 times a day was prescribed). Overall, at six months, men who received the PC-PEP intervention had significantly improved IPSS sum score when compared to baseline (mean IPSS difference 1.56 (95% CI 0.52 – 2.60, p=0.003). At 6 months, urinary function was better than baseline among the 107 patients who had received radical prostatectomy (mean IPSS difference 1.94 (95% CI 0.40 – 3.50, p=0.014), and the 73 patients who were treated with radiation (either beam or brachy), mean IPSS difference 1.7 (95% CI 0.31 – 3.09, p=0.017). Men on active surveillance or hormone therapy only, showed comparable urinary function from pre- to post-intervention (p=0.19 and p=0.11, respectively). Among the patients who reported not having had received any treatment yet at baseline, the men who received RP or RT during the 6 months of the intervention reported no improved urinary function, p=0.95 or p=0.27, respectively. Patients who received salvage radiation had better urinary function from baseline to 6 months, mean IPSS difference 4.46 (95% CI 1.80 – 7.13, p<0.002).

### **Conclusion:**

PC-PEP, a comprehensive six-month home-based empowerment program, appears to significantly improve lower urinary tract symptoms in this cohort of prostate cancer patients who are in various stages of disease treatment. In particular, patients who underwent salvage radiotherapy may derive the most benefit. These findings add to our previous RCT Phase 3 results showing that PC-PEP significantly improves urinary function among men with curative disease.

## **The risk of infertility in Wilms' tumor survivors: a Canadian national population-based study**

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### **Purpose:**

Wilms' tumor (WT) carries a high survival rate. Treatment-related gonadotoxicity is perceived as low. We challenge this assumption by reporting on exposure to gonadotoxic treatments in a population-based national cohort of patients with WT.

### **Materials and Methods:**

The following variables were collected for patients with WT from the CYP-C (cancer in young people in Canada) database from 2001 to 2018: sex, age at diagnosis, chemotherapy agents and doses, cancer relapse, and death. Risk of infertility was defined as exposure to at least one of the following three treatments: a cyclophosphamide equivalent dose (CED) greater than 4000 mg/m<sup>2</sup> for males and 6000 mg/m<sup>2</sup> for females, a carboplatin dose greater than 2000mg/m<sup>2</sup>, and whole abdominal irradiation in females (10.8Gy).

### **Results:**

A total of 816 patients were included (53% female; mean age at diagnosis 3.7+/-2.6 years). Of these, 48% were exposed to radiation, 27% to an alkylating agent and 8% to carboplatin therapy. The most common gonadotoxic exposure was to alkylating agents (151/217-70%-received toxic CED) followed by carboplatin chemotherapy (19/65-29%), and abdominal irradiation in females (59/215-27%). Of the 229 gonadotoxic events, 60 occurred in children with relapse (26%), while 53 patients died in the study period. Overall, 88% of WT patients survived after receiving potentially gonadotoxic treatments.

### **Conclusions:**

In a national population-based cohort of patients with WT, 24% were exposed to at least one gonadotoxic treatment placing them at risk for infertility. Survivorship for patients treated with these agents was high. The risk of infertility in children treated for WT may not be as low as previously thought given these exposures. Treatment with alkylating agents posed the highest risk of gonadotoxicity in our cohort. These findings should be discussed during counseling and raise the potential need for fertility preservation interventions.

## **A Canadian first: Spermatogenic recovery following bilateral orchidopexies for undescended testicles**

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### **Purpose:**

Cryptorchidism is a common cause of male infertility, and up to 89% of male adults with untreated bilateral cryptorchidism will be diagnosed with non-obstructive azoospermia (NOA). Treatment of bilateral cryptorchidism in male adults may improve sperm parameters in the absence of other causes of infertility, and subsequently allow for further fertility interventions. To date, 9 cases of spermatogenic recovery following bilateral orchidopexy have been reported internationally.

### **Materials and Methods:**

This is a case series of 2 adult males presenting with bilateral undescended testicles (UDT) and NOA who underwent bilateral orchidopexy. Both patients were evaluated and treated by a urologist with expertise in male fertility and a pediatric urologist in a collaborative manner.

### **Results:**

*Case 1* is a 20-year-old male (46 XY, microdeletion negative) who presented with bilateral UDT. FSH was 6.4 IU/L and T was 11.02 nmol/L, and an initial semen analysis showed azoospermia with a volume of 0.5mL. Semen analysis 15 months post-orchidopexy showed rare (n=3) non-motile spermatozoa on wet mount smear post-centrifugation, indicating cryptozoospermia.

*Case 2* is a 22-year-old male (46 XY, microdeletion negative) who was incidentally found to have bilateral UDT on a CT scan. The testicles were small, and palpable in the inguinal canal bilaterally. FSH was 62.9 IU/L, and T was 18.24nmol/L, and initial semen analysis showed azoospermia with a volume of 2mL. Semen analysis 11 months post-orchidopexy showed 2 motile sperm on wet mount, indicating severe oligospermia.

Both surgeries were done conjointly by a urologist with specialization in male infertility and a pediatric urologist. Post-operatively, testicular volume increased bilaterally in *Case 1*, and remained stable in *Case 2*.

### **Conclusions:**

To our knowledge, these are the first Canadian cases reporting the transition from NOA to cryptozoospermia and severe oligospermia following bilateral orchidopexy in adult males with UDT, adding to the growing, but limited evidence available on this topic. Given the increasing accessibility of reproductive technology, it is critical that cases of reestablishment of spermatogenesis are reported in this population. Performing orchidopexy in this patient population may also have psychosocial benefits and facilitate self-examination in the context of increased risk of testicular malignancy.

# Sponsors

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