

Innovations in Urology



*Rady Children's - A comprehensive system
focused solely on children.*



PEOPLE

Fellow brings her passion, multiple skills to team

Kelly Nast, M.D., is a second-year fellow in the Division of Urology at Rady Children's Hospital-San Diego. Using her experience in quality improvement, she is currently working on an innovative project with the Hospital's operating room team and Sterile Processing Department to lower costs and improve efficiency by reducing the number of unused instruments for common pediatric urology surgeries. (See "Project aims to reduce unused surgical instruments," July 2016 issue.)



In the clinical area, Dr. Nast has collaborated with the [2-B-Dry Program](#) team in developing a posterior tibial nerve stimulation program for dysfunctional voiding. The Division is just one of a few centers in the country that offers this technology and seeks to collaborate with the [Division of Gastroenterology, Hepatology & Nutrition](#) to offer this program for its patients.

Her research has involved studying the Division's experience using the vesicostomy button as a temporary means for bladder management; she is currently investigating patients' perceptions of quality of life while using the vesicostomy button versus the standard of care (clean intermittent catheterization). Additionally, Dr. Nast has presented research in Hawaii and Cape Town, South Africa, on the Division's innovative technique of ureterocele puncture using endoscopic scissors.

Dr. Nast graduated magna cum laude from Quinnipiac University. She earned her medical degree at Temple University in Philadelphia, where she won the Charles Schnall Award Alumni Award for Clinical Excellence for the most outstanding performance in the clinical years, and was also inducted into the Alpha Omega Alpha Medical Honor Society. She completed both her internship and residency at Medstar Georgetown University Hospital in Washington, D.C.

During her residency, she was the chief resident, for which she won the Resident of the Year Award. She was also actively involved in quality improvement and won the Resident Award for Best Quality Improvement Project after implementing a hand-off protocol in the post-anesthesia care unit. In the fourth year of her residency, she realized her passion for pediatric urology.



PROGRAMS

Multidisciplinary Stone Clinic takes holistic approach to care

The Stone Clinic at Rady Children's combines the specialties of urology and nephrology to treat and prevent the recurrence of kidney stones in children and adolescents.

Pediatric urologist [Sarah Marietti-Shepherd, M.D.](#), focuses on the surgical management of stones, using procedures including ureteroscopy, extracorporeal shock wave lithotripsy (ESWL) and percutaneous nephrolithotomy, while nephrologist [Elizabeth Ingulli, M.D.](#), handles the medical management and prevention. A pediatric urology nurse is also part of the team.



innovation
belongs in every moment



RESEARCH



As patient education is a significant component of prevention, Dr. Ingulli spends much of her time counseling patients and their families on dietary modifications (i.e. eating low-oxalate, low-sodium foods and increasing water intake). For some children, these changes may be enough to lower the recurrence risk, but others may require medication.

The majority of patients seen are teenagers with calcium oxalate stones. However, some children are found to have more complex staghorn stones or other less common stones such as cysteine. The clinic is held two days a week for a half day and sees about 20 patients a month.

INNOVATIONS

Investigating the microbiome in vesicoureteral reflux

There is currently no literature exploring whether differences in the urinary microbiome affect diseases of the urinary tract in pediatrics.

In a collaborative study with the lab of Rob Knight, Ph.D., at UC San Diego, the Division (including first-year fellow Diana Cardona-Grau, M.D.,) seeks to assess whether differences in the urinary microbiome can predict renal scarring in vesicoureteral reflux (VUR). Knight, a world leader in the study of the microbiome, is also a professor of pediatrics and of computer science & engineering at UC San Diego.

The Knight lab has conducted rigorous research on the microbiome and its correlation with various disease processes. In studies looking at the gut microbiome, dysbiotic gut communities have been associated with diseases including obesity, inflammatory bowel disease, and type 1 and type 2 diabetes. Alterations in the gut microbiome have been associated with inflammatory bowel disease, and the gut microbiome has also been noted to predict the risk for Crohn's disease (Debelius 2016).



In a normal state of health, microbiota help to maintain the intestinal epithelium and regulate immune and inflammatory responses, but altered bacterial composition has been found in children with diseases such as necrotizing enterocolitis (NEC) and Hirschsprung's enterocolitis (Wieck 2016).

Similarly, it is postulated that the composition and diversity of the urinary microbiome may affect certain diseases of the urinary tract. Specifically, urge urinary incontinence has been studied in the adult population, and it has been postulated that loss of biodiversity may be correlated with disease severity (Karstens 2016).

Patient portal usage linked to patient's primary language

A study by the Division on the patient portal used at Rady Children's finds that the patient's primary language may pose a significant barrier to adoption.

Although patient portals are increasingly common, there is little information regarding their use as an engagement



tool to connect patients, caregivers and healthcare teams. Parents of children with chronic conditions who use multiple healthcare systems as well as providers have reported patient portal underutilization; they have also suggested that increased usage by both providers and patients might be a tool to help alleviate caregiver stress while serving as a potential modality for education on chronic care management. The adoption of and enrollment in the portal, however, has not been fully studied.

Working with Ruth Bush, Ph.D., M.P.H., at the University of San Diego, Division Chief [George Chiang, M.D.](#), and his colleagues retrospectively assessed the adoption and use of Epic Systems' MyChart patient portal for pediatric urology patients from January 2010 to June 2016. They examined electronic health record (EHR) data from 10,464 patients aged 2-18 who fell into four categories: activated (or caretaker activated) MyChart access code; accepted but did not activate a code; declined activation; or activated and then deactivated their account and who had at least one Urology appointment. Differences in adoption rates were examined using chi-square statistics and one-way Analysis of Variance (ANOVA).

Among the results, patients who reported their primary language as Spanish were much less likely to activate their MyChart account than English-speaking patients. Additionally, men, patients self-identifying as "Other" (not White, Asian, or African American) and Hispanic patients were also less likely to activate their account. Patients living in central, urban areas were less likely than those living in suburban areas to activate their accounts, and those who activated their account had a significantly higher median household income than those who did not activate, refused or deactivated their account.

Dr. Chiang and his team suggest that bilingual programs, bicultural educational materials and encouragement from clinical staff, in addition to making portal access easily available, may help facilitate adoption and usage.