

Question #1**ANSWER=B**

The endopelvic fascia is an important structure in pelvic and retroperitoneal urologic surgery. In the pelvis, the viscera, including the bladder, prostate, vagina, and rectum, are all encased within the intermediate stratum of retroperitoneal connective tissue which is derived from the transversalis fascia. Condensations of the intermediate stratum form the endopelvic fascia and ligaments of the pelvis, including the pubourethral, puboprostatic, and pubocervical ligaments, the arcus tendoneus of the endopelvic fascia, the broad ligament of the uterus, and the lateral vesical pedicle. The levator ani muscle, Denonvilliers' fascia, the internal oblique fascia, and the obturator internus muscle are not continuations of the endopelvic fascia.

AUAUNIVERSITY CORE CURRICULUM: Prostate and seminal vesicle. Updated March 1, 2021. <https://university.aunet.org/core/anatomy-physiology/prostate-and-seminal-vesicle/index.cfm>

Liu JJ, Foster B, Amling CL: Surgical, radiographic, and endoscopic anatomy of the male pelvis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 109, p 2444.

Question #2**ANSWER=E**

When the penis is flaccid, the smooth muscle of the penile vessels and of the lacunar spaces are in a state of tonic contraction, maintained by post-ganglionic sympathetic adrenergic nerves, which release norepinephrine as their primary neurotransmitter. Parasympathetic stimulation causes erection through non-adrenergic, non-cholinergic neuronal release of nitric oxide which subsequently leads to a generation of cyclic GMP, and ultimately relaxation of penile smooth muscle. Acetylcholine, vasoactive intestinal polypeptide, cyclic GMP, and prostaglandin would all result in tumescence rather than detumescence.

AUAUNIVERSITY CORE CURRICULUM: Erectile dysfunction: Physiology, pathophysiology. Updated January 25, 2022. <https://university.aunet.org/core/sexual-medicine-andrology/erectile-dysfunction-physiology-pathophysiology/index.cfm?d=2906>

Question #3**ANSWER=A**

Complete androgen insensitivity syndrome (CAIS) is due to the absence of a functional androgen receptor. All affected individuals will have a 46,XY genotype and approximately 80% will have female-typical external genitalia. Patients with CAIS will have an increased risk of seminoma with time if the testes are left in situ after puberty. Historically, gonads were removed at the time of diagnosis. However, given the relatively low risk of malignancy, some patients may prefer to retain gonads for endocrine or reproductive potential. After counseling, if a patient elects to retain the gonads, a malignancy surveillance plan should be outlined. There is an increased risk for

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gonadoblastoma in dysgenetic gonads when Y chromosome material is present but not in CAIS. Individuals with CAIS are at no higher risk of Leydig cell tumors, embryonal carcinoma, or teratomas than the general population.

AUAUNIVERSITY CORE CURRICULUM: Genitourinary oncology. Updated January 20, 2022. <https://university.auanet.org/core/pediatric/genitourinary-pediatric-oncology/index.cfm>

Question #4

ANSWER=E

Non-gonococcal urethritis caused by *Chlamydia trachomatis* or *Ureaplasma urealyticum* cannot be distinguished from one another clinically, but either doxycycline or azithromycin is usually effective against both. Sexual partners should also be treated. If the signs and symptoms of urethritis do not improve with doxycycline, infection with resistant *U. urealyticum* may be present; this usually responds to azithromycin. Relapse may be due to reinfection by an untreated sexual partner, and the patient and all partners should be retreated. Currently, the initial recommended therapy is doxycycline, 100 mg twice daily for two weeks, or a single 1 gram dose of azithromycin, which can be repeated after 10 to 14 days if needed. Other alternatives include erythromycin, 500 mg four times daily, or ofloxacin, 300 mg twice daily for 10 to 14 days. The other antibiotic choices (spectinomycin, ceftriaxone, amoxicillin-clavulanic acid, penicillin) are not indicated for the treatment of nongonococcal urethritis.

Borawski, KM: Sexually transmitted diseases, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 58, p 1253.

AUAUNIVERSITY CORE CURRICULUM: Sexually transmitted infection. Updated January 21, 2022. <https://university.auanet.org/core/urologic-infections/sexually-transmitted-infection/index.cfm?d=2904>

Question #5

ANSWER=D

Examination of the initial 24-hour urine collection from this patient would note small white crystals at the bottom of the urine container. These are uric acid crystals that have precipitated out of solution. Uric acid precipitation is due to the urine pH being below the pKa of uric acid (less than 5.5). Once the urine pH is raised above 5.5 with alkali therapy (in this case, potassium citrate), the uric acid will go back into solution and the true solubilized uric acid level can be calculated by analysis of this 24-hour urine specimen. An increase in dietary purine intake would also decrease urine pH and, therefore, would increase uric acid supersaturation but not necessarily increase the urinary uric acid levels. Increased purine turnover or increased production of endogenous uric acid would not be associated with potassium citrate therapy and are generally the result of chemotherapy or inherent genetic defects such as Lesch-Nyhan syndrome. Inhibition of xanthine oxidase would decrease uric acid levels.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA Guideline. J UROL 2014;192:316.
<https://www.auanet.org/guidelines/guidelines/kidney-stones-medical-mangement-guideline>

Question #6

ANSWER=D

The plain films show the lead is too lateral and too deep in the S3 foramen. The use of a curved stylet would allow placement of the new lead into S3 in a more medial-to-lateral configuration, thereby allowing maximal contact of electrodes to the nerve. This is due to the nerve following a medial-to-lateral course. Revising leads to place them deeper may create stimulation of the leg and other untoward effects. S4 lead replacement is not recommended. Lateral lead placement would not allow optimal contact with the nerve. It would be premature to remove the system and start onabotulinumtoxinA injections. Furthermore, if ultimately utilized, the dose of onabotulinumtoxinA used for OAB is 100 units.

Jacobs SA, Lane FL, Osann KE, Noblett KL: Randomized prospective crossover study of InterStim lead wire placement with curved versus straight stylet. NEUROUROL URODYN 2014;33:488-492.

Heesakkers JPFA, Blok B: Electrical stimulation and neuromodulation in storage and emptying failure, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 122, p 2739.

Gormley EA, Lightner DJ, Burgio KL, et al: Diagnosis and treatment of overactive bladder (non-neurogenic) in adults: AUA/SUFU Guideline. J UROL 2012;188:2455.
[https://www.auanet.org/guidelines/guidelines/overactive-bladder-\(oab\)-guideline](https://www.auanet.org/guidelines/guidelines/overactive-bladder-(oab)-guideline)

Question #7

ANSWER=B

The only nerves to the adrenal which have been demonstrated are sympathetic branches from T10-L1 coursing through the splanchnic nerves. This preganglionic sympathetic input stimulates the release of catecholamines from the adrenal chromaffin cells. Cortical innervation or parasympathetic innervation have not been demonstrated.

AUA UNIVERSITY CORE CURRICULUM: Kidney, adrenal, ureter. Updated March 30, 2021. <https://university.auanet.org/core/anatomy-physiology/kidney-adrenal-ureter/index.cfm>

Palmer DA, Moinzadeh A: Surgical, radiographic, and endoscopic anatomy of the retroperitoneum, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 75, p 1658.

Question #8**ANSWER=C**

Scattering of the primary beam from the patient is the primary source of radiation exposure to the operator during endourologic procedures. For this reason, maximizing the distance between the operator and the patient during fluoroscopy is a very effective method of reducing exposure. This explains why the fluoroscopy source is best placed under the patient to minimize radiation scatter to the operator. Radiation scatter from other sources, the primary radiation beam, or leakage from the x-ray tube are less significant sources of exposure.

AUAUNIVERSITY CORE CURRICULUM: Radiation safety. Updated January 27, 2022. <https://university.auanet.org/core/uroradiology/radiation-safety/index.cfm?d=2882>

Question #9**ANSWER=D**

Penile ultrasound is commonly used in the evaluation and management of men with erectile dysfunction, Peyronie's disease, and other sexual dysfunctions. The vascular assessment portion of the ultrasound evaluates the peak systolic velocity, end-diastolic velocity, and resistive index. Although definitions vary slightly, a peak systolic velocity of < 25-30 cm/sec suggests arterial insufficiency, while an end-diastolic velocity of > 5 cm/sec suggests veno-occlusive dysfunction, and a resistive index of < 0.80 suggests veno-occlusive dysfunction. However, it is important to recognize that the findings on vascular assessment should not take precedence over clinical findings. If a patient is found to have arterial insufficiency or veno-occlusive dysfunction but does not experience symptoms of erectile dysfunction, then the vascular findings on penile ultrasound are of minimal consequence. In the current example, the peak systolic velocity of 30 cm/sec rules out arterial insufficiency. Similarly, since the patient is achieving a full erection with intracavernous injection, veno-occlusive dysfunction can be ruled out even in the absence of knowing the end-diastolic velocity. Neurogenic dysfunction cannot be assessed with a penile ultrasound. Of the available choices, psychogenic dysfunction is most consistent with the findings presented.

