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Revisiting Bulking Agents: Is 2022 the Year of the Bulking Agent? Maybe So, and Here’s Why

Nicole B. Fleischmann, MD
White Plains Hospital/Montefiore Health System, New York

I have always been fond of the midurethral sling (MUS). I trained at a time where I was fortunate enough to have been taught multiple traditional procedures (autologous fascial pubovaginal sling [AFPVS], open Burch colposuspension). When MUS was launched in the middle of my residency, I rejoiced that we had a minimally invasive procedure to treat female stress urinary incontinence (SUI). For years, my algorithm for managing SUI included initial conservative management (behavioral, lifestyle, dietary), pelvic floor muscle therapy and lastly, MUS (or AFPVS/Burch in select patients) in women desiring surgical correction.

I had some experience with urethral bulking agents (UBAs) but was never impressed with the outcomes, nor did I routinely offer them. I reserved UBAs for salvage procedures, in women who wished to continue conceiving and those who were too old or sick to take to the operating room. In 2017, the AUA/Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction (SUFU) published guidelines on treatment of the “index patient” with SUI (healthy female considering surgery, no previous SUI surgery) and concluded that physicians may offer MUS, AFPVS, colposuspension and UBAs, but while UBAs “are viable treatments for SUI; little long-term data exist for them. Re-treatment tends to be the norm for patients with a diagnosis of intrinsic sphincter deficiency (ISD), a weakened urethral closure mechanism as defined by the International Continence Society (ICS), numerous studies have shown clinical utility in using injectable bulking agents in the setting of urethral hypermobility as well.” Furthermore, AUA guidelines suggest there is little benefit to performing preparative urodynamic testing in the initial evaluation of SUI, rendering the diagnosis of ISD indeterminable in the majority of cases.

Although there have been numerous UBAs employed over the years, currently 2 classes have emerged. The first type is a particulate suspended in a carrier gel which dissolves over time. The second type is a homogenous hydrogel (PAHG) which forms “cushions” in the submucosal layer proximal to the bladder neck. Sling placement is a larger risk. While UBAs may not be on par with MUS in the ability to eradicate SUI they may not need to be for women to choose them. Patients who wish to avoid the use of a synthetic mesh or a more invasive surgical intervention may prefer UBA injection, even in the setting of the need for repeat injections. Although traditionally UBAs have been reserved for patients with a diagnosis of intrinsic sphincter deficiency (ISD), a weakened urethral closure mechanism as defined by the International Continence Society (ICS), numerous studies have shown clinical utility in using injectable agents in the setting of urethral hypermobility as well. Furthermore, AUA guidelines suggest there is little benefit to performing preparative urodynamic testing in the initial evaluation of SUI, rendering the diagnosis of ISD indeterminable in the majority of cases.

Table. Rates and 95% confidence intervals of inpatient and outpatient SUI procedures from 2000 to 2009 in women 18 to 64 years old

<table>
<thead>
<tr>
<th>Type of SUI Surgery</th>
<th>Inpatient Procedures</th>
<th>Outpatient Procedures</th>
<th>Total Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Rate*</td>
<td>95% CI</td>
</tr>
<tr>
<td>Sling</td>
<td>47,853</td>
<td>64.7</td>
<td>62.9-66.5</td>
</tr>
<tr>
<td>Burch</td>
<td>16,229</td>
<td>21.9</td>
<td>20.9-23</td>
</tr>
<tr>
<td>Collagen</td>
<td>46</td>
<td>0.06</td>
<td>0.05-0.08</td>
</tr>
<tr>
<td>Laparoscopic SUI procedures</td>
<td>1,371</td>
<td>1.9</td>
<td>1.7-2</td>
</tr>
<tr>
<td>Transvaginal hysterectomy and colpourethrocystopy</td>
<td>1,328</td>
<td>1.8</td>
<td>1.7-1.9</td>
</tr>
<tr>
<td>Needle suspension</td>
<td>765</td>
<td>1</td>
<td>0.9-1.2</td>
</tr>
<tr>
<td>Kelly plication</td>
<td>308</td>
<td>0.4</td>
<td>0.4-0.5</td>
</tr>
<tr>
<td>Total</td>
<td>67,900</td>
<td>91.7</td>
<td>89.2-94.3</td>
</tr>
</tbody>
</table>

*Rate per 100,000 person-years.

Figure 1. Trends of surgeries for stress urinary incontinence.

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setting with local anesthesia or under sedation according to patient and surgeon preference. A recently published randomized controlled trial comparing PAHG to MUS confirmed an 80% satisfaction rate and, with the exception of de novo urgency, a 0% adverse event rate in the PAHG arm at 1 year. The agent has impressive longevity with published 7-year data demonstrating patient satisfaction rates and 80% of patients not seeking further treatment for their SUI.9

In the current age of care pathways we must view the management of SUI through our patients’ eyes. As surgeons we are trained to fix problems—but so much more is involved in patients’ decision making than the success rate of the procedure. In the “Voice Your Choice” study conducted with the goal of understanding the most important factors women consider when choosing one procedure over another, UBAs were the preferred first option 64% of the time. In addition, many women desired a hierarchical treatment pathway starting with the least invasive (lowest perceived risk) and ending with most invasive (highest perceived risk) if the least invasive procedure failed.10 The fact remains that a good percentage of women will never feel comfortable with an invasive procedure regardless of degree of bother if the perceived risk is high enough.

Since I began changing my algorithm in early 2020 to offer UBAs—specifically PAHG—in the initial treatment of SUI before MUS, I have been amazed by the volume of patients who gratefully consent. UBAs have the unique position of being successful enough and risk-friendly enough to make them a first choice for women. So now we need to ask why they shouldn’t be a first choice for doctors.1


AUA2021 Take Home Message: Robotic Surgery

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Robotic surgery played a major role on the virtual stage of the AUA2021 meeting. As expected, a lot of interesting, stimulating and—in some cases—thought-provoking work was presented by national and international speakers alike. First and foremost, invited lectures and semi-live surgery transmissions enriched the plenary program over the 4-day event. On Friday, Dr. Joseph (University of Rochester) showed his technique for robotic single port extraperitoneal radical prostatectomy, and Dr. Badani (Mount Sinai) illustrated his tips and tricks for retropubic robotic radical partial nephrectomy (106HO). On Saturday (Plenary: Prime Time, Saturday, Afternoon Session), as part of the “Crossfire: Controversies in Urology” debates, Dr. Bocciardini (Niguarda Hospital, Milan), who first conceived and reported in 2010 the Retzius-sparring approach for robotic prostatectomy, debated with Dr. Tewari (Mount Sinai), who presented the anatomical and surgical principles of his Hood technique. Immediately after this debate, Dr. Humphreys (Mayo Clinic Arizona) presented a State-of-the-Art Lecture on robotic uroteroscopy, and Dr. Kaouk (Cleveland Clinic) gave an update on the latest advances in the field of single port robotic surgery. Later, Dr. Hemal (Wake Forest) provided an overview of robotic procedures for the management of upper tract urothelial cancer. Moreover, on Sunday, the Society of Urologic Robotic Surgeons (SURS) session at AUA2021, led by Dr. Tewari, featured eminent speakers lecturing on different hot topics related to robotic assisted surgery.

Over 320 abstracts related to robotic surgery were accepted as podium presentations and moderated posters, as well as videos (103) distributed in different subject areas. Not surprisingly, most contributions were in oncology, above all for prostate and kidney cancer management (fig. 1). Here are some of the abstracts that deserve, in my opinion, to be mentioned.

Oncology: Kidney Cancer

Bekas et al reported a multi-institutional analysis of 72 patients who underwent robotic partial nephrectomy for recurrent renal tumor (PD64-06). Two cases (2.8%) were converted to open surgery. One patient underwent radical nephrectomy due to bleeding. Major complication rate was 8.3%. Estimated glomerular filtration rate preservation was 90.8% at 1-year followup. Positive surgical margin rate was 9.5%. Only 1 patient had local recurrence (1.4%). Yim et al presented a retrospective analysis utilizing the ROSULA registry comparing minimally invasive radical nephrectomy to robotic partial nephrectomy for cT3a renal tumors (PD64-11). A total of 441 patients were analyzed. Multivariate analysis demonstrated increasing American Society of Anesthesiologists® class, positive margins, and sarcomatoid histology to be independently associated with worsened all-cause mortality, while type of surgery was not. Increasing age, hypertension and radical nephrectomy were associated with de novo estimated glomerular filtration rate <60.

Oncology: Prostate Cancer

Nguyen et al reported the preliminary results of a phase I study in 24 high-risk prostate cancer patients undergoing robotic prostatectomy using a novel near-infrared prostate specific membrane antigen (PSMA) targeted fluorophore to
administration of 99m Tc-labelled PSMA positron emission tomography and who had undergone a preoperative or known lymph node metastasis underwent a robot-assisted radiotracer prostatectomy with extended prostatectomy procedures in a cognitively impaired setting.

Oncology: Bladder and Testis

Mastroianni et al reported the 2-year oncologic outcomes from a randomized controlled trial comparing open to robotic radical cystectomy with totally intracorporeal urinary diversion (NCT03434132; PD55-07). Overall, 166 patients were enrolled. The 2 study arms displayed comparable overall, cancer specific, disease-free and metastasis-free survival. Ghoreifi et al evaluated post-chemotherapy robotic retroperitoneal lymph node dissection in a retrospective study including 43 cases done at 5 U.S. academic centers (PD53-06). Median estimated blood loss, operative time, and length of hospital stay were 100 mL, 5.7 hours, and 2 days, respectively; 90-day complication rate was 25%.

Transplantation

Zeinab et al presented the outcomes of the initial 7 patients who underwent robotic single port kidney transplantation (MP37-01) at their center. All cases were completed successfully. Median total operative and vascular anastomosis times were 372 and 53 minutes, respectively. None of the patients had delayed graft function requiring dialysis. All patients up to 1-year follow-up had no acute rejection.

Reconstruction

Chao et al reported the outcomes of 26 cases of robotic nonanastomotic ureteral reimplantation from a multi-institutional ureteral reconstruction database (CORRUS; PD55-07). There were no intraoperative or immediate postoperative complications. Over a median follow-up of 21 months, 2 patients (7.7%) developed recurrent stenosis. Ten patients (38.5%) reported symptoms suggestive of de novo vesicoureteral reflux, and they were mostly managed conservatively. Shakir et al presented a multi-institutional group experience with robotic-assisted vesicourethral anastomotic stenosis reconstruction (MP03-14). A total of 32 patients from 6 institutions met study criteria. At a median follow-up of 12 months, 25 patients (78%) had patent repairs and 26 (81%) were voiding per urethra.

Pediatrics

Grant et al compared the outcomes of stented (196) and stentless (114) robotic pyeloplasty (MP44-12). Stentless procedure had shorter operative time and similar overall complication rate allowing avoidance of a second procedure for stent removal.

Figure 1. Abstracts related to robotic surgery at AUA2021: distribution by therapeutic area.

Figure 2. a–h, images from abstract PD61-04 reporting on preliminary results from phase I dose-escalation study using novel near-infrared PSMA targeted fluorophore (IS-002) designed to enhance intraoperative cancer visualization during robotic radical prostatectomy. Reprinted with permission of the American Urological Association. NVB, neurovascular bundle. PSM, positive surgical margin.
One of the most challenging aspects of care in patients with neurogenic bladders (NGBs) is interpreting the finding of bacteriuria in order to properly diagnose and treat a potential urinary tract infection (UTI). Recurrent UTIs can cause significant patient morbidity in any population but have particular consequences in NGB patients. UTI is the most common infection in those with a spinal cord injury and NGB, with increasing number of UTIs independently associated with a worse quality of life. In addition, UTI is the second leading cause of death in this patient population. As such, accurately identifying an infection to enable proper treatment and prevention of future infections is of particular importance in this population to prevent such outcomes.

Yet the presence of bacteria in the urine alone does not necessarily indicate infection and may instead be reflective of asymptomatic bacteriuria (ASB). Patients with NGB have multiple risk factors for having bacteriuria, mainly as a result of their neurological insult, such as their regular need for bladder instrumentation, incomplete bladder emptying, neurogenic bowel dysfunction and prior urinary tract reconstruction. As a result, patients with NGB have a high incidence of bacteriuria even when asymptomatic. The general recommendations do not advise treating uncomplicated ASB as it is not associated with an increased risk of symptomatic UTI or deterioration of the upper urinary tract. In fact, treatment of ASB has been found to increase the risk of future symptomatic UTI in a study of young women without NGB. In addition, there is a real motivation to be more thoughtful and deliberate about antibiotic use given the rise in antibiotic resistance among bacteria, with patients with NGB having a particularly high rate of antibiotic-resistant bacterial carriage. Thus, it is of paramount importance to distinguish between bacteriuria suggestive of infection versus simply as a result of colonization in those with NGB. This distinction, however, can be difficult in this patient population.

Part of the problem is the lack of a unified definition of UTI in NGB patients. Various definitions have been used among guidelines (Infectious Diseases Society of America, European Association of Urology, National Institute on Disability, Independent Living, and Rehabilitation Research), with provider confusion on how to diagnose UTIs in NGB patients and a lack of consensus on the evaluation and management of bacteriuria between specialty centers caring for NGB patients.

The diagnostic criteria for UTI in the NGB population broadly includes 1) presence of bacteriuria, 2) signs/symptoms compatible with UTI and 3) an abnormal urinalysis. Each criterion has its own set of problems, however. The presence of bacteriuria itself is necessary for the diagnosis of both UTI and ASB, with the magnitude of bacteriuria unable to distinguish between the 2 conditions. Symptoms in this population can be nonspecific or atypical due to altered sensation as a result of their neurological lesion. Various urinalysis findings used to potentially indicate infection, such as the presence of nitrites and leukocyte esterase, have poor sensitivity and specificity, respectively. As a result, there has been interest in other biomarkers that could distinguish between UTI and ASB. These have tended to focus on the innate host response to bacteriuria, through measuring interleukins like IL-6 and IL-8 and certain antimicrobial peptides, with studies primarily having been done in nonNGB patients. The research in NGB patients is quite limited, with neutrophil gelatinase-associated lipocanin being the only urinary marker showing some promise in discriminating between UTI and ASB specifically in the pediatric NGB population.

Findings related to characteristics of the bacteria itself and composition of the microbiome have not been illuminating thus far. While work does continue to try and identify better means of distinguishing true infection from colonization, this still leaves clinicians with the dilemma of trying to interpret the finding of bacteriuria in this complex patient population. At this time, providers have to continue to rely on their level of clinical suspicion and make the most of the diagnostic test results at their disposal. In the meantime, it bears repeating that one should carefully assess the clinical question to be answered by even checking urine studies, remaining an important first step before the process of interpreting the subsequent results.


Active Surveillance: What is the Schedule You Tell Your Patient?

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University of Washington, Seattle

Daniel W. Lin, MD
University of Washington, Seattle

At least 75,000 new patients with prostate cancer (PCa) per year in the United States are diagnosed with low risk disease (prostate specific antigen [PSA] <10 ng/ml, Grade Group [GG] 1, cT1c/T2a), and active surveillance (AS) is the preferred management strategy for these patients, recommended by nearly all major guidelines. Large single and multi-institutional AS cohorts with extended followup, in addition to randomized clinical trials of immediate treatment vs observation, have supported surveillance in this clinical setting. Notably, many of the AS cohorts included men across the spectrum of PCa risk, not only including men with so-called “very low risk” PCa but also a substantial proportion of men with low-risk and even favorable-intermediate risk disease. Although guidelines provide near consensus preference for AS over active treatment for low risk PCa, there is lack of consensus regarding optimal monitoring protocols, including how frequently to perform PSA measurements, prostate biopsies and digital rectal examinations, in addition to the need for imaging or biomarkers. Herein, we will address the issue of what to tell your patients who are starting on AS with regards to their schedule for evaluation. Serial surveillance prostate biopsy is a well-established and
integral part of current AS protocols, although biopsies are also associated with significant risks of acute infection, pain and costs. The frequency of biopsies is variable across reported AS series, ranging from annual biopsies to every 3–5 years. One notable study examined 4 AS cohorts in the U.S., evaluating the tradeoffs of biopsy frequency and differences in the patient populations with the finding that biennial biopsies are an acceptable alternative to annual biopsies. We typically recommend a confirmatory biopsy at the 6–12-month timeframe after diagnosis with subsequent biopsies being biennial, unless triggered by clearly rising PSA levels. We have shown that the rate of adverse reclassification is similar whether the confirmatory biopsy is performed at 6 or 12 months, and some men may be reassured with an earlier confirmatory biopsy at 6 months. If the patient has no evidence of grade progression over the first 5–6 years, and in particular if the patient has multiple negative prostate biopsies as shown by our team,11 we begin to decrease the frequency of surveillance biopsy.

The frequency of PSA measurements has also not been well established, with most guidelines recommending PSA assessments no more frequent than every 6 months. Although early reports suggested that PSA levels are not clearly related to risk of upgrading,22 more recent reports associate rising PSA levels with higher grade disease on subsequent biopsies.1 One study examined PSA measurements taken every 3 months compared to every 6 months, demonstrating no clear value to more frequent measurements.13 We routinely obtain PSA on an every-6-months schedule that corresponds with patient clinical appointments.

While multiparametric magnetic resonance imaging (mpMRI) has been shown to improve the detection of clinically significant disease in the initial diagnosis of PCa,14,15 it remains unclear whether mpMRI has utility in AS or whether mpMRI can safely replace surveillance biopsies in men with low-risk disease managed with AS. The only randomized clinical trial of mpMRI in AS was a negative trial, showing that mpMRI did not lead to detection of more clinically significant cancers when compared to the standard of care transrectal ultrasound-guided biopsies.16 Our group evaluated 395 magnetic resonance imaging (MRIs) performed within 12 months prior to a surveillance biopsy,17 reporting an 83% negative predictive value and 31% positive predictive value for GG2 or greater disease. Several other cohort studies have addressed the performance of MRI for predicting biopsy upgrading during AS with conflicting results, but general consensus that a negative MRI does not ensure a lack of tumor upgrading in a patient on AS. Additionally, if an MRI is abnormal, both targeted and systematic biopsies should be performed. Lastly, while higher Prostate Imaging–Reporting and Data System18 scores are associated with a greater risk of a clinically significant cancer on surveillance biopsy, several other clinical factors are associated with upgrading. As such, we do not recommend the routine use of MRI in all patients on AS, but consider its use in men with higher volume disease, higher PSA density, or a rising PSA. Furthermore, similar to published guidelines, we inform our patients that MRI should not be used as a replacement for surveillance biopsies.18

Multiple biomarkers, primarily tissue-based panels, are commercially available and have been shown to be associated with clinically relevant end points, such as adverse pathology and prostate cancer-specific mortality. Importantly, the majority of these platforms were developed and validated in patients who had already undergone radical prostatectomy across the spectrum of prostate cancer, including men with much higher risk PCa, not in men currently undergoing AS. The results of investigations in men on AS are relatively limited and conflicting. We would endorse the recent joint AUA-American Society of Clinical Oncology guideline that these biomarkers are not recommended for routine use; however, their use may be considered in situations where the result is more likely to influence or alter management, such as in high-volume GG1 or low-volume GG2.19

Future advancements in the practice of AS will likely incorporate risk tools and models. These instruments will use the entire wealth of clinical variables, such as patient age, serum PSA value, prostate volume (or PSA density), ratio of biopsy cores containing cancer to total biopsy cores, number of prior negative biopsies and time from most recent biopsy to calculate the risk of adverse reclassification (or progression) vs stable disease.20,21 Emerging iterations of these tools may incorporate imaging and biomarkers if studies prove their incremental value over existing clinical models. We recently reported on a model that can predict reclassification-free survival and thus potentially can identify subsets of low-risk patients in whom we can decrease intensity of surveillance and even avoid serial prostate biopsies.22 These findings suggest that AS intensity can be modulated based on an individual’s risk parameters and that many men may be safely monitored with a substantially less intensive surveillance regiment. Importantly, these tools may also alleviate patient anxiety that is sometimes associated with AS23,24 and reduce the treatment in the absence of clear progression that is seen during AS.25 Until these tools/instruments are validated, we have still endorsed the aforementioned array of biennial serial prostate biopsies, PSA measurements every 6 months, and judicious use of MRI and biomarkers.

Current State of the “Drink More Fluids” Recommendation: Are There Evidence-Based Technologies That Improve Intake Long Term?

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Glickman Urologic and Kidney Institute,
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According to the current AUA guidelines on the medical management of kidney stones, “Clinicians should recommend to all stone formers a fluid intake that will achieve a urine volume of at least 2.5 liters daily.” These recommendations were established based on numerous studies demonstrating a dose-dependent relationship between increased water intake and decreased stone formation. However, despite objective data on the benefits of drinking more fluids, adherence to these recommendations has proven to be challenging for patients with compliance rates of 50% or less, presumably due to lifestyle and motivational factors.

With the rapid adoption of emerging technologies into the realm of digital health, it is conceivable that some of these tools may be beneficial for patients to achieve their fluid intake recommendations.

Interestingly, with over 300,000 mobile health apps currently available, a systematic evaluation of all smartphone apps is the medical management of nephrolithiasis identified only 31 apps, 18 of which focused on fluid management; in this study, while fluid management apps outperformed dietary apps, they were limited to user-entered fluid intake data, which imposes a burden on users for effective tracking. By the same token, studies have shown that patients with a history of kidney stones have expressed interest in using smart technology to improve adherence to fluid intake recommendations. Fortunately, there are several smart devices in the market to assist with fluid intake, and while it is difficult to ascertain the effectiveness of such devices, it has been shown that smart water bottles can accurately measure daily fluid intake when compared to manual hand measurement. But as attractive as these seem, do apps and devices really help patients with chronic disease management?

Indeed, it has been shown with other chronic disease conditions that the utilization of smart technology can improve patient adherence. For example, clinical trials in hypertensive patients have shown sustainable changes in patient adherence with improved blood pressure control with the use of smartphone app monitoring with feedback vs counseling alone. Accordingly, the incorporation of mobile health technology towards helping our kidney stone patients achieving their fluid intake goal is an attractive and logical step into the future.

Based on these insights and a paucity in the literature on this topic, we conducted a 3-arm prospective trial to evaluate whether a smart water bottle (HydraCoach™) or smartphone app (Aqualert™) could improve patient adherence and augment fluid intake when compared to standard counseling alone. We randomized 111 patients (37 per group), and found that in the 12-month follow-up period, the control group patients were the most likely to adhere to follow up. Overall, the mean urine output increased by 0.4 L in each of the 3 groups (p <0.05), with no significant difference between groups (p >0.05) in mean 24-hour urine output at baseline (1.6 L) or at 12 months (2.0 L). Although it was disappointing that our hypothesis was disproven—that the use of smart technology did not further increase urine output or patient adherence—this study does underscore the importance of dietary and medical counselling for kidney stone prevention. Furthermore, we can infer that technology driven self-monitoring alone may not be enough to yield sustainable behavioral change in chronic disease states such as nephrolithiasis. We did acknowledge some limitations in our study, notably that it consisted of patients from a single tertiary care academic setting, with predominantly White patients.

To this end, 2 additional clinical trials are currently underway to further our understanding of this issue. One of these, similar to our study discussed above, investigates whether using a smart water bottle (HidrateSpark™) improves adherence to recommended increases in hydration compared to standard techniques such as education and reading materials. The investigators completed their target enrollment of 85 participants in January 2021, and presumably the results of this trial are forthcoming. The critical study, however, is a large-scale, multicentered clinical trial, the Prevention of Urinary Stones with Hydration (PUSH) study, funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), which began in September 2017 and is nearing the end of patient recruitment. The primary aim of this trial is to determine whether a multi-component program of behavioural interventions to increase fluid intake, including that of a smart water bottle (HidrateSpark™) and mobile health app (Hidrate Inc™), will result in reduced risk of stone progression. While this will be the largest clinical trial to date on kidney stone prevention with a pragmatic design incorporating smart technology, adaptable intervention and active patient engagement, a unique feature of this study lies in evaluating how active coaching further enhances the smart technology.

