

# Moderated Poster Session III: Pediatrics/Voiding Dysfunction

## Thursday, September 29, 2016

### 3:15 – 5:00 pm

#### P35

##### **Blood product utilization pattern in pediatric renal transplantation: A single-institution analysis**

Rakan I. Odeh, Frank J. Penna, Naimet K. Naoum, Teresa Skelton, Armando J. Lorenzo, Walid A. Farhat, Martin A. Koyle  
The Hospital for Sick Children, Toronto, ON, Canada

**Background:** In renal transplantation (RT), there is an inherent lack of evidence-based guidelines to direct the amount and need of cross-matching blood products for surgery. Due to the inherent added costs, limited availability of blood products and potential waste if not used, we aimed to evaluate our practice to identify factors that can lead to standardized policy for blood product utilization in RT.

**Methods:** Retrospective chart review of patients who underwent pediatric RT over a 10-year period at our institution was performed. Variables analyzed included: patient age, weight, pre- and postoperative hemoglobin (Hb), donor source (deceased- or living-donor), estimated allograft size by ultrasound, mean intra-operative blood loss (EBL), erythropoietin, number of units transfused per case, cross-matched/transfusion (C:T) ratio, overall transfusion rate, type of dialysis and the total cost of unused cross matched units.

**Results:** RT was performed in 188 patients during the study period. Males represented 59.5% (n=112) and females, 40.5% (n=76). Of these, 54% (103/188) received blood transfusions. The total number of units cross-matched was 455 (2.3 units/patient). Average EBL was 212 mL, and C:T ratio was 2.6:1. Univariate analysis of factors predictive of the need for intra-operative blood transfusion demonstrated the following statistically significant parameters: preoperative Hb, age, weight, and EBL. Multivariate analysis showed EBL as the only factor predictive of the need for intra-operative blood transfusion. Total estimated cost of unused cross-matched units was \$22 282 CAD.

**Conclusions:** At our center, the number of unused cross matched units in pediatric renal transplantation represents a considerable waste of limited resources. EBL is the only factor predictive of intra-operative transfusion. More efficient institutional policies with regard to blood cross-matching in RT are in progress.

#### P36

##### **Cost-effectiveness of a multidisciplinary stone clinic in a tertiary care children's hospital**

Jessica M. Ming, Elizabeth Harvey, Darius J. Bagli, Roberto I. Lopes, Megan A. Saunders, Walid A. Farhat, Joana Dos Santos  
The Hospital for Sick Children, Toronto, ON, Canada

**Background:** Here, we assess the cost-effectiveness of a multidisciplinary clinic for children with urinary stones. With rising healthcare costs, the primary goals of the clinic were to decrease unnecessary visits, duplicate imaging and costs, while optimizing quality of care.

**Methods:** Since October 2012, children with complex stone disease, previously treated in urology and/or nephrology clinics, were seen at a triannual pediatric combined stone clinic. Patients attended one appointment in which they were seen by both nephrology and urology teams, allowing for both medical and surgical needs to be assessed simultaneously. A total of 79 patients have been evaluated since the clinic began. We compared the number and cost of imaging studies, emergency room visits and stone surgeries performed before and after the initial evaluation of each patient. All patients also received satisfaction surveys in clinic or the mail.

**Results:** Median age at diagnosis of all clinic patients was 72 months (range 5–185). Of the 79 patients, 32 were seen at least twice in the combined clinic. Prior to the combined clinic, 27 of these patients were followed multiple times in either a urology or nephrology clinic and numbers and costs of the above interventions in this subgroup were compared. Underlying metabolic disease was identified in 17 (63%) patients, including idiopathic hypercalciuria (25.9%), cystinuria (18.6%), nephrocalcinosis (11.1%), and primary hyperoxaluria (7.4%). There was no significant difference in the number per year (1.97 vs. 1.6; p 0.13) or cost (591.2 vs. 496.2; p=0.16) of the ultrasounds performed before and after the clinic intervention. The number per year (0.29 vs. 0.1; p<0.001) and cost (59.2 vs. 8.9; p<0.001) of emergency room visits significantly decreased after being evaluated in clinic. There was also a significant difference in the number per year (0.38 vs. 0.20; p=0.016), and cost (482.4 vs. 89.3; p=0.003) of surgeries related to stone disease. After correction for followup time of two years, the results remained significant. Twenty four survey responses were returned. Seventy five percent of families believed the clinic was time saving and 79% agreed that the information given was consistent between the teams and they had a better understanding of their child's condition.

**Conclusions:** We believe this combined clinic may be beneficial for those patients requiring long term management of nephrolithiasis to decrease overall healthcare costs. Although a small sample size, the number of emergency room visits and stone related operations were significantly decreased after the initial combined clinic intervention. Longer-term data will need to be collected to see if the positive findings continue.

#### P37

##### **Feasibility and efficiency of pediatric outpatient cystoscopy: A step out of the operating room**

Frank J. Penna, Abby Varghese, Katharine Williams, Hissan Butt, Martin A. Koyle, Armando J. Lorenzo  
The Hospital for Sick Children, Toronto, ON, Canada

**Background:** Awake cystoscopy is routinely performed in the adult ambulatory setting, while pediatric cystoscopy is most commonly performed in the operating room (OR), particularly in younger children. Cystoscopy in the OR necessitates additional anesthetic risk to the child, is time-consuming, and expensive. We hypothesized that selective cystoscopy in the ambulatory setting is feasible and results in higher satisfaction and lower costs.

**Methods:** All older children and adolescents requiring cystoscopy at our institution within a one-year period (2014–2015) were offered the option of in-clinic vs. OR cystoscopy for diagnosis, stent removal or intravesical botulinum toxin injection. Parameters such as age, gender, procedure time, and total clinic time, were reviewed. The patients were administered a survey assessing their level of satisfaction with the experience and their preference for scheduling future outpatient procedures, if indicated.