AUAUNIVERSITY CORE CURRICULUM: Erectile dysfunction: Patient evaluation, investigations. Updated January 26, 2022. <https://university.auanet.org/core/sexual-medicine-andrology/erectile-dysfunction-patient-evaluation-investigations/index.cfm?d=2907>

Question #10**ANSWER=C**

Persistent azoospermia following resection of the ejaculatory ducts may be due to persistent obstruction, concomitant epididymal obstruction, or testicular failure. The restoration of normal ejaculate volume rules out persistent ejaculatory duct obstruction, and therefore, neither a repeat TUR-ejaculatory duct nor a TRUS is indicated. Scrotal exploration is necessary to differentiate between epididymal obstruction and testicular failure. Donor insemination is not necessary with obstructive azoospermia unless the obstruction is uncorrectable and the couple refuses ICSI/IVF. Varicocelectomy may be

indicated in some instances of non-obstructive azoospermia but it is not helpful with obstructive azoospermia.

Goldstein M: Surgical management of male infertility, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 67, p 1453.

*Schlegel PN, Sigman M, Collura B, et al: Diagnosis and treatment of infertility in men: AUA/ASRM Guideline Part II. J UROL 2021;205:44.
<https://www.auanet.org/guidelines/guidelines/male-infertility>*

Question #11

ANSWER=A

Although chemotherapy is generally well tolerated in patients with urinary diversion, methotrexate toxicity has been documented. Methotrexate toxicity can be compounded in patients who require adjuvant therapy after radical cystectomy and neobladder or continent cutaneous diversion due to reabsorption of this agent by the intestinal segment. Vigorous hydration and alkalinization of the urine along with liberal leucovorin rescue are indicated to reduce the likelihood of this complication. In patients with continent diversion receiving chemotherapy, consideration should be given to pouch drainage during drug administration. 5-FU is rarely used in the treatment of metastatic bladder cancer. Cisplatin, doxorubicin, and vincristine are not reabsorbed by ileal mucosa.

Wintner A, Dahl DM: Use of intestinal segments in urinary diversion, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 139, p 3201.

Van der Aa F, Joniau S, Van Den Branden M, Van Poppel H: Metabolic changes after urinary diversion. ADVANCES IN UROLOGY 2011;764325. PMC. Web. 17

Question #12

ANSWER=D

Patients with chronic diarrheal syndromes, including regional enteritis or extensive small bowel resection will develop malabsorption of fat with intraluminal calcium saponification. This provides an increased oxalate load to the colon with resultant hyperoxaluria. In addition, these patients lose fluids and bicarbonate from their chronic diarrhea, causing decreased urine output and hypocitraturia, respectively. Magnesium levels are also decreased in these individuals. This combination may cause recurrent calcium oxalate stone formation. Appropriate management of chronic diarrheal syndromes includes increased hydration, alkalinization, and calcium supplementation, to bind free oxalate in the intestine. Calcium and magnesium are often decreased, not increased, in the urine of affected patients. Uric acid levels in the urine are generally not affected, and with bicarbonate loss in the stool, the urine is generally acidic.

Miller NL, Borofsky MS: Evaluation and medical management of urinary lithiasis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH

WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 92, p 2036.

Pearle MS, Antonelli JA, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 91, p 2005.

Question #13

ANSWER=A

The most common location of metastasis in patients with clear cell RCC is the lung (70%), lymph nodes (45%), bone (32%), liver (18%), adrenal gland (10%), brain (8%), and pancreas (5%). In a large multi-institutional series, the median survival rates of patients with liver, bone, lymph nodes, lung, and adrenal gland metastasis are 17.6, 19.4, 21.4, 25.1, and 27.3 months, respectively. Patients with brain metastasis have a median survival rate of 16.5 months.

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 104, p 2324.

Dudani S, de Velasco G, Wells, JC, et al: Evaluation of clear cell, papillary, and chromophobe renal cell carcinoma metastasis sites and association with survival. JAMA Open Network. 2021;4(1):e2021869. doi:10.1001/jamanetworkopen.2020.21869

Gollob JA, Atkins MB: Management of metastatic renal cell carcinoma, in Vogelzang NJ, Scardino PT, Shipley WU, Coffey DS, COMPREHENSIVE TEXTBOOK of GENITOURINARY ONCOLOGY, ed 2. Baltimore, Williams and Wilkins, 2000, chap 14, pp 207-218.

Question #14

ANSWER=A

Rash occurs in 9% of patients receiving mitomycin C instillations and may represent a contact dermatitis. Chemical cystitis has been reported in 6-41% of patients managed with this agent. The molecular weight of mitomycin C is so high that little is absorbed, and myelosuppression is rare. A contracted bladder is also rare after mitomycin C treatment. Flu-like symptoms, which are commonly seen after BCG therapy, are uncommon after intravesical chemotherapy.

AUAUNIVERSITY CORE CURRICULUM: Bladder neoplasms: Non-muscle invasive bladder cancer. Updated February 3, 2022. <https://university.auanet.org/core/oncology-adult/bladder-neoplasms-non-muscle-invasive-bladder-cancer/index.cfm?d=2887>

Question #15

ANSWER=B

Bacterial vaginosis results from a replacement of normal vaginal flora of Lactobacillus species with high concentrations of anaerobic bacteria. Diagnosis can be confirmed with

the identification of clue cells, a homogenous vaginal discharge, a vaginal pH > 4.5, and a malodorous fishy vaginal discharge. Risk factors may include multiple sexual partners, a new sexual partner, use of an intrauterine device, and douching. Metronidazole (oral 500 mg bid for seven days) or intravaginal gel (0.75%) is the treatment of choice for the patient. Clindamycin intravaginal cream (2%) is an alternative. Routine treatment of sexual partners is not recommended. Ciprofloxacin or removal of the IUD is not indicated. Symptoms may recur in one-third of patients after treatment.

Borawski, KM: Sexually transmitted diseases, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 58, pp 1271-1272.

AUAUNIVERSITY CORE CURRICULUM: Sexually transmitted infection. Updated January 21, 2022. https://university.auanet.org/core_topic.cfm?coreID=94

Question #16

ANSWER=E

The first branch of the left renal artery is a small ureteral branch, but the first major branch is the posterior or dorsal artery. This artery primarily supplies the posterior segment of the kidney alone but occasionally may provide a small branch to the apical segment as well. The anterior or ventral artery generally supplies branches to all but the posterior segment, including the apical, lower, upper, and middle anterior arteries.

Elkoushy MA, Andonian S: Surgical, radiologic, and endoscopic anatomy of the kidney and ureter, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 84, p 1865.

Question #17

ANSWER=D

Continent cutaneous urinary diversions develop stones in approximately 10% of cases. Frequent catheterization and pouch irrigation can help to reduce the risk. In this case, antibiotics and irrigation will not deal with the stones despite the fact that these are most likely struvite stones. SWL and endoscopic or percutaneous lithotripsy are not indicated in these cases as it is impossible to remove all of the stone fragments which can subsequently act as a nidus for recurrent stone formation. Although endoscopic approaches can be used, they risk damage to the efferent continence mechanism. Percutaneous approaches can be considered for smaller volume calculi in which case the stones should be removed intact if at all possible. The simplest method to render the patient stone-free is open stone removal, and the CT scan demonstrates a favorable body habitus with no bowel anterior to the pouch. There is no evidence indicating a need to revise the pouch given no hydronephrosis of the upper tract and no comment on incontinence.

DeCastro GJ, McKiernan JM, Benson MC: Cutaneous continent urinary diversion, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 140, p 3223.

Question #18**ANSWER=C**

Cystinuria is due to a defective neutral, dibasic amino-acid transporter. The gene has been located on chromosome 2. This results in excess urinary excretion of cystine, ornithine, lysine, and arginine. The latter three amino acids are quite soluble in urine, whereas cystine is not. Glycine, aspartic acid, L-glycerate, and glycolate are not affected by the defective dibasic amino-acid transporter and are therefore not increased in the urine in patients with cystinuria.

Miller NL, Borofsky MS: Evaluation and medical management of urinary lithiasis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 92, p 2036.

Question #19**ANSWER=C**

Persistent drainage nine weeks following a repaired bladder injury would indicate issues related to poor healing such as the presence of a foreign body, inadequate drainage from an indwelling catheter, or recurrent/persistent malignancy. This injury is unlikely to heal with further catheter drainage following nine weeks of observation; therefore, waiting an additional three weeks and repeating a cystogram would be of little to no value. The next step should be a cystoscopy and biopsy to rule-out recurrent/persistent malignancy before proceeding with definitive therapy. Assuming the urethral catheter is working appropriately, suprapubic drainage will not be any more effective and will not resolve the issue. Fulguration of a fistula tract and/or injection of fibrin glue has been shown to be of benefit in fistula < 5 mm in size, with definitive surgical repair pursued in large or persistent fistulas. Surgical intervention, however, should not be pursued until persistent or recurrent malignancy has been ruled out. Further, definitive surgical intervention should be delayed for three months after the low anterior resection to allow inflammation to subside.