Despite the challenges we face in helping our patients meet their hydration goals, it is reassuring to know we may soon have a definitive evidence-based answer to this conundrum—whether technology can truly augment fluid intake behaviors in our patients.
Use of *Clostridium histolyticum* (CCH) in Acute or Ventral Cases of Peyronie’s Disease

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Peyronie’s disease (PD) is a superficial fibrosing condition of the penis characterized by plaque development in the tunica albuginea. PD often presents with a constellation of penile curvature, pain, and erectile dysfunction (ED). The exact etiology of the Peyronie’s plaque is not completely understood; however, it is thought to be secondary to an excessive healing response to sexual trauma in genetically susceptible individuals. Collagenase *Clostridium histolyticum* (CCH; Xiaflex®, Endo Pharmaceuticals, Malvern, Pennsylvania) is an injectable therapeutic agent that selectively degrades collagen type I and III and thereby degrades the tunical fibrotic plaque (fig. 1). It is suggested that once the plaque is weakened, the patient undergoes penile modeling that acts in synergy with the enzymatic process to reduce curvature and potentially increase penile length. CCH is the first and only intralesional agent approved by the U.S. Food and Drug Administration (FDA) to treat PD.

Evidence as to the safety and efficacy of CCH in the treatment of PD has been documented in the IMPRESS (Investigation of Maximal Peyronie’s Reduction Efficacy and Safety Studies) trials, 2 double-blinded, placebo-controlled phase III studies which included 836 patients at 64 sites in the United States and Australia. The IMPRESS trials did not include PD patients who presented with a ventral penile plaque (fig. 2) or men in the acute phase of PD (≤12 months). FDA approval of intraleisional CCH does not include use for those men with atypical curvatures (ventral or hourglass deformities with curvatures <30°). And yet, ventral curvatures represent a significant subgroup of PD cases, with approximately 9% of all plaques located on the ventral aspect of the penis. Available evidence suggests that PD patients with ventral curvatures treated with intraleisional CCH experience similar safety and efficacy outcomes compared to dorsal or dorsal-lateral plaques.

A prospective cohort study published in 2019 included 228 patients treated with CCH for PD. Subjects in this study included those with atypical curvatures with 83%, 50% and 11% of the sample displaying some degree of dorsal, lateral and ventral angulation, respectively. Analysis of outcome measures by curvature group revealed more substantial improvements in the ventral and lateral groups than the dorsal group. While the dorsal curvature group experienced a 25% reduction in curvature, the ventral and lateral groups experienced improvements of 49% and 38%, respectively. The ventral and lateral curvature groups were also more likely to experience a greater degree (≥50%, ≥75% and ≥90%) of curvature improvement than those within the dorsal group.

Limitations to this study included a relatively low census of ventral-curvature patients, limited follow-up duration and biases associated with an as-treated model. Furthermore, a retrospective study published in 2017 included 53 patients with ventral curvature. Patients received 3 CCH injections of 0.9 mg intraleosonally at 4-week intervals in addition to modeling, stretching exercises, and vacuum therapy. Median penile curvature in the ventral curvature group was 40.0° with an interquartile range of 30° to 45°. Reductions in penile curvature were reported in interquartile range, with the middle 50% of patients experiencing between −20 to −10 reduction in curvature with a median of −20, which was statistically significant. No serious adverse events were reported. This study was also limited by a relatively small sample size. Notably, both of these studies reported that common adverse events included those typically observed with treatment with CCH for routine dorsal or dorsolateral curvatures, including local penile swelling, pain, hematoma and ecchymosis.

During the acute phase PD (defined as presence of penile pain and progression of curvature and duration of PD no longer than 12 months), patients usually experience significant psychological distress due to lack of an effective treatment during this period. Therefore, several studies have investigated the use of CCH injection during the acute phase PD. Nguyen et al conducted a study to specifically investigate the efficacy and safety of CCH injection in treating acute phase PD compared with stable disease. An analysis of 162 patients (22% with acute phase PD and 78% with stable phase PD) showed that CCH intralesional injections resulted in similar improvement in penile curvature in both groups (16.7° in acute phase vs 13.6° in stable phase; p=0.654). Furthermore, there were no statistically significant differences in frequency of treatment-related adverse events between the acute

Continued on page 11
USE OF CLOSTRIDIUM HISTOLYTICUM IN ACUTE OR VENTRAL CASES OF PEYRONIE’S DISEASE

Continued from page 10

phase (4 patients, 11%) and the stable phase (12, 10%; p=0.778). This finding was subsequently reported in other studies. Moreover, Cocci et al investigated the effect of a single injection of CCH in 72 patients with acute PD with mean penile curvature of 41.1° (±12.2°).8 Results showed that after 3 months there was mean improvement of penile curvature of 19.3° (±8.4; p<0.0001). There were also mild mean improvements of International Index of Erectile Function score of 1.1 (±0.9; p=0.02) and Peyronie’s Disease Questionnaire and its subscores (psychological symptoms, penile pain and bother disease). These results suggest that CCH injection is safe and efficacious in the treatment of acute phase PD and perhaps reduces the psychological bother associated with treatment delays. However, because of the retrospective nature of these studies, further prospective studies are warranted to validate these findings.

In conclusion, intrallesional CCH can provide benefit to PD men with ventral curvatures, and in men with PD who present in the acute phase.

Male Sling vs AUS: Which Patients, Which Procedure?

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Stress urinary incontinence (SUI) is most effectively and most frequently managed with insertion of either a transobturatus mesh sling or artificial urinary sphincter (AUS).1 Men with severe SUI or any SUI in the context of prior radiation are likely best served with AUS insertion—this much is clear.2 The challenge lies in accurately grading men with self-reported mild–moderate SUI and then in determining the ideal management strategy for each patient. Many men conceptually prefer the sling because of its simple design and passive function. Therefore, preoperatively identifying those patients who are less likely to have long-term satisfaction with slings is of utmost importance in minimizing failed surgeries.

Urodynamic testing provides confirmation of SUI and offers precise quantification of SUI severity in the form of Valsalva leak point pressure (VLPP). Preoperative VLPP <100 cmH2O (severe SUI) has been proposed as a threshold predictive of sling failure for post-prostatectomy SUI.3 However, the resource and time requirements, patient discomfort, and costs of urodynamic limit the attractiveness of its routine use in assessment of SUI severity.

The 24-hour pad test provides a “real-world” assessment of SUI severity by quantifying the volume of daily urine leakage. However, this test has 2 major limitations. First, the amount of leakage a man experiences in a 24-hour period varies significantly based on his level of physical activity and oral intake. Second, many patients find it logistically challenging and cumbersome to reliably collect their pads for 24 hours and bring the pads to the urology clinic. These limitations have deterred us from using this test in our routine practice.

Patient-reported average pad per day (PPD) usage is the simplest and quickest way to quantify SUI. However, this test also has 2 major limitations. First, PPD usage varies with the type of pad used, the patient’s threshold for changing pads, and the patient’s level of physical activity and oral intake. Second, relying solely on patient-reported history with no objective measurements lacks the precision ideally used in surgical decision making.

In 1996, Kowalczyk first described the standing cough test (SCT) as a means to determine a patient’s candidacy for tandem AUS cuff placement.4 The SCT is performed with a full bladder and 4 deep coughs while the provider monitors for leakage. As male SUI guidelines recommend cystourethroscopy prior to surgical intervention,2 we recommend performing the SCT immediately after cystourethroscopy to confirm that the bladder is full. While we no longer place tandem AUS cuffs, we appreciated the practicality and reproducibility of the SCT. We began incorporating the SCT into our routine clinical practice in 2014. We subsequently created the Male SUI Grading Scale (MSIGS) to quantify the degree of leakage using in-office SCT (see Appendix). We have validated MSIGS and found it to correlate closely with 24-hour pad weights.5

Once validated, we sought to retrospectively assess the value of MSIGS as a predictor of successful SUI surgery. We retrospectively analyzed the cases of 203 men who had undergone sling placement at our institution with 11–75 months of followup.6 Multivariable analysis identified MSIGS score as an independent predictor of sling success (p<0.001). We then developed a nomogram that incorporated MSIGS, PPD and history of pelvic radiation.7 We internally validated the nomogram and confirmed that it performed superiorly to PPD and history of pelvic radiation alone in predicting sling failure in males.

After accumulating more data, we again tested the value of MSIGS in predicting SUI surgical success, focusing on men with mild-moderate SUI (MSIGS 0–3). As expected, men with mild SUI (MSIGS 0–1) had significantly higher rates of sling success (≤1 PD and no subsequent incontinence procedure) than men with moderate SUI [MSIGS 2–3; 78% vs 63%, p=0.02]. Moreover, we found that men with moderate SUI were significantly more likely to succeed with AUS than with slings [80% vs 63%, p=0.02]. Therefore, we use these data to counsel patients with moderate SUI towards AUS placement.

As a tertiary referral center, many patients present to our clinic specifically requesting sling placement. However, 34% of men presenting to our practice with self-reported mild-to-moderate SUI by PPD actually exhibit severe SUI on SCT.8 Moreover, men with self-reported moderate SUI who are “upstaged” to severe SUI by MSIGS have low...
MALE SLING VS AUS
Continued from page 11

MSIGS has become an important tool in decision making.

visual confirmation and quantification of leakage prior to offering surgical interventions, we advise visual confirmation and quantification of leakage to guide preoperative decision making.

While certainly imperfect, MSIGS has become an important pillar of our SUI evaluation because of its practicality. The SCT adds minimal time and no cost to a standard clinic visit. It does not rely on the patient to collect pads or keep a diary, so it can be performed consistently on essentially all patients. MSIGS accurately assesses the severity of male SUI and predicts sling success, even in men with reported mild–moderate SUI. By consistently using this tool, urologists can minimize unsuccessful sling placements and maximize patient satisfaction.

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The Impact of COVID-19 on Cancer Screening and Treatment

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The first wave of the COVID-19 pandemic placed significant stress on the already strained U.S. health care system. To ease the pressure, lawmakers, hospital administrators and ultimately clinicians had to prioritize what was considered urgent vs elective care. The rationale behind such decisions was made on many factors including the need to preserve resources and personnel for the incoming surge, but also to ensure the safety of patients, providers and caregivers. The safety issue is especially of concern to cancer patients, who may be immunosuppressed as a result of their ongoing or prior systemic treatments.

In that context, many patients with subacute and chronic conditions such as cancer experienced a wide range of delays in their medical care. Specifically, there were delays in cancer screening, cancer diagnosis, and definitive treatment of cancer. Further down the continuum of care, patients with cancer also experienced delays in follow-up visits and systemic treatments. To help address the confusion, many societies issued guidelines to help triage patients appropriately. Locally here at Brigham and Women’s Hospital/Dana-Farber Cancer Institute, we proposed clinical guidelines that were disseminated on May 1, 2020, roughly 6 weeks after the first elective procedures were ordered to be postponed by state and federal authorities.

As mentioned above, while many high-profile publications in lay media issued concerns about the fallout resulting from delayed cancer care, we only recently started to understand the impact of the COVID-19 pandemic on delays in cancer screening tests, cancer diagnoses and cancer procedures. In a recent publication in JAMA Oncology, we assessed the number of patients undergoing cancer screening tests and ensuing cancer diagnoses during the COVID-19 pandemic at Massachusetts General Brigham (MGB) System whose catchment area includes Massachusetts’ 5 neighboring states. We found a dramatic decline in breast, prostate, colon, cervical, and lung cancer screening (~60% to ~82%) and cancer diagnoses (~19% to ~78%) during the first pandemic peak (March to June 2020). Similarly, an analysis of the American Urological Association Quality Registry, a national Qualified Clinical Data Registry reporting on urology patients, found that outpatient visits and surgical procedures decreased up to 59% and 79%, respectively. Indeed, the number of “missed” cancer diagnoses and treatments will affect millions of people in the U.S. For instance, Chen et al estimated that 1.9 million prostate cancer screenings were missed in the U.S. during the pandemic. These findings truly emphasize that cancer patients have been disproportionately affected by the pandemic, which we suspect will ultimately result in worse outcomes and deaths due to delays in treatment. While other diseases can wait, cancer continues to grow and needs timely diagnosis and treatment.

A more recent study by our group published in Cancer Cell looking at cancer screening and diagnosis at MGB after the first wave of the pandemic showed that cancer screening has significantly improved in more recent time periods (September–December 2020). In fact, prostate cancer screening increased by 24.0% with numbers exceeding those seen before the pandemic. These findings make sense—health systems and patients have adapted to the post-pandemic world, and efforts to bring patients back to their usual care have been largely successful within our health system. Nevertheless, our experience may not reflect what is happening in the rest of the country. It is important to understand that the population we care for at MGB is not necessarily representative in terms of race, income, education and insurance.

Along those lines, there are growing concerns that the pandemic may exacerbate well-documented racial disparities, and that is true even (especially) for cancer care. Black residents in Michigan were fivefold more likely to be infected with COVID-19 than White residents. This might be explained by the fact that racial and ethnic minorities are more likely to live in densely populated areas, suffer from higher rates of comorbidities and have less access to care. As such, we assessed whether the pandemic aggravated existing health disparities in different socioeconomic and ethnic groups. We found that racial and socioeconomic disparities were recorded for mammography and colonoscopy procedures. Given...
that underserved minorities generally had lower cancer screening rates prior to the pandemic, our recent findings are concerning. Hence, efforts to mitigate these disparities are needed more than ever.

Access to essential care and medical services is a challenge for which we, as health care providers, need to assume full responsibility. To overcome the disparities, institutions and health care providers will need to engage in an inclusive process by enhancing communication and augmenting timely care. Telemedicine could be a potential approach to reach out to underserved populations who often have difficulty accessing care due to availability of transportation or inability to take time off from work. An uptick of telehealth use for outpatient evaluation and management services was seen in urology and other specialties during the first wave of the COVID-19 pandemic, possibly as a result of recent policy changes aiming to broaden coverage for telehealth services.8 Other approaches include increased adoption of home screening tests such as the fecal immunochemical test for colon cancer. Therefore, high-risk groups and vulnerable populations need to be identified and prioritized a priori. However, while telemedicine could potentially mitigate disparities in access to care, non-English speakers or minority populations with limited technological literacy may face further discrimination in their care.9 Real-time interpreters and technical assistants could make telehealth more inclusive.

The pandemic has significantly impacted patients in need of oncologic care and may disproportionately affect racial and ethnic minorities with cancer. The process of identifying “missed” patients for cancer screening will challenge health care providers for the upcoming years. We need to think "outside the box" about how to improve cancer screening and care, especially when considering that failures in vaccination and the emergence of variants will lead to additional waves of COVID-19.1


Cervical Cancer Survivors with Urological Complications following Radiotherapy Require Numerous Procedures

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Cervical cancer is the fourth leading cause of death worldwide and one of the leading causes of cancer-related morbidity in women. The widespread implementation of pelvic radiotherapy as standard-of-care for localized disease in 1999 has improved survival, and we are now able to assess the long-term urological effects. It was our clinical impression that survivors of cervical cancer with urological complications following radiotherapy required numerous repeated urological procedures. To better quantify this hypothesis, we examined the rate of radiation-induced urological complication requiring procedural intervention (RUCPI) at our institution.

We performed a single-institution retrospective chart review of all cervical cancer patients who underwent primary radiotherapy between 1998 and 2012. We included all patients with total radiation dose >50 Gy and followup duration longer than 6 month. RUCPI was defined as a urological complication requiring procedural procedure following radiotherapy. Data regarding all procedures of the urinary tract were collected including those performed in the operative room and clinic settings, and those performed by interventional radiology. We compared the study cohort of patients with RUCPI vs those with no procedure. Patients undergoing a urological procedure not clearly attributable to radiation (ie history of urological procedure prior to radiotherapy, oncologic recurrence) were excluded from further analysis. Multivariate analysis was used to identify predictors of RUCPI.

Out of 378 patients seen by gynecology for cervical cancer, a total of 134 patients with FIGO stage IA2-4B cervical cancer met inclusion criteria. Of these, 26 patients underwent urological procedures, 18 of whom experienced RUCPI (14.3%). The mean followup duration for the entire cohort was 63 (24.5–88.0) months. The cohort received a mean total radiation dose of 82.0 (±7.4) Gy. The most common complications were ureteral stricture and radiation cystitis (table 1). Those with RUCPI differed from those without procedures in smoking status, type of sensitizing chemotherapy, and duration of followup. However, in multivariate analysis, only smoking status at the time of diagnosis was predictive of RUCPI (OR 3.44 [95% CI 1.34–9.26], p=0.03). Stage was not a significant predictor of RUCPI.

To our knowledge, this was the first retrospective series to show the rate of urological complications requiring procedural intervention in patients receiving primary radiotherapy for cervical cancer and to quantify the number of procedures required to manage these complications.

We identified a high rate (14.3%) of RUCPI in patients undergoing radiotherapy for cervical cancer, which is consistent with recent literature of 10% and 15% in a claims-based study and a Surveillance, Epidemiology, and End Results-Medicare database study assessing Clavien III–IV complications. It is worth noting, however, that although the risk of urological complications continued to increase for 25 years, the majority of gynecologic oncology literature does not include late complications. Focused studies reporting on only ureteral stricture rates following radiotherapy for cervical cancer (2.5%–3%) date back to the 1990s and report only severe complications requiring major open operations. Most recently the EMBRACE trial showed an actuarial risk of ureteral stricture of 2.0% at 5 years. However, its median followup duration of 34 months limited its capture of late complications as seen in our series.

Our most interesting finding lies in the sheer number of procedures endured by those with RUCPI. Over the median followup duration of 7.3 months for those with RUCPI, a total of 253 procedures were performed, representing 14.4 procedures per patient with RUCPI. In patients with ureteral stricture, the average number of procedures was even greater at 26.4 procedures per patient.

Ureteral stenting was the most common procedure in those with ureteral stricture, reflecting the repetitive nature of ureteral stenting in otherwise healthy patients (table 2). Thus, the consequences of ureteral stenting in patients with incidentally discovered hydronephrosis must be carefully considered given the repetitive nature of these procedures. Traditional ureteral stenting with 3–6 ureteral stents per year is thought to incur estimated medical charges of $18,218–$36,437 per patient, in addition to the cost of missed work and travel. Additionally, cervical cancer survivors with chronic ureteral stents have higher rates of urinary tract infections, lower urinary tract symptoms, and pain. Unfortunately, the alternatives are either renal failure or reconstructive surgery. Neither are desirable outcomes as reconstruction of irradiated ureters has a high failure rate with significant morbidity in 17% and re-intervention in 28%. Smoking at the time of diagnosis was the only predictor of RUCPI after adjusting for age, stage, radiation dose and type of chemotherapy used. This is consistent with prior data showing that smoking at the time of radiation was predictive of urological complications. As such, patients should be counseled on the importance of smoking cessation prior to radiotherapy to mitigate the risk of urological complications.

Limitations to this study include the small cohort size of patients managed at a single institution, loss to followup and relatively short followup duration. Further, dose of radiation had no predictive ability in our analysis due to tight range of radiotherapy dosing at our institution during this time period. As such, the lack of dose-effect should not be misinterpreted.

In conclusion, our study shows that multiple procedures may be necessary to manage the sequelae of complications following radiotherapy for cervical cancer, highlighting the complexity of the management of cervical cancer survivors with urological complications.

Next-Generation Sequencing for Urine Microorganism Detection: A New Hope?

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The Problem

One does not have to practice urology for long to recognize how frequently our patients experience or think they may be experiencing a urinary tract infection (UTI). In an ideal world, we could perform a single test that quickly provides accurate information regarding the presence or absence of infection and, if present, the appropriate antibiotic(s) for treatment. Prompt and precise information would provide clinicians all the necessary data for consideration of treatment. Standard urine culture (Ctx) remains the gold standard for urinary tract infection across most hospital facilities, although it lacks many of these ideal characteristics.

Culturing of urine is limited by a multiday lag between the time of specimen collection and the final resulting information regarding presence of microorganism growth and antimicrobial susceptibility. If clinicians wait until Ctx results to consider treatment, the patient will likely continue to suffer with bothersome symptoms and run the risk of the infection worsening. As a practical matter, providers may empirically treat patients with an antibiotic after collecting the urine specimen. Some patients will be treated appropriately, but empiric treatment can result in overtreatment of patients with no infection, or insufficient and delayed treatment if the culture grows an organism not susceptible to the prescribed antibiotic.

Another example of how this may affect patients occurs in patients with nephrolithiasis and concurrent urinary tract infection. Intraoperatively obtained culture of renal stones in patients undergoing surgical stone removal frequently does not match culture data from preoperative voided urine culture. Inaccurate culture data in patients undergoing stone procedures could be a contributing factor in postoperative infectious complications if the preoperative and perioperative antibiotic provided do not treat microorganisms contained in the stone.

The technique of Ctx clearly leaves room for improvement.

What Is Next-Generation Sequencing?

Next-generation sequencing (NGS) is performed using rapid-sequence polymerase chain reaction (PCR) of DNA from bacterial 16S rRNA genes. Several commercially available companies offer this technology, and it is often covered by health insurance in the United States. Depending on the company used, NGS provides a test result in 24 hours. NGS has been utilized in studies of the urinary microbiome to disprove the previously held dogma that urine is sterile, as well as in microorganism detection in other fields such as orthopedics when evaluating for joint infections.

How Does NGS Compare to Ctx in Clinical Urology Practice?

A 2017 study by McDonald et al compared microorganism detection in urine samples of both

Table 1. Concordance of microorganism detection in voided and stone cultures using Ctx and NGS techniques

<table>
<thead>
<tr>
<th>Comparison</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly matching voided Ctx and voided NGS</td>
<td>16 (19.0)</td>
</tr>
<tr>
<td>Exactly matching or at least 1 overlapping organism between voided Ctx and voided NGS</td>
<td>32 (38.1)</td>
</tr>
<tr>
<td>Exactly matching voided Ctx and stone Ctx</td>
<td>53 (63.1)</td>
</tr>
<tr>
<td>Exactly matching or at least 1 overlapping organism between voided Ctx and stone Ctx</td>
<td>56 (66.7)</td>
</tr>
<tr>
<td>Exactly matching voided Ctx and stone NGS</td>
<td>35 (41.7)</td>
</tr>
<tr>
<td>Exactly matching or at least 1 overlapping organism between voided Ctx and stone NGS</td>
<td>42 (50.0)</td>
</tr>
<tr>
<td>Exactly matching voided NGS and stone Ctx</td>
<td>13 (15.5)</td>
</tr>
<tr>
<td>Exactly matching or at least 1 overlapping organism between voided NGS and stone Ctx</td>
<td>26 (31.0)</td>
</tr>
<tr>
<td>Exactly matching stone NGS and stone Ctx</td>
<td>44 (52.4)</td>
</tr>
<tr>
<td>Exactly matching or at least 1 overlapping organism between stone NGS and stone Ctx</td>
<td>55 (65.5)</td>
</tr>
<tr>
<td>Exactly matching voided NGS and stone NGS</td>
<td>12 (14.3)</td>
</tr>
<tr>
<td>Exactly matching or at least 1 overlapping organism between voided NGS and stone NGS</td>
<td>35 (41.7)</td>
</tr>
</tbody>
</table>

Exactly matching includes samples that showed no microorganism growth in addition to samples that showed the exact same microorganism growth.

Renal, renal stone. Voided, voided bladder urine.
asymptomatic control patients and patients with symptomatic acute cystitis. Standard urine culture detected organisms in 13 of 44 (30%) symptomatic patients and 5 of 22 (23%) asymptomatic controls. Interestingly, NGS detected organisms in 13 of 44 (30%) symptomatic patients and 27 (32%) had microorganisms detected in all 44 of 44 (100%) symptomatic patients and 21 of 22 (95%) controls.