**Results:** Thirty children underwent cystoscopy in the outpatient setting. The mean age was 12 years, with 18 male and 12 female patients. Anxiolytic medication was requested by 87% of the patients. The mean procedure time was 22 minutes and mean total clinic time was 131 minutes, as compared to 240 minutes (the mean in-hospital time for cystoscopy in the OR). The mean cost was \$217 (CAD), compared to the estimated cost of cystoscopy in the OR (\$1016 CAD). Over 95% of patients either strongly preferred or preferred the procedure in the ambulatory setting.

**Conclusions:** Outpatient cystoscopy in children is safe and feasible and translates to improvements in patient satisfaction and overall efficiency and

availability, while minimizing costs. This option should be considered and offered to older children and adolescents.

**P38**  
**Impact of email and media communication on emergency room visits post-hypospadias repair**

Michael Chua<sup>1</sup>, Megan Saunders<sup>1</sup>, Paul Bowlin<sup>2</sup>, Jessica Ming<sup>1</sup>, Roberto Iglesias Lopes<sup>1</sup>, Walid Farhat<sup>1</sup>, Joana Dos Santos<sup>1</sup>

<sup>1</sup>The Hospital for Sick Children, Toronto, ON, Canada; <sup>2</sup>Children’s Mercy Hospital, Kansas, KS, USA

**Background:** Advances in communication technology are shaping our medical practice; herein, we aim to evaluate the effect of email communication with application of smart phone photography on emergency room (ER) visits post-hypospadias repair.

**Methods:** This prospective cohort study included patients who underwent hypospadias repair performed by a single surgeon from October 2014 to November 2015. Patients were categorized into two groups: Group A consented to email communication with smart phone photography and Group B declined. Reason for ER visits within 30 days postoperatively was assessed by another physician for an objective evaluation. The rea-

son was categorized as: unnecessary ER visits (defined as postoperative wound check with no intervention needed); indicated ER visits (defined as ER visits that required intervention or visits unrelated to hypospadias surgery). Chi square test and T test were used for statistical analysis. Relative risk and corresponding 95% confidence interval were also calculated. Statistical significance set at p<0.05.

**Results:** Over a 14-month period, 96 patients underwent hypospadias repair (Group A 81, Group B 15). Patients in Group A were significantly younger than patients in Group B (Group A median 11 months [IQR 9–17] vs. Group B median 15 months [IQR 9–23, respectively], p<0.001). The number of ER visits for wound check not requiring intervention was significantly lower in Group A than in Group B (3 [4%] vs. 4 [27%], respectively [RR 0.14; p=0.005; 95% CI 0.035–0.56]. A higher number of ER visits requiring intervention was noted in Group A compared with Group B.

**Conclusions:** Email communication with the use of smartphone photography significantly reduced the number of unnecessary ER visits for postoperative wound.

**P38. Table 1. Summary of baseline characteristics of study groups**

	Consented	Declined	P value
Number	81	15	
Average pictures sent	6.8 (5%)	0	
≥2	60 (74%)		
≥6	46 (57%)		
≥10	34 (42%)		
Age in months, mean (standard deviation)	16.3 (15.4)	32 (46.4)	<0.001
Median (interquartile range)	11 (9–17)	15 (9–23)	
Comorbidities			0.33
None	76 (93.8%)	13 (86.7%)	
Yes	5 (6.2%)	2 (13.3%)	
Concomitant inguinal surgery			0.6
None	78 (96.3%)	14 (93.3%)	
Yes	3 (3.7%)	1 (6.7%)	
Hypospadias classification			0.09
Distal	47 (58%)	13 (86.7%)	
Midshaft	13 (16%)	0 (0%)	
Proximal	21 (26%)	2 (13.3%)	
Hypospadias repair type			0.26
Single stage	62 (76.5%)	14 (93.3%)	
First stage	12 (14.8%)	0 (0%)	
Second stage	7 (8.6%)	1 (6.7%)	

**P38. Table 2. Emergency room (ER) return analysis of study groups**

	Consented	Declined	P value	Relative risk (95% confidence interval)
ER return for consult	15 (18.5%)	6 (40%)	0.05	0.46 (0.21–1.0)
ER return reason				
Wound check	3 (4%)	4 (27%)	0.005	0.14 (0.035–0.56)
Non-related/medical reason	3 (4%)	2(13%)	0.14	0.28 (0.05–1.52)
Indicated (excessive bleeding/catheter issues)	9 (11%)	0 (0%)	0.36	3.7 (0.23–60.54)
Postoperative day return	3.4 (4.8%)	8.17 (7%)	0.14	

**P39**  
**WITHDRAWN**

**P40**  
**Improving the management of bladder and bowel dysfunction in children**

Joana Dos Santos, Rebecca Rockman, Niraj Mistry, Roberto I. Lopes, Walid A. Farhat, Martin A. Koyle

The Hospital for Sick Children, Toronto, ON, Canada

**Background:** Bladder and bowel dysfunction (BBD) is very common, but underdiagnosed in children, resulting in significant complications and family distress. The majority of BBD cases improve with basic bladder retraining and constipation treatment. We are seeing increasing numbers of children with BBD in urology practice. As a result, the excessive number of referrals to the surgical specialist led to delays in care. We aim to decrease the number of BBD urology visits and wait times by 50% over six months, by optimizing strategies to empower pediatricians to manage BBD in the community. Objectives: 1) Identify which barriers pediatricians may have in preventing care of such conditions via online questionnaires; 2) assess the impact on care from a pediatric elimination network in which children with BBD who are referred to urology in a single quaternary center are re-referred to a network of community pediatricians (closer to home) with support of the urology division (Fig. 1). **Methods:** After quality management approval, an online survey was distributed; 54 community pediatricians have answered to date. In the elimination network, the Dysfunctional Voiding Score System and Bristol stool chart are being completed at zero, three, and six months, and an anonymous satisfaction survey is offered to families at every visit. Results from multiple community pediatric offices and a urology clinic in a single quaternary center will be compared.