De Ridder DJMK, Greenwell T: Urinary tract fistulae, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 129, p 2924.

*AUAUNIVERSITY CORE CURRICULUM: Urinary fistulas. Updated January 27, 2022.
<https://university.auanet.org/core/fpmrs/urinary-fistulas/index.cfm?d=2944>*

Question #20**ANSWER=D**

Urinary drug screening is now routinely performed in a number of settings. It is important to recognize that certain types of antibiotic therapy may result in false positive urinary opiate testing. Several types of quinolone agents including levofloxacin, ofloxacin, ciprofloxacin, norfloxacin, trovafloxacin, enoxacin, and nalidixic acid have this property. Rifampin therapy and poppy seed ingestion have also been reported to result in false positive urinary opiate testing. The other antibiotics listed do not cause false

positive results.

Colby JM, Patel PC, Fu DY, Rutherford NJ: Commonly used fluoroquinolones cross-react with urine drug screens for opiates, buprenorphine, and amphetamines. CLIN BIOCHEM 2019;68:50-54.

Baden LR, Horowitz G, Jacoby H, Eliopoulos GM: Quinolones and false-positive urine screening for opiates by immunoassay technology. JAMA 2001;286:3115-3119.

Question #21

ANSWER=D

Patients with suprasacral spinal cord injuries typically have preservation of reflexogenic erections, but not psychogenic or nocturnal erections, which require central neural integration. The penis receives innervation via several different nerve pathways and branches. Penile sensation and muscular contraction of the bulbospongiosus muscles are both innervated by the pudendal nerve, which receives roots from the S2-4 spinal region. The parasympathetic nerves, which are predominantly responsible for generating erections, originate in the S2-4 region and travel through the hypogastric plexus into the cavernosal nerves. The cavernosal nerves then travel posterior to the prostate (often injured during prostate surgeries) and enter the corpus cavernosum. The sympathetic nerve pathway originates in the T10-L2 spinal roots and travels in the paravertebral sympathetic chain. Sympathetic branches are then dispersed to the hypogastric, cavernous, and pudendal nerves. Ejaculation is also specifically mediated in the T12-L2 region, in the spinal ejaculation generator. Nerves traveling to the brain help initiate the sensation of orgasm and pleasure. With the above background in mind, vibratory ejaculation is a reflex that is dependent on intact sensation (pudendal nerve) and the parasympathetic/sympathetic systems (hypogastric plexus, cavernosal nerves). In the current scenario, a T12 spinal injury has been sustained, which will allow for reflexogenic erections (intact sensation/parasympathetic system) but will limit ejaculation (due to damage of the spinal ejaculation generator). The individual would also not feel pleasure or a sensation of orgasm with the reflex erection/ejaculation.

Shindel AW, Lue TF: Physiology of penile erection and pathophysiology of erectile dysfunction, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 68, p 1485.

AUAUNIVERSITY CORE CURRICULUM: Erectile dysfunction: Physiology, pathophysiology. Updated January 25, 2022. <https://university.auanet.org/core/sexual-medicine-andrology/erectile-dysfunction-physiology-pathophysiology/index.cfm?d=2906>

AUAUNIVERSITY CORE CURRICULUM: Ejaculation and orgasm disorders. Updated March 3, 2022. <https://university.auanet.org/core/sexual-medicine-andrology/disorders-of-ejaculation-and-orgasm/index.cfm?d=2915>

Question #22**ANSWER=E**

Post-obstructive diuresis is defined as urine output > 200 mL/hour for two consecutive hours or > 3 L/24 hours and is a common occurrence after relief of bladder outlet obstruction, bilateral ureteral obstruction, or ureteral obstruction of a solitary kidney. Patients should be closely monitored for high salt and water elimination. High-risk patients include those with chronic obstruction, edema, congestive heart failure, hypertension, weight gain, and azotemia. In the high-risk patient, a spot check urine for osmolality or specific gravity will assess the kidney's ability to concentrate or dilute the urine to maintain fluid balance. Assessment of urine electrolytes may also guide the type and duration of fluid replacement. High-risk patients such as this one should have vital signs, including postural blood pressure and output measured hourly. D5 1/2 NS is an appropriate replacement fluid in the patient who cannot consume oral fluids and/or who has poor cognitive status, and/or clinical hypotension. This replacement fluid is given at half of the previous hour's urine output. Fluids should not be replaced at an equal rate of output because this may prolong the diuresis.

AUAUNIVERSITY CORE CURRICULUM: Post obstructive diuresis. Updated January 28, 2022. <https://university.auanet.org/core/consults-emergencies/consults-emergencies-post-obstructive-diuresis/index.cfm?d=2972>

Peters CA, Meldrum KK: Pathophysiology of urinary tract obstruction, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 40, p 776.

Question #23**ANSWER=C**

Hydronephrosis of pregnancy is at least two to three times more common on the right side than on the left. Isolated left-sided hydronephrosis during pregnancy should prompt investigation into other causes of urinary tract obstruction, such as a stone. The presence of leukocytes in the urine suggests the possibility of infection combined with obstruction and mandates investigation. Transvaginal ultrasound, looking for ipsilateral absence of the ureteral jet, would be the initial screening study, if available. In this scenario, a non-contrast MRI scan would be the study of choice as the patient refuses the CT scan. Low-dose CT scan is considered low-risk in pregnancy and has a high positive predictive value for stones. PCNT and retrograde pyelography would not be indicated in this setting unless less invasive diagnostic studies were unrevealing or demonstrated a need for intervention. Observation and hydration with medical expulsive therapy are not appropriate next steps given the need to evaluate further the cause of her intractable pain.

AUAUNIVERSITY CORE CURRICULUM: Renal, upper tract obstruction. Updated March 1, 2021. <https://university.auanet.org/core/anatomy-physiology/renal-upper-tract-obstruction/index.cfm>

AUAUNIVERSITY CORE CURRICULUM: Urologic considerations in pregnancy. Updated January 26, 2022. <https://university.auanet.org/core/fpmrs/urologic-considerations-in->

Question #24

ANSWER=B

Spinal cord abnormalities, including tethered cord or thickened or fatty filum terminale and lipoma have been noted in 20-50% of patients with imperforate anus. The severity of the lesion is proportional to the severity of the rectal lesion. In this case, the patient has a high-imperforate anus. VCUG reveals trabeculation, VUR into one kidney, and incomplete bladder emptying - a collection of findings potentially due to neurogenic bladder dysfunction. The next step is a spinal MRI scan. Due to ossification of the spine, a spinal ultrasound cannot rule out a tethered spinal cord after three months of life. Vesicostomy, CIC, and medications are premature at this point without UDS and a formal diagnosis of neurogenic bladder.

Wilcox DT, Rove KO: Clinical and urodynamic evaluation of lower urinary tract dysfunction in children, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 28, p 473.

Question #25

ANSWER=E

In men with recurrent bouts of ischemic priapism who desire to preserve their sexual function, the use of an LH-RH agonist is problematic due to a significant number of adverse effects related to the suppression of testosterone. In this situation, training the patient to use home intracavernosal injections with phenylephrine is warranted. The literature supporting the use of oral terbutaline, digoxin, or baclofen is variable and does not demonstrate equivalent consistency or efficacy compared to phenylephrine.

*Bivalacqua TJ, Allen BK, Brock G, et al: The diagnosis and management of recurrent ischemic priapism, priapism in sickle cell patients and non-ischemic priapism: AUA/SMSNA Guideline. J UROL 2022.
[https://www.auanet.org/guidelines/guidelines/the-diagnosis-and-management-of-priapism-an-uaa/smsna-guideline-\(2022\)](https://www.auanet.org/guidelines/guidelines/the-diagnosis-and-management-of-priapism-an-uaa/smsna-guideline-(2022))*

Question #26

ANSWER=C

Intravesical BCG is generally well-tolerated, but patients should be monitored for systemic infection with BCG and treated appropriately. In the absence of bacteriuria, patients with persistent high-grade fever (38.5 °C or greater) that does not respond to antipyretic therapy should have BCG treatment discontinued and isoniazid (INH) therapy started. This may be an early sign of a systemic BCG infection. Double and triple therapy is reserved for patients who present with pulmonary or hepatic involvement with BCG. Fluoroquinolones alone or with suppressive antibiotics are appropriate for treatment of acute bacterial cystitis as opposed to the presumed mycobacterial (BCG-related) infection, as is illustrated in this case. It should be noted that fluoroquinolones may have a role in treating systemic infections with BCG, but this is as a part of an

antimycobacterial regimen over a more prolonged period and only in the second or third line.

Zabell J, Konety BR: Management strategies for non-muscle-invasive bladder cancer (Ta, T1 and CIS), in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 136, p 3101.