Our group recently completed a prospective study evaluating concordance of microorganism detection between voided (or catheterized) urine and stone samples taken from patients undergoing surgical stone removal (ureteroscopy or percutaneous nephrolithotomy) using both Ctx and NGS. Of all 84 patients included, 33 (39%) had microorganisms detected in urine by Ctx vs 66 (79%) by NGS, and 27 (32%) had microorganisms detected in surgically removed stone by Ctx vs 40 (48%) by NGS. When evaluating concordance between urine and stone samples, the data suggest a large amount of discordance between Ctx and NGS. As seen in table 1, the highest proportion of concordance occurred between Ctx of urine and Ctx of stone samples (63% for exactly matching samples), with the next highest proportion of concordance between Ctx of surgically removed stones and NGS of those same stones (52% for exactly matching samples). Table 2 includes test characteristics for predicting concordance of both Ctx and NGS of urine samples to both Ctx of the surgically removed stone or NGS of the stone. The results reported in this table suggest that the test characteristics are not overly favorable for NGS when comparing to standard urine culture.

### Table 2. Test characteristics of preoperative voided via Ctx or NGS technique relative to intraoperative stone culture

<table>
<thead>
<tr>
<th>Characteristic by Technique</th>
<th>Intraop Stone Culture</th>
<th>Ctx</th>
<th>NGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ctx</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>66.7</td>
<td>47.5</td>
<td></td>
</tr>
<tr>
<td>Specificity</td>
<td>73.7</td>
<td>68.2</td>
<td></td>
</tr>
<tr>
<td>PPV</td>
<td>54.5</td>
<td>57.6</td>
<td></td>
</tr>
<tr>
<td>NPV</td>
<td>82.4</td>
<td>58.8</td>
<td></td>
</tr>
<tr>
<td>NGS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>85.2</td>
<td>90.0</td>
<td></td>
</tr>
<tr>
<td>Specificity</td>
<td>24.6</td>
<td>31.8</td>
<td></td>
</tr>
<tr>
<td>PPV</td>
<td>34.8</td>
<td>54.5</td>
<td></td>
</tr>
<tr>
<td>NPV</td>
<td>77.8</td>
<td>77.8</td>
<td></td>
</tr>
</tbody>
</table>

NPV, negative predictive value. PPV, positive predictive value.

When evaluating concordance between urine and stone samples, the data suggest a large amount of discordance between Ctx and NGS. The results reported in this table suggest that the test characteristics are not overly favorable for NGS when comparing to standard urine culture.

### Is NGS the Future?

It is important to keep in mind that our study is based upon an assumption that standard urine culture is the optimal gold standard for microorganism detection, especially when looking at test characteristics reported in table 2. NGS more often detects microorganisms than Ctx in both urine and stone samples, and even standard urine culture will detect microorganisms in otherwise asymptomatic patients. Ctx lacks much in the ways of a gold standard test, but it remains to be determined if NGS has the capability of filling the gaps.

Further work still needs to be completed to determine if NGS should replace or be otherwise routinely incorporated into clinical practice. One major limitation of the above studies is the clinical relevance of the result obtained by NGS. NGS almost always detects some organism presence, making it challenging to determine what is a harmless colonizer vs a true infection. Over detection of clinically insignificant microorganisms may cause more harm than good, or make NGS unwieldy. If, however, the results could be clarified to appropriately identify clinically relevant microorganisms, then perhaps this technology could show a superiority. Further studies to define the clinical relevance of NGS for the urology community hold potential, but much work has yet to be completed.

**“NGS almost always detects some organism presence, making it challenging to determine what is a harmless colonizer vs a true infection.”**

Post-Prostatectomy Questionnaires: Which is Best?

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Introduction

Patients who undergo radical prostatectomy (RP) face a number of postoperative challenges, spanning from initial recovery and surgical wound healing to more long-term concerns such as regaining urinary and sexual function. Numerous questionnaires have been developed and are utilized regularly in post-prostatectomy care for the purpose of providing patient-directed assessments of symptoms. Here we present an overview of commonly utilized questionnaires, with domains including sexual and erectile function, urinary function and satisfaction, and other post-prostatectomy considerations, aiming to provide practicing urologists balanced views on what are the “best” questionnaires (see table).

Erectile Function

The 2018 AUA Guidelines on Erectile Dysfunction (ED) give an expert opinion that “validated questionnaires are recommended to assess the severity of ED, to measure treatment effectiveness, and to guide future management.” While not specific to post-prostatectomy ED, this guideline highlights the importance of using questionnaires to guide therapy.

The first questionnaire developed for the measure of erectile function was the International Index of Erectile Function (IIEF). Developed in 1997, it is

Table. Summary of post-prostatectomy questionnaires

<table>
<thead>
<tr>
<th>Domain</th>
<th>No. Questions</th>
<th>Mins Admin Time</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erectile function</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIEF</td>
<td>15</td>
<td>10–15</td>
<td>Many validation and bridging studies</td>
<td>Little information on sexual domains outside of erection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sensitive to treatment effects across a variety of different treatments</td>
<td>Assumes the patient is sexually active; of little value in patients who do not engage in penetrative vaginal intercourse</td>
</tr>
<tr>
<td>SHIM</td>
<td>5</td>
<td>2–3</td>
<td>Reduced questionnaire length relative to IIEF</td>
<td>6-Month recall period makes it less suitable for prospective, long-term, or longitudinal follow-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Distinct cut-off indicate no ED (&gt;21) &amp; severe ED (&lt;8)</td>
<td></td>
</tr>
<tr>
<td>MSHQ</td>
<td>25</td>
<td>15–20</td>
<td>Cultural sensitivity, ease of comprehension, and focus on ejaculation and satisfaction, as well as erection problems</td>
<td>Does not assume heterosexual intercourse as the primary or sole form of sexual activity</td>
</tr>
<tr>
<td>PROMIS-SexFS v2.0</td>
<td>Variable</td>
<td>30–45</td>
<td>Customizable</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Excellent validity and consistency</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Validated as an assessment of postsurgical recovery of erectile function</td>
<td></td>
</tr>
<tr>
<td>EHS</td>
<td>1</td>
<td>1</td>
<td>Single item, highly specific</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Correlates to IIEF</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Positive correlation between erection hardness and psychosocial measures i.e. self esteem, confidence, and relationship satisfaction</td>
<td></td>
</tr>
<tr>
<td>PFE</td>
<td>1</td>
<td>1</td>
<td>Single item</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Predicts long-term potency rates after RP (&lt;24% of erectile fullness indicates significantly greater risk of long-term ED)</td>
<td></td>
</tr>
<tr>
<td>Urinary function/incontinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICIQ-SF</td>
<td>4</td>
<td>5–10</td>
<td>Generally correlates well to 1- and 24-hour pad weight</td>
<td>Correlation lost at more severe scores</td>
</tr>
<tr>
<td>24-Hour pad weight</td>
<td>N/A</td>
<td>N/A</td>
<td>Historic gold standard</td>
<td></td>
</tr>
<tr>
<td>Miscellaneouse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDQ</td>
<td>15</td>
<td>10–15</td>
<td>All domains validated and confirmed with good consistency and reliability</td>
<td>Does not focus on erection quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Shown to be highly responsive to treatment</td>
<td>Requires vaginal intercourse in the last 3 months</td>
</tr>
<tr>
<td>BAPS</td>
<td>10</td>
<td>5–10</td>
<td>Assess psychological symptoms of perceived penile size</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potential use in treatment planning</td>
<td></td>
</tr>
<tr>
<td>USC patient-reported penile length loss</td>
<td>1</td>
<td>1–2</td>
<td>Incorporated penile length loss with IIEF-5</td>
<td></td>
</tr>
</tbody>
</table>
a 15-question device that established a framework for questionnaires in this space. It is sensitive to treatment effects across a variety of treatment modalities and benefits from many validation and bridging studies. However, the IIEF imparts little information on sexual domains outside of erection and is of little value in patients who do not engage in penetrative vaginal intercourse. An abridged iteration of the IIEF referred to as “IIEF-5,” or more commonly as the “Sexual Health Inventory for Men” (SHIM), is a questionnaire in widespread use. The main advantages of the SHIM questionnaire compared to the IIEF include its abbreviated structure (5 vs 15 items) as well as cutoffs for moderate and severe ED. However, similar to the IIEF, it is validated only in sexually active, heterosexual men and has a 6-month recall period, limiting its utility for prospective, long-term followup of erectile function.

In contrast, the Male Sex Health Questionnaire (MSHQ) is a 25-question device that does not assume heterosexual intercourse as the primary form of sexual activity. It has the benefit of being more culturally sensitive with a focus on ejaculation and satisfaction in addition to erectile function.

The Patient-Reported Outcomes Measurement Information System Sexual Function & Satisfaction Measures 2.0 (PROMIS-SexFS v2.0) survey is the longest of the commonly utilized sexual function questionnaires. It is a comprehensive, customizable device with questions across 17 domains and exhibits excellent validity and consistency, including in post-surgical recovery. However, this questionnaire is time intensive and requires an administrator to tailor questions.

Deviating in design, both the Percent Full Erection (PFE) and Erection Hardness Score (EHS) questionnaires contain only a single item relating to a patient’s perceived degree of erectile fullness/hardness. The PFE has been validated in men undergoing robotic assisted RP and provides an added prognostic benefit, with a score of 0%–24% being associated with a significantly greater risk of long-term ED.

### Urinary Function and Incontinence Questionnaires

Per the 2019 AUA/SUFU guidelines on incontinence after prostate treatment, “clinicians should evaluate patients with incontinence after prostate treatment with history, physical examination, and appropriate diagnostic modalities to categorize type and severity of incontinence and degree of bother.” In contrast to erectile function, fewer validated questionnaires exist to aid in evaluating post-prostatectomy urinary incontinence. The International Consultation on Incontinence Questionnaire Short Form (ICIQ-SF) is a 4-question Likert scale device validated in men with incontinence. While found to generally correlate well to the 1-hour and 24-hour pad tests in post-prostatectomy patients, Torrent-González et al noted that severe ICIQ-SF scores did not correlate well with severe 24-hour pad test scores.

The 24-hour pad weight, while not strictly a questionnaire per se, has been utilized as an objective method for estimating the degree of urinary incontinence, correlating well with the number of pads per day. Unfortunately, no cutoffs have been established to categorize severity of incontinence using these methods.

### Miscellaneous Questionnaires

In addition to the common post-prostatectomy concerns of ED and urinary incontinence, men are often faced with additional issues, such as changes in penile shape and length. Approximately 11%–16% of men will develop Peyronie’s disease after RP. Consequently, it is important to address and monitor the degree of bother patients may experience from this complication. The Peyronie’s Disease Questionnaire (PDQ) is a 15-question Likert scale device evaluating domains including psychological and physical symptoms, including bother and pain. It has been shown to be highly responsive to treatment with good consistency and reliability. However, it has not been validated in the post-prostatectomy patient population and does not focus on the quality of erections.

Post-prostatectomy patients can expect approximately 1 cm of penile length shortening after RP; however, studies have shown a return to baseline for most patients at 48 months. The Beliefs About Penis Size (BAPS) questionnaire assesses the psychological symptoms patients experience regarding their penis size, with the potential for use in treatment planning. It is a 10-item Likert scale design previously validated in men ashamed of their penis size. Unfortunately, it has not yet been validated in the post-prostatectomy population. The USC Patient-Reported Penile Length Loss Survey is a 1-item device used in men undergoing cytoprostaticectomy and measures 3 domains: perceived length loss, amount of length loss and erectile function. It is easily incorporated into the IIEF-5, but has not yet been validated.

### Conclusion

There are a number of questionnaires that assist in the evaluation of issues commonly faced by the post-prostatectomy population. As such, we aimed to provide a global overview of the most utilized questionnaires in order to provide practicing urologists balanced views on what are the “best” questionnaires in the post-prostatectomy setting. Notwithstanding, there is no single questionnaire that is “best,” and perhaps the best questionnaire is the one designed and validated for the purpose of studying and investigating a specific urological population and condition that is being evaluated.

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Rhabdomyosarcoma (RMS) affects ~350 children per year in North America and represents 8% of all pediatric solid tumors. Of these, 15%–20% occur in genitourinary organs. Through cooperative clinical trials and improved multimodal management, survival for genitourinary RMS has improved to over 80%. This improvement in survival has led to an increased focus on reducing treatment morbidity. Here, we will discuss findings from multicenter clinical trials on risk stratification, local control and chemotherapy for genitourinary RMS.

The Children’s Oncology Group (COG) has traditionally taken both presurgical TNM staging and postsurgical clinical grouping into account when risk-stratifying patients into low, intermediate or high-risk groups (see table). This COG-modified TNM staging is based on tumor location and size, nodal involvement and presence of metastatic disease. Clinical grouping is based on the presence and extent of residual (postoperative) tumor, nodal involvement and distant spread. The European pediatric Soft Tissue Sarcoma Study Group (EpSSG) utilizes a similar system with the major difference being that any lymph node positivity is considered high risk by EpSSG. A recent multivariate analysis of 9 studies identified 4 prognostic factors that have been incorporated in COG and EpSSG risk stratification: age <1 year or >10 years, unfavorable tumor location (including bladder and prostate), ≥3 metastatic sites, and bone marrow involvement. Molecular markers, such as PAX3/7-FOXO1 translocations and mutations in MYOD1 and TP53, have also been identified as important adverse prognostic indicators and are now being incorporated into COG risk stratification. Work on other similar biological markers that have been incorporated into COG and EpSSG risk stratification. 2 Such aggressive initial treatment is now recommended as subsequence trials demonstrated that neo-adjuvant chemotherapy and radiation result in similar survival rates with higher rates of bladder preservation. Because complete excision is rarely feasible without removing multiple pelvic organs, the current preferred strategy for most pelvic/bladder/prostate RMS is biopsy, chemotherapy and radiation. Delayed primary excision (DPE), defined as surgery undertaken after initiation of chemotherapy, is only indicated if a complete (R0) excision is clearly achievable. DPE has not been shown to improve survival in genitourinary RMS. By contrast, Pretreatment ReExcision (PRE)—defined as wide local excision of RMS prior to initiation of chemotherapy—has been shown to improve survival and should be undertaken if feasible (for example, excision of RMS at the bladder dome). Importantly, paratesticular RMS in patients >10 years of age or with nodal involvement on preoperative imaging (N1) require an up-front ipsilateral retroperitoneal lymph node evaluation as their risk of relapse is greater. The current challenge is identifying exactly which patients would benefit from less aggressive local control in order to balance the burden of both disease and treatment.

Recent trials reflect the difficulty of balancing long-term control and survival with the risks of long-term toxicity. The COG low-risk trial ARST0331 demonstrated higher-than-expected local failure rates in incompletely resected vaginal RMS after the elimination of radiotherapy. Of note, ARST0331 had lower alkylator dosing compared to prior studies, which may have contributed to the increased local recurrence rate. Another recent analysis of vaginal and uterine RMS found that while elimination of radiotherapy did not impact overall survival (89%), the event-free survival was diminished compared to those receiving radiotherapy (71% vs 81%). A recent intermediate-risk study, ARST0531, introduced early radiation with irinotecan but ultimately demonstrated inferior local control compared to the preceding COG intermediate-risk study, D9803. Although the exact cause is unclear, many suspect it may be due to suboptimal cyclophosphamide doses in ARST0531. A comparison of the specific effect of DPE on local control and survival between D9803 and ARST0531 found that DPE decreased the radiation dose in 81% of patients with equivalent outcomes compared to no DPE. The ongoing intermediate-risk ARST1431 (clinical trial NCT02567435) study is examining higher doses of radiation for bulkier (>5 cm) tumors and encouraging DPE (when R0 resection is feasible) as a local control option.

The standard of care for all RMS risk groups includes adjuvant chemotherapy as RMS cells are known to be present in blood or bone marrow in the majority of grossly localized RMS cases. The standard treatment regimen consists of an alkylator with vincristine and actinomycin D. Cyclophosphamide (combination VAC) is used in North America and ifosfamide (combination IVA) is used in Europe with proven equivalency between the 2 regimens. For intermediate-risk RMS, alternating VAC with vincristine and irinotecan has been shown to have comparable efficacy.

Table. RMS TNM staging and clinical grouping

<table>
<thead>
<tr>
<th>TNM</th>
<th>Clinical Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 Noninvasive, confined to organ or tissue of origin</td>
<td>I Localized tumor, completely resected</td>
</tr>
<tr>
<td>T2 Invasive, tumor extension beyond the organ or tissue of origin</td>
<td>II Localized tumor, completely resected with: (A) microscopic residual disease, (B) involved nodes, grossly removed with no microscopic residual disease, or (C) involved nodes, grossly removed but with microscopic residual disease</td>
</tr>
<tr>
<td>N0 No regional lymph node involvement</td>
<td>III Localized tumor, biopsied or incompletely resected with gross, residual disease</td>
</tr>
<tr>
<td>N1 Regional lymph node involvement</td>
<td>IV Distant metastases present at onset</td>
</tr>
<tr>
<td>N2 Regional lymph nodes not examined</td>
<td></td>
</tr>
<tr>
<td>M0 No distant metastasis</td>
<td></td>
</tr>
<tr>
<td>M1 Distant metastatic disease</td>
<td></td>
</tr>
</tbody>
</table>
event-free survival with less risk of hematologic toxicity, hemorrhagic cystitis, infertility and secondary malignancy. ARST0331 (low-risk study) evaluated cyclophosphamide dose reduction and found excellent 3-year overall survival rates. However, for the subset of patients with stage 1 group III nonorbital or stage 3 group I/II tumors, the 3-year failure-free survival was only 70% overall and 57% for genitourinary tumors, which was significantly lower than anticipated. Of note, ARST0531 (intermediate-risk study) reduced cyclophosphamide etoposide with ifosfamide and found outcomes improved only in a tiny subset of all patients studied. Similarly, recurrent RMS has a very poor prognosis (5-year overall survival 17%) with few clinical trials to guide management. Currently, a combination of cyclophosphamide, vinorelbine, and temsirolimus and/or an irinotecan-based therapy is recommended. In part motivated by the dismal prognosis of high-risk and recurrent RMS, COG recently convened an interdisciplinary task force to prioritize classes of pharmacological agents for new clinical trials.

While insights from clinical trials have resulted in much improved cure rates for genitourinary RMS, many challenges remain. Continued trials are needed to optimize multimodal treatment for low and intermediate-risk RMS, while there is a significant need for research into new approaches to improve outcomes in high-risk and recurrent RMS.

The Underactive Bladder: Where Do We Stand in 2021?

Epidemiological studies have established that voiding symptoms are very common in the general population, affecting up to 57.1% of men and 48% of women over the age of 40 at some time. For many years there has been a focus on bladder outlet obstruction (BOO) and in particular benign prostatic hyperplasia (BPH) as the underlying pathophysiological process causing these symptoms. Consequently, several novel pharmacotherapies and new technologies were introduced into clinical practice. By contrast detrusor underactivity (DUA) has been largely neglected as a topic for clinical and scientific research. This is emphasized by the observation that the last major advance in management was the introduction of clean intermittent self-catheterization by Jack Lapides more than 40 years ago. Over recent years there has been a resurgence of interest in investigating this problem with rising enthusiasm to better understand its epidemiology, aetio-pathogenesis and to develop new treatments. Despite the current enthusiasm for what appears to be a “topical” clinical issue, it is clearly evident that there has been little progress in our knowledge and the therapeutic options available as evidenced by a contemporary update.

While there has in the past been a lack of consensus on terminology with a plethora of terms being used, that recommended by the International Continence Society is DUA, as a urodynamic diagnosis which is defined as “a contraction of reduced strength and/or duration, resulting in prolonged bladder emptying and/or failure to achieve complete bladder emptying within a normal time span.” This definition is hampered by the subjective interpretation of what constitutes normal detrusor contraction strength, length and emptying time. Unlike the detrusor overactivity and its related but nonspecific storage symptom complex, the overactive bladder (OAB) is not analogous with the urodynamic diagnosis of bladder overactivity. There is currently no widely accepted symptom complex related to DUA, though some have suggested the term underactive bladder (UAB).

UAB is indeed an attractive concept, as it could lead to the identification of patients based on symptoms rather than an invasive pressure flow study. Particularly, this would facilitate epidemiological studies and generate greater interest in developing novel treatments. Unfortunately, on closer inspection of contemporary evidence, UAB is difficult to diagnose as there is significant overlap with the symptoms associated with bladder outlet obstruction (BPH and OAB) and detrusor overactivity (DO-OAB). Therefore, symptomatic diagnosis of UAB is unreliable and can lead to assumptions in studies based on a symptomatic assessment of the condition that do not represent a true picture of the prevalence of this important problem. It must be borne in mind that the “bladder is an unreliable witness” as lower urinary tract symptoms (LUTS) often do not accurately reflect the underlying urological abnormality. All of the terms benign prostate enlargement (BPE), OAB and UAB are nonspecific, symptom-based diagnoses, based on the objective assessments of subjective data—the converse of pressure flow urodynamics, which is subjective assessment of objective parameters. The symptomatic expression of DUA is particularly difficult as, in addition to its being predominantly a voiding dysfunction characterized by voiding symptoms, the large postvoid residuals (PVRs) may lead to significant storage symptoms, including incontinence. Nevertheless, efforts are underway to develop a working definition based upon expert consensus and the available data.

An important consideration in defining any development is that it will include a diverse group of patients as the etiology of DUA is multifactorial. This is clear when one reviews the potential clinical tools which can be used to identify patients (see table).

Confirmed etiological factors include neurological disease (eg multiple sclerosis and sacral cord injury) and diabetes mellitus. While longstanding BOO has been suggested to be a potential contributory cause, studies in animal models have demonstrated DUA ensues following prolonged BOO; however, confirmatory evidence of this in man is lacking. Aging has been linked to a decline in detrusor contractile function in some animal models and in patients with LUTS; however, there has been no adequate study in healthy individuals. These diverse etiologies could logically lead to DUA by the consequence of any pathology affecting any part of the micturition reflex including the sensory nerves, the central neural control, the efferent nerves or the detrusor muscle. While the diagnostic criteria for DUA and by inference UAB are an area where consensus is lacking, numerous clinical studies have attempted to estimate its prevalence in the patients presenting with LUTS. In this group, it has been estimated that DUA affects 9%–28% of men under the age of 50 years and 48% in those older than 70. In women DUA is found in 12%–45% and is more prevalent among the institutionalized elderly.

Clearly at present based on the uncertainties noted above, a definitive diagnosis of DUA relies upon an invasive pressure flow assessment, and several derived calculations and indices are available for use (eg bladder contractility index, Watt factor). Most of these have their basis in the bladder outlet relation, which represents the inverse relationship between pressure and flow during a void, and aims to estimate isovolumetric detrusor pressure as a surrogate for isometric contraction strength. The main problem with most of these reported measurements is the lack of validated thresholds for different patient groups, in particular women and young men, as most studies have been conducted in older men. A further issue that is relevant to clinical practice is the inability to reliably exclude the presence of BOO when the patient is unable to generate sufficient detrusor pressure.