**Results:** 83% (45/54) of respondents were primarily office-based or combined office-hospital practice. BBD was diagnosed at least five times per month by 42.5% (23/54) of pediatricians; 55.5% (30/54) refer up to four patients per month to urology or gastroenterology. BBD management with polyethylene glycol 3350 and dietary changes was recommended by at least 89.1%; however, the use of a voiding diary was only done by

45.6%. Increased fluid intake was recommended by 60%, and bladder retraining strategies was recommended by 73.9%. 50.9% of pediatricians considered treatment failure to be the lack of improvement before six months of adequate management. Most pediatricians requested additional educational initiatives for healthcare practitioners and parents.

**Conclusions:** Our preliminary data suggests that constipation is adequately managed by community pediatricians, however, improvement in strategies surrounding bladder retraining is needed. Once data from the elimination network is analyzed, we will be able to compare outcomes from community pediatricians and urology. Educational initiatives are recommended for improvement of the management of BBD in children.

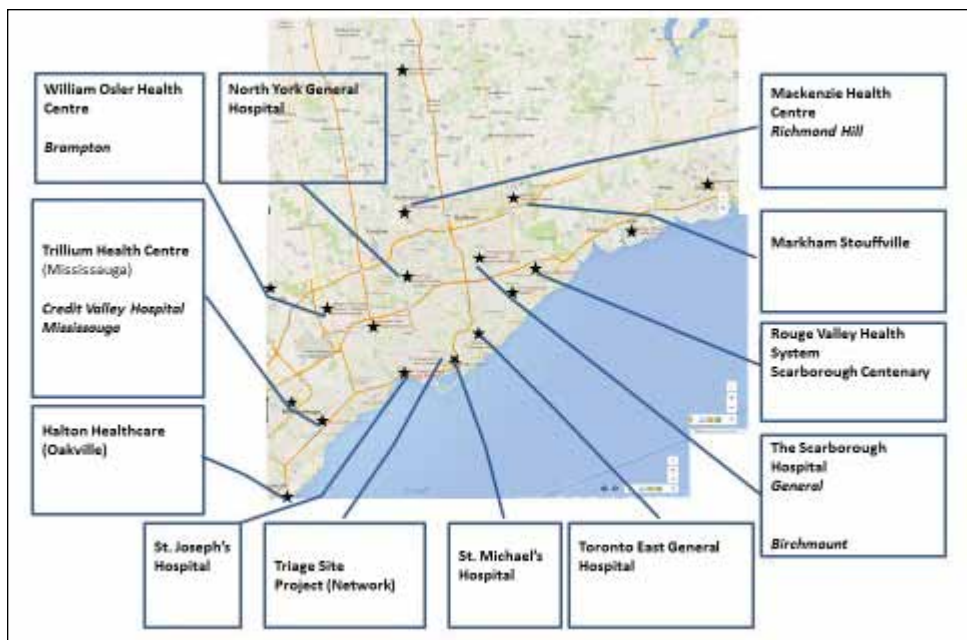
**P41**  
**Operating room utilization in a tertiary care, free-standing pediatric hospital: Current practices and improvements**

Jessica M. Ming, Michael E. Chua, Megan A. Saunders, Melyssa Stoute, Vanessa Chin, Martin A. Koyle

The Hospital for Sick Children, Toronto, ON, Canada

**Background:** Operating room (OR) hours are a valuable resource for hospitals and can be very limited due to a variety of factors, including: appropriate scheduling and allocation of case times, efficiency of turnover, and the preset culture of each individual facility. Multiple attempts have been made to identify optimal utilization in the OR with variable success and mostly in the adult setting. Here, we characterize the operating room efficiency and utilization of four pediatric urologists in a free standing children's hospital with the aim to identify points of potential improvement for increased throughput and team satisfaction.

**Methods:** We prospectively, after QI committee approval, collected data over a six-week time period of the four pediatric urologists operating collectively for 10 full OR days per week. This included: scheduled time per OR case, time in and out of the room, turnover, induction to incision start, surgery time, incision end to extubation, and extubation to time out of room. For any delays or alterations to the schedule, we identified cause for delay or change and recorded the reason. OR efficiency ( $[\text{sum of operative time}/\text{sum of case time including turnover}] \times 100$ ) and utilization ( $[\text{sum of time OR occupied by patient}/\text{sum of block time}] \times 100$ ) was calculated per day.



**P40. Fig. 1.** Elimination (Bowel Bladder Dysfunction) Network.

**Results:** Overall, times were recorded for 129 patients. For the four surgeons, overall mean OR efficiency ranged from 38–44%. The overall mean OR utilization for each surgeon ranged from 63–75%. There were 45 late starts (35%) identified with the majority of cases being due to the prior case going over time scheduled. This subsequently created an expected domino effect for the remaining cases in the day. All first start cases were on time (in the room within five minutes of 8:00 am start). The second most common reason was due to a delay in receiving a PACU bed, requiring time waiting in the operating room (46% of cases). The mean wait time was five minutes overall with range of 2–15 minutes. Patient factors such as NPO violations did not have a major impact on schedule delays, but did lead to cancellations.

**Conclusions:** We have identified the overall utilization and efficiency of OR time among pediatric urologists operating in a free-standing academic children's hospital. Important factors contributing to our late starts was appropriate booking times and delay of transporting the patient to the PACU. Current efforts to improve the flow of patient care in the operating room are in effect.

#### P42

##### Optimal length of followup for the detection of an unsuccessful pediatric pyeloplasty: A single-center experience

Utsav K. Bansal, Pankaj Dangle, Heidi Stephany, Asad Durrani, Glenn Cannon, Francis Schneck, Michael Ost  
University of Pittsburgh School of Medicine, Pittsburgh, PA, USA

**Background:** There are no standard guidelines on ideal followup and imaging post-pediatric pyeloplasty. Our goal was to assess the optimal length of followup for patients undergoing both open and minimally invasive pyeloplasties to ensure detection of a recurrent obstruction in timely manner.