Pérez-Jacoiste Asín MA, Fernández-Ruiz M, López-Medrano F: Bacillus Calmette-Guérin (BCG) infection following intravesical BCG administration as adjunctive therapy for bladder cancer: incidence, risk factors, and outcome in a single-institution series and review of the literature. MEDICINE (Baltimore). 2014;93:236-254.

Question #27

ANSWER=B

The use of sildenafil 25 mg has no impact on the type of alpha-blocker used, its dose, or the timing in relation to sildenafil use. Sildenafil doses greater than 25 mg (50 mg or 100 mg) used to require separation from any alpha-blocker by a period of four hours, but recent studies have shown that there is little difference in hypotension with the addition of alpha-blockers to all three doses of sildenafil, so this is no longer recommended. Tadalafil may be used at any dose with tamsulosin 0.4 mg. The concerns about hypotension induced by the concomitant use of sildenafil and alpha-blockers also pertain to vardenafil. Further, there is no need to decrease the dose of amlodipine because of the fact that the combination of sildenafil 25 mg and tamsulosin is considered safe.

https://www.accessdata.fda.gov/drugsatfda_docs/label/2014/20895s039s042lbl.pdf

Burnett AL II, Ramasamy R: Evaluation and management of erectile dysfunction, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 69, p 1513.

AUAUNIVERSITY CORE CURRICULUM: Medical treatment. Updated January 28, 2022.
<https://university.auanet.org/core/BPH/medical-bph/index.cfm?d=2883>

Question #28

ANSWER=D

Kallmann syndrome, anosmia or hyposmia associated with hypogonadotropic hypogonadism, is commonly diagnosed due to a delayed onset of puberty. Most patients are treated with exogenous testosterone at the time of their diagnosis for virilization. Testosterone is easy and cost-effective to administer compared to daily injections of alternative hormones. Azoospermia in these patients results from the combination of inadequate levels of intratesticular testosterone and the patient's natural absence of stimulatory pituitary hormones. When the patient desires to father children, spermatogenesis can be brought about by discontinuing exogenous testosterone and beginning daily IM or SQ injections of hCG and recombinant FSH. GnRH administration may be considered but is expensive and requires I.V. administration. In patients with low

ejaculate volume (< 1.5 mL), post-ejaculate urine is useful to diagnose retrograde ejaculation; however, this patient's ejaculate volume is normal. Assay of testosterone, LH, and FSH is not needed in this patient in whom a diagnosis of Kallmann syndrome has already been made. It would be inappropriate to proceed with testicular sperm extraction without first giving the hormonal treatment necessary to stimulate spermatogenesis.

Niederberger CS, Ohlander SJ, Pagani RL: Male infertility, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 66, p 1428.

Question #29

ANSWER=D

Uroflow evaluation with the determination of urinary residual is an important screening tool for patients with lower urinary tract symptoms. Normal values vary depending on age, sex, and volume voided. In men, urine flow declines with age, while women will have minimal alterations with age. In general, in pre-pubertal males and females, the average peak flow rates range from 10-15 mL/sec. Post-puberty until age 45 years, the average peak uroflow rate in males is 21 mL/sec. The average peak flow rate for females is 18 mL/sec. Between the ages 46 to 65 years, the average peak uroflow rate for males will decrease to 12 mL/sec. The average peak uroflow rate for females will remain at 18 mL/sec. Between 66 to 80 years of age, the average peak uroflow rate for males will further decrease to 9 mL/sec. The average peak uroflow rate for females remains at 18 mL/sec. While flow rates decrease in men with age, this patient's uroflow results are within normal limits for his age and would not predict future risk of urinary retention. In general, provided the patient voids a minimum of 125-150 mL, urologists will find a peak flow rate of < 15 mL/sec in one-third of patients evaluated (one standard deviation below the mean) and a peak flow rate of < 12 mL/sec in 5% (two standard deviations below the mean). In using the uroflow to evaluate patients, it is critical to note the following: 1) The uroflow represents the combined dynamics of the outflow tract and detrusor contractility, a decrease in peak uroflow may be due to either the obstruction of the outflow tract, poor detrusor contractility, or both; 2) There is minimal to no correlation of the peak uroflow to IPSS. Specifically, pharmacological therapy for BPH will frequently document significant improvement in symptom scores with minimal to no increase in peak uroflow; 3) Studies have found that patients with a peak uroflow of > 15 mL/sec have significantly less improvement in IPSS following TURP compared to patients with a peak uroflow of < 15 mL/sec. The uroflow, being of prognostic value in this circumstance, enables the surgeon to determine how well surgical intervention will improve the patient's symptoms.

Kumar V, Dhabalic J, Nelvigi G, et al: Age, gender and voided volume effect on peak uroflow rate and the uroflow nomogram. INDIAN J UROL 2009;4:461-466.

Capogrosso P, Salonia A, Montorsi F: Evaluation and nonsurgical management of benign prostatic hyperplasia, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 145, p 3343.

Rates of incontinence can be high in patients undergoing TURP following brachytherapy (at least 18%). The presence of obstructive symptoms at the time of TURP and a period of at least two years since brachytherapy are associated with a greater likelihood of incontinence. Treatment with ADT, prostate size, pretreatment IPSS, dosage of brachytherapy, and pre-treatment PSA do not seem to affect the likelihood of incontinence.

Sandhu JS, Breyer B, Comiter C, et al: Incontinence after prostate treatment: AUA/SUFU Guideline. J UROL 2019;202:369.

<https://www.auanet.org/guidelines/guidelines/incontinence-after-prostate-treatment>

Kollmeier MA, Stock RG, Cesaretti J, Stone NN: Urinary morbidity and incontinence following transurethral resection of the prostate after brachytherapy. J UROL 2005;173:808-812.

Question #31

ANSWER=B

This patient has signs and symptoms of an infected IPG. The bacterial infection of the IPG will result in a bacterial biofilm that will also contaminate the lead connected to the IPG. Thus, both the IPG and lead should be explanted, and the patient should be allowed to heal. The risk of infection of a new device or new lead placement at the time of explantation is too high and should not be pursued. The proper management is the explantation of all prosthetic material, treatment of the infection, and repeat test stimulation in the future when the patient is completely recovered.

Heesakkers JPFA, Blok B: Electrical stimulation and neuromodulation in storage and emptying failure, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 122, p 2739.

Question #32

ANSWER=D

New onset symptoms in a geriatric patient with previously diagnosed asymptomatic bacteriuria warrants therapy. Generally, three to seven days of therapy is suggested. Good options include five days of nitrofurantoin, three days of trimethoprim/sulfamethoxazole (if resistance is < 20% among E. coli strains locally), or seven days of beta-lactam agents as a secondary option. Fluoroquinolones have a higher risk of adverse side effects and are no longer first-line treatment. Observation is not recommended since this patient is symptomatic at this time. A history of asymptomatic bacteriuria or recurrent symptomatic UTIs in women typically does not require cystoscopy or imaging studies, according to the AUA Guideline on Recurrent UTIs in Women. Single dose therapy is inadequate in this setting. Initiating estrogen therapy in patients with recurrent symptomatic UTIs and atrophic vaginitis in a post-menopausal woman would be appropriate. However, treating with estrogen alone in a setting of an

acute symptomatic infection is insufficient.

Cooper KL, Badalato, GM, Rutman MP: Infections of the urinary tract, Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 55, pp 1156-1157.

AUAUNIVERSITY CORE CURRICULUM: Urinary tract infection (Adult). Updated February 25, 2022. https://university.auanet.org/core_topic.cfm?coreID=92

Anger J, Lee A, Ackerman AL, et al: Recurrent uncomplicated urinary tract infections in women: AUA/CUA/SUFU Guideline. J UROL 2019;202:282. <https://www.auanet.org/guidelines/guidelines/recurrent-uti>

Question #33

ANSWER=C

Because of its size, the fistula is unlikely to close with prolonged Foley catheterization. There is limited data to support endoscopic treatment with fulguration for genitourinary fistulas. In this patient, immediate surgical repair is indicated. The outcomes are not adversely affected by intervening at six weeks. Given the location of the fistula, a transvaginal approach with interposition of labial or peritoneal flaps between the vesical and vaginal tissues at the time of repair would be optimal, given high success rates and decreased potential morbidity compared to an abdominal approach.

De Ridder DJMK, Greenwell T: Urinary tract fistulae, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 129, p 2924.

AUAUNIVERSITY CORE CURRICULUM: Urinary fistulas. Updated January 27, 2022. <https://university.auanet.org/core/fpmrs/urinary-fistulas/index.cfm?d=2944>

Question #34

ANSWER=C

The UDS findings are consistent with involuntary detrusor contractions and bladder outlet obstruction, most likely due to BPH. The most reasonable pharmacologic approach is to use an alpha-sympathetic blocking agent. Detrusor-external sphincter dyssynergia is not seen in Parkinson's disease. Thus, baclofen, which is intended to induce skeletal muscle relaxation, is not indicated. Antimuscarinics may reduce involuntary detrusor contractions but may exacerbate emptying failure, so should not be used until his emptying improves. A trial of alpha-blocker is warranted prior to initiation of CIC or a surgical debulking procedure. Incontinence rates are higher in patients undergoing TURP with multisystem atrophy; however, this does not appear to be the case for patients with Parkinson's disease and bladder outlet obstruction.