The mainstay for the management of DUA has been the use of

Table. Demonstration of the potential use of epidemiological measures to act as a proxy for detrusor underactivity, emphasizing the pros and cons of the different measures

<table>
<thead>
<tr>
<th>Potential Epidemiological Measure of DUA</th>
<th>For</th>
<th>Against</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUTS</td>
<td>-Feasible to collect large scale data using questionnaire or surveys</td>
<td>-Commonly found in other LUT dysfunctions. Impossibly to differentiate from BOO.</td>
</tr>
<tr>
<td>Free flow measurement</td>
<td>-Noninvasive and easy to perform</td>
<td>-Does not distinguish DU from BOO.</td>
</tr>
<tr>
<td></td>
<td>-Objective data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Positive findings in DU</td>
<td></td>
</tr>
<tr>
<td>PVR</td>
<td>-Noninvasive and easy to perform</td>
<td>-Poor test-retest reliability</td>
</tr>
<tr>
<td></td>
<td>-Objective data</td>
<td>-No accepted threshold for abnormal PVR</td>
</tr>
<tr>
<td>Urinary retention</td>
<td>-Feasible to collect large scale data</td>
<td>-May not be a constant feature of DU</td>
</tr>
</tbody>
</table>

Continued on page 22
clean intermittent catheterization where the patient is able and willing to do this. Parasympathomimetic therapy including muscarinic agonists and anticholinesterases are the only available researched agents for this indication based on a handful of relatively low-quality studies. Analysis of these data does not support their efficacy as they are associated with significant side effects, such as tachycardia, facial flushing, salivation, diarrhea and in rare circumstances cardiac depression. Theoretically, any potential new drug therapy would work to either directly increase the contractility of the detrusor muscle or to do so indirectly by sensitizing the sensory nerves. Possible targets include the muscarinic or prostaglandin receptors or the transient receptor potential channels. At present little progress has been made in developing effective pharmacotherapeutic therapy as the most recent development programs in this area have not been successful.

In 2021, 50 years after the widespread introduction of urodynamical assessment, we need to bear in mind the limitations of symptom-based diagnoses in functional urology such as BPH and OAB, which although essential for the institution of noninvasive therapy nevertheless have their limitations. DUA remains under-researched and inadequately treated in clinical practice, except by the institution of invasive bladder drainage preferably by intermittent self-catheterization. Future work needs to be directed at better defining the true prevalence of DUA and its symptom-based correlate UAB, with the development of novel pharmacotherapeutic treatments introduced on the basis of robust clinical trial data to support their use.

Clinical decision making in urology, particularly urological oncology, is driven by accurate pathological diagnoses. As in clinical medicine, pathological evaluation is not always “black and white,” and open communication between pathologists and urologists can result in more informed diagnoses and improved outcomes. The rapidly evolving landscape of molecular biomarkers also necessitates closer collaboration between these disciplines.

Conceptualized from a surgeon’s standpoint, the standard workflow of pathology is simply depicted as follows: Sample obtained → gross evaluation of specimen → tissue processed and slide generated → pathological interpretation → final diagnosis and reporting → clinical decision making → additional biomarker testing.

However, each step of this process is nuanced and relies on explicit and implicit communication between the surgeon and pathologist. After a specimen is obtained and sent for evaluation, interpretation is influenced by information provided on the requisition form, details in the operative note and clinical history of the patient provided in the medical record. The historic notion that “all the pathologist needs is a slide” assumes diagnoses are made in a vacuum, a viewpoint that can negatively impact patient care.

For example, a prostate biopsy obtained following radiotherapy in the setting of biochemical recurrence is a key detail that provides context to the interpreting pathologist. Receipt of prior treatment can not only downstage or eliminate disease (“ypT0”), but also render morphological changes (treatment effect) that may be challenging for a pathologist to conceptualize in the absence of relevant clinical history. Furthermore, providing this information leads to more accurate reporting as cancer showing significant treatment effect should not be assigned a Gleason grade and may otherwise be inaccurately assigned a grade without knowledge of prior treatment.

In addition, clinical impressions from the surgeon provided in the operative and clinical notes can guide the pathologist in terms of sampling, selection of specific stains, evaluation of further levels and diagnostic considerations. For example, communicating the presence of an elevated serum alpha-fetoprotein in a patient with a testicular tumor that appears to be a pure seminoma on initial pathological evaluation should warrant further sampling for a nonseminomatous component. As such, initial line of communication from the urologist to the pathologist starts even before the specimen arrives to the laboratory in the form of thorough documentation in the medical record and requisitions.

Communication also occurs between urologists and pathologists through standardized synoptic reporting. The College of American Pathologists (CAP) has published standardized reporting forms for a variety of cancers, which simplify the transfer of information to surgeons and patients and should be incorporated into practice. These synoptics serve as a checklist and ensure documentation of key pathological parameters necessary for staging and treatment decisions. Moreover, as the number of histological entities expands with further characterization of various tumors (e.g. renal cell carcinoma subtypes) and the complexity of staging and prognostic factors compounds, the importance of utilizing synoptic reports has become increasingly necessary to clearly summarize and communicate data.

Another central arena of communication among surgeons and pathologist occurs in the setting of tumor board conferences. Real-time review of the pathology can lead to important discussions that influence subsequent steps in management via clarification and elaboration of specific elements within a pathology report. This may, for example, include

Establishing Communications with Your Pathology Colleagues to Impact Decision Making and Clinical Outcomes

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Table. Key initiatives to improve communication between pathologists and urologists

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive documentation</td>
<td>in clinical and operative notes and pathology requisition forms</td>
</tr>
<tr>
<td>Utilization of standardized synoptic reports</td>
<td></td>
</tr>
<tr>
<td>Participation of pathologists at multidisciplinary genitourinary (GU) tumor boards</td>
<td></td>
</tr>
</tbody>
</table>

quantification of variant morphologies with poor prognosis (microcystic or plasmacytoid in urothelial carcinoma, and rhabdoid or sarcomatoid features in renal cell carcinoma, among others) that could result in more aggressive surgical or adjuvant treatments, or changes in surveillance regimens. Furthermore, tumor boards are an important avenue for feedback and education with regard to complex nomenclature and evolving practices (for instance, recent recommendations to report presence or absence of cribriform glands in Gleason pattern 4 prostatic adenocarcinoma).\(^1\)

Other discussions that may arise during these conferences include the role of novel and emerging biomarkers. For example, immunohistochemical staining for PDL1 in urothelial carcinoma may be important in selecting treatments for patients with advanced disease; the same applies for FGFR3 testing, where-by the presence of a mutation will inform selection of novel agents for progressive disease. Multiple new biomarkers are available across the spectrum of all genitourinary tumors.

As the realm of urologic oncology expands in complexity and standards of clinical care change, treatment will continue to be guided by accurate pathological diagnoses. An open line of communication between pathologists and urologists at all levels can inform higher level of care for all patients (see table).\(^1\)


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The field of genital gender-affirming surgery (gGAS) is in an exciting phase. The last 3 decades have yielded several new surgical options and techniques that improved patient care. However, time has also shown us that some of these surgical options are associated with complications that have a significantly adverse effect on quality of life.\(^2\) There is also a nationwide shortage of surgeons with expertise to manage gGAS complications,\(^3\) and there are large geographic areas of the U.S. that suffer from limited to no trans health care support.\(^4\)

For all of these reasons it is especially important today to: 1) counsel patients thoroughly about potential complications of gGAS and 2) offer a net risk/benefits ratio that includes significantly lower risk of postoperative complications requiring additional surgeries.\(^5\)

A “one size fits all” approach to gGAS options is insufficient and will not serve many patients. Providers must consider that patients “don’t know what they don’t know” about short and long-term surgery risks and benefits, and surgeons “don’t know what they don’t know” about what each individual patient most wants to gain from surgery and what specific outcomes each wants to avoid. The surgeon should articulate the potential priority “gains” and “costs” of each surgery.

Here we present work by our group to develop: 1) gGAS options that reduce risk of postoperative complications and morbidity,\(^2\) results from questionnaires aimed at better understanding patients’ priorities related to surgery selection and 3) our experience providing recordings of surgery discussion sessions to enhance their recall of risks and benefits we discuss and to improve satisfaction.

Masculinizing Surgery: “Modified Phalloplasty”

The vast majority of complications with phalloplasty (and metoidioplasty) come from the urethral lengthening (+UL) portion of the surgery, which allows the patient to urinate from the tip of his penis. Complications include strictures, fistulae, obstructive lower urinary tract symptoms and urinary tract infections. These often require urgent management, followed by single and multistage (and often repeat) repairs.\(^1,5\)

While it is possible to construct a phallus without UL (−UL),\(^6\) patients willing to forego standing to urinate are often not offered this option and/or choose to forego this option if the final result looks different from phalloplasty+UL (P+UL). For these reasons, and to include a “lower risk” option for all patients, we developed an almost identical-appearing alternative to P+UL which we term simply “modified phalloplasty”\(^7\) (fig. 1). We create a novel 2 cm long distal urethra and normal appearing urethral meatus (fig. 1, a) and we preserve a 1 cm cuff of periurethral mucosa with the native urethral opening (fig. 1, b). The scrotum is constructed to be longer in the center (opposite of the Ghent technique\(^8\)) by anchoring the posterior ends of the labia majora to the anterior aspect of the native urethral meatus (fig. 1, c and d) so the posterior end of the scrotum hangs over and obscures the urethral opening (fig. 1, e). The final result is identical-appearing to P+UL. The same techniques can also be applied to metoidioplasty–UL (fig. 1, f).

We surveyed our patients who underwent P–UL and asked them to rank what factors are most important to them to achieve (and to avoid) with surgery (fig. 2). Elimination of native female anatomy was always #1, but the next highest were “having a normal appearing phallus,” “preservation of erogenous sensation” and “desire to minimize complications.” The proportion who choose P–UL over P+UL in our practice today has

“"It is especially important today to: 1) counsel patients thoroughly about potential complications of gGAS and 2) offer a net risk/benefits ratio that includes significantly lower risk of postoperative complications requiring additional surgeries.”

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INNOVATIVE CHOICES FOR GENITAL-GENDER AFFIRMING SURGERY

Continued from page 23

Figure 1. a, At Stage I, the flap for the P-UL modified phallicurethroplasty can be harvested from the forearm or anterior lateral thigh (ALT) using a similar template as for P+UL, except that only the distal 2–2.5 cm of the urethral portion is used. b, At Stage II surgery, all vulva, labia minora and clitoris epithelium are excised (purple hatch). A 1 cm wide cuff of periurethral mucosal epithelium (blue hatched line) is preserved. The clitoris disappears from view (but is accessible for stimulation) after it is placed into a subdartos space and is sutured to the skin at the right base of the shaft. The lateral edge of the labia majora (darker blue hatch) is incised, from the introitus (orange asterisk) anteriorly (yellow asterisk) to create the neoclitoris. c, We include all subcutaneous fat with the labia majora flaps (green arrows) to preserve skin viability and to optimize scrotal fullness. The ~1 cm periurethral cuff can be trimmed as needed (red hatch). d, After vaginectomy, we begin by anchoring the posterior ends of the labia majora to the midline anterior aspect of the peritoneum(asterisk). Next, the periurethral cuff is sutured to surrounding lateral edge of the labia majora and lateral perineal skin, in the order shown: #2 (green), #3 (yellow) and #4 (blue). e, Glansplasty is performed at Stage II (inset). After complete vulvectomy, the new urethral opening does not have a feminine appearance, and is visible only when the patient manually elevates his scrotum (upper). With gravity, the redundant midline scrotal skin hangs over and obscures the urethral opening (located at the green hatched line). f, This same technique can be used with metoidioplasty as well.

Figure 2. Bar graph of some of the results of our surgery questionnaire regarding decision making factors among trans women and trans men. These illustrate the relative importance that transfeminine patients (who elected SDV over FDV) and transmasculine patients (who elected P-UL over P+UL) ascribe to a subset of surgery decision making domains.

“In an effort to optimize patient recall of the details of our extended (~45–60 minutes) discussion with each regarding the risks and benefits associated with each surgery option, we offered to audio record the discussion and provide a copy on a USB drive that could be listened to at home.”

“increased to 35%, which is significantly higher than other reports. Never reported, about half can stand to urinate over a toilet in a closed stall, though for most this is not a priority.

Feminizing Surgery

The Tubularized Urachus-Peritoneal Hinge-Flap: Patients who suffer partial loss of vaginal depth after full-depth vaginoplasty (FDV) face limited options to augment depth. Our work developing a salvage technique for complete loss of vaginal depth using right colon vaginoplasty led us to develop a robot-assisted laparoscopic salvage technique utilizing peritoneum for patients who have residual satisfactory vaginal depth of 7–8 cm (fig. 3). Our technique is an alternative to other innovative techniques utilizing peritoneum. In contrast, however, ours does not incorporate the rectum. The vaginal canal-vault is incised and its anterior half is sutured to surrounding vesicorectal fold peritoneum, while the cephalad end of the flap is sutured to the posterior half of the opened residual vaginal canal.

For well-selected patients this technique offers modest increased...
depth (fig. 3) but helps avoid more complex and potentially morbid salvage techniques, such as with intestinal vaginoplasty.’

Shallow-Depth Vaginoplasty: Vaginoplasty that includes vaginal canal construction requires a lifelong commitment to dilation/douching, which many patients find especially challenging. The vast majority of complications after vaginoplasty are associated with the vaginal canal. For select patients (eg unable to regularly perform dilation/douching, do not desire penetrative vaginal intercourse) vaginoplasty without creation of a vaginal canal deep to the introitus area (commonly referred to as “shallow-depth vaginoplasty” [SDV]) or “vulvoplasty” is an excellent option. Considering that the vaginal canal is normally not visible, external appearance is identical to FDV. Erogenous sensation, orgasm and urinary function are also identical to FDV.

At our center, approximately 30% of patients choose SDV over FDV. Similar to others who have also reported positive outcomes with this surgery, satisfaction is high and regret rare. We surveyed patients regarding what priorities drove their decision making to select SDV over FDV, and results were similar to what trans men reported when choosing between P–UL vs P+UL (see table).

**Audio Recordings of Surgery Planning Discussion**

In an effort to optimize patient recall of the details of our extended (~45–60 minutes) discussion with each regarding the risks and benefits associated with each surgery option, we offered to audio record the discussion and provide a copy on a USB drive that could be listened to at home. We then queried patients to understand whether, and how, being provided with this recording was useful to them (see table).

**Conclusion**

It is important to consider the complex and highly personal factors that contribute to patients’ decision making for specific gGAS procedures. Our experience suggests that the manner in which surgery options are presented (nuanced to convey that the patient is the decision maker, that most options are not perfect but a balance of pros/cons, and that all options are gender affirming) is essential to helping patients choose surgeries that best balance risks, expectations and achieving individual care goals.

“...suggests that the manner in which surgery options are presented is essential to helping patients choose surgeries that best balance risks, expectations and achieving individual care goals.”

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Bladders Matter: AUA Advocacy Efforts

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In recent years the AUA has drastically expanded its advocacy efforts to support and promote bladder health. The AUA initiated the Bladder Health Alliance in 2014 to create a collaborative network of patient advocacy organizations, physicians and urological researchers in hopes of promoting bladder health awareness and remove associated stigmas. They even created Bladder Health Awareness Month, which is in November, to help increase public health educational opportunities. Currently they are advocating for prescription coverage for bladder medications, increasing research support for bladder health and working to support the continued use of telemedicine.

This fall, the Bladder Health Alliance was focused on women’s bladder health. A variety of topics were covered but advocacy for women’s health, research funding and prescription support were the main themes of the discussion panels. Dr. Rachel Rubin, urologist and sexual medicine specialist in Washington, DC, discussed the importance of the genitourinary syndrome of menopause and the effects of hormone withdrawal on bladder health. Overwhelming data show that local vaginal estrogen will prevent recurrent urinary tract infections (UTIs) in perimenopausal and postmenopausal women and is recommended in the AUA guidelines on recurrent UTI. Not only will vaginal estrogen decrease recurrent UTIs, but it will also improve many lower urinary tract symptoms, including frequency, urgency and dysuria. It will also help improve arousal and lubrication, and decrease painful penetration. The problem is that less than 7% of women with genitourinary syndrome of menopause are prescribed vaginal estrogen, and many who get the prescription don’t use it properly, can’t afford it, stop using it, or fear using it because of misinformation around theoretical harm and inappropriate boxed warnings based on data for systemic synthetic estradiol. This is just one example of the many bladder health concerns that deserve more national attention. We need to increase our advocacy efforts to help educate patients and providers, and advocate for legislation making these therapies more affordable for women.

To further support this and many other advocacy endeavors, the Society of Urodynamics, Female Pelvic Medicine, and Urogynecologic Reconstruction (SUFU) has also enhanced their health policy initiatives. SUFU started a Health Policy Scholar program this year in combination with the AUA to allow urologists the opportunity to take time away from practice to learn some of the intricacies of health policy. During this year the Scholar will attend the advocacy roundtables at the AUA, the Bladder Health Alliance, AUA Health Policy weekend, meetings such as the RUC (American Medical Association [AMA]/Specialty Society Resource-Based Relative Value Scale Update Committee), CPT® or AMA House of Delegates meeting and the AUA Advocacy Summit. SUFU members have shown an increasing presence in recent years at the AUA Advocacy Summit, working with their national representatives to improve support from Congress for bladder health initiatives, and this is a great introduction for this.

Additionally, the AUA Urology Care Foundation works to support the improvement of urological care by funding research, developing patient education and advancing humanitarian initiatives. As part of this, the Bladder Health Committee, part of the larger Public Education Council, works to increase knowledge and awareness of bladder health conditions. The Bladder Health Committee has been quite productive over the past several years working to enhance public education materials on a variety of urological conditions, including bladder cancer, overactive bladder, recurrent UTIs, pelvic floor disorders etc. These handouts are available online at www.urologyhealth.org and are a fantastic resource for patients. There are currently 100 bladder health patient education materials translated into 8 languages and almost 200 total bladder health materials on the website for patient and provider use. These are reviewed frequently to ensure they include recommendations from the most up-to-date AUA guidelines as well.

While these committees and initiatives have been developed in recent years, we have much more to do to increase awareness of bladder health. There are many organizations that can use your help. Please get involved: Bladders Matter.
Unfortunately, COVID forced this year’s AUA annual meeting into a virtual format.

Fortunately, the decision was made late, which led to the inclusion of many exceptional kidney stone abstracts in this year’s AUA program. In light of this, there were over 100 moderated posters and over 50 podium presentations (including video presentations) related to kidney stone disease. Due to the enormity and quality of the presentations, this write-up is but a short glimpse at some of the impactful stone abstracts. That said, I highly encourage you to review the rest of the kidney stone abstracts as they are excellent and are all available on the AUA annual meeting website (https://www.aua2021.org).

In the area of kidney stone prevention, empirical vs selective preventative treatment for kidney stone disease was described in 2 abstracts from the same group using medical claims data. They determined that empirical therapy can be effective at preventing stone recurrence and that thiazides were the most effective (PD21-05).

The same research group also determined that kidney stone patients at high risk for recurrence had a lower risk of stone-related events when obtaining 24-hour urine testing prior to prescribing preventive therapy (PD14-09). Importantly, selective therapy is necessary in some stone patient populations but probably not all. Also in the area of kidney stone prevention, 2 abstracts (PD21-08 and PD21-12) examined alkali agents and found that LithoLyte®, KSPtabs™ and baking soda were all effective alkali supplements (increasing urinary pH and citrate). Their side effect profiles were found to be similar to prescription potassium citrate. This information can be useful for patients who either can’t afford, cannot tolerate or desire a nonprescription alternative for urinary alkalization. Two groups also examined the impact of proton pump inhibitors (PPIs) on kidney stone disease. The first abstract (MP07-11) found a decrease in urinary magnesium on 24-hour urine collection in patients on omeprazole. The second abstract (PD14-12), using electronic medical records, found that patients on PPIs had a higher risk of incident stone formation. This increase in stone formation can most likely be attributed to the low urinary magnesium induced by the PPI.

Shifting focus to the surgical management of kidney stones, PD34-10 was the first report on comminution of stones in humans by burst wave lithotripsy. This innovative technology has seen considerable evolution from bench to now clinical use. Using this handheld device, 63% of stones that were treated (22) were broken into ≤2 mm fragments within 10 minutes and 82% within 50 minutes. Importantly, there were minimal to no adverse events. This novel technology will likely change the way we surgically manage kidney stone disease in the very near future. The EDGE group reported on the 6-year followup of the basking vs dusting trial (PD54-11). It was determined that there was no difference in terms of surgical reinterventions, symptomatic stone events, stone recurrence, emergency department visits and readmissions. Therefore, it is clear that outcomes depend more on a number of stone and patient related factors and not necessarily on the stone fragmentation technique being used. Also presented at this year’s AUA was a study from the Endourological Society TOWER group examining the success of extracorporeal shock wave lithotripsy (SWL) for distal calculi (MP06-19). In this retrospective study of 384 patients using the Storz Modulith® SLX lithotripter, it was determined that the stone-free rate was 70% for stones with an average size of 6.5 mm. Failure was associated with larger stones (mean size 7.12 mm; see figure). Surprisingly, body mass index was not a significant predictor of failure. Interestingly, the majority of cases (81.3%) were done in the supine position. Finally, 2 abstracts examined ambulatory percutaneous nephrolithotomy (aPCNL) retrospectively and found it to be safe and effective even in patients who were more complex (MP06-02). In addition, aPCNL was found to reduce cost by 30% when compared to standard percutaneous nephrolithotomy (MP06-03). Initial, unplanned and overall costs all favored aPCNL. It is clear that aPCNL will play a significant role in the future surgical management of kidney stone disease.

Two noteworthy abstracts examined kidney stones during pregnancy. The first (MP54-12) found that first-time stone formers during pregnancy have an increased risk of developing stone disease within 4 years after pregnancy. The second abstract (PD14-03) examined pregnant patients presenting with obstructive pyelonephritis and determined that they had reduced odds of decompression as well as increased odds of delayed decompression when compared to nonpregnant patients. Furthermore, delays in decompression were associated with increased maternal-fetal complications. These abstracts further emphasize the importance of treating pregnant stone patients appropriately and in a timely manner in order to avoid complications.

There was also a thought-provoking abstract examining racial and ethnic disparities in emergency care of kidney stone patients (PD03-01). Analysis of the Healthcare Cost and Utilization Project examined over 200,000 kidney stone patients and found that Black patients were more likely to return to the emergency department compared to Black and Hispanic patients. Medicare and Medicaid patients were also more likely to revisit the emergency department, as were patients from rural populations.

Finally, regarding patient quality of life and kidney stone disease, the Wisconsin Stone Quality of Life (WisQOL) Consortium presented a short form of the WisQOL questionnaire (MP19-05). This version has only 6 items (original WisQOL has 28 items) with only 2 domains. This newly developed version was found to be both short and suitable for efficient assessments. Regarding ureteral stents, the Urinary Stone Disease Research Network study presented the patient’s perspective regarding the symptoms associated with the placement of a ureteral stent (PD14-05). This abstract provided great insight into the patient’s perspective, which should help further research in this area. Finally, the Canadian Endourology Group presented early work on the validation of a new short and concise ureteral stent symptom score (MP06-11). After developing the questionnaire, it was pilot tested and found to be acceptable among patients, and was evaluated to be at a grade 5 readability level. Once validated, this new stent symptom questionnaire will be concise and will be appropriate not only for research, but also for clinical objectives.

This concludes the brief overview of the stone disease abstracts from the 2021 AUA annual meeting. Although the meeting was once again virtual this year, the richness of research in our field of kidney stone disease was clearly apparent. I look forward to seeing everyone next year in New Orleans.
AUA2021 Take Home Message: Health Services Research

Kevan Sternberg, MD
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The 2021 American Urological Association Annual Meeting had 11 sessions dedicated to Health Services Research. The tenets of Health Services Research, including the delivery of patient-centered, high quality, cost-effective and safe urological care, permeated throughout the entire meeting making this a challenging topic to completely summarize. Therefore, I will focus on several recurrent themes and highlight these topics.