**Methods:** A retrospective chart review identified 279 patients (<18 years old) who underwent pyeloplasty for ureteropelvic junction obstruction between April 2002 and December 2014. Ultrasound was obtained every 3–4 months for the first year following pyeloplasty and thereafter at the discretion of the treating physician. Patient characteristics including symptoms and imaging were reviewed.

**Results:** Of the 279 patients, 71% were male (mean age of 52 months) and mean followup of 27.4 months. Of these 279 patients, 73% were followed up to three years. Fifteen patients (5.4%) had a recurrent obstruction. Among the failures, 80% were diagnosed and underwent successful redo-pyeloplasty within three years. The six infants with recurrence (40% of all unsuccessful surgeries) were detected and diagnosed within three years of the initial surgery. Patients undergoing a minimally invasive procedure were less likely to be followed for more than three years compared to an open procedure ( $p < 0.001$ ). Patients with severe hydronephrosis preoperatively were followed longer and this was statistically significant in a univariate analysis ( $p = 0.036$ ). Age at time of surgery and type of surgical approach ( $p < 0.01$ ) were significant predictors of length of followup in a negative binomial regression, which accounts for maximal length of followup.

**Conclusions:** Based on the results, a minimum of three years of followup is necessary to detect the majority of recurrent obstructions. Among those who require a secondary pyeloplasty, younger patients with severe hydronephrosis are at an increased risk of recurrence.

#### P43

##### Prognostic factors of chronic kidney disease in patients with posterior urethral valves

Monica Salgado, Yann Chaussey, Pierre-Alain Hueber, Anne-Marie Houle, Diego Barrias, Julie Franc-Guimond  
CHU Sainte-Justine, Montreal, QC, Canada

**Background:** Posterior urethral valves (PUV) is the most common cause of congenital bladder outlet obstruction and chronic kidney disease (CKD) in the male pediatric population. The aim of this study is to determine the prognostic value of nadir creatinine during the first year of life and all other potential factors that might increase the likelihood of developing CKD in patients with this condition.

**Methods:** Hospital records of all patients with PUV were reviewed from 1980–2010. Abnormal kidney function was defined as CKD Stage 2 or higher (National Kidney Foundation). Patients were divided in two groups based on GFR at latest followup. Receiver operating characteristic (ROC) curve, univariate and multivariate analysis were conducted in order to identify independent prognostic factors for CKD. Statistical significance was defined as  $p < 0.05$ .

**Results:** A total of 114 PUV patients satisfied our inclusion criteria. At diagnosis, the mean age was three years. Among them, 32.5% were diagnosed antenatally, 23.7% before one year of life and 43.9% after. The mean followup period was eight years ( $SD \pm 4.6$ ). An abnormal kidney function was found in 18.4% patients, among them 4.38% reached end-stage renal disease (ESRD). Mean of Nadir creatinine at first year of life in patients who developed CKD was  $54.75 \mu\text{mol/l}$  vs.  $27.95 \mu\text{mol/l}$  for patients with normal renal function. Levels of nadir creatinine during the first year of life  $> 30 \mu\text{mol/L}$  were found to be a cutoff point for determine future prognosis (ROC curve,  $AUC = 0.94$ ;  $p < 0.001$ ) with a sensibility of 95%, specificity of 32%. Diagnosis before one year of age, elevated nadir creatinine at first year of life, bilateral hydronephrosis, recurrent UTIs, and loss of corticomedullary differentiation were significant predictors of renal outcome on univariate analysis.

**Conclusions:** PUV disease can lead to deleterious effects on renal function. Nadir creatinine during the first year of life was the only independent predictor of CKD on multivariate analysis. As a predictive factor for future CDK, we found a much lower threshold than previously reported in the literature. In addition, age at diagnosis, presence of urinary tract infection, and radiological findings on ultrasound represent important prognostic factors that should be taken into consideration in order to optimize patient management.

#### P44

##### Radiation exposure in children with posterior urethral valves during the first year of life: A necessity or an avoidable oversight?

Frank J. Penna, Rakan I. Odeh, Hissan Butt, Armando J. Lorenzo, Walid A. Farhat, Darius J. Bägli, Martin A. Koyle  
The Hospital for Sick Children, Toronto, ON, Canada

**Background:** Although the long-term risks of radiation exposure remain unknown, it has been estimated that cumulative exposure increases the long-term risk of malignancy. Posterior urethral valves (PUV) is one of the most common causes of chronic kidney disease in children. While certain imaging studies are necessary to adequately diagnose and treat the critically ill child, we hypothesized that some of these studies, which carry radiation exposure, may be avoidable, particularly in the critical first year of life.

**Methods:** A retrospective, single-institution review of all children born with a diagnosis of PUV over a 10-year period (2003–2013) was performed. Patients were stratified into three groups at two different time periods (one month and one year of age) based on creatinine (Cr) range and mean total radiation exposure from all imaging studies performed during the first year of life was estimated for each group: Group I (20–50  $\mu\text{mol/L}$ ), Group II (50–100  $\mu\text{mol/L}$ ), and Group III ( $> 100 \mu\text{mol/L}$ ).

**Results:** Fifty-three children were included in the study. The mean gestational age was  $36.6 \pm 1.9$  weeks and the mean birth weight was  $3.0 \pm 0.3$  kg. All of the children except for three had a documented history of antenatal hydronephrosis, with seven having a history of oligohydramnios. The majority of the children were treated with endoscopic valve ablation; only three had vesicostomy creation. Table 1 summarizes the mean Cr and radiation exposure/patient by Group. Fig. 1 demonstrates the significant shift in Groups based on Cr at one month vs. one year.

**Conclusions:** There was greater total radiation exposure during the first year of life in the category of patients with higher Cr (Group III) at one month as compared to those with initial lower values (Groups I and II), albeit not statistically significant. Cr at one month was not a predictive indicator of Cr at one year, as the majority of patients at one year migrated to Group I. Cr at one month may not be the best parameter to base imaging studies on. Long-term risks of radiation exposure to children from imaging studies is unknown, and therefore should be minimized.