Kowalik CCG, Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3,

Question #35

ANSWER=C

Three male infertility conditions are associated with chronic upper respiratory infections: congenital bilateral absence of the vas deferens (CBAVD) associated with cystic fibrosis gene mutations, immotile cilia syndrome, and Young's syndrome associated with inspissated secretions in the epididymis and vas deferens. Patients with either CBAVD or Young's syndrome are azoospermic. Primary ciliary dyskinesia (also called immotile cilia syndrome) is associated with normal sperm concentrations but no motility or severely low sperm motility due to ultrastructural defects in the sperm tail. Primary ciliary dyskinesia associated with situs inversus is known as Kartagener's syndrome. Sperm with absent motility due to ultrastructural defects are typically alive (viable), while most other causes of low motility are associated with non-viable sperm. Sperm viability testing will demonstrate a high percentage of viable sperm in primary ciliary dyskinesia. Partial ejaculatory duct obstruction may be associated with low sperm motility and low viability. Since TRUS is an invasive test, sperm viability testing should be performed first. Genital tract infections may cause impairment of sperm motility but are usually associated with pyospermia and low sperm viability. Semen cultures may be considered in cases of pyospermia. Deficiency in FSH and/or testosterone would be associated with decreased sperm concentration, not an isolated motility defect. While adoption may be an option, sperm viability testing would be the next step prior to recommending this.

Niederberger CS, Ohlander SJ, Pagani RL: Male infertility, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 66, p 1440.

Question #36

ANSWER=D

The patient appears to be obstructed following midurethral sling placement and should be considered for sling incision. UDS data can be useful in some cases, but if the symptoms began after the sling was placed, she will likely need to have the sling incised regardless of UDS findings. Given the urinalysis findings, cystoscopy should be done to evaluate for urethral injury/erosion prior to the sling incision procedure. Sling excision would be necessary if urethral erosion is identified; however, it is usually not necessary for sling release and may result in a greater risk of recurrent stress incontinence compared to sling incision alone. Tamsulosin may help mild functional obstruction symptoms. However, since her iatrogenic anatomic obstruction is unlikely to improve, and given the relationship of symptoms to the sling procedure, one must address the role of the sling in her voiding dysfunction.

Gomelsky A, Dmochowski RR: Slings: Autologous, biologic, synthetic, and mid-urethral, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3,

Bazi T, Kerkhof MH, Takahashi SI, et al: Management of post-midurethral sling voiding dysfunction. International Urogynecological Association research and development committee opinion. INT UROGYNECOL J 2018;29:23–28.

Question #37

ANSWER=E

All current phosphodiesterase-5 inhibitors have some cross-reactivity to other phosphodiesterases. Phosphodiesterase-6 is present in the retina, and its inhibition can lead to visual disturbances, including how color is perceived (i.e., blue-green color changes). Both sildenafil and vardenafil are known to bind phosphodiesterase-6 with greater affinity than tadalafil or avanafil. Phosphodiesterase-11 inhibition is responsible for lower back myalgias and is impacted more heavily by tadalafil. From a clinical standpoint, patients who experience bothersome adverse effects from one agent (i.e., blue-green color changes or backaches) may be changed to an alternative agent. Phosphodiesterase 4 and 8 have not been associated with bothersome adverse effects with sildenafil, vardenafil, tadalafil, or avanafil.

Burnett AL II, Ramasamy R: Evaluation and management of erectile dysfunction, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 69, p 1513.

Question #38

ANSWER=D

Patients undergoing adrenalectomy for Cushing's syndrome have an excess of corticosteroids from an adrenal adenoma or carcinoma. These patients need stress-dose steroids and careful glycemic control as they often have obesity and diabetes. Alpha-blockers and hydration are indicated peri-operatively for patients with pheochromocytoma. Beta-blockers may also be necessary pre-operatively for patients with pheochromocytoma if they are tachycardic after alpha-blockade. Potassium-sparing diuretics are important for the peri-operative management of patients with hyperaldosteronism (Conn's disease) as they often have significant hypokalemia.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 106, p 2354.

Question #39

ANSWER=A

Ease of targeting with large focal zone lithotriptors may lead to improved efficacy with higher stone-free rates. Electrohydraulic, or spark gap lithotriptors, like the original HM3, have the largest focal zones, which is likely the reason for their widespread acceptance. Piezoelectric devices have small focal zones with wide apertures of entry, thus minimizing patient discomfort but often have lower stone-free rates.

Electromagnetic machines have smaller focal zones but typically achieve higher pressures. Microexplosive lithotriptors are not currently used due to the requirement for lead azide pellets, and electroconductive machines are currently not utilized but retained smaller focal zones.

Matlaga BR, Krambeck AE: Surgical management for upper urinary tract calculi, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 94, p 2094.

Question #40

ANSWER=B

The CT scan shows a 1.5 cm node in the interaortocaval region, the primary landing zone for a right testis tumor. Thus, the patient has a pT1bN1M0 or stage 2A seminoma. The treatment for stage 2A seminoma is either 3 cycles of BEP, 4 cycles of EP, 30-36 Gy of external beam XRT to the para-aortic area and ipsilateral pelvic lymph nodes, or potentially bilateral RPLND based on recent preliminary data. Most patients with 2A seminoma get treated with XRT. Some patients do get chemotherapy; however, as this patient has CKD, he is not a good candidate for platinum-based chemotherapy. XRT would be the recommended therapy. In the presence of visible retroperitoneal disease, 30-36 Gy is recommended (typically 30 Gy for 2A and 36 Gy for 2B), to the interaortocaval region and right iliac lymph nodes. If he was undergoing adjuvant XRT for stage 1 seminoma, 20 Gy to only the interaortocaval region would be sufficient. Based on the SEMS trial (which will be published in 2022), RPLND is a reasonable option for low-volume retroperitoneal seminoma and is associated with ~85% three-year disease-free survival. However, it would be a bilateral RPLND, particularly with visible interaortocaval disease, and not a modified template. Single-dose carboplatin is an option for the adjuvant treatment of stage 1 seminoma, but not for stage 2A or higher disease.

National Comprehensive Cancer Network Guidelines.

https://www.nccn.org/professionals/physician_gls/pdf/testicular.pdf

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 76, p 1680.

Question #41

ANSWER=B

Urologists may have significant occupational radiation exposure. It is important to wear radiation protection for the body, thyroid, and eyes. Place the fluoroscopy beam under the table if possible and use the principle ALARA or "as low as reasonably achievable." The maximum yearly dose recommended by the National Council on Radiation Protection and Measurements is 5,000 mrem or 5 rem to the entire body; likewise, 0.5 rem is the maximum recommended dose to a fetus, and 50 rem is the maximum recommended dose to an individual body organ.

Question #42

ANSWER=B

The clitoral neural anatomy is similar to that of the normal male phallus. At the mid-portion of the clitoral body, the main nerve bundles are found dorsally. While individual nerve fibers are found circumferentially around the corpora, the main bundles are not present ventrally, laterally, between the urethra and vagina, nor between the corpora themselves. Thus, the dorsal aspect of the clitoral shaft is the area that must be approached with great care if gender affirming surgery is performed to ensure future genital sensation.

Kaefer M: Management of abnormalities of the genitalia in girls, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 47, p 973.

Question #43

ANSWER=A

This presentation is most consistent with a female with androgen insensitivity syndrome (AIS) based on amenorrhea, karyotype, and elevated testosterone (indicating the presence of functional testicular tissue). The pelvic examination will most likely reveal a short vagina, due to the effect of Müllerian inhibiting substance, causing the regression of the uterus, fallopian tubes, and upper vagina, but not uterine duplication. Imperforate hymen and transverse vaginal septum can cause amenorrhea but are not associated with an abnormal karyotype. Bifid clitoris is associated with bladder exstrophy.

Yu RN, Diamond, DA: Disorders of sexual development: Etiology, evaluation, and medical management, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 48, p 990.

AUAUNIVERSITY CORE CURRICULUM: Disorders of sexual differentiation. Updated February 17, 2022. <https://university.auanet.org/core/pediatric/disorders-of-sexual-differentiation/index.cfm>

Question #44

ANSWER=B

Absolute contraindications to the use of ileum in urinary tract continent/reservoir reconstruction include short bowel syndrome and small bowel inflammatory diseases such as Crohn's disease. Prior pelvic XRT increases the risk of incontinence and complications, but with astute intraoperative assessment of the bowel integrity, neobladder reconstruction has been performed successfully. CIS in the bladder, tumor at the bladder neck, and positive pelvic lymph nodes are not contraindications for

orthotopic diversion.

Wintner A, Dahl DM: Use of intestinal segments in urinary diversion, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 139, p 3160.