The sessions began with a focus on racial disparities of urological care. Dr. Hayden from Lahey Clinic presented his work on the impact of race on the emergency care of patients with stone disease (PD03-01). Analysis of the Healthcare Cost and Utilization Project revealed that 7% of patients seen in the emergency department for symptomatic stones had an emergency department re-visit within 30 days. Black and Hispanic patients were less likely to re-present compared to White patients, which was an unexpected finding. Possible explanations discussed included disparity of up-front surgical care and differential pain medication management. Dr. Bernstein from Fox Chase Cancer Center evaluated the differential impact of the COVID-19 pandemic pertaining to race on patients with localized prostate cancer (PD03-02). A retrospective review of a multi-institutional collaborative found that Black men were significantly less likely to undergo prostatectomy during the early COVID-19 pandemic despite similar COVID-19 risk factors, similar Gleason Grade Group, and higher prostate specific antigen values. Bashir Al Hussein Al Awanlh reported on the importance of active surveillance for prostate cancer using the Surveillance, Epidemiology, and End Results database from 2010–2015 (PD03-03). A predictive model was developed and found that the intensity of active surveillance (prostate specific antigen testing, magnetic resonance imaging scans, surveillance biopsies) was significantly less for Black men compared to non-Black men. Dr. Michel from the University of Pennsylvania looked at the impact of race on involvement in urologic oncologic clinical trials using the National Cancer Database and ClinicalTrials.gov (PD28-01). Only half of the clinical trials had any data on race/ethnicity despite a 1993 mandate to report this data. They found that Black and Hispanic patients were underrepresented compared to White and Asian groups. This discrepancy impacts not only the availability of clinical care but also the ability to generate relevant conclusions to all patient groups from these clinical trials. Dr. Inoyatov from Albany Medical Center similarly used the ClinicalTrials.gov site and found that the majority of clinical trials failed to report enrollment information regarding minority groups, and those that did had a <3% enrollment (MP34-11). Lastly, Dr. Bernstein found that while the discussion of race and health disparities in the urological literature has increased over time, racial health disparities relating to structural biases and the impact of social inequities are rarely named (MP58-02).

The next area to explore involved social determinants of urological care as social factors are known to impact health outcomes. Dr. Miller from UPMC examined the association of socioeconomic status, rural-urban location, and insurance type with overall and cancer specific mortality in muscle invasive bladder cancer using the Pennsylvania Cancer Registry (PD03-04). Lower socioeconomic status and Medicare/Medicaid insurance type were associated with overall mortality while rural location was not, suggesting a need for public health programs to focus on these at-risk populations. Dr. Lundon from Mount Sinai Hospital looked at a diverse group of patients from New York City diagnosed with both COVID-19 and urological cancers (PD03-06). COVID-19 outcomes (positive test, hospitalization, intubation, and death) were found to be related to factors including zip code, race/ethnicity, smoking status, and English as preferred language. Emily Roebuck from Atrium Health described a pilot project to screen for social determinants of health in 2 outpatient urology clinics; 30% of the participants identified a resource need with food and housing being the most common highlighting the pervasive social needs of urological patients and the opportunity to address such needs in this setting (MP34-10).

Next, disease specific quality of life (QOL) was highlighted. Dr. Penniston from the University of Wisconsin discussed the importance of QOL in kidney stone patients (MP19-01). She described the creation of a shortened version of the Wisconsin Stone Quality of Life scale that can more easily be used for repeated collection of QOL measures. The Wisconsin Stone Quality of Life scale has previously shown that certain stone forming groups have lower QOL scores including those with multiple stone events/procedures/comlications, women, obese, cystine stone formers, lower socioeconomic status and others. QOL related to urological cancers was explored by Dr. Maciejewski from the Ottawa Hospital (MP19-02). He described outcomes in patients undergoing radical cystectomy. Emotional distress was often found before cystectomy while physical and social concerns were frequently identified after surgery, highlighting the importance of assessing QOL factors pre and post-radical cystectomy. Patient-reported QOL has been independently associated with survival for many disease states, per Dr. Alam from Johns Hopkins (MP19-04). His group examined the differential effects of a cancer diagnosis on QOL. Using the Surveillance, Epidemiology, and End Results–Medicare Health Outcomes Survey, they found that both mental and physical health declined after cancer diagnosis for all urological cancers except testicular cancer. The greatest decline in mental health occurred in those with a diagnosis of ureteral cancer while the greatest decline in physical health occurred in those with a penile cancer diagnosis.

A recurrent topic in the sessions related to cost and outcome measures was the 2021 changes made by Centers for Medicare & Medicaid Services to the physician fee schedules. Drs. Mikula and Williams from the Smith Institute described these changes, which involved increased payments for outpatient evaluation and management services and subsequent decreases in compensation for in-office and inpatient procedures (MP17-12).

Several abstracts focused on the limited use of palliative care (PC) in urological patients. Dr. Filipiou from the University of Washington and Dr. Hugar from Moffitt reported on patients with bladder cancer where only 4% utilize these services (MP19-07). Using the Bladder Cancer Advocacy Network Patient Survey Network, it was shown that PC is infrequently discussed by providers. Both patients and caregivers, however, were receptive to PC and would like it introduced earlier and more frequently in their care. Most patients had accurate knowledge and positive beliefs about PC. Using the National Cancer Database, Dr. Patel from Rutgers showed that PC was also infrequently used in patients with metastatic RCC (17%–20%) and that its use was influenced by several socioeconomic and clinical variables (PD38-09).

There were many presentations on opioid limitation and predictors of persistent use. In addition to urology-specific improvements in prescribing, Eric Macdonald from Albert Einstein reported that opioid prescriptions for patients with urethritis seen in the emergency department have steadily decreased in all U.S. regions except the Midwest (MP23-19). Another common topic explored was

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AUA2021 TAKE HOME MESSAGE: HEALTH SERVICES RESEARCH

Continued from page 28

The worldwide urological community is heavily invested in the education of the next generation of urologists as evidenced by the abstracts presented on surgical education during the virtual AUA Annual Meeting in September 2021. A total of 75 abstracts were presented across the Podium Education Research I–V, Moderated Poster Education Research II and MP Education Research II sessions on numerous topics related to medical and urological education, training, and clinical practice. Significant themes emerged, including 1) process improvement and use of social media in the AUA/SAU (Society of Academic Urologists) Urology Match, 2) the effect of COVID-19 on clinical education, 3) implementation of surgical simulation and video surgical skills, and 4) trends in publications and scholarly activity with a focus on diversity, equity, and inclusion (DEI; see figure).

Within the theme of the AUA/SAU Urology Match, abstracts addressed bias reduction in letters of recommendation (LOR), program directors’ (PDs’) criteria in application selection, holistic review of applicants in the context of diversification of the workforce, and the evolving role of social media in the match process. Nabavizadeh et al evaluated 90 standardized LORs introduced to overcome ambiguity and bias in traditional LORs and found applicants were highly rated among top tiers despite the structured format and recommend further revisions to the structure and domains to distinguish between highly qualified urology applicants (MP12-08). Sidhu et al found the gender of the LOR author impacted the length and frequency of achieve and risk words in over 54 LORs written by letters of both genders (MP12-09). Women authors were more likely to write longer LORs and include more risk and achieve words. In the subtopic of criteria for interview selection and holistic application review, Alamiri et al surveyed U.S. PDs with a 49% response rate and determined that PDs value LORs, urology clerkship grades, research, and visa status as the most important factors in selection of applicants for interview (MP12-07). Nussbaum et al reported a 13% increase in underrepresented minorities as well as out-of-state applicants selected for interview with a comprehensive scoring tool based on attributes of manual dexterity, academic performance, research, leadership, resilience, and commitment to underserved populations (MP12-10).

Ho et al surveyed applicants on use of social media and revealed a large proportion of applicants are using Twitter to connect directly with residents and faculty, make decisions about applying, interviewing, and ranking programs, certainly increased from the prior cycle (MP20-01). Ernst et al demonstrated that their novel structured mentorship “tweetorial” pilot paired 111 students with 93 residents to develop mentoring relationships as well as educational resources released thru social media (MP20-03). High levels of satisfaction were identified using a validated mentorship assessment survey and over 20 “tweetorials” covering a wide breadth of educational topics were published on Twitter.

Within the theme of simulation, virtual reality and video data collection have been used to expand place and time limitations for learners. Leung et al demonstrated use of online virtual realism technology during a regional live cadaveric course where attendees used personal smartphones and headsets to observe procedures such as reimplant to provide real-time electronic immersive experiences (PD02-11). Vanstrum et al used the Delphi method to validate the content of dissection assessment for robotic technique specifically on the lymph node and seminal vesical dissection of robotic prostatectomy and found the process to be reproducible to differentiate between expert and trainee surgeons (PD02-01). Li et al surveyed trainees on feasibility of video data collection in the operating room as short-term increased knowledge base (PD02-08). Whiles et al implemented a 2-week virtual interactive synchronous and individual learning rotation with self-reflective exercise amid pandemic restrictions on medical education (PD02-09).

Post-rotation student evaluations were completed by 89% and 87% rated the experience as strongly positive. Johnstone et al administered the Maslach burnout inventory questionnaire to graduating chief residents at the time of the Canadian Urology examination skills test and found significant increase in emotional exhaustion and depersonalization scores comparing pre-pandemic and pandemic graduates (MP20-17). LeBlanc et al showed mean total volume on national case logs decreased during the 6-month period following March 2020 (PD24-05).

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Figure 1. Themes for surgical education research abstracts, AUA2021.
a means for objective surgical skills assessment and at a 23% response rate reported that 89% had no experience with their own operative skills being recorded but that 92% were receptive with limited concerns for their personal privacy or obtrusiveness, and that it would be more objective but should not be used for summative evaluation (MP12-05).

Within the theme of scholarship, trends for publication rates during and after training, academic writing assessed by gender and diversity and inclusion topics were studied. Johnson et al analyzed publication rates for residents and correlated this to academic scholarship after practice and a moderate positive correlation between the number of publications obtained during and after residency (MP20-12). Prunty et al analyzed publication records for an 18-year period of the 10 highest impact factor urology journals of over 59,000 articles and found the proportion of female authors increased, as did the female first authorship, but female senior authors did not have the same growth (MP20-14). Findlay et al analyzed the pipeline or racial and ethnic diversity of applicants to urology from 2016–2020 and found a 92% increase in Black applicants from 4% to 7% (37) of the pool, but despite this significant increase Black and Hispanic applicants remain underrepresented overall (MP12-13). Ghanney et al surveyed all medical students at a single institution and found those underrepresented in medicine had interest in pursuing a career in urology but lack role models, which may impact the pipeline of students choosing urology as a subspecialty (MP12-12).

As evidenced by these highlighted projects and many others, the urological community is deeply engaged in training and education, and the take home message is that despite the challenges of the pandemic and social inequity, urologists dedicate themselves to advancing and innovating in teaching and education.

Deep Learning in Cancer Detection

Deep learning models for MRI-detected prostate cancer have traditionally been hampered by incomplete or inaccurate pathology-confirmed ground-truth labels. One study aimed to overcome this by co-registering MRI images with annotated whole mount pathology slides to directly correlate radiological and histological features on a pixel-by-pixel basis (PD10-01). Their model demonstrated excellent cancer detection performance and highlights the potential for machine learning methods to help enhance MRI interpretation.

Similarly, other authors used deep learning models to distinguish benign renal masses from renal cell carcinoma (PD41-02). Their model incorporated both imaging and clinical information to achieve promising discriminatory performance. Notably, the model enhanced discriminatory accuracy in patients who had undergone negative or nondiagnostic renal mass biopsy, suggesting radiomics may have a role in reducing the overtreatment of indolent or benign masses.

Surgical Skill Improvement

Several presentations this year examined creative ways to improve technical surgical skills among trainees. One multicenter randomized control trial examined the utility of surgical simulation to improve resident performance of ureterorenoscopy (PD38-04). The authors found that trainees exposed to simulation had better overall proficiency scores with faster skill acquisition during subsequent surgical procedures in patients. A creative way of promoting more widespread use of surgical simulation is the use of gamification through the creation of team-based competitions. These authors showed that participating in a robotic surgery simulation league could improve resident engagement and proficiency with surgical simulation (PD38-06). Residents also reported subjective improvement in surgical confidence and autonomy. Working the use of high-fidelity surgical simulators was also presented, including a mixed-reality laparoscopic simulator that incorporates haptic feedback and real-world obstacles into virtual simulations. This added realism can more accurately mimic adverse events such as uncontrolled bleeding or bowel injury. Together, these presentations highlight the growing focus on improving technical skills prior to entering the actual operative setting.

Other strategies to improve surgical outcomes were also investigated. One study analyzed room

**AUA2021 Take Home Message: Imaging/Technology**

Calvin C. Zhao, MD
New York University School of Medicine, New York

Richard S. Matulewicz, MD, MSCI, MS
Memorial Sloan Kettering Cancer Center, New York, New York

The 2021 AUA Annual Meeting showcased the torrid pace of technology-driven innovations in urology with 30 abstracts in the “imaging and radiology” category and 56 in the “technology and instrumentation” category. Themes included using machine learning methods and the application of standard and novel imaging modalities to optimize cancer detection, as well as using novel surgical techniques to improve outcomes. Over 30 abstracts discussed surgical skill improvement, with a focus on utilizing virtual reality and other simulation technologies. Though we regrettably cannot cover every meritorious presentation, we discuss select abstracts that highlight these noteworthy trends.

**Novel Applications of Ultrasound**

Micro-ultrasound uses higher frequencies to improve image resolution over traditional ultrasound devices. In a small case series, transrectal micro-ultrasound compared favorably to magnetic resonance imaging (MRI) in detecting pathology-confirmed prostate cancer lesions (MP22-09). Another study demonstrated the feasibility of ultrasound-tomography, an acoustic 3D imaging modality, for prostate cancer detection in ex-vivo models (MP22-17). These proof-of-concept studies highlight the potential for ultrasound to again be used as a low-cost, point-of-care tool to help manage prostate cancer.

Novel uses for ultrasound technology in benign urology were also reported. One group demonstrated that contrast-enhanced ultrasound (CEUS), which uses a microbubble contrast agent, was superior to fluoroscopy in detecting ureteral drainage in patients undergoing endoscopic stone management (PD10-01). The authors hypothesized that CEUS could be used to more accurately determine the need for post-lithotripsy stent placement. Other authors used CEUS to assess urethral strictures and reported it to be more accurate than retrograde urethrography (PD10-12). Another study found that traditional ultrasound was noninferior to computerized tomography urogram for the detection of suspicious lesions in low risk microhematuria patients (PD10-07). These studies suggest ultrasound modalities may be a valuable alternative to imaging modalities that expose patients to ionizing radiation.

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AUA2021 Take Home Message: Pediatrics

Kate H. Kraft, MD, FAAP, FACS
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The 2021 SPU (Societies for Pediatric Urology) annual meeting proved a major success, transitioning nimbly to a virtual format that attracted hundreds of attendees. Drs. Fernando Ferrer and Rebecca Zee deserve huge congratulations for organizing a dynamic meeting elucidating cutting-edge topics in pediatric urology.

A major theme of the day consisted of updates in genitourinary reconstruction, opening with a panel centered around the tubularized incised plate (TIP) repair for hypospadias. First described by Dr. Snodgrass nearly 30 years ago, the TIP procedure has become a mainstay in our toolkit for hypospadias repair. Dr. Walid Farhat and Dr. Ahmed Hadidi debated the risks and benefits of the technique, alerting that the TIP repair is not a one-size-fits-all procedure and very much depends on the size of the glans, quality of the tissue, and the width of the urethral plate. Dr. Farhat reviewed the importance of learning curve, citing changes in his own technique over time with a transition from dartos flap coverage to spongoplasty more recently. Dr. Hadidi warned we must be cautious about complications associated with TIP, not the least of which are intraoperative distractions in relation to adverse operative events (MP10-02). Another examined the use of 3D anatomical visualization platforms, such as the Da Vinci® Iris®, and found that users were able to more quickly and accurately understand patient anatomy compared to using traditional 2D viewing platforms (PD41-11). Ergonomics were also of particular interest in several presentations that examined economy of motion and posture during laparoscopic, robotic and microsurgery (PD58-11, PD41-07, PD58-05). While these studies are still preliminary, they may yield important improvements in historically overlooked, but important, aspects of surgery.

New Devices/Techniques

Several new devices were introduced this year, including a multi-resolution foveated laparoscope which allows for simultaneous wide angle and zoom views for better field of vision (MP10-04). A novel pneumo-cystoscope with a laparoscopic instrument channel was introduced as well (MP10-03). The authors demonstrated this scope in a small series of bladder tumor resections using a supersonic scalpel in a bladder pressurized with carbon dioxide. Other surgical advancements include intraoperative near-infrared fluorescence (using Firefly®) of the prostatic neurovascular bundles to facilitate nerve-sparing procedures during robotic-assisted radical prostatectomies (MP10-07). The authors report safely identifying all neurovascular bundles in their cohort of 207 patients, resulting in significantly improved postoperative erectile function.

A large collection of presentations featuring procedures performed with the Da Vinci Single Port robot were also presented, including extraperitoneal kidney transplantation (V08-08), extra-peritoneal radical prostatectomy (V08-10), bilateral pyeloplasty (V08-06), inguinal lymph node dissection (V08-05), radical cystectomy with intracorporeal creation of neobladder (V08-01) and ipsilateral transureteroureterostomy (V08-07). However, the true patient and system-level benefits of the single port platform over established surgical approaches requires further study of its economic impact and incremental effectiveness.

“As patients age, they become much more aware of differences in their anatomy and function after hypospadias repair, which may lead to dissatisfaction in adults.”

Dr. Richard Redett, the Milton T. Edgerton, M.D. Director and Professor of Plastic and Reconstructive Surgery at Johns Hopkins University. Dr. Redett, a thought leader in reconstructive surgery, emphasized 4 primary outcomes for penile reconstruction: 1) aesthetically acceptable results, 2) creation of a competent neourethra, 3) return of both tactile and erogenous sensation, and 4) ability to achieve intercourse through a successful penile implant. Dr. Redett presented his team’s experience with the radial forearm free flap, which affords excellent aesthetics and sensation while issues with urethral stricture and implant complication persist. This has motivated the exploration of penile transplantation, a nascent yet promising procedure that may yield excellent outcomes in all domains of penile reconstruction.

Dr. Redett’s lecture segued into a forward-thinking panel discussion on gender affirmation surgery and the role of the pediatric urologist. Recent data suggest 0.7%–2.9% of adolescents identify as transgender/nonbinary. Dr. Beth Dworzewiecki reviewed how despite growing demand, the health care needs of our transgender/nonbinary patients are not being met. Transgender/nonbinary youth encounter a number of hurdles in transitioning, including feeling vulnerable or uncertain with decision making and overcoming systemic barriers. Dr. Joshua Roth shared his surgical tips executing metoidioplasty, explaining how the techniques are akin to hypospadias repair. Dr. Geolani Dy described novel techniques in performing penile inversion vaginoplasty with peritoneal flaps. All panelists emphasized the importance of adhering to the WPATH (World Professional Association for Transgender Health) standards for the transitioning process.

Highlighting the future of our specialty, Dr. Jonathan Ellison expanded on the American College of Surgeons National Surgical Quality Improvement Project (NSQIP®). Starting in 2006 with only 4 pediatric hospitals, NSQIP now includes 148 participating sites nationwide. NSQIP has introduced 3 novel tracking mechanisms for antireflux surgery, surgical antibiotic prophylaxis, and testicular torsion. Data supplied by NSQIP can drive quality improvement initiatives and opportunities for collaborative learning, particularly if large variations across centers are observed.

Dr. Amanda North delivered the Meredith Campbell Lecture centered on the past, present, and future of the urological workforce. Dr. North touched on many “firsts” in urology, particularly the growth of underrepresented groups in our field. While approximately 27% of current trainees are women, the...
...Despite growing demand, the health care needs of our transgender/nonbinary patients are not being met.”

Kyle Rove outlined successes with ERAS at Children’s Hospital Colorado as well as development of the PURSUE (Pediatric Urology Recovery after Surgery Endeavor) collaborative among 8 pediatric centers. ERAS pathways aim to minimize length of stay, intraoperative fluids, and postoperative opioids, among a number of other metrics. Success hinges on multi-disciplinary collaboration, buy-in from all stakeholders, decreasing variation, and embracing the iterative process.

Finally, we revisited vesicoureteral reflux, with Dr. Antoine Khoury offering an elegant overview of various anti-reflux procedures. Dr. Patrick Cartwright and Dr. Hans Pohl engaged in a point-counterpoint summarizing the optimal scenarios for surgery versus nonoperative management. Anti-reflux surgery should be considered in children at high risk for febrile urinary tract infections and low likelihood of resolution. Monitoring with continuous antibiotic prophylaxis remains a pillar of conservative management given that the majority of vesicoureteral reflux resolves spontaneously and that continuous antibiotic prophylaxis lowers the risk of urinary tract infection. Nitrofurantoin has maintained minimal resistance over the last 20 years, and thus we should consider this our first-line agent for continuous antibiotic prophylaxis.

Overall, this year’s SPU annual meeting highlighted advanced approaches for both long-standing and emerging issues in pediatric urology. In service to our pediatric patients, our field continues to be rich in energy and innovation.
AUA2021 Take Home Message: Infection and Inflammation

Kymora Scotland, MD, PhD
UCLA

Several themes have emerged during this year’s conference with implications for the care of patients with genitourinary infections and inflammatory disorders. Intriguing studies in each of these general themes are discussed below.

Theme 1: The Urinary Microbiome

What can we learn from next generation sequencing (NGS) of urine samples?

Fairly recent work has revealed that urine is not sterile and that in fact a urinary microbiome exists. This has led to speculation that patients with issues ranging from recurrent urinary tract infections (UTIs) to chronic pelvic pain syndrome may well have previously undetected bacteria to blame for their persistent symptoms. In recent years, we have seen the emergence of several companies who provide NGS of urinary microbiota as a means of diagnosis. But what can we deduce from these troves of data that is of practical benefit to patients? During AUA2021, several research teams presented their investigations of the urinary microbiome of asymptomatic as well as UTI patients. This includes the new identification of nonrandom bacterial communities called bacterial consortia by Vollstedt and team (MP25-10). Nickel and colleagues investigated the urinary microbiome of healthy patients using an NGS platform and found tremendous diversity among patients and even in the same patient at different timepoints (MP25-02). There may be differences based on sex and age as well as antibiotic use but no clear pattern has currently been elucidated.

Does hormonal status affect urinary microbiome diversity?

Nickel and team did not find differences due to menopause. In contrast, Nettey et al found that the genera of bacteria present in urine samples change after women undergo menopause (fig. 1; MP-25-03).

Takeaway: The urinary microbiome is complex with no consistent pattern even for asymptomatic volunteers. Thus, we cannot yet interpret NGS findings for UTI, interstitial cystitis/chronic pelvic pain syndrome and prostatitis patients.

Theme 2: Management of Life-Threatening Infections

Fournier’s gangrene

Substantial work is being done by several groups to determine new ways to improve outcomes for patients with Fournier’s gangrene. Warner et al showed that the diagnostic opportunity for Fournier’s is much earlier than assumed (MP35-05). They found that approximately 50% of patients had at least 1 visit to an emergency room or outpatient clinic for a symptomatically similar diagnosis within 20 days of Fournier’s diagnosis.

Takeaway: We should have a higher index of suspicion for Fournier’s, particularly in patients at risk for this disease.

The importance of renal pelvis cultures

Preoperative midstream urine culture samples are unreliable at predicting blood culture results in patients with subsequent sepsis. Two independent studies addressed the importance of renal pelvis urine cultures in patients presenting with obstructing infected ureteral calculi. Belle at al investigated sample discordance between bladder urine culture and subsequent blood culture (MP29-08). They revealed decreased discordance of renal pelvis samples which had the real consequence of decreasing hospital stay by as much as half the number of days for patients with bladder samples only (fig. 2). A different study by Thakker and Mirzazadeh also revealed the importance of pelvic culture in obstructive stone surgery; in 22% of patients with positive blood cultures, cultures were only positive from the renal pelvis and not the bladder (MP29-05). However, it must be noted that in 35% of patients with positive blood cultures
both renal and bladder cultures were negative.