**P44. Table 1. Patient radiation exposure parameters during the first year of life**

Group	% patients (at 1 month)	Mean Cr at 1 month ( $\mu\text{mol/L}$ )	% patients (at 1 year)	Mean no. studies/patient	Mean total radiation/patient (mSv)	P value
I	9.5%	35.4 $\pm$ 8.6	81.8%	2.4	0.30 $\pm$ 0.08	0.42
II	39.6%	71.8 $\pm$ 13.8	4.5%	5.2	0.32 $\pm$ 0.34	0.08
III	50.9%	189.7 $\pm$ 75.6	13.7%	14.3	0.47 $\pm$ 0.36	0.14

**P45****Short-stay pediatric pyeloplasty: A pilot project**

Martin A. Koyle, Armando Lorenzo, Darius Bagli, Walid Farhat  
The Hospital for Sick Children, Toronto, ON, Canada.

**Background:** Healthcare costs continue to escalate, and this has incentivized hospitals and healthcare workers to increase value by maintaining and/or increasing quality and safety, while reducing wastes and costs. A surgical short stay (SSS) unit was introduced to our facility, where cases were identified by each surgical service, where potentially, length of stay (LOS) could be reduced to <24 hours. Pyeloplasty was the procedure chosen as the pilot case for analysis in this unit by pediatric urology. The primary objective was to assess adverse outcomes (AOs) associated with reduced LOS by examining readmissions and emergency room (ER) visits. **Methods:** During the inaugural period of this pilot project, September 23–November 15, 2014, 149 total patients passed through the SSS. The records of these patients were reviewed to document those who underwent pyeloplasty and measure LOS compared to historic controls and report any adverse events.

**Results:** Pyeloplasty represented the fourth most common indication for SSS admission, 7/149 (9%) of patients, equal to that of appendectomy. In 2013–2014, 54 pyeloplasties were performed with mean LOS of 1.61 $\pm$ 1.69 days compared to 0.89 $\pm$ 0.41 days in the SSS group. No patients in the SSS were readmitted. However, a single child was evaluated and treated in the ER for a febrile urinary tract infection, >48 hours after discharge. All eight services who used SSS felt that the pilot was of benefit, although other than pyeloplasty, in the majority of other procedures, LOS did not demonstrate a trend to decrease. Of 44% (n=60) of families who completed feedback by returning a survey, satisfaction with the SSS unit surpassed that of pre-pilot patients in eight categories. **Conclusions:** Pediatric pyeloplasty patients can be discharged safely with LOS <24 hours, from a unit where the culture is focused on SSS. Based on our early experience, there is the potential for reducing costs because of reduced LOS. We have agreed to expand our inclusion criteria to include other common surgical procedures involving the ureter and bladder (e.g., reimplants). It has been our observation that if cases selected for SSS unit are performed as the first case of the day, particularly in infants, they invariably are ready to be discharged that evening with the proper nursing support and family/patient education. Family and surgeon acceptance is superb. Selection bias likely influences LOS, as all patients chosen had open pyeloplasty performed and were <2 years.

**P46****The fate of postoperative perinephric fluid collections within one month of pediatric renal transplantation: Etiology and therapeutic interventions**

Frank J. Penna, Armando J. Lorenzo, Walid A. Farhat, Martin A. Koyle  
The Hospital for Sick Children, Toronto, ON, Canada

**Background:** Postoperative perinephric fluid collections are common after pediatric renal transplantation (RT), and may be caused by clinical entities such as urinoma, hematoma, and lymphocele. These collections are usually monitored with serial ultrasounds. Size, etiology, extrinsic ureteral obstruction, and/or the presence of symptoms dictate management. We hypothesized that these fluid collections rarely require intervention and gain little benefit from close followup with imaging in the presence of stable clinical status (asymptomatic with stable renal function) and absence of hydronephrosis.

**Methods:** Retrospective review was performed of all children who underwent pediatric RT at our institution within the last five years (2010–2014) and monitored at least one month postoperatively. Perinephric fluid collections on postoperative renal ultrasounds were measured in three axes and correlated with clinical parameters and symptomatology. Indicated interventions including image-guided drainage and surgery were captured. **Results:** One hundred three children underwent RT (59 deceased and 44 living-related donor) over this period, at a mean age of 10.6 $\pm$ 5.4 years. Only 37 patients (36%) had no perinephric collections on ultrasound at two weeks postoperatively. Sixty-six patients (64%) had fluid collections, 14 of which underwent intervention: nine lymphoceles (8.7%), three infected hematomas (2.9%), and two urinomas (1.9%). Four patients with lymphoceles underwent laparoscopic marsupialization after failed drainage and/or sclerotherapy. The average fluid collection volume was 169 cm<sup>3</sup>; 618 cm<sup>3</sup> in the intervention group compared to 46 cm<sup>3</sup> in those observed.

**Conclusions:** Perinephric fluid collections are common after pediatric renal transplantation, the majority of which do not require intervention. Larger volume fluid collections were associated with intervention and are usually secondary to lymphoceles.

**P47****Trends in renal extirpative surgery: A single-institution experience over 10 years**

Rakan I. Odeh, Frank J. Penna, Naimet K. Naoum, Ibraheem Abu Azzawayed, Walid A. Farhat, Armando J. Lorenzo, Darius J. Bagli, Martin A. Koyle

The Hospital for Sick Children, Toronto, ON, Canada

**Background:** Renal extirpative surgery (RES) for benign and malignant conditions may be performed as total or partial nephrectomy, accomplished in an open (O) or laparoscopic (L) fashion. We set out to trend RES at a large, free-standing children's hospital and hypothesized that the trend of surgical intervention for benign conditions would demonstrate a decrease over the course of the study, primarily due to a paradigm shift in the management of benign congenital urological conditions, particularly duplex systems.