Question #45

ANSWER=C

In patients with a suspected pheochromocytoma, it is critical to achieve adequate alpha-blockade prior to surgery. This is typically accomplished with phenoxybenzamine. In patients in whom blockade with phenoxybenzamine is inadequate, the addition of metyrosine, a tyrosine hydroxylase inhibitor, has been recommended to prepare the patient for anesthesia or surgery. An alternative to metyrosine would be to continue the phenoxybenzamine and add a beta-blocker, but in this setting of inadequate alpha-blockade, the addition of a beta-blocker has on occasion been found to be associated with increased alpha-receptor stimulation and furthering hypertension. Therefore, the addition of metyrosine would be a better choice in patients who have their hypertension poorly controlled by phenoxybenzamine. Weak alpha-blockers, such as prazosin, have been used; however, a majority of patients still appear to have hypertensive crises prior to or during surgery while on these drugs. Adrenalectomy would be dangerous without pre-surgical medical stabilization which has not been accomplished in this patient. Clonidine and metyrapone do not play a role in the medical management of pheochromocytoma.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 106, pp 2378-2380.

Michalakis K, Ilias I: Medical management of adrenal disease: A narrative review. ENDOCR REGUL 2009;43:127-135.

Question #46

ANSWER=A

Physiologic post-obstructive diuresis is caused by retained urea, sodium, and water. This can typically be observed by allowing patients free access to drink as they become thirsty. Pathologic post-obstructive diuresis is caused by impairment of concentrating ability or sodium reabsorption and frequently requires treatment such as I.V. hydration. Free water clearance, prostaglandin, and angiotensin II secretion or excretion are not related to pathologic post-obstructive diuresis.

Brown ET, Wein AJ, Dmochowski RR: Pathophysiology and classification of lower urinary tract dysfunction: Overview, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 111, p 2514.

The incidence of *Clostridium difficile* infection (CDI) is increasing with a preponderance of the NAP1 hypervirulent strain of *C. difficile* found in recent epidemics. It is believed the NAP1 strain arose due to the widespread use of fluoroquinolone antibiotics. The NAP1 strain is more likely to cause severe and fulminant colitis, characterized by marked leukocytosis, renal failure, hemodynamic instability, and toxic megacolon. While oral vancomycin and oral metronidazole are both considered standard therapies for CDI, recent studies suggest that vancomycin is more effective. Neither I.V. vancomycin nor I.V. metronidazole have been found to be more effective than the oral form of the medications for treatment of CDI. There is no role for fluoroquinolone antibiotics in treatment of CDI. This patient with worsening diarrhea, fever, and leukocytosis, is failing to improve with standard treatment, and thus surgical consultation is indicated. Subtotal colectomy with end ileostomy is the procedure of choice for fulminant CDI colitis non-responsive to medications and has been documented to result in improved survival.

Cooper KL, Badalato, GM, Rutman MP: Infections of the urinary tract, Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 55, p 1155.

Czepiel J, Drozd M, Pituch H, et al: Clostridium difficile infection: Review. EUR J CLIN MICROBIOL INFECT DIS 2019;38(7):1211-1221.

Pant C, Sferra TJ, Deshpande A, et al: Clinical approach to severe Clostridium difficile infection: Update for the hospital practitioner. EUR J INT MED 2011;22:561-568.

Moudgal V, Sobel JD: Clostridium difficile colitis: A review. HOSP PRACT 2012;40:139-148.

Nassour I, Carchman EH, Simmons RL, et al: Novel management strategies in the treatment of severe Clostridium difficile infection. ADV SUR 2012;46:111-135.

The use of over-the-counter phytotherapy continues to be a popular therapy for the treatment of male LUTS due to BPH. However, there are a limited number of well-done placebo-controlled trials evaluating its efficacy. The vast majority of these trials suggest that *Serenoa repens* is no more effective than placebo. No differences are seen in regard to IPSS or flow rates. There does not appear to be any decrease in prostate size or evidence that suggests that this drug is able to minimize the risk of progression to acute urinary retention. Initial prostate size does not appear to impact the outcome when *Serenoa repens* is used. Adverse events are mild and appear to be comparable to a placebo.

Capogrosso P, Salonia A, Montorsi F: Evaluation and nonsurgical management of benign prostatic hyperplasia, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3,

chap 145, pp 3395-3398.

MacDonald R, Tacklind JW, Rutks I, et al: *Serenoa repens* monotherapy for benign prostatic hyperplasia (BPH): An updated Cochrane systematic review. *BJU INT* 2012;109:1756.

Barry MJ, Neleth S, Lee JY, et al: Effect of increasing doses of saw palmetto extract on lower urinary tract symptoms. *JAMA* 2011;306:1344-1351.

Question #49

ANSWER=A

Benign urethrorrhagia is a common cause of pediatric gross hematuria in pre-pubertal and adolescent boys. Drops of blood after voiding clear urine or blood spotting in the underwear suggest urethral bleeding. Pediatric urethrorrhagia is almost always benign and self-limited. Renal/bladder ultrasound, non-invasive uroflowmetry, and PVR can be considered as part of the work-up but are usually normal. Additional upper tract imaging with ionizing radiation is not necessary. Urine calcium:creatinine ratio can be part of the work-up of pediatric gross hematuria but is not warranted given the terminal nature of the hematuria. Urethral strictures are not uncommonly diagnosed in patients who originally presented with urethrorrhagia. Because urethral instrumentation may exacerbate existing urethral inflammation, neither cystoscopy nor VCUG should be considered in this otherwise asymptomatic child.

AUAUNIVERSITY CORE CURRICULUM: Abnormal urinalysis/hematuria and medical renal disease. Updated January 25, 2022.

<https://university.auanet.org/core/pediatric/abnormal-urinalysis-hematuria-and-medical-renal-disease/index.cfm>

Shukla AR, Srinivasan AK: *Posterior urethral valves*, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): *CAMPBELL WALSH WEIN UROLOGY*, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 33, p 602.

Question #50

ANSWER=C

Most patients can be discharged home on the first postoperative day after holmium laser enucleation of the prostate (HoLEP). If there is no evidence of a definitive capsular perforation, the catheter can be removed the next day. In case of a large perforation, the catheter should be left for a few days. Only large extraperitoneal or intraperitoneal bladder injuries during morcellation, or evidence of a large degree of irrigant extravasation from an extraperitoneal injury, require open exploration. If hemodynamically stable, there is no need to abort the procedure and subject the patient to another procedure for morcellation. The "mushroom technique" is an alternate approach for adenoma removal, during which the lobes are left attached to a stalk and later resected down to pieces that are suitable for coming through the resectoscope. In this case, the adenoma has already been entirely enucleated in preparation for using the morcellator.

Helo S, Welliver RC Jr, McVary KT: Minimally invasive and endoscopic management of benign prostatic hyperplasia, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 146, p 3436.

AUAUNIVERSITY CORE CURRICULUM: Surgical treatment. Updated July 21, 2022. <https://university.auanet.org/core/BPH/surgical-bph/index.cfm?d=2884>

Question #51

ANSWER=A

This patient has a steinstrasse and mild ureteral stone symptoms. Patients with minimal symptoms, adequate renal function, and no signs of sepsis can be managed conservatively, and approximately 50-60% will resolve spontaneously. These patients must be monitored closely with imaging to ensure intervention is not needed. Patients with persistent steinstrasse will require intervention and/or decompression. Placement of a PCNT or ureteral stent would then be options, especially in the setting of infection. SWL of the lead fragment, especially if a large lead fragment is present, can sometimes be successful as well. If intervention is required, ureteroscopy is the definitive treatment with success rates approaching 100%.

York NE, Lingeman JE: Complications of extracorporeal shock wave lithotripsy, in Taneja SS, Shah O (eds): TANEJA'S COMPLICATIONS OF UROLOGIC SURGERY, ed 5. Philadelphia, Elsevier 2018, chap 29, p 301.

Matlaga BR, Krambeck AE: Surgical management for upper urinary tract calculi, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 94, p 2094.

Question #52

ANSWER=C

The most common adverse effects of SSRIs are yawning, mild nausea, excessive sweating, fatigue, diarrhea, erectile dysfunction, and loss of libido. A sudden reduction or cessation of long-term treatment of SSRIs can lead to "SSRI discontinuation syndrome," which includes symptoms such as nausea, vomiting, dizziness, headache, ataxia, drowsiness, anxiety, and insomnia. These symptoms begin one to three days after the drug cessation and may continue for more than a week in some patients. The combination of more than one SSRI may lead to "serotonin syndrome," which can be life-threatening and requires immediate cessation of one of the offending agents.