"Renal samples are still often negative in patients with a positive blood culture so we must be vigilant in monitoring all patients for evidence of sepsis."

Figure 3. Discordance between bladder urine, renal pelvis and blood cultures in infected obstructed stone patients. (Provided by Dr. Duane Baldwin, Loma Linda University). E coli, Escherichia coli. MRSA, methicillin-resistant Staphylococcus aureus.

Takeaway: Yes, we should collect renal pelvis urine in obstructed infected stone patients since it seems to be more reliable than bladder samples only. However, renal samples are still often negative in patients with a positive blood culture so we must be vigilant in monitoring all patients for evidence of sepsis.

Theme 3: Antibiotic Stewardship in Urology

Antibiotic stewardship was the focus of several new studies. Based on work by Najafabadi et al, the clinical utility of antibiotic prophylaxis for shockwave lithotripsy is not currently clear (MP25-17). A separate study by Rosen et al revealed that local antibiograms in several states suggest the use of antibiotics other than those recommended by the AUA best practice statement for transurethral procedures (fig. 3; MP25-15).

Takeaway: Check your local state and institutional antibiogram.

Theme 4: Sublingual Vaccine

Finally, in a late-breaking abstract Dr. Nickel presented the promising results from the first multi-center randomized double-blind controlled trial of a sublingual vaccine for recurrent UTI patients (PLLBA-02). This mucosal vaccine comprises 4 whole cell inactivated bacteria and is administered daily for a 3-month period. He reports time to first UTI was 275 days for patients administered the vaccine versus 48 days in the placebo group and with milder UTI severity.

Takeaway: This vaccine may potentially be an alternative to antibiotics in patients with recurrent UTIs. Larger studies are warranted.


AUA2021 Take Home Message: Reconstruction/Trauma/Diversion

Matthias D. Hofer, MD, PhD
Urology San Antonio, Texas

There was an abundance of excellent presentations in urological reconstruction, trauma, and diversion at this year’s AUA meeting and it was difficult to choose those that should be highlighted in the Take Home Messages. Despite our mutual grief of not being able to get together at a live meeting, one advantage of the virtual AUA is the ability to go back and review the many excellent presentations on demand, all of which would have deserved to be highlighted.

One noteworthy presentation addressed the validation of the LSE classification system of urethroplasties by Justin Drobish from the University of Iowa on behalf of the TURNS group (MP03-02). The study cohort contained nearly 2,500 urethroplasties done between 2008 and 2018. The authors demonstrate a significant difference in recurrence-free survival of the length parameter (L1: <2 cm, L2: 2–7 cm, L3: >7 cm), segment parameter (briefly, bulbar strictures fare better than penile strictures), and etiology parameter with radiation and lichen sclerosus-related strictures having the worst prognosis. While the initial description of the LSE system is a couple of years out, this validation study highlights its ability to classify urethral strictures and encourages its adaptation by reconstructive urologists. It allows not only the comparison of urethral strictures and surgical outcomes by allowing to take complexity into account, but it is furthermore useful for

“Local antibiograms in several states suggest the use of antibiotics other than those recommended by the AUA best practice statement for transurethral procedures.”
clinical decision making as well as communication among urologists.

Of timely interest and practical applications was a presentation about strategies to decrease narcotic requirements after urethralplasty. Adam Nolte from the Mount Sinai Medical Center in Miami Beach (MP03-19). In this study, the use of a buccal nerve block with a mixture of bupivacaine, xylocaine, and dexamethasone injected in the buccal sulcus just behind the first molar significantly decreased the amount of opioid pain medication needed by 66% in the immediate postoperative period and by 50% in the following hours during admission. Given the still prevailing opioid epidemic in the U.S. and increasing scrutiny of opioid prescriptions after surgery, this protocol would decrease the opioid requirements and may be one small part of the solution to this dilemma.

An interesting study came from the University College London presented by Simon Bugeja analyzing the significance of contrast leaks after urorectal fistula repair (MP53-18). These fistulas are a challenging entity and often there is contrast extravasation present after catheter removal. However, as demonstrated in this study in a large cohort of 138 urorectal fistula patients having undergone repair, this may not always be equal to failure of the repair. While contrast extravasation into the perineum or rectum indeed had a poor prognosis for further closure with conservative means such as prolonged catheter placement, those patients in which contrast was extravasating into a blind tract had a >90% chance to experience fistula closure with conservative means. This, in turn, would certainly prevent a number of unnecessary revisions which, needless to say, have a poorer prognosis already.

The number of abstracts and presentations in regards of transgender surgery has been increasing over the years, as has the number of patients presenting with complications thereof. During the GURS (Society of Genitourinary Reconstructive Surgeons) meeting at AUA2021, Geolani Dy from the Oregon Health and Science University and Joe Pariser from the University of Minnesota gave an excellent presentation on complications of vaginoplasty surgeries along with detailed guidance on how to address them. In an equally excellent presentation, Richard Santucci (Crane Surgical Services) addressed complications encountered after phalloplasty surgery as well as neo-urethral complications. A review on demand of these 3 presentations can be highly recommended as these complications will present with increasing frequency to reconstructive urologists worldwide.

Also during the GURS meeting, Reynaldo Gomez (Hospital de Trabajador, Santiago, Chile) presented on nontransecting bulbar urethralplasty, adapting and expanding a technique originally reported by Gerald Jordan over a decade ago. Unfortunately, transection of the bulbar arteries during membranous urethralplasty is near inevitable during a classic ventral approach that requires transection of the perineal body. This poses a significant risk to the urethral blood supply facilitating recurrence of the stricture. As Dr. Gomez demonstrates, the urethra can, however, also be accessed dorsally through the intracural space after splitting of the corpora allowing for mobilization of the bulb without having to transect the perineal body and jeopardizing the bulbar arteries. While this technique was initially developed for pelvic fracture-related strictures, this technique is applicable for all membranous and proximal bulbar strictures combining the advantages of an excision and primary anastomosis in this area with avoiding its major disadvantage, transection of the bulbar arterial blood supply. This is of particular importance in patients with membranous strictures who often need artificial urinary sphincters due to uncontrolled stress incontinence postoperatively, and the preservation of the blood supply likely decreases risk of erosions.

Lastly, an important presentation was given by Margit Fisch from the University of Hamburg, Germany about complications occurring in adult patients who received bladder augmentation or urinary diversion as children. Transitional care is an important aspect of reconstructive surgery, and as children who have received bladder augmentations and diversion become adults complications that arise with time need to be addressed. This not only includes complications associated with augmentations such as ruptures or stone formation, ureterointestinal anastomotic strictures, and renal failure in patients with ileal conduits, but also secondary malignancy, specifically if colon had been used for reconstruction. This presentation is a comprehensive overview of what needs to be monitored and addressed in the transitional population and underscores the variety of patients reconstructive urologists are currently caring for and increasingly will care for in the future.
AUA2021 Take Home Message: Male Infertility

Joshua Halpern, MD, MS
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Despite the challenges of the virtual AUA, this year’s conference delivered spectacular research and innovation in the field of male infertility. The program included multiple poster (MP-21, MP-31) and podium (PD-29, PD-39) sessions, along with plenary panel discussions covering a broad range of clinical topics, including a review of the new AUA Guideline on the Diagnosis and Treatment of Infertility in Men.

In the basic and translational science arena, multiple investigators developed novel approaches towards the study and understanding of spermatogenesis. One group used both whole testes and testicular organoids to identify 133 unique miRNAs present along various stages of spermatogenesis, providing new insight into the role of miRNA in regulation of spermatogenesis (PD39-05). Another group used sorted cells from human testicular biopsies in a bioprinted microfiber, demonstrating high cell viability and an intrinsic ability for cell organization after bioprinting (PD39-09; see figure). This model shows significant promise as a platform for future studies of spermatogenesis and regenerative therapies.

A large number of studies focused on the condition of nonobstructive azoospermia (NOA). Single-cell transcriptome analysis of spermatogonia from men with NOA due to early maturation arrest (25) and obstructive azoospermia (12) were compared in order to determine differences in gene expression between men with impaired versus normal spermatogenesis (PD39-02). Over 5,000 differentially expressed genes were upregulated and over 12,000 differentially expressed genes were downregulated in spermatogonia of men with NOA, indicating that impaired spermatogenesis is likely the result of a large number of alterations in gene expression working in concert across functional axes pertaining to DNA synthesis, cell cycle, stress response and glucose metabolism.

A randomized trial compared the success of testicular sperm aspiration (TESA) and microdissection testicular sperm extraction (microTESE) in men with NOA (MP31-03). After randomization, men who underwent TESA with negative sperm retrieval went on to a subsequent “salvage” microTESE. Only 22% of TESA patients had successful retrieval compared to 43% of microTESE patients (p=0.02). Interestingly, even with salvage microTESE, successful retrieval in the TESA + salvage group was seen in only 29% of men; while the study was underpowered to compare the salvage protocol to conventional microTESE, these data support the role of microTESE as a gold standard approach for NOA.

Lastly, a deep learning artificial intelligence approach was used for automated sperm identification in men with NOA (PD39-12), showing great promise for convolutional neural networks to support andrological evaluation of semen specimens that may harbor rare sperm.

Two studies examined the relationship between reproductive urologists and reproductive endocrinologists and its impact on access to care for male infertility. Interviews with 477 assisted reproductive technology clinics revealed that higher number of in vitro fertilization cycles, urban location, presence of fertility fellowship program in-state and affiliation with an academic center were all associated with a higher likelihood of urology referral for male-factor infertility (PD29-04). Institutional data from a single, high-volume center found that overall urology referral rates for men with semen parameter abnormalities was quite low at just 20.5% (PD29-03). There was also significant variability in referral rates across individual reproductive endocrinologist providers. Together, these data suggest an important role for further interdisciplinary communication and collaboration to increase the proportion of men who undergo reproductive urology evaluation.

Klinefelter syndrome (KS) was the focus of multiple abstracts throughout the meeting (MP31-08, MP31-09, MP31-12, PD39-06, MP47-01), and 2 studies specifically examined the use of testosterone replacement therapy (TRT) in men with KS. Among 290 men with KS who underwent microTESE, men without current or recent TRT use had significantly higher sperm retrieval rates (85.7%) compared to those on short-acting (40.0%) and long-acting (0.0%) TRT medications, suggesting a negative impact of TRT upon sperm retrieval in these patients (MP31-08). The risks of TRT in men with KS were also examined among 235 men across a national-access database (MP31-09). Men receiving TRT had significantly higher rates of thromboembolic events compared to those not receiving TRT (30.4% vs 10.9%, p <0.001). While limited by small sample size and retrospective design, these studies demonstrate important risks of TRT in the KS population, which physicians should discuss with patients and consider before initiation of TRT.

As the COVID-19 pandemic ushered in the era of telemedicine, multiple abstracts throughout the meeting explored the use of telemedicine for health care delivery. One retrospective study examined the use of telemedicine versus in-person visits for the initial consultation prior to vasectomy (PD25-12). A very high proportion of men (97.4%) who had initial telemedicine consultation went on to successfully complete a vasectomy, which was similar to those who underwent in-person consultation (98.7%, p=0.68). While 3 (2.6%) procedures were aborted due to anatomical considerations on the day of the procedure, these data provide reassurance that the overwhelming majority of men are good candidates for telemedicine consultation prior to this procedure.

The program concluded with an excellent overview of the new 2-part AUA Guideline on the Diagnosis and Treatment of Infertility in Men from Dr. Peter Schlegel, Chair of the guideline panel.1 The updated guidelines emphasize the importance of the male partner evaluation in parallel to the female evaluation. Other notable changes include more extensive statements in the realm of fertility preservation, critical assessment of the role of lifestyle factors and medical therapy in male infertility, and restriction of criteria for retroperitoneal evaluation in the setting of an isolated right varicocele.

AUA2021 Take Home Message: Renal Transplantation

Jason Y. Lee, MD, MHPE
University of Toronto, Ontario, Canada

After a wonderfully executed eleventh-hour pivot by AUA Secretary Dr. John Denstedt and the entire planning team, the AUA2021 Annual Meeting was successfully held in a virtual format. The program included an excellent array of topics pertinent to kidney transplantation (KTXs) presented during plenary, podium, moderated poster and video sessions.

One of the main highlights was a report on the inaugural 7-year experience of the Voucher-based Kidney Donation Program started in 2014 (PD45-03). As a method to increase the donor pool, the program allows potential donors to donate a kidney and secure a voucher for their intended recipient, which can be redeemed in the future if needed with a kidney from a different donor. The program has seen 250 family voucher-based donations (fig. 1), which may have significantly contributed to a 3-month reduction in mean paired-exchange wait-times since 2014. There have been 6 voucher redemptions to date, all leading to successful KTXs with a mean time of 88 days from time of redemption to KTXs. The Voucher Program was further discussed by Dr. Jeffrey Veale during the 2021 Urologic Society for Transplantation & Renal Surgery (USTRS) meeting held during the AUA2021 Annual Meeting, resulting in some robust debate and discussion.

Cancer is now the leading cause of death among solid organ transplant (SOT) recipients, and given the prevalence of some genitourinary (GU) malignancies, the cross-section between uro- oncology and transplantation has become commonplace. During the podium session, a single-center retrospective cohort study including almost 11,000 SOT patients from the University of Minnesota found that recipients diagnosed with bladder cancer presented at a later stage than the general population and with higher grade disease (PD45-04; fig. 2). Conversely, those diagnosed with renal cell carcinoma (RCC) had a more indolent course, presenting with lower rates of metastatic disease and lower recurrence rates after extirpation. Data on prostate cancer outcomes among SOT patients were not presented during the meeting. Another retrospective study out of Universitario do Porto, Portugal compared oncologic outcomes among KTX and dialysis patients diagnosed with RCC and found that KTX recipients presented with lower grade disease with no signal that immunosuppression negatively impacted oncologic outcomes (PD45-07). A scoping review on the impact of immune-checkpoint inhibitors (ICI), which are revolutionizing the field of oncology, demonstrated that in addition to the overall poor outcomes of these patients, graft rejection rates were high (42%), with ICI being the most common cause (MP37-11).

Urologists have long been known as innovators and early adopters. Several abstracts focused on reducing the surgical morbidity of KTXs through innovation were presented during the meeting. During the podium session, we heard about the development of a novel cold-ischemia device for use during open or robot-assisted kidney transplantation (RAKT; PD45-05). Novel devices such as these have the potential to reduce re-warming times, which may be particularly beneficial during complex cases involving long vascular anastomotic times. In the past few years, we have seen increasing adoption of RAKT. With mounting experience worldwide, we have moved from the “safety and feasibility” stage to the “optimization of outcomes” phase of RAKT, as evidenced by one of the video abstracts presented during this year’s V02 video session. The group from Fundació Puigvert demonstrated some excellent new techniques and technologies to improve surgical performance during RAKT (V02-01). Continuing to push boundaries, the Cleveland Clinic group presented their early experience with a single-port extraperitoneal approach to RAKT, and demonstrated safety and feasibility in expert hands (MP37-01).

Expanding on the focus of improving KTX surgical outcomes, a retrospective cohort study, also from the Cleveland Clinic, examining the safety and impact of implementing an early recovery after surgery (ERAS) protocol for KTX recipients found that it was associated with shorter hospital stay, reduced rate of delayed graft function (DGF) and a higher rate of graft survival at 6 months (PD45-06). While recipient body mass index (BMI) has been associated with surgical complication rates post-KTXs, a group from McMaster University in Canada found that skin to external iliac vein distance (SVD) was a better predictor of surgical complications than BMI, suggesting that perhaps we can evaluate surgical risk among our KTX recipients with better granularity than BMI alone (PD43-11). The traditional teachings regarding the use of intravenous (IV) mannitol during renal transplantation surgery have come under scrutiny in recent years, both during donor and recipient operations. A single-center retrospective study found that IV mannitol during laparoscopic donor nephrectomy was not associated with improved recipient serum creatinine at 1 month, 6 months, 1 year, 2 years or 3 years post-KTX (PD45-12).

The Monday morning plenary session was a case-based discussion and included patients presenting with ureterovesical anastomotic stricture, bladder-outlet obstruction resulting in high-pressure reflux and urine leaks post-transplantation. The expert panel, comprised of DRS. John Barry, Obi Ekwenna and Jeffrey Veale, discussed the use of robot-assisted

Figure 1. Trends in voucher-based kidney donation by annual quarter (q).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Number of patients (N=42)</th>
<th>Percentage of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>15</td>
<td>38.1%</td>
</tr>
<tr>
<td>T2</td>
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<td>28.6%</td>
</tr>
<tr>
<td>T3</td>
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<td>28.6%</td>
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<tr>
<td>T4</td>
<td>12</td>
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<tr>
<td>T5</td>
<td>4</td>
<td>9.5%</td>
</tr>
<tr>
<td>T6</td>
<td>4</td>
<td>9.5%</td>
</tr>
</tbody>
</table>

Figure 2. Bladder cancer pathology characteristics among single-organ transplant recipients.
surgical techniques for ureteric re-implantation post-renal transplant, the value of considering a patient’s native ureter when urinary tract reconstruction is required and the importance of maximal drainage in the case of urine leak.

In some jurisdictions around the globe, the United States being a prime example, we are seeing an increasing number of surgical transplant teams leading multi-organ transplant programs. The need for well-trained, knowledgeable urological surgeons remains paramount to the kidney transplant patient population and the programs to which it belongs. It behooves our specialty to remain engaged in the field and continue to innovate and lead academic discovery. As we look forward to the AUA2022 Annual Meeting, I invite clinicians and researchers alike to continue to submit abstracts relating to the topic of renal transplantation and encourage all to attend the US-TRS meeting held during the AUA Annual Meeting.

Have You Read?

Craig Niederberger, MD
University of Illinois Chicago College of Medicine
University of Illinois Chicago College of Engineering


(Special thanks to Drs. Juan Diego Cedeño and Ervin Kocjancic at the University of Illinois at Chicago)

To render a patient stone-free or to leave little fragments behind that “shouldn’t be a problem” in the treatment of kidney stones: that is the question. It isn’t just about getting rid of stones; what has to be included in the equation are also factors such as recurrence and reintervention that affect patient morbidity and economic concerns such as time off work.

To our knowledge, this is the first systematic review and meta-analysis of the natural history of residual asymptomatic kidney stones after treatment. Interventions sometimes leave small (<4 mm) fragments often considered clinically insignificant, and this study aimed to evaluate the rate of spontaneous passage, intervention, and disease progression of these fragments.

Data were extracted from 18 studies and revealed that fragments <4 mm can carry a risk of the need for a subsequent intervention. Regardless of whether the procedure was percutaneous nephrolithotomy, shock wave lithotripsy or ureteroscopy, these fragments can cause a downstream problem, and the risk of reintervention can be as high as 38% to 88% for up to 4 years and potentially extend beyond. There was no difference between small and large fragments (>4 mm) in disease progression or spontaneous passage. Larger fragments were more likely to need intervention, but a sizable minority of smaller fragments still required intervention, at around 20%.

The authors emphasize that “term ‘clinically insignificant’ should be abandoned,” and that patients with fragments should be closely followed and advised of the possibility of progression and the potential need for future intervention. We’d say: try to take it all, folks!


(Special thanks to Drs. Jason Huang and Rodrigo Pagani at the University of Illinois at Chicago)

Chronic scrotal content pain is a debilitating condition, and the typical management of refractory cases involves microsurgical denervation of the spermatic cord. But is there a role for spermatic cord block series for these patients?

In a series of 44 men with chronic scrotal content pain, a debilitiating condition, and the typical management of refractory cases involves microsurgical denervation of the spermatic cord. But is there a role for spermatic cord block series for these patients? In a series of 44 men with chronic scrotal content pain, a debilitiating condition, and the typical management of refractory cases involves microsurgical denervation of the spermatic cord. But is there a role for spermatic cord block series for these patients?

A total of 9,662 ureteroscopic procedures were performed between June 2016 and May 2019 in the state of Michigan. Overall, a stent was placed in 72.7% of these cases. Stented patients presented to the emergency department 1.4% more often and 0.9% more were hospitalized. After controlling for patient and surgeon differences, stent placement during ureteroscopy was independently associated with 1.25 higher odds of an emergency department visit within 30 days. However, these visits typically did not lead to admissions. This finding contradicts the previous Cochrane Database finding and could lead to a potential paradigm shift in endoscopic practice. One major limitation of this study is the intrinsic bias of this study noted in the statistically significant difference in stenting based on the kidney stone size. This could have skewed the result toward the numbers favoring that stenting predisposes patients to return to the emergency department due to the fact that the patients with less complicated ureteroscopy are less likely to return. Maybe not stenting every ureter doesn’t sound like a bad idea, but selecting which cases it applies to remains an open need for urology.
Sponsoring Transparency and Open Science: The Case for Open Peer Review

Joseph A. Smith, Jr., MD
Editor, The Journal of Urology®
Vanderbilt University, Nashville, Tennessee

D. Robert Siemens, MD, FRCSC
Incoming Editor, The Journal of Urology®
Queen’s University, Kingston, Ontario, Canada

In October 2021, my editorial, “Determination of the Worthiness for Publication,” was published in The Journal of Urology®. This editorial served as an announcement that The Journal would begin to embrace the transparent concept of open peer review. In collaboration with my successor, Dr. Robert Siemens, who begins his term in January 2022, and with the support of our Editorial Board, we are pleased to announce exactly how we will move forward with this initiative.

Historically, The Journal has used “single-anonymous” peer review. This model obscures the identity of a submission’s peer reviewers to authors; however, the reviewers have access to the identities of authors. Although single-anonymous peer review is used widely across scholarly publishing, its critics argue it is subject to bias. Because reviewers are able to see a submission’s authors and institutions, opponents of single-anonymous peer review believe it is difficult for the peer review process to remain impartial and without prejudice.

One alternative to single-anonymous peer review is double-anonymous peer review. This model conceals the identities of both authors and peer reviewers from one another. The benefits of double-anonymous peer review are that any unfairness and preconceptions a reviewer might have about an author and/or institution are removed. However, double-anonymous peer review is very challenging from a practical perspective. Editorial office members must read each submission carefully to remove identifying information from a manuscript. Often, such details are missed, despite thorough checks. We want to equip our reviewers with all relevant information, including data about the provenance of submissions. Reviewers are keenly aware of the potential for bias but do a great job of attempting objective commentary and recommendations.

After careful consideration, Dr. Siemens and I reached the conclusion that open peer review is the right decision for The Journal of Urology®. There are multiple levels of what constitutes truly “open” peer review, so with the support of our Editorial Board, we have committed to working toward the ideal of fully open peer review with the following guidelines:

• We will only publish peer review reports for accepted, published articles.
• We will publish reviewer comments on decisions for accepted papers only, along with the authors’ responses. Comments and feedback shared by reviewers with the Editor will not be published for any articles. Editorial comments and names of the reviewers writing them will continue to be published at the end of articles, exactly as they are now.
• We will offer reviewers an “opt-out” button, which will allow their name to be obscured from the published peer review report. However, we will still publish their comments anonymously.
• All reviewer names will be presented in aggregate, along with the full peer review report. No specific reviews will be connected to specific reviewers.
• All of the above will be explained in a clear and straightforward manner in our reviewer invitation letters.

Recognizing that our volunteer peer reviewers are the backbone of The Journal’s success, we thank them for their steadfast commitment. At the same time, we want The Journal to be a leader in medical publishing while providing a window into the peer review process and how decisions are made in accepting an article.

We have valued the thoughts and comments of the community as we announced this initiative. As we work toward fully open peer review, where we offer transparency regarding the entire decision process, we realize that we must take small steps as we move toward that ultimate goal. In hearing the respectful opinions on this change from our Editorial Board, and following along with personal conversations and feedback we have received on social media and in writing, we believe that the principle of what we are trying to accomplish will be embraced by the urology community. However, we also see that we must move slowly so that we can alleviate the well-founded concerns that reviewers, especially those who are junior and/or international volunteers, will be protected when their peer review comments are shared publicly.