**Methods:** A retrospective chart review was performed on all patients who underwent RES at a large pediatric referral center over a 10-year period (2005–2014). Parameters evaluated included: diagnosis, surgical approach (O vs. L, total vs. partial), mean age, operative time, estimated blood loss (EBL), and complications.

**Results:** Of the 292 patients evaluated, 30 patients were excluded who either underwent transplant nephrectomy or were lost to followup. Of the 262 patients included, 60.7% had benign conditions, with over half (52.4%) being approached laparoscopically. Over the time course of the study, the trend of surgical intervention for benign conditions decreased significantly (15.7–6.3%; p=0.0003). Partial nephrectomy for benign conditions, particularly duplex systems also decreased significantly (28.6–4.76%; p=0.009). Conversely, malignant conditions represented 39.3% of patients, with 22.3% of these patients being treated laparoscopically. The trend of surgical intervention for malignant conditions demonstrated a steady increase over the time course of the study (3.9–18.4%; p=0.06).

**Conclusions:** Over the period of the study, the trend of extirpative surgery for benign disease has decreased significantly, particularly duplex systems and multicystic dysplastic kidneys. Conversely, the trend for malignant conditions increased steadily over the same time period. Despite initial

enthusiasm, the trend for laparoscopic approaches for all conditions has remained flat.

**P48**  
**Consistent and durable improvements in quality of life with long-term onabotulinum toxin A treatment in patients with overactive bladder**

Benjamin Brucker<sup>1</sup>, Victor Nitti<sup>2</sup>, Sidney Radomski<sup>3</sup>, Angelo Gousse<sup>4</sup>, Marcus Drake<sup>5</sup>, Albert Kaufmann<sup>6</sup>, Andrew Magyar<sup>7</sup>, JP Nicandro<sup>8</sup>, David Ginsberg<sup>9</sup>

<sup>1</sup>New York University Langone Medical Center, New York, NY, USA; <sup>2</sup>New York University, New York, NY, USA; <sup>3</sup>University of Toronto, Toronto, ON, Canada; <sup>4</sup>Bladder Health and Reconstructive Urology Institute, Miami, FL, USA; <sup>5</sup>Bristol Urological Institute, Bristol, UK; <sup>6</sup>Kliniken Maria Hilf GmbH, Mönchengladbach, Germany; <sup>7</sup>Allergan plc, Bridgewater, NJ, USA; <sup>8</sup>Allergan plc, Irvine, CA, USA; <sup>9</sup>USC Institute of Urology, Los Angeles, CA, USA

**Background:** Overactive bladder (OAB) is a chronic condition that can cause significant burden and have a negative effect on patients' daily lives. There is a need to offer patients with OAB who are inadequately managed by an anticholinergic alternative therapies that are effective and improve quality of life (QOL) over the long-term. A long-term extension study involving patients with OAB and urinary incontinence (UI) who were inadequately managed by an anticholinergic (ACH) demonstrated that onabotulinum toxin A 100U provides consistent, long-term improvement of OAB symptoms. Here we evaluated the long-term effects of onabotulinum toxin A 100U on QOL in this extension study.

**Methods:** Eligible patients who completed either of two phase 3 trials could enter a three-year extension study to receive onabotulinum toxin A treatment "as needed" for control of symptoms. Results are reported for up to six treatments. Assessments included change from baseline in Incontinence-QOL (I-QOL) total score and proportions of patients who achieved/exceeded the minimally important difference (MID) in I-QOL score (+10 points) after each treatment. Consistency of response over repeat treatments was evaluated by determining whether patients achieved  $\geq$ MID after the first treatment, and then analyzing the proportion who achieved  $\geq$ MID for all subsequent treatments.

**Results:** Of 829 patients enrolled, discontinuations due to lack of efficacy/adverse events were 5.7%/5.1%. After onabotulinum toxin A treatments 1–6, QOL improvements were consistently maintained at 2–3X MID across treatment cycles, with most patients achieving  $\geq$ MID (range 65.2–76.1%). 72.9% of patients who achieved  $\geq$ MID after treatment 1 maintained I-QOL improvements  $\geq$ MID in all subsequent treatments. Over one-third (38.3%) of patients not achieving  $\geq$ MID after treatment 1 achieved improvements  $\geq$ MID in all subsequent treatments. No new safety signals were observed.

**Conclusions:** Consistent improvements in OAB symptoms after long-term treatment with onabotulinum toxin A corresponded with durable QOL improvements, with no new safety signals. Patients with clinically meaningful QOL improvements after treatment 1 had similar improvements in subsequent treatments, while lack of response to treatment 1 did not preclude positive response(s) in subsequent treatments. These results help set treatment expectations of patients and clinicians for onabotulinum toxin A and support persistence of its use over the long-term. Additional analyses may further characterize the long-term effects of treatment with onabotulinum toxin A in patients with OAB inadequately managed by an ACH.

**P49**  
**Do postoperative urinary retention and urinary tract infections predict complications of mid-urethral slings?**

Nahid Punjani<sup>1</sup>, Jennifer Wince-Ng<sup>2</sup>, Blayne Welk<sup>1</sup>  
<sup>1</sup>Western University, London, ON, Canada; <sup>2</sup>Institute for Clinical Evaluative Sciences, Toronto, ON, Canada

**Background:** Mid-urethral slings (MUS) are the gold standard for treatment of stress urinary incontinence. Limited data exists regarding predictive factors for future mesh complications. Our study examines if postoperative urinary retention and urinary tract infection were predictors of future mesh complications requiring surgical intervention.

**Methods:** Administrative data in Ontario, Canada between 2002 and 2013, was used to identify all women who underwent a mesh-based MUS. The primary outcome was future transvaginal mesh complications including erosion, fistula, removal, or urethrolysis. The primary exposure was postoperative urinary retention (within 30 days of procedure) and secondary exposure was the number of postoperative serious urinary tract infections (requiring emergency room visit or hospital admission).