AUAUNIVERSITY CORE CURRICULUM: Ejaculation and orgasm disorders. Updated March 3, 2022. <https://university.auanet.org/core/sexual-medicine-andrology/disorders-of-ejaculation-and-orgasm/index.cfm?d=2915>

Shindel AW, Althof SE, Carrier S, et al: Disorders of ejaculation: AUA/SMSNA GUIDELINE (2020). <https://www.auanet.org/guidelines/guidelines/disorders-of-ejaculation>

UTI in patients with spinal cord injury on CIC is commonly seen but can be a challenge to diagnose. Almost all urine collections will show bacteriuria, and pyuria may occur solely due to the irritative effects of catheterizations, and may not always be related to the presence of infection. The usual symptoms of UTI such as urinary frequency, urgency, and dysuria will not be noted in patients with a complete neurologic injury who have no bladder sensation. Typical UTI symptoms in a patient with a spinal cord injury may include urinary incontinence between catheterizations, increased spasticity (as seen in this patient), malaise, lethargy, persistent cloudy or malodorous urine, and discomfort at the level of the flank, back, or abdomen. Bacteria levels are problematic to interpret and are classically only treated if they are greater than or equal to 100 cfu/mL and the patient is symptomatic. Due to the symptomatic complaint of increased spasticity and positive urine culture, this patient should be given antibiotics. If the spasticity is not resolved after treatment, the patient should be carefully examined for any physical injury below the level of his lesion, such as obstipation, decubitus ulcer, ingrown toenail, developing syrinx, etc. Baclofen is a commonly used treatment for spasticity in spinal cord injury (SCI) patients and should be considered for use if the spasticity is not resolved after treatment of the UTI, and additional patient evaluation fails to reveal an underlying cause. Elevated storage pressures do place a patient at increased risk of symptomatic UTI, and UDS should be considered if this patient continues to experience recurrent symptomatic infections.

AUAUNIVERSITY CORE CURRICULUM: Urinary tract infection (Adult). Updated February 25, 2022. <https://university.auanet.org/core/urologic-infections/adult-urinary-tract-infection/index.cfm>

Cooper KL, Badalato, GM, Rutman MP: Infections of the urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 55, p 1129.

Ginsberg DA, Boone TB, Cameron AP, et al: The AUA/SUFU Guideline on adult neurogenic lower urinary tract dysfunction: Diagnosis and evaluation. J UROL 2021;206:1097. <https://www.auanet.org/guidelines/guidelines/adult-neurogenic-lower-urinary-tract-dysfunction>

The AUA/SUFU Urodynamics Guidelines suggest that clinicians should repeat stress testing with the urethral catheter removed in patients suspected of having stress incontinence (SUI) who do not demonstrate SUI with the catheter in place. Filling the bladder to a higher volume than maximum capacity would not be indicated. Changing the prolapse reduction method would not be expected to change the findings. It should be noted the AUA Guidelines on UDS assessment of stress incontinence state that there is no standardized method with which to reduce prolapse during UDS. Patients with marked vaginal prolapse are at risk for de novo or worsening stress incontinence after prolapse treatment, and the presence of a urethral catheter may prevent the

demonstration of stress incontinence during UDS due to obstruction. Removal of the catheter (with continued reduction of prolapse) allows for complete evaluation and is the next step prior to proceeding with surgical planning.

*Kobashi KC, Albo ME, Dmochowski RR, et al: Surgical treatment of female stress urinary incontinence: AUA/SUFU Guideline. J UROL 2017;198:875.
[https://www.auanet.org/guidelines/guidelines/stress-urinary-incontinence-\(sui\)-guideline](https://www.auanet.org/guidelines/guidelines/stress-urinary-incontinence-(sui)-guideline)*

Brucker BM, Nitti VW: Urodynamic and video-urodynamic evaluation of the lower urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 114, p 2550.

Question #55

ANSWER=E

Extramammary Paget's disease (EPD) is an uncommon intraepithelial adenocarcinoma of sites bearing apocrine glands and can involve the penis and scrotum in males. The lesion in EPD is usually an erythematous plaque with a sharp border between normal and involved skin. It may be asymptomatic, pruritic, or associated with burning pain. Treatment generally involves surgical excision or Mohs micrographic surgery. There is an important association between EPD and another underlying malignancy in 10% to 30% of cases. In males, associations between EPD and urethral, bladder, and rectal cancers have been described. It is critical, therefore, to perform a systematic evaluation for underlying carcinoma in cases of EPD, including evaluation for bladder and urethral carcinoma with cystourethroscopy. There is no known association of EPD with HIV (as in the case of Kaposi sarcoma) or HPV (as in the case of verrucous carcinoma). Cutaneous T-cell lymphoma can occur in the penis but would be diagnosed on the excisional biopsy and is not associated with EPD. Although Paget also described a disease of the bone that bears his name, it has no relation to the EPD. Thus, a bone scan is not warranted.

Link RE, Tang N: Cutaneous diseases of the external genitalia, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 59, p 1273.

Question #56

ANSWER=B

Cortical phase nuclear renography may offer an accurate prediction of functional renal parenchymal recovery following reversal of prolonged obstruction. DMSA is a cortical agent and has been shown to be superior to the tubular agents, DTPA and MAG-3 for the prediction of renal recovery. Estimation of renal parenchymal thickness on CT scan remains investigational as a means to evaluate existing renal function. Doppler ultrasound of the renal vessels is an assessment of renal arterial flow in patients with kidney damage as a result of renal artery stenosis but cannot predict renal functional recovery.

Peters CA, Meldrum KK: Pathophysiology of urinary tract obstruction, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 40, pp 777-780.

Question #57

ANSWER=C

A newly diagnosed fistula may heal spontaneously with placement of an indwelling catheter. Spontaneous healing of the fistula is unlikely to occur if leakage still occurs with the catheter in place. Since the patient is dry with the catheter in place, additional radiographic studies and evaluation with a tampon dye test are not needed. Repair would be considered if the fistula does not heal after two-three weeks of catheter drainage, which is often combined with antimuscarinic use.

De Ridder DJMK, Greenwell T: Urinary tract fistulae, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 129, pp 2931-2932.

Question #58

ANSWER=C

The patient presented with symptoms of autonomic dysreflexia that have temporarily subsided but are likely to recur. This represents a life-threatening situation. Stent placement will avert recurrent obstruction and dysreflexia. Urinary alkalization is not appropriate since the patient is symptomatic. Medical expulsive therapy is not appropriate due to stone size and location. SWL will not reliably relieve the acute obstruction and risk of autonomic dysreflexia, and therefore, should not be considered a first-line treatment option. PCNL and primary ureteroscopy with definitive stone treatment could each be considered an appropriate treatment option if the patient is not infected and medically stable.

Kowalik CCG, Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 116, p 2600.

Question #59

ANSWER=A

Syphilis in the United States is a concern, especially among HIV patients. Approximately 2% of screened men with HIV have positive syphilis serology. The incidence rate of syphilis in the HIV population is 77 times greater than that of the general population. All patients who test positive for primary or secondary syphilis should also be tested for HIV infection. The U.S. Preventive Services Task Force (USPSTF) recommends that men at increased risk should be screened for HIV and syphilis. Persons diagnosed with other sexually transmitted infections (i.e., chlamydia, gonorrhea, genital herpes simplex, human papillomavirus, and HIV) may be more likely than others to engage in high-risk behavior, placing them at increased risk for syphilis. Screening tests for syphilis include nontreponemal tests (VDRL or RPR) followed by confirmatory fluorescent treponemal

antibody absorbed (FTA-ABS) or T. pallidum particle agglutination (TP-PA). For epididymitis in sexually active men younger than 35 years, the CDC recommends: (1) urethral Gram stain, (2) urethral culture or nucleic acid amplification (PCR) test for N. gonorrhoea and C. trachomatis, (3) examination of first-void uncentrifuged urine for leukocytes if the urethral Gram stain is negative, and (4) syphilis serology and HIV counseling and testing. Empiric therapy with ceftriaxone 250 mg IM in a single dose plus doxycycline 100 mg orally twice a day for ten days is indicated before laboratory test results are available. Testing for hepatitis B and C, culture of the expressed prostatic secretions, and percutaneous epididymal biopsy are not recommended. Culture of expressed prostatic secretions is not recommended since the patient did not present with symptoms of prostatitis.

Borawski, KM: Sexually transmitted diseases, Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 58, pp 1257-1259.

Meyers D, Wolff T, Gregory K, et al: Screening for syphilis infection in nonpregnant adults and adolescents: US Preventive Services Task Force Recommendation Statement. JAMA 2016;315:2321-2327.

AUAUNIVERSITY CORE CURRICULUM: Sexually transmitted infection. Updated January 21, 2022. https://university.auanet.org/core_topic.cfm?coreID=94

Question #60

ANSWER=A

The development of calculi within the lumen of an ileal conduit is not common and estimated to be less than 10%. The etiology is related to stasis of urine and may be related to stomal stenosis. In this situation, one would expect to have upper tract changes that can be detected on renal ultrasound. Unlike in the setting of continent diversion, a trial of observation is warranted given that most calculi in ileal conduits will pass spontaneously. All modalities listed are effective at eradicating calculi within a reservoir of urinary diversion and would potentially be used if the patient is symptomatic after failure of an observation period. A CT scan is not warranted based on the diagnosis of a calculus. Loopogram is used to detect anastomotic stenosis or stomal stenosis and would not be indicated in this patient who does not have hydronephrosis on ultrasound.