We are not instituting this policy to check a box. Rather, we intend to keep the conversation around open peer review fluid and ongoing. This process will evolve over time, and we encourage continued feedback from each of you. We will continuously check in on progress, measuring such metrics as reviewer declines, number of reviewers who opt out of sharing their names on published peer review reports and anecdotal reactions from our reviewers to this initiative. We will also send follow-up emails to our reviewers to survey them to determine whether the quality of their reviews and/or the thought processes around them were affected by open peer review. These findings will be reported periodically as editors in The Journal; furthermore, it is expected that the guidelines will be tweaked and updated frequently over time.

The Journal of Urology® has been a leader in adopting and launching new initiatives. Modification of content, improving visual presentation and incorporation of innovative social media concepts have all been introduced and remain ongoing. Moving toward more transparency in the review process will provide an educational opportunity for readers and, once fully understood and implemented, improve the quality of reviews and discourse with authors.

A 55-year-old woman who was diagnosed with Werner syndrome presented with macroscopic hematuria. Her medical history included hypertension and diabetes mellitus, which are common comorbidities in Werner syndrome. She had also been treated for chronic leg ulcers for 5 years. Although no tumor was observed in the bladder, enhanced computerized tomography (CT) showed a tumor in the middle part of the left ureter that appeared to be the cause of hydronephrosis. Based on these findings, the patient was diagnosed with left ureteral cancer, and laparoscopic nephroureterectomy was performed. The histological examination showed invasive urothelial carcinoma (pT2N0M0). Cystoscopy at 4-month followup showed tumor recurrence on the trigone of the bladder, and transurethral resection of the bladder tumor (TURBT) was performed. Although the histological examination showed invasive urothelial carcinoma (pT1), the surgical specimens obtained by repeat TURBT identified no residual malignancy histopathologically. Intravesical bacillus Calmette-Guérin therapy was refused. Three months after repeat TURBT, multiple papillary tumors recurred on the posterior wall and bladder neck. One week before the third TURBT for recurrent tumors, the patient started to complain of urinary incontinence. During the operation, a vesicovaginal fistula (VVF) was confirmed (fig. 1). Although no malignant lesion was reported on frozen section examination, the masses were removed without nephrectomy, and then radical cystectomy was also performed. The final diagnosis of the peri-renal masses was high-grade sarcoma, which is consistent with dedifferentiated liposarcoma. This patient refused additional surgical intervention with right nephrectomy because of the difficulty of hemodialysis. She underwent chemotherapy for 17 months and died 24 months after the diagnosis of liposarcoma.

Werner syndrome is a rare autosomal recessive disorder characterized by premature aging. Diabetes mellitus, arteriosclerosis, and malignant tumors are common in this syndrome, resulting in a shorter lifespan. Malignancies associated with Werner syndrome are more frequently nonpapillary than papillary. In addition, the frequency of urothelial carcinomas is low even among epithelial. In the present case, urothelial carcinoma was diagnosed when the patient presented with gross hematuria, but she eventually died of liposarcoma that occurred during the treatment process.

Intractable skin ulcers are also a major problem in Werner syndrome, which may have a significant impact on the quality of life of the patient. Although the etiology of the skin ulcers is multifactorial, they are due to a combination of decreased adipose tissue, delayed wound healing due to fibroblast aging, and microcirculatory disorders associated with diabetes mellitus and/or arteriosclerosis. In this patient, cystoscopic observation after 2 TURBTs showed no obvious ulcer formation in the bladder. However, a VVF formed despite no obvious cause other than surgery, and it was considered that the delayed wound healing associated with Werner syndrome was involved in the formation of the VVF.

Extreme care should be taken when performing TURBT in patients with diseases involving delayed wound healing, including Werner syndrome.

Impact of the COVID-19 Pandemic on Urologist Burnout in the New York Section of the American Urological Association

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Introduction

The COVID-19 pandemic has placed a massive strain on all aspects of the health care system and has demanded a corresponding shift in resources and priorities. Many urologists, particularly in New York City, were involved in critical care. Working beyond their usual scope of practice, urologists were concerned about the novel virus, inadequate access to personal protective equipment and potential effects on surgical training or career-advancement opportunities. While the COVID-19 pandemic continues to place strain on health care professionals, the effects of the pandemic on rates of burnout and depression in urologists should be further characterized. In the Medscape National Physician Burnout, Depression & Suicide Report,4 this report defined burnout as “long-term, unresolvable job stress that leads to exhaustion and feeling overwhelmed, cynical, detached from the job, and lacking a sense of personal accomplishment.” The Medscape report defined colloquial depression as “feeling down, blue, or sad” and clinical depression as “prolonged severe depression that is not caused by a normal grief-associated event.” Our survey incorporated these definitions. Additionally, we adapted many of the factors contributing to burnout and the coping mechanisms from the Medscape report.

Our primary outcome was the rate of self-reported burnout or depression. Univariable logistic regression was used to assess for factors associated with the primary outcome. Logistic regression was repeated for each variable of interest in a multivariable model. Statistical analysis was performed using Stata® 12.1 (StataCorp, College Station, Texas). This study was approved by the Columbia University Institutional Review Board.

Methods

In July 2020, we administered a survey to attending urologists in the NYS of the AUA. Chi-square tests were used to determine factors associated with rates of burnout or depression. Questions about burnout and depression were largely derived from the 2019 Medscape National Physician Burnout, Depression & Suicide Report. This report defined burnout as “long-term, unresolvable job stress that leads to exhaustion and feeling overwhelmed, cynical, detached from the job, and lacking a sense of personal accomplishment.” Our survey incorporated these definitions. Additionally, we adapted many of the factors contributing to burnout and the coping mechanisms from the Medscape report.

Results

A total of 94 attending urologists completed the survey. The median age category was 50–59 years, and 87% were male. Survey respondents included a combination of academic and nonacademic urologists, as well as general urologists and subspecialists. Table 1 shows

Continued on page 42
additional demographic and professional characteristics. During the COVID-19 pandemic, 80% of urologists reported decreased clinical or surgical volume; however, 39% reported increased workload outside of business hours. Burnout was reported by 32 subjects (34%), and colloquial depression was reported by 7 subjects (7%), for a combined rate of 41%. The most cited contributing factors to burnout were charting/paperwork (50%), emphasis on profits over patients (54%), lack of respect from patients (49%), insufficient salary (46%) and excessive work hours (46%). Decreased job security and decreased salary during the pandemic were reported by 24% and 47%, respectively. After controlling for age and gender, decreased job security (OR 5.96, p < 0.01) and decreased salary (OR 2.48, p=0.05) were associated with higher rates of burnout (table 2). Availability of nonphysician providers to assist with clinical tasks was associated with lower rates of burnout (OR 0.34, p=0.02). Of the subjects with burnout or depression, 67% reported an associated impact on patient care.

Overall, 50% of respondents reported involvement in non-urologic care during the pandemic, including 14% who were deployed to the intensive care unit (ICU) and/or emergency department (ED). There was no relationship between redeployment and burnout for re-deployed attendings (OR 1.30, p=0.53) or those specifically redeployed to the ED and/or ICU (OR 0.86, p=0.81).

Among respondents who reported burnout or depression, the most common coping mechanisms included exercise (67%), talking with family/friends (46%), alcohol use (31%), and music (31%). Of those with burnout or depression, only 15% sought professional help, and 67% felt that appropriate mental health support was not provided at work. Among those who did not seek professional help, the most common explanation was feeling their symptoms were not severe enough to require help (52%). Additionally, 36% did not think professional help would be beneficial; 36% felt they were too busy to seek help and 9% feared it would be seen as a sign of weakness.

The statistically significant association between decreased job security since the beginning of the pandemic and burnout may stem from an environment of general uncertainty. When this survey was conducted, it was not known when an effective vaccine would become available. Without a clear idea of the future, physicians may have been unable to seize opportunities to network, relocate or otherwise advance their careers. The financial stress on institutions with the cancellation of elective surgeries and the reallocation of resources also may have contributed to the decreased job security reported by nearly a quarter of our study’s respondents.

The decreased revenue associated with scaling back elective surgeries affected many urologists, with nearly half of respondents reporting decreased compensation. These issues have been described during the pandemic among surgeons outside of urology, as well.4,5

### Conclusions

Burnout and depression during the COVID-19 pandemic were highly prevalent among urologists in the NYS of the AUA. The rate of burnout measured in our study, 41%, closely aligns with the rate measured in the largest study on burnout in urology to date, 38.8%.6 This high prevalence may be partially related to decreased job security and compensation in the setting of the pandemic. Availability of nonphysician providers to assist with clinical tasks may be protective against burnout.

These data reflect last year’s responses, and further information needs to be collected on the current state of burnout amongst urologists in particular sections and beyond. These findings along with ongoing data acquisition via the AUA Census can continue to help guide programming and outreach regarding this important issue.

<table>
<thead>
<tr>
<th>Factors associated with burnout/depression for 94 participants</th>
<th>Univariable Logistic Regression</th>
<th>Controlling for Age and Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
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<tr>
<td>Yrs age, increasing category</td>
<td>0.89</td>
<td>0.63–1.28</td>
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<tr>
<td>Male gender</td>
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<td>Academic (vs nonacademic)*</td>
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<td>0.22–1.30</td>
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<td>Yrs in practice, increasing category</td>
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<tr>
<td>Subspecialist (vs general urologist)</td>
<td>0.52</td>
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<td>Urban (vs suburban)</td>
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<td>Nonphysician providers assisting</td>
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<td>Work hrs, increasing category</td>
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<td>No. pts per hr, increasing category</td>
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<td>Proportion of telemedicine, increasing category</td>
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<tr>
<td>Redeployed to ICU or ED</td>
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<td>Increased workload outside business hours</td>
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<tr>
<td>Increased sense of purpose</td>
<td>1.67</td>
<td>0.69–4.00</td>
</tr>
</tbody>
</table>

*Excluded part-time or missing data.
Fixing Moments of Misery and Celebrating Moments of Magic

Neil H. Baum, MD
Tulane Medical School, New Orleans, Louisiana

When s&*t hits the fan, most medical practices conduct damage control to first identify the problem and, more importantly, to see that the problem does not occur again. When a patient complains and has a moment of misery with the practice, the investigation will reveal that an employee or even the physician did not perform to the expectation of the patient. However, sometimes, the investigation will discover that there was a problem in the system.

An example is when a patient waits on hold for more than several minutes when calling the office, and then when the caller does connect with the office, the caller is relegated to a phone tree. This is unacceptable, and most patients don’t appreciate a long hold time or being required to listen to multiple options before they can speak to a human. This is a system problem that needs to be fixed. If the practice conducts patient satisfaction surveys and hears this complaint on multiple occasions, then the process needs to be repaired.

On the other hand, when a moment of magic occurs, hopefully more frequently than moments of misery, the positive movement is often not recognized and is seldom celebrated. I suggest that these moments of magic be acknowledged with every intention that the action is repeated.

In most medical practices, when an accolade is received by the practice, the compliment is buried or not celebrated at all. Let me provide a few examples of how a moment of magic is honored and shared with others in the practice.

It is common for patients to share with the doctor in the exam room how helpful a staff member was and compliment the staff member. Rather than gloss over the compliment, the doctor might consider asking the patient “to hold that thought” and then go to the employee and invite him or her into the exam room and ask the patient to repeat the compliment so that the staff member hears the remark directly from the patient. For example, a patient reports that the receptionist was helpful in making an appointment so quickly for the patient. When the receptionist is called into the room and hears directly from the patient that the effort of the receptionist is so appreciated, the employee will likely break into a wide smile and truly appreciate the recognition. This acknowledgment takes less than 3 minutes, but it is the best 3 minutes you can invest in staff motivation. This approach is extended to sharing the same story at a future staff meeting so that the remainder of the staff also hears the compliment. This informs the staff that their actions are recognized and celebrated by everyone. This approach motivates others to extend themselves to patients so that everyone is able to have moments of magic within the practice.

A second example is the thank you note sent by a patient to the office manager or to the treating doctor complimenting them on their expertise or outstanding care. Most of those notes are tossed out, placed in a drawer or posted on the practice bulletin board in the employee lounge. I suggest that you share the note with all of the staff and also send a copy to the patient’s referring physician with a note that mentions the patient’s positive experience. I also recommend obtaining permission from the patient to place the note in a scrapbook in the reception area.

From Congress to the Clinic: Congressman Dwight Evans Visits Penn Urology

Robert Bass, MD, MBA
Chair, AUA Legislative Affairs Committee

Rep. Dwight Evans arrived in Congress in November 2016, and since then, he has gone on hospital and medical center tours throughout Pennsylvania’s Third Congressional District. From Temple University Hospital to Einstein to Lankenau Medical Center, listening to doctors, nurses and patients has helped him learn what health care professionals think about our nation’s health care system. Such interest led him to a seat on the House of Representatives Ways and Means Subcommittee on Health, one of the two primary committees of jurisdiction on health care in the U.S. Congress.

Rep. Evans’ Penn Urology tour began with Dr. Ruchika Talwar, Chief Resident, and Dr. Thomas Guzzo, Professor and Chief of Urology at the University of Pennsylvania Perelman Center for Advanced Medicine, highlighting key clinic elements and facilities. Shortly thereafter, they were joined in a round table conversation with Dr. Ariana Smith, Dr. Trinity Bivalqua, Dr. Esther Nivasch-Turner, Dr. Marjorie Margaux Johnson, Dr. R. Caleb Kovell and Dr. Daniel Roberson. The conversation mainly centered on bladder cancer research, benign urology and bladder health research, community outreach for urologic health and Penn Urology’s opioid reduction initiative.1

The Congressman was interested to learn that tens of millions of Americans are affected by bladder diseases and benign urological conditions, including urinary incontinence, overactive bladder, stress urinary incontinence, urinary accidents, underactive bladder, interstitial cystitis, urinary tract infections and neurogenic bladder. In addition, bladder cancer being the second most common urological...
cancer in adults was discussed, with 67,000 new cases of bladder cancer each year in the United States. He also expressed interest in voiding and erectile dysfunction, lowering urinary tract symptoms and how to improve communication and discussion of the urological quality of life concerns given the intimate nature of psychosocial-related injuries.

“It was an honor to have Rep. Evans join my colleagues and me at Penn Urology to learn more about urology and, more specifically, its impact on the Philadelphia community and needs. In addition, his passion and interest in health equity, health literacy and veterans’ wellbeing is well aligned with our division’s mission and inspired us to continue with the work we do in those realms,” said Dr. Talwar.

“As his constituent, I initially spoke with his congressional office during the Annual Urology Advocacy Summit this year. So it was exciting to see how an office visit during the Summit translated into a congressional site visit. Congressional site visits can be a very effective advocacy initiative. By inviting your legislator to visit your practice, you get the unique opportunity to show them firsthand the impact of government actions on the healthcare industry and the patients they represent. These visits can help you establish a vital relationship with lawmakers and their staff, which is key to successful advocacy. We are thankful for Congressman Evans’ ongoing support of our mission, and we are so appreciative that he could join us at Penn Urology.”

The Penn Urology congressional site visit has sparked interest in Rep. Evans’s further collaborating with the group to potentially host a urologic health fair in the Third District. If you are interested in hosting a congressional site visit or setting up an in person district meeting, please contact the AUA’s Legislative & Political Affairs Department staff at LegislativeAffairs@AUAnet.org for information or assistance.


FROM CONGRESS TO CLINIC  
Continued from page 43

Lean methodologies, when applied correctly, have been shown to decrease waste, improve processes, and lower costs. Lean application continues to garner support secondary to improving patient satisfaction, easing workday frustrations, increasing patient-centered care, and improving health care value. The latter is especially important given our nation spends nearly 17.7% of our gross domestic product, or $3.6 trillion, on health care and studies show up to 25% of this spending is wasteful.

Fortunately, the automotive, airline, farming, shoe, and technology hardware industries have given us examples of successful lean implementation and shown improvements in quality and value.

Using this information, we sought to study the outpatient urology clinic setting in order to ascertain if lean application would yield positive results. We chose this setting as we believed the work-to-reward ratio was favorable and because we had control over most of the clinic processes, thus making change attainable. We initially sought buy-in from both front line and top line stakeholders, and both groups became invested in the opportunity for improvement. After the communication was done and buy-in achieved, we studied the current state of the clinic by “going to the Gemba.” The first author on the work spent time with a stopwatch, pen, and paper tracking patient times as well as technician, provider, and patient movement for 85 patient visits. We found 5 different possible patient flows, with flows 2 and 3 being most efficient and flows 4 and 5 being the most inefficient and occurring in 33% of visits (fig. 1). The median wait time from appointment time to roomed was 15 minutes.

Figure 1. Preintervention patient flows and times.
minutes and this was secondary to lack of provider room availability.

The time and patient flow tracking provided information concerning flow but did not provide information regarding reasons for inefficient flows. However, the spaghetti diagrams illustrated the needed information and showed excessive movement during the patient encounter (fig. 2). A median of 6 technician trips and 4 provider trips were seen per patient. Furthermore, the spaghetti diagrams showed up to 3 separate technicians could be involved in a single patient’s care. We found several examples of confusion over which technician was performing certain tasks, which led to duplication of work or wasting time asking one another if tasks had been completed.

Through studying the current state, we identified the following main issues:

1) The initial wait time was too long.
2) Technicians and providers were having to see the patient multiple times during a visit. An example of this would be the following: technician gets patient from lobby and rooms patient, provider decides a urinalysis is needed, patient goes with technician to get urinalysis and returns to provider, provider then decides a bladder scan is needed, technician takes patient to get bladder scan and returns patient to provider.
3) Lack of clear technician roles and responsibility.

After, and only after, thoroughly studying the current state, the following interventions were discussed with the frontline stakeholders:

1) Technicians would be assigned 1 technician to 1 provider instead of all technicians helping all providers.
2) Technicians would prepare the charts the day prior to anticipate patient technician needs, such as symptom questionnaires, urinalysis etc.
3) The technician would “huddle” and review the list from #2 with their assigned provider the morning of clinic to confirm patient technician needs.

After reviewing this with the technicians, the technicians were tasked with implementing these workflows the most effective way
possible from their perspective. Providers were then communicated the new workflow.

After implementation, the same mechanisms of study were used to assess if any changes occurred. Patient wait time decreased by 53% concerning all flows: the most efficient patient flows increased from 19% to 28% of patient visits, the most inefficient flows decreased from 33% to 17% of patient visits, and total appointment time decreased by 27% (see fig. 3 for other pertinent results). This saved the clinic 98 minutes per day. Furthermore, the spaghetti diagrams showed much improved movement with only 1 technician involved in the patient visit (fig. 4).

The interventions in this study improved patient flows, increased efficiency, and improved the staff’s working conditions. The time saved allowed the staff to work in a less chaotic, or rushed, work environment. However, the key information from this work is not the results or the interventions; these interventions may not work in other clinics as they were designed specifically for this clinic. Seeing a problem and interjecting a solution prior to studying the problem is likely to yield poor results. The key in this work was the process by which the methodology was applied. The process was chosen and scoped appropriately, meaning we had influence to enact change in this area. The project was discussed in detail with front line and top line stakeholders to garner buy-in. The process was studied by going to the workplace to develop flow maps and spaghetti diagrams. By using the maps and diagrams, targeted interventions were developed and studied. Understanding and implementing this process will allow others the opportunity for replication in order to design appropriate interventions tailored to specific needs. This is considerably more important than the actual interventions deployed in this work.

For more information, please see the article “Use of Lean Methodologies in Outpatient Urology Clinic” in the November issue of Urology Practice.

Satisfaction and Shared Decision Making in a Multidisciplinary Differences in Sex Development Clinic

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Satisfaction and Shared Decision Making in a Multidisciplinary Care Clinic for Patients with Differences in Sex Development

Introduction

Patients with differences in sex development (DSD) represent a complex pediatric population with varying psychosocial and medical needs. Patients and families face difficult medical decisions related to early gender assignment and hormonal treatments during puberty, and are subject to considerable ethical and legal controversies surrounding surgical interventions. Given these challenges and complexities, the current recommendation from the medical community is to utilize a multidisciplinary care (MDC) clinic setting in the care of patients with DSD. MDC clinics allow for coordination of care through a consolidation of resources, and they facilitate joint collaboration between health care providers, patients and families, a collaboration that lends to a shared decision making process. Unfortunately, to date, there are few published data on the satisfaction with health care delivery that families of patients with DSD experience in a pediatric MDC clinic, nor is there information on the level of shared decision making involved in discussions with urologists during the planning stages of care.

Methods

Parents/guardians and young adult patients seen in a multidisciplinary DSD clinic were asked to participate in an anonymous online survey. Questionnaires included self-reported demographic and medical information, overall satisfaction with health care delivery in the MDC DSD clinic (Patient Satisfaction Questionnaire-Short Form) and involvement in the shared decision making process with the pediatric urologist during their most recent clinic visit (Shared Decision Making Questionnaire). Welch’s t-test was used to compare mean survey scores to historical and contemporary control populations.

Results

A total of 22 guardians and 1 young adult patient completed surveys. Table 1 contains detailed participant demographic information. Median patient age was 36 months. Patient diagnoses were diverse: the most common self-reported diagnosis was 46, XY DSD (39.3%) with the remaining participants reporting diagnosis of congenital adrenal hyperplasia (CAH); 46, XX DSD; 45, XO/46 XY, complete androgen insensitivity syndrome (CAIS); partial androgen insensitivity syndrome (PAIS); hypospadias and a medical condition that was unknown to the respondent. At the time of their clinic visit, 7 patients had undergone surgery. Mean satisfaction scores were higher than a primary care population and comparable to patients and patients’ caregivers with chronic medical conditions (table 2). The mean shared decision making score was well above adult populations and similar to adult temporary control populations.