**Results:** A total of 59 556 women had a MUS, of which 1598 (2.7%) required reoperation for mesh complications. Of the 2025 women who presented to the emergency room or were admitted for postoperative urinary retention, 212 (10.5%) developed mesh complications. Of the 11 747 patients who had at least one postoperative urinary tract infection, 366 (3.1%) patients developed mesh complications. Postoperative urinary retention was predictive of future reoperation (HR 3.33, 95% CI 2.86–3.87). Postoperative urinary tract infections were also associated with an increased risk for future complications (HR 1.15, 95% CI 1.13–1.17).

**Conclusions:** Postoperative urinary retention and frequent urinary tract infections are associated with an increased risk of reoperation for MUS complications. These patients should be closely followed and appropriately investigated.

**P50**  
**Increasing screening for overactive bladder and incontinence in at-risk patient population**

Diane K. Newman<sup>1</sup>, Ruth Cohen Cooper<sup>2</sup>, Vandana Iyer<sup>2</sup>  
<sup>1</sup>University of Pennsylvania, Berwyn, PA, USA; <sup>2</sup>Practicing Clinicians Exchange, Stamford, CT, USA

**Background:** Overactive bladder (OAB) and urinary incontinence (UI) remain underdiagnosed and undertreated, despite evidence-based guidelines on assessment and treatment. Most patients are embarrassed to initiate conversations about UI and, since the prevalence of OAB increases with age, patients and clinicians often accept OAB as an inevitable part of aging. Diabetic and obese women are particularly at risk. Increasing numbers of these patients are being seen by advanced practice providers (APPs), nurse practitioners (NPs), and physician assistants (PAs). They have the opportunity to improve outcomes by consistently screening patients and increasing the use of strategies that promote patient adherence to treatment. To this end, the aim of this practice building activity was to increase APP communication techniques and use of guideline-based screening tools to improve diagnosis, treatment adherence, and long-term monitoring of OAB and UI within their practice.

**Methods:** In the initial (baseline) phase, APPs (NPs=39, PAs=15; total n=54) who see patients with OAB and UI were asked to review medical records of four patients with either type 2 diabetes (T2DM) and/or obesity and answer seven questions about their care in an online questionnaire. The APPs then received four educational email briefs reinforcing important aspects of optimal care for patients with OAB and UI, and were then asked to complete an action plan. In the final phase, APPs reviewed charts of four new patients with T2DM and/or obesity and answered the same questions to determine whether a change in performance occurred regarding practices involved in screening and management.

**Results:** Outcomes reported are based on a change from baseline to final phase (Table 1). There was a 141% increase over baseline in percentage of clinicians asking their four patients all main main questions (p<0.01), and a 125% increase over baseline in the percentage of clinicians offering all four patients a voiding diary (Table 1). Results between NPs and PAs were minor.

**P50. Table 1. Summary of performance change for each of the 5 main patient questions**

Questions	% asking all 4 patients at initial phase	% asking all 4 patients at final phase	% increase	P value
Ask patient about concerns about bladder control problems?	57%	83%	45%	<0.01
Document patient's bladder complaints at every visit?	48%	72%	50%	<0.01
Offer the patient a voiding diary?	24%	54%	125%	<0.01
Discuss bladder symptoms at each subsequent visit?	44%	78%	77%	<0.01
Provide patient with material on behavioral and pharmacotherapeutic options?	33%	61%	85%	<0.01

**Conclusions:** Clinical performance can be improved when clinicians participate in an educational format that requires them to assess their own practice patterns before and after an educational intervention. This activity led to significant improvements in practices related to OAB and UI screening, symptom evaluation, and long-term monitoring by targeting patients at increased risk for OAB and UI.

## P51

### Network meta-analysis to assess the treatment effect of onabotulinum toxin A, mirabegron, and anticholinergics vs. placebo for overactive bladder

Benjamin Brucker<sup>1</sup>, Marcus Drake<sup>2</sup>, David A. Ginsberg<sup>3</sup>, Christopher Chapple<sup>4</sup>, Rachael McCool<sup>5</sup>, Julie Glanville<sup>5</sup>, Kelly Fleetwood<sup>6</sup>, Daniel James<sup>6</sup>, Kristin Khalaf<sup>7</sup>, Victor W. Nitti<sup>8</sup>

<sup>1</sup>New York University Langone Medical Center, New York, NY, USA; <sup>2</sup>Bristol Urological Institute, Bristol, UK; <sup>3</sup>USC Institute of Urology, Los Angeles, CA, USA; <sup>4</sup>The Royal Hallamshire Hospital, Sheffield Teaching Hospitals, NHS Foundation Trust, Sheffield, UK; <sup>5</sup>York Health Economics Consortium, University of York, York, UK; <sup>6</sup>Quantics, Edinburgh, Scotland, UK; <sup>7</sup>Xcenda, Palm Harbor, FL, USA; <sup>8</sup>New York University, New York, NY, USA

**Background:** Pharmacotherapy is the second-line treatment for overactive bladder (OAB) after behavioral therapy, but there is a high discontinuation rate due to inadequate efficacy and/or intolerable side effects. Onabotulinum toxin A provides an additional treatment option for OAB in patients who are inadequately managed by an anticholinergic. This is the first comparison of the efficacy of all licensed doses of anticholinergics, mirabegron, and onabotulinum toxin A vs. placebo in adults with idiopathic overactive bladder using network meta-analysis (NMA) and meta-regression (NMR).

**Methods:** Electronic databases, review documents, guidelines, and websites were searched for randomized blinded trials of  $\geq 2$  weeks duration comparing any dose of onabotulinum toxin A, mirabegron, or oral/transdermal anticholinergics with each other or placebo. Networks were developed for outcomes of interest based on studies of similar quality of study methods, confounding factors, common treatment arms, and outcomes measured. Bayesian random effects NMA (for the outcome of 100% reduction in urinary incontinence episodes [UIE]) and NMR (for outcomes on changes from baseline in UIE, urgency episodes, and micturition frequency) models were used to synthesize results at Week 12. Safety outcomes were not compared due to differences in adverse event profiles.

**Results:** One hundred two trials were assessed. NMRs indicated that, after adjusting for differences in baseline severity between trials, all treatments were more efficacious than placebo. Patients who received onabotulinum toxin A (100U) had the greatest mean reductions in UIE (1.55 episodes/day more than placebo [95% credible interval (CrI) 1.10, 2.01]), urgency (2.01 episodes/day more than placebo [CrI 1.48, 2.54]) and micturition frequency (1.37 episodes/day more than placebo [CrI 1.03, 1.70]).

Onabotulinum toxin A patients also had the highest likelihood of achieving 100% UIE reduction (OR 4.30 vs. placebo [CrI: 3.03, 6.23]).

**Conclusions:** This analysis suggests that onabotulinum toxin A 100U provides the greatest reduction in OAB symptoms and higher likelihood of being dry, relative to placebo, than all licensed doses of anticholinergics and mirabegron in the network. Additional studies should also evaluate the cost-effectiveness of onabotulinum toxin A vs. other OAB treatments.

## P52

### The use of urodynamics in followup of neurogenic bladders treated with onabotulinum toxin A

Michelle Bergeron

CHU de Québec, Quebec City, QC, Canada

**Background:** Patients with neurologic disorders may suffer from detrusor overactivity (NDO) or low bladder compliance, which can damage the upper urinary tract. Intradetrusor injections of onabotulinum toxin A (BoNTA) have recently emerged as a treatment for NDO. Urodynamics (UDS) are currently used at initial diagnosis and at regular intervals during followup to ascertain that the intravesical pressure remains within safe limits. However, with regards to the discomfort and risks associated with UDS, our objective was to assess if UDS done at regular intervals in the followup of neurogenic bladders treated with BoNTA had an impact on management.

**Methods:** We analyzed retrospectively the medical records of adult patients with neurologic disorders treated with intradetrusor injections of BoNTA for either detrusor overactivity or low bladder compliance at the Institut de réadaptation en déficience physique du Québec (IRDQP). In our center, UDS were routinely done at baseline and then after every fifth set of injections.

**Results:** We identified 57 patients with a diagnosis of neurologic disorder. Each patient had between one and 19 sets of injections, with a mean number of 5.61 injections, and 1–6 followup UDS representing a mean number of 2.09 UDS. Of the 119 followup UDS reviewed in our center, urologists took the decision to interrupt treatment in five cases (4.2%), which was eventually resumed, while three patients (2.5%), due to persistence of symptoms or high intravesical pressure, had their management changed to bladder augmentation. Two regimens were suspended and one was ended due to patient's preference.

**Conclusions:** Our study showed that UDS at pre-set intervals for followup of patients receiving BoNTA injections were rarely associated with modifications in the treatment course. Therefore, UDS should only be performed in cases where there is a change in the patient's symptoms or if the urologist suspects that the treatment response is suboptimal.

**P53**

**Voiding symptoms, age, and BMI are driving factors in AUASS**

Ilija Aleksic<sup>1</sup>, Charles Welliver<sup>1</sup>, Randy Sulaver<sup>2</sup>, Adam Whittington<sup>3</sup>, Brian Helfand<sup>3</sup>, Ömer Onur çakır<sup>4</sup>, James Griffith<sup>5</sup>, Kevin McVary<sup>2</sup>

<sup>1</sup>Albany Medical College, Albany, NY, USA; <sup>2</sup>Southern Illinois University School of Medicine, Springfield, IL, USA; <sup>3</sup>NorthShore University Health System, Evanston, IL, USA; <sup>4</sup>Istanbul Bagcilar Research and Training Hospital, Istanbul, Turkey; <sup>5</sup>Northwestern University, Chicago, IL, USA

**Background:** The AUA Symptom Score (AUASS) includes voiding (straining, incomplete emptying, intermittency, weak stream) and storage symptoms (nocturia, urgency, frequency). To date, no comorbidity has been shown to have predictive value and no chief lower urinary tract symptoms (LUTS) complaint (CLC) has been implicated as a driving factor in AUASS. Our objective is to determine influence of comorbidities, CLC, and treatment on AUASS.

**Methods:** Prospective evaluation of men with LUTS, completing AUASS and CLC survey at two consecutive visits. Collected comorbidities included: age, body mass index (BMI), hypogonadism, diabetes, hyperlipidemia, hypertension, and smoking. Treatments included: anticholinergics, alpha blockers, 5-alpha-reductase inhibitors, and phosphodiesterase type 5 inhibitors.

**Results:** Predictors of AUASS are BMI and age (adjusted R<sup>2</sup> 7.5%) with each BMI and year of age yielding a score increase of 0.16 (SE 0.03; p<0.001) and 0.18 (SE 0.08; p<0.05), on stepwise regression. Straining as the CLC yielded the highest AUASS (ANOVA; Table 1A) of 17.0 (95% CI, 13.8–20.1), significant vs. frequency, nocturia, multiple and no complaints (Tukey's test; p<0.05). No CLC yielded the lowest score, 6.76 (95% CI 5.68–7.27), significant against all except intermittency (Table 1B). One-way ANOVA for AUASS change to CLC, the worst change was seen in patients with straining 3.5 (95% CI 1.06–5.99) and incomplete emptying by 2.1 (95% CI 0.750–3.416). Comparing AUASS change to treatment initiated, only anti-cholinergics demonstrated significant decrease in score (p<0.001) by 4.44 (95% CI 2.3–6.6). Initiating finasteride or alpha-blocker yielded a decrease of 0.70 and 0.75. No new medication led to a decrease of 0.47 (95% CI 0.14–0.80).

**Conclusions:** Age and BMI are driving factors for AUASS. Four of the top five CLC are voiding symptoms, with straining as the largest driving factor at presentation and between visits. Anticholinergics are the only initiated therapy yielding a clinically and statistically significant improvement in AUASS.