Ganpule AP, Desai MR: Lower urinary tract calculi, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 95, p 2114.

Question #61

ANSWER=E

Penile curvatures greater than 60 degrees may limit or prevent penetration, and therefore some form of intervention should be employed. It is unlikely that repeat modeling or changing the type of prosthesis to a two-piece or malleable device will significantly improve the curvature. Both a penile plication or an incision/excision and

grafting technique would be appropriate choices in this setting with neither demonstrating clear superiority.

AUA UNIVERSITY CORE CURRICULUM: Erectile dysfunction: Surgical management. Updated February 2, 2022. <https://university.auanet.org/core/sexual-medicine-andrology/erectile-dysfunction-surgical-management/index.cfm?d=2909>

Question #62

ANSWER=E

Necrotizing fasciitis often causes subcutaneous emphysema that can be detected as crepitus on physical examination and can be seen on imaging. The ultrasonographic characteristics of subcutaneous air are hyperechoic areas with shadowing because of reflection of the ultrasound waves. The images show scrotal wall thickening with subcutaneous air classic for Fournier's gangrene. Management should be excision of involved skin and broad-spectrum antibiotics. Observation is inappropriate. Antibiotics and scrotal support are insufficient. Although a small spermatocele is present on imaging, it is not the key finding. This patient likely has hyperglycemia but based on the history, physical, and ultrasound, the patient will require definitive surgical therapy.

Link RE, Tang N: Cutaneous diseases of the external genitalia, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 59, p 1273.

Question #63

ANSWER=B

The consumption of a low-carbohydrate, high-protein diet (i.e., Atkins, Keto, or South Beach-type diets) delivers a marked acid load to the kidney and increases the risk for stone formation. Increased dietary intake of protein will decrease urinary citrate excretion, increase urinary calcium excretion, increase urinary uric acid excretion, and reduce urinary pH. Urinary sulfate is a marker for animal protein intake, so would be expected to increase in a high protein diet. Urinary sodium would be unaffected by protein intake alone; however, the salt added to most animal proteins would likely cause an increase in urinary sodium if consumed in large quantities.

Miller NL, Borofsky MS: Evaluation and medical management of urinary lithiasis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 92, p 2036.

Question #64

ANSWER=E

During use of the argon beam electrocoagulator in a laparoscopic setting, intraperitoneal pressure can rapidly increase, resulting in low tidal volumes and compromised ventilation. At times, it is important to "vent" from one of the trocar ports during its use in order to avoid over-pressurizing the abdomen with the infused argon gas. If unrecognized, this can cause an abrupt increase in intra-abdominal pressure and eventual compromise of ventilation. When there are concerns for a gas (CO₂) embolism,

it is usually manifested as hypoxia, hypercarbia, or hypotension. It is managed with increasing FiO₂ (inspired oxygen concentration), Trendelenburg and left lateral decubitus position, and a central line to attempt aspiration. Lowering the argon power setting and continuing coagulation will continue to increase intraperitoneal pressure. Decreasing CO₂ insufflation rate will not impact intraperitoneal pressure in this setting.

Sourial MW, De SK, Monga M, Knudsen BE: Basic energy modalities in urologic surgery, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 15, p 236.

Patel RM, Kaler KS, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 14, p 215.e1.

Question #65

ANSWER=D

Indications for radiographic assessment of the pediatric patient with blunt abdominal trauma for possible GU injury include any of the following four criteria: 1. A significant deceleration or high-velocity accident, fall from greater than 10 feet, or strike to the abdomen or flank with a foreign object such as this patient sustained. 2. Significant trauma that has resulted in injuries to the thoracic contents and/or intra-abdominal organs, and/or orthopedic fractures of the ribs, spine, pelvis, or femur. 3. Gross hematuria. 4. Microscopic hematuria associated with shock. It is important to note that unlike in adults, there is a poor correlation relating the degree of hematuria to the presence of renal injuries in children. In addition, because of their sympathetic tone, children are able to sustain a normal blood pressure despite significant blood loss. Because of these differences in children, the indications for imaging in the setting of trauma must be expanded compared to adults. The first two criteria noted above are relevant to this case, so this patient should undergo a CT scan. Observation and serial hemoglobin alone are inappropriate until renal trauma has been fully addressed with imaging. Renal ultrasound alone is not sufficient to grade the degree of renal trauma if present. Based on mechanism and presentation, suspicion for bladder injury is low, so a cystogram is not indicated.

Schlomer BJ, Jacobs MA: Pediatric genitourinary trauma, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 52, p 1065.

Morey AF, Simhan J: Genital and lower urinary tract trauma, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 133, p 3048.

AUAUNIVERSITY CORE CURRICULUM: Pediatric trauma. Updated February 14, 2022. <https://university.auanet.org/core/pediatric/pediatric-trauma/index.cfm?d=2927>

The majority of testosterone that circulates is primarily bound to serum hormone-binding globulin (SHBG), with albumin and corticosteroid-binding globulin (CBG) playing lesser roles. Only 1-3% of total testosterone circulates unbound (free). SHBG production in the liver and Sertoli cells are altered by obesity, liver disease, and nephrotic syndrome. Obese males have reduced SHBG and lower total testosterone, while the free testosterone levels are generally unchanged. The excess aromatase activity in visceral fat in obese men translates into greater testosterone conversion to estradiol, further lowering the total testosterone level and elevating the estradiol level. Because of the balancing effect of higher estradiol and low testosterone, LH is most often in the normal range.

Fleshner N, Kenk M, Kaplan S: Integrated men's health: Androgen deficiency, cardiovascular risk, and metabolic syndrome, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 65, p 1411.

Tamsulosin, although not approved for use in children, has shown efficacy as medical expulsive therapy in children, but it is unlikely to be successful with a stone of this size, particularly since it has not entered the ureter. SWL is used in children with stones up to 15 mm but has poor stone-free rates in children with a history of urologic conditions or reconstruction. Ureteroscopy and PCNL are preferred modalities in this situation, but ureteroscopic management is less invasive with excellent stone-free rates for stones < 15 mm. Revision pyeloplasty is not appropriate since there was minimal hydronephrosis on recent ultrasound suggesting no evidence of UPJ obstruction.

Tasian GE, Copelovitch LA: Management of pediatric kidney stone disease, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 43, p 853.

*AUAUNIVERSITY CORE CURRICULUM: Urolithiasis. Updated January 27, 2022.
<https://university.auanet.org/core/pediatric/urolithiasis/index.cfm?d=2925>*

The correct answer is to repair the urethral injury. The cystogram demonstrates a bladder full of clot (rim sign of contrast outlining the perimeter of the clot) and no bladder injury. While there is no extravasation of contrast at the bladder neck, one must suspect a bladder neck or urethral injury because urethral catheter placement was unsuccessful and there is no other explanation for the tremendous amount of clot in the bladder (there is no bladder or upper tract injury). Further, when the bladder catheter does not drain, one should perform bladder clot evacuation. In the course of doing this, one should simultaneously explore the bladder neck and repair any injury as delayed

repair of bladder neck injuries is associated with increased urinary incontinence. Bladder irrigation, continued suprapubic tube drainage, and upsizing the suprapubic tube would fail to treat the injury. Repairing the bladder injury is incorrect as the cystogram fails to demonstrate extravasation.

Morey AF, Brandes S, Dugi DD III, et al: Urotrauma: AUA Guideline. J UROL 2014;192:327. <https://www.auanet.org/guidelines/guidelines/urotrauma-guideline>

AUAUNIVERSITY CORE CURRICULUM: Bladder, urethra, genitalia. Updated February 10, 2022. <https://university.auanet.org/core/trauma/bladder-urethra-genitalia/index.cfm>

Question #69

ANSWER=A

Approximately one-third of patients with metastatic NSGCT will have residual masses at multiple sites (retroperitoneum, chest, and left supraclavicular fossa) after chemotherapy, and in general, these patients should undergo resection of all sites of measurable residual disease. However, the histology of post-chemotherapy specimens from non-retroperitoneal sites is more likely to show necrosis than in the retroperitoneum, and the presence of necrosis in the post-chemotherapy RPLND specimen is highly predictive of necrosis at other sites. Of 159 patients who underwent post-chemotherapy resection of residual masses at different sites, only 19 (12%) who had necrosis in the RPLND specimen had either viable malignancy or teratoma at the other sites. As such, RPLND should be performed before resection of residual masses at other sites, and surveillance of small residual masses (in this case the lung and supraclavicular fossa) is the most appropriate option if the histology of the RPLND specimen is fibrosis. While FDG-PET scan may be useful in the assessment of residual masses after chemotherapy for seminomas, it has no role in patients with NSGCT.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 76, p 1680.

Question #70

ANSWER