Continued on page 48

Table 1. Survey demographics of 23 individuals

<table>
<thead>
<tr>
<th>No. race (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
</tr>
<tr>
<td>Black/African American</td>
</tr>
<tr>
<td>White/Caucasian</td>
</tr>
<tr>
<td>Multiracial/other</td>
</tr>
<tr>
<td>Declined to answer</td>
</tr>
<tr>
<td>No. ethnicity (%)</td>
</tr>
<tr>
<td>Hispanic</td>
</tr>
<tr>
<td>Non-Hispanic</td>
</tr>
<tr>
<td>No. level of education (%)</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>High school</td>
</tr>
<tr>
<td>Some college</td>
</tr>
<tr>
<td>Associate’s degree</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
</tr>
<tr>
<td>Master’s degree</td>
</tr>
<tr>
<td>Vocational training</td>
</tr>
</tbody>
</table>

| No. prior urological surgery (%) | 7 (30.4) |
| No. self-reported DSD diagnosis (%) |  
| 46, XY DSD | 6 (26.1) |
| 46, XY DSD and hypospadias | 2 (8.7) |
| CAH | 2 (8.7) |
| 45, XO/46, XY | 1 (4.3) |
| 45, XO/46, XY and hypospadias | 1 (4.3) |
| CAIS | 2 (8.7) |
| 46, XX DSD | 1 (4.3) |
| Partial androgen insensitivity syndrome and hypospadias | 1 (4.3) |
| Hypospadias | 5 (21.7) |
| Unknown | 2 (8.7) |

*Declined to answer (2).  
†Declined to answer (10).  
§Hypospadias was only diagnosis self-disclosed by family. All patients were seen in an MDC DSD clinic and had a confirmed DSD using conventional DSD classifications.  
§§Diagnoses were self-disclosed by family. All patients were seen in an MDC DSD clinic and had a confirmed DSD using conventional DSD classifications.
Satisfaction and Shared Decision Making in a Multidisciplinary Differences in Sex Development Clinic

Table 2. Short-Form Patient Satisfaction Questionnaire (PSQ-18) scores, scale 1–5

<table>
<thead>
<tr>
<th>Measure</th>
<th>Median</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>p Value</th>
<th>Mean</th>
<th>SD</th>
<th>p Value</th>
<th>Mean</th>
<th>SD</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>General satisfaction</td>
<td>5.0</td>
<td>4.5</td>
<td>0.85</td>
<td>3.58</td>
<td>0.94</td>
<td>&lt;0.0001</td>
<td>4.62</td>
<td>0.68</td>
<td>0.5363</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Technical quality</td>
<td>4.75</td>
<td>4.58</td>
<td>0.45</td>
<td>3.68</td>
<td>0.76</td>
<td>&lt;0.0001</td>
<td>4.74</td>
<td>0.49</td>
<td>0.14</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Interpersonal manner</td>
<td>5.0</td>
<td>4.68</td>
<td>0.52</td>
<td>4.09</td>
<td>0.69</td>
<td>&lt;0.0001</td>
<td>4.79</td>
<td>0.51</td>
<td>0.3824</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Communication</td>
<td>5.0</td>
<td>4.7</td>
<td>0.45</td>
<td>3.74</td>
<td>0.87</td>
<td>&lt;0.0001</td>
<td>4.7</td>
<td>0.63</td>
<td>0.9684</td>
<td>4.67</td>
<td>0.62</td>
<td>0.79</td>
</tr>
<tr>
<td>Financial aspects</td>
<td>4.5</td>
<td>4.2</td>
<td>0.8</td>
<td>3.78</td>
<td>0.94</td>
<td>0.0213</td>
<td>4.55</td>
<td>0.81</td>
<td>0.0737</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Time spent with doctor</td>
<td>5.0</td>
<td>4.7</td>
<td>0.43</td>
<td>3.59</td>
<td>0.94</td>
<td>&lt;0.0001</td>
<td>4.53</td>
<td>0.93</td>
<td>0.1733</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Accessibility and convenience</td>
<td>4.125</td>
<td>4.25</td>
<td>0.57</td>
<td>3.76</td>
<td>0.74</td>
<td>0.0006</td>
<td>4.42</td>
<td>0.67</td>
<td>0.2222</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Table 3. Shared Decision-Making Questionnaire (SDM-Q-9) average scores compared to pooled historical data, transformed scale 1–100

<table>
<thead>
<tr>
<th>Measure</th>
<th>Median</th>
<th>Mean</th>
<th>SD</th>
<th>p Value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSD MDC clinic</td>
<td>94.31</td>
<td>85.54</td>
<td>22.52</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Pooled study scores</td>
<td>Not reported</td>
<td>64.81</td>
<td>7.24</td>
<td>0.0004*</td>
<td>10.20–31.25</td>
</tr>
<tr>
<td>Pediatric ambulatory clinics</td>
<td>Not reported</td>
<td>82.6</td>
<td>20.5</td>
<td>0.5506</td>
<td>−7.14–13.02</td>
</tr>
<tr>
<td>Pediatric otolaryngology clinic</td>
<td>Not reported</td>
<td>77.20</td>
<td>2.01</td>
<td>0.0974</td>
<td>−1.66–18.34</td>
</tr>
</tbody>
</table>

*Statistically significant difference.

Discussion

The current findings suggest that families followed in a pediatric, multidisciplinary DSD clinic are very satisfied with the quality of care they receive and appear to feel personally invested in the decision making process. This is notable given the complexity of care and controversy surrounding medical decision making in the DSD population. Current consensus guidelines recommend building open and honest communication, respecting patient and family values and wishes, and sharing medical information in a way that is sensitive to each child’s development. Further, this approach is thought to be best facilitated by a multidisciplinary approach to care, involving team-based collaboration across multiple disciplines such as urology, endocrinology, gynecology, nursing, psychology, social work and genetic counseling. This is the first study, to our knowledge, to review shared decision making and satisfaction with MDC in the DSD population.

The current study should be considered in light of several limitations, notably assessment of caregiver rather than patient satisfaction and family self-disclosure of patients’ medical diagnosis. Generalizability of the current findings could be limited; the current DSD MDC clinic is a long-standing clinic with the inclusion of patient advocates and a robust psychosocial support team. Moreover, the sample size of the current study precluded our ability to differentiate between DSD diagnoses. Despite these limitations, this study has several strengths, including utilizing validated, widely used assessments in pediatric populations and recruiting patients with a range of DSD medical diagnoses. Future research should assess satisfaction and shared decision making among adolescents and adults with DSD, and compare findings to patients receiving care through stand-alone medical providers.

FROM THE AUA SECRETARY

See You in New Orleans for AUA2022!

John D. Denstedt, MD, FRCSC, FACS, FCAHS
Editor, AUANews

New Orleans not only is the birthplace of jazz music in the United States, but also is home to the 117th AUA Annual Meeting, to be held May 13–16, 2022 at the Ernest N. Morial Convention Center. After 2 years of virtual meetings, we are looking forward to being back together in person as a global urology community.

The AUA Annual Meeting is the largest gathering of urologists in the world, and it is where you will find unparalleled access to groundbreaking research, new guidelines and the latest advances in urological clinical care. While we hope you will join us in person, the AUA
FROM THE AUA RESEARCH COUNCIL

Diversity, Equity, Inclusion in Urological Research: Walking the Talk

Steven A. Kaplan, MD
Chair, AUA Research Council

“Diversity is the engine of invention. It generates creativity that enriches the world.” —Justin Trudeau

As part of introducing the Strategic Plan of the AUA’s Office of Research, I will take the opportunity to do deeper dives on each of our goals. In my last AUA News column, I reviewed our plan to maximize sustainment and optimization of research support. Our overall focus is to increase impact via a wider and more strategic constituency. In this article, I will describe our efforts at increasing capacity for diversity, equity and inclusion.

Despite this recognition of the importance of diversity, the urology community, as many or most of us know, has historically struggled, and even now continues to struggle, with including full representation of the breadth of backgrounds that will enable us to equitably meet the needs of all urology patients. There are many different reasons for this—some fairly obvious, such as a lack of early exposure to urology in medical school, but some more difficult to identify, such as implicit and even explicit biases that impact opportunities and must be addressed. In response, the AUA has wholeheartedly been examining every aspect of its programming and governance to increase diversity and inclusion, and address equity to the best of its ability. These efforts, as shown in this example list, span the spectrum of the AUA mission of education, research and the formulation of public policy, as well as communications, data collection, humanitarian efforts and also, importantly, our governance.

It is inarguable that health care disparities exist. In addition, there is a disproportionate lack of under-represented minorities (URM) in grant submissions, grant reviews and research governance. There are a myriad of reasons why this has happened in the past, but there is a concerted effort to change this arc. We have a laser focus on funding research for urological diseases that disproportionately impact diverse persons and interventions that reduce health care disparities. More specifically, the Office of Research increased its efforts to improve diversity starting in 2018 and with the previous AUA Research Chair, Dr. Aria Olumi, who started with casting a critical eye on its scientific symposia, research workshops, research awards and various advisory groups. Some of the changes that resulted include the following:

• In early 2020 and in partnership with the Society of Urologic Oncology, the very first research endowment for the AUA and Urology Care Foundation focused on increasing diversity in urologic oncology research, including women, was established.
• When I became Research Chair-elect in June of last year and in partnership with Aria, we began to establish a new 5-year strategic plan, with improving diversity, equity and inclusion as 1 of our 5 key goals.
• As we built momentum with our strategic plan, we identified new partners who shared our goals, and we were able to establish another new endowment with Urovant Sciences, the LEAD (Leadership in Education, Achievement and Diversity) program, that will target increasing diversity in residency research.
• On the heels of that achievement, and with the leadership of the New York Section, we jointly established the AUA’s first medical student research award targeting diversity and inclusion, and other Sections have since followed suit.
• And finally, we are continuing on truly a daily basis to identify additional ways in which we can achieve our diversity, equity and inclusion-related goals.

One of the first things that we fully recognized as we developed this plan was that having the right expertise to inform our goals was critical, and so we established a workgroup, led by AUA Research Council member Dr. Margarett Shnorhavorian, which has been meeting monthly over the past 6 months to closely examine every one of the Office of Research programs to make recommendations for diversity, equity and inclusion-related improvements. I think it’s appropriate to say that many of the improvements to the AUA’s and Urology Care Foundation’s research programs that you’re going to see over the next few years are going to stem from the recommendations of this dedicated and expert group of advisors.

While these goals are important, have we begun to “walk the talk”? We have made substantive progress! In 2021 we have already achieved within our research grant programs alone:

• Summer Medical Student Fellowship
  • Achieved equal awards by gender in 2021
• 4 AUA Section-sponsored URM targeted awards (all disease areas) in 2022
• Residency Research Award
  • 5 URM targeted awards (urologic oncology, bladder health, men’s health) in 2022
• Research Scholar Award
  • Achieved equal awards by gender in 2021
• 2 URM and disparities targeted awards (urologic oncology) in 2022

SEE YOU IN NEW ORLEANS FOR AUA2022!

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will offer virtual and hybrid options for the annual meeting.

AUA’s Annual Meeting, as well as other year-round educational offerings, provides the highest standards for urological education. The AUA programs offer something for everyone, including residents, researchers, medical students and others. There are also educational offerings tailored for advanced practice providers and practice managers, like the Practice Management Program.

The AUA2022 program will include favorite sessions, such as “When Disaster Strikes: Preventing and Managing Nightmares in Urology,” “Semi-Live Surgeries and Surgical Techniques,” “Second Opinion Cases” and more. As in previous years, soon to be released AUA clinical guidelines will be presented, and new for 2022 is “How I Do It: Common Urologic Procedures.”

Information about the newest advances in clinical care as well as new surgical techniques, innovations, discoveries and technologies is all a part of the AUA’s Annual Meeting. With all the AUA has to offer, it is no wonder attendees unanimously state the knowledge they receive at the meeting positively impacts their practices.

While in New Orleans, please enjoy the city’s invigorating spirit, walk through the French Quarter and learn more about the city’s rich history. There are plenty of sights to see and more than 1,400 great restaurants. For more information and to register, visit https://www.auanet.org/AnnualMeeting.

See you in New Orleans!
DIVERSITY, EQUITY, INCLUSION IN UROLOGICAL RESEARCH: WALKING THE TALK

There is great enthusiasm from many of our partners in enhancing and achieving these goals. We were able to work together with Urovant, who generously endowed $2M to create the LEAD program, which will fund 3 residents per year to conduct mentored research training, engage in AUA research education opportunities and be championed through networking events as they develop successful research careers.

While we have made progress, there is so much left to do. It is our mission to have a diverse research and discovery village so that we can truly bring premier urological care to all our patients. I hope to engage all of those interested in this mission. Please feel free to contact me with ideas, suggestions or thoughts. Together, let us create a better future! @MaleHealthDoc

FROM THE CHIEF EXECUTIVE OFFICER

Reflecting on 2021 and Looking Ahead to 2022

Michael T. Sheppard, CPA, CAE
CEO, American Urological Association, Lutherville, Maryland

As 2021 comes to a close, I wanted to take a moment to reflect on the strides we made this year. There’s no question that 2021 was an arduous year, yet as I reflect on what transpired, I am humbled by the continued perseverance of our members, volunteers and staff. I would like to take a moment to express my profound gratitude to the entire urology community, as well as the broader medical community, for all you do on a daily basis and all you’ve done this past year to care for patients and advance the specialty worldwide.

This year has been filled with a multitude of challenges and successes. As a globally engaged organization, the AUA represents all facets of the urology community. From retired urologists and those just starting out in medicine to advanced practice professionals, allied health care professionals and research scientists, our members are at the core of everything we do. In 2021, the AUA welcomed more than 2,400 new members, bringing our global footprint to more than 24,000 members.

Further, we experienced a record-breaking year for the 2021 Urology Residency Match, resulting in the highest number of applicants, programs, positions filled and female applicants to date—including a 74% match rate, leaving zero vacancies.

Although it’s clear the pandemic continues to have a grasp on the world, it also provided the opportunity to embrace new modes of video-based technology and dynamic learning styles to expand our capacity and meet the needs of our members wherever they may be. For instance, this year we offered our benign prostatic hyperplasia education in 4 languages—English, French, Portuguese and Spanish—launched a new AUAUniversity app, bringing together all of our esteemed educational content into one mobile platform, and introduced a new Business of Urology Compensation Program. Additionally, we delivered nearly 190 domestic—and more than 40 international—educational activities. Although COVID-19 resulted in a fully virtual Annual Meeting, we successfully delivered a robust offering of learning and engagement, including educational programming, abstracts, keynotes and courses to every corner of the globe. The AUA Annual Meeting remains the premier urological educational, research, policy and networking experience in the world, and we look forward to seeing you next May in New Orleans.

In addition, we had tremendous success with our Journals and publications. The Journal of Urology® impact factor increased 26% to 7.45; we announced our upcoming Gold Open Access Journal, JU Open Plus®; we launched a new AUA News online content platform; and our Urology Practice® journal published the most articles in 2021 since its inception 7 years ago.

Additionally, we established the AUA Diversity & Inclusion Task Force, chaired by Dr. Tracy Downs and co-chaired by Dr. Simone Thavaseelan. This task force is made up of a dedicated group of knowledgeable and motivated individuals who will identify specific and actionable steps for how the AUA can continue to advocate for and foster a diverse and inclusive environment within the Association, as well as the global urology community. In April of this year, we launched an AUA News focus issue celebrating diversity within the AUA, which I encourage you all to read. Additionally, our AUA Medical Student Education Committee provided a Diversity in Urology: Initiatives and Opportunities webinar, we introduced new webinars and podcasts on disparities in prostate cancer, and we worked with the Urology Care Foundation to link its humanitarian mission with initiatives addressing disparities of care.

The AUA Quality (AQUA) Registry also continued with yet another successful year. Now in its sixth consecutive year as a CMS-designated Qualified Clinical Data Registry, more than 2,000 providers from across 42 states are now enrolled, and 7,500,000 patients are represented in the data results. Developed by urologists for urologists, AQUA is designed to measure, report and improve health care quality and patient outcomes. Whether a solo practitioner, a member of a large group or a part of a medical institution, the AQUA Registry continues to be a leading registry for urological data.

In 2021, the AUA Office of Research reached several milestones in funding and education. We introduced our Leadership in Education, Achievement and Diversity (LEAD) program, which will support 3 urology residents per year from racial and ethnic backgrounds that are underrepresented in urologic research; we held our 9th Annual Early-Career Investigator Workshop, as well as our 3rd Annual Urology Scientific Mentoring and Research Training (USMART) Academy; and provided nearly $1.5 million in research funding awarding:
• 4 Rising Stars in Urology Research Awards
• 43 Research Scholar Awards

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REFLECTING ON 2021 AND LOOKING AHEAD TO 2022

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• 1 Physician Scientist Residency Training Award
• 6 Residency Research Awards
• 12 Summer Medical Student Fellowships

In this challenging political landscape, our advocacy team continued to make great progress, ensuring critical interests for our members and their patients are promoted to a wide array of decision makers. Not only did we hold a very successful virtual AUA Advocacy Summit aimed at expanding, strengthening and unifying the voice of urology on policy matters impacting our members and their patients, we also expanded our reach in Washington with the introduction of H.R. 944, the specialty physician loan repayment bill, and H.R. 4880/S.2720, the Veterans’ Prostate Cancer Treatment and Research Act.

I recognize much of this work would not be possible without the support of our members, volunteers and staff, and I remain thankful for the more than 400 urologists who volunteered on over 35 AUA committees this calendar year. This steadfast commitment is what helps us deliver on our mission and promise as we advance urology around the world. While this is only a small look into the Association’s accomplishments for 2021, I very much look forward to another productive year in 2022!!

FROM THE EDUCATION COUNCIL

It’s about the Engagement

Jay D. Raman, MD, FACS
Chair, AUA Office of Education

“The more you engage with customers the clearer things become and the easier it is to determine what you should be doing.”
—John Russell

It was exciting to watch, and be a part of, the engagement between colleagues and peers on the new annual meeting platform used to support AUA2021. Although we all wish we could have been together in Las Vegas, the knowledge exchange, academic interactions and friendly banter give me confidence for this platform to be part of future educational offerings. To give some perspective on its use, we offered more than 2,150 presentations from over 2,600 speakers with 6,000 unique viewers and 92,678 total individual session views! These numbers are phenomenal considering the short time interval to pivot to a virtual meeting. Although the intent is for an in-person AUA2022 meeting, I am certain we will leverage this digital platform to expand our meeting offerings.

As the Office of Education also strives to improve engagement and access to our content, we are very excited to announce the launch of the new AUA University mobile app. If you have not had the opportunity to download or use this app yet, I strongly encourage you to do so! Since the Office of Education launched the Future of Education initiative in 2019, the ultimate goal was to bring together all urological content into 1 searchable platform, making it easier for users to search our content.

On the new AUA University app, you now can query across content in the AUA Urology Core Curriculum (including videos and presentations), the AUA Update Series, the AUA guidelines and whitepapers, and the surgical video library (across multiple years). In addition, the app home page has direct access to The Journal of Urology® and the AUA University podcasts, as well as other AUA mobile apps (including AUA2021, SASP and the Oral Board Study Guide). Another new feature of this app is folders that allow you to identify the content you are looking for and place it all into a folder for future reference. If you like, you can also share folders with a colleague or resident.

The AUA University app gives you the breadth of urological content right on your mobile device. We believe this is how our members want to access our incredible volume of content, and the Office of Education will continue to work to integrate more of the AUA’s content into the search function with progressive iterations of the app.

These achievements and accomplishments in 2021 could not have occurred without the leadership and hard work of all of the AUA’s volunteers. At this time, I would like to thank all of the members of the AUA Education Council and each education committee for their commitment. These colleagues contribute hours of their time supporting the educational mission of the AUA Office of Education.

The Office of Education represents our members’ educational needs. As always, I welcome your feedback and input into areas of education we should focus on or new technology modalities we should employ. Please feel free to contact us at education@auanet.org.

FROM THE RESIDENTS & FELLOWS COMMITTEE

Finding Resiliency in Residency: Staying Sharp

Andrew Rabley, MD
University of Washington, Seattle

In the September 2021 issue of AUANews, Dr. Scott Swanson penned an article titled “Resilient Leadership,” in which he highlighted the many ways the AUA and its members have shown both resilience and leadership throughout the past year.1 In reflecting on his words regarding resilient actions, I began to ponder how we develop and maintain this trait. From that, I want to share a few thoughts on ways to cultivate resiliency during residency training.

A co-resident used to ask, “Are you keeping your axe sharp?” The confusion on my face the first time he posed this question must have been obvious. He was from Minnesota, so I figured there would be an interesting backstory for how this phrase came about. Simply put, it was his way of asking if I was taking care of myself. He made the point that dull axes, although they look like they may be effective, can’t do the job for which they were created. He explained that we all have different things that make us tick, that bring us joy, that keep us “sharp.” If we lose sight of those things it’s easy for us to become someone we’re not and, arguably, an ineffective version of ourselves. I smiled and nodded but couldn’t rationalize how I could do anything but residency. How could I do anything else but eat, sleep and breathe urology?

Midway through training, I found myself short tempered, easily

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FINDING RESILIENCY IN RESIDENCY
Continued from page 5

frustrated and endlessly tired. I hadn’t been taking care of myself outside of the hospital, and it was becoming obvious to my peers and attendings at work. At some point I was reminded of what my co-resident had said about “keeping your axe sharp” and that to be the best resident I had to be the best version of myself first. I started to make changes and do more things outside of residency that I enjoyed, like playing sports, spending time with friends and cooking. Eventually, I noticed that I was becoming more engaged and focused while at work and more excited to learn about urology both inside and outside of the hospital than I had ever been before. Staying “sharp” allowed me to develop resiliency and, in the process, become a better resident, urologist and person overall.

Resiliency is a trait that we all inherently have, especially as physicians. However, maintaining this necessary characteristic is not always easy. For me, maintaining resiliency comes by “keeping my axe sharp.” I think a fair equivalent to “sharpness” would be wellness. Wellness looks different for everyone, so I encourage you to find what keeps you sharp and embrace it. Find ways to incorporate it into your daily routine or even your clinical work, as our wellness absolutely has an impact on the care we provide. And our personal wellness shouldn’t replace our educational endeavors and interests. Rather, it should bolster them and drive you forward to becoming the best urologist and person you can be.

FROM THE UROLOGY CARE FOUNDATION PRESIDENT

Growth and Opportunity: Looking Back, but More Importantly, Looking Ahead!

Harris M. Nagler, MD, FACS
President, Urology Care Foundation
Hofstra Northwell School of Medicine, Hempstead, New York

"Alone we can do so little. Together we can do so much." —Helen Keller

2021 has brought focus to the world’s greatest challenges and, hence, many opportunities to be seized. As the year comes to a close, it is important to take a moment to reflect on the many reasons we have to be proud. Each of our accomplishments this year marked a milestone in the Foundation’s legacy, each achieved as a result of the tireless efforts of our donors, partners, volunteers and staff. Our commitment to making a global impact has never been stronger, which is why on behalf of the Board of Directors I want to thank each of you for your hard work and generous support as we continue our global mission to advance urology and improve urological health care for patients worldwide.

Research

In 2021, the Foundation remained a driving force in the discovery of advancements in our understanding and management of urological disease. The pursuit of new knowledge must be supported, and your Foundation continued to encourage young talented researchers by providing nearly $1.5 million in urology research funding. These gifts not only fund the best research from talented scientists, but also help foster and support long-lasting research careers. Our awardees this year included: 43 Research Scholars, 6 Residency Researchers, 4 Rising Stars in Urology Research, 1 Physician Scientist in Training and 12 Summer Medical Student Fellowships.

Patient Education

The Urology Care Foundation continued to make a difference throughout 2021 with efforts to increase visibility and awareness of our immense portfolio of patient education materials. With more than 500 total pieces, the Foundation remains the single largest repository of urology-specific patient education in the world. We successfully translated nearly 100 patient education pieces and expanded our language offerings to include Arabic, Brazilian Portuguese, French, Hindi, Italian, Punjabi, Spanish, Urdu and Vietnamese. The drive to translate our materials is based upon the recognition that lack of information and knowledge continues to be a major factor in health care disparities. The Foundation’s vision is to meet the needs of patients worldwide; therefore, our focus is serving people from multiple countries, cultures and backgrounds who speak many languages.

Humanitarian Efforts

In 2021, the Urology Care Foundation provided recognition and support to those who offer urology-specific humanitarian work in underserved communities around the globe. Dr. Catherine DeVries received our first Humanitarian Recognition Award for her lifetime of urological volunteer work in under-resourced communities across the globe, and Drs. Una Lee and David Rapp were both selected as our 2021 Urology Care Foundation Humanitarian Grant recipients for their true spirit of humanitarianism. As part of our mission, the Foundation recognizes the critical need to identify and encourage humanitarianism in an effort to eliminate health care disparities. This impact goes beyond the mere physical, providing hope, dignity and quality of life, and we look forward to recognizing and supporting many more for their work in 2022.

I am humbled by the achievements this year and feel deep gratitude for the many individuals, organizations and corporate partners who generously gave their time, talents and financial support to further our crucial mission. I am very grateful to our staff, leadership and Board, and to our donors both large and small, new and longstanding, for keeping our focus on how we can solve problems and seize opportunities to improve more lives.

Throughout the Foundation’s history, our donors have been the source of the Foundation’s success. Year-end giving is your chance to invest in the future and to save lives. Making a gift to the Urology Care Foundation gives motion to your money and intentions, pushing it forward toward the greater good of our wonderful community. I invite you to learn more about our work, our partners and our stewardship by visiting: UrologyHealth.org/Donate.

Your support is essential as we move from what we have achieved to what we can achieve.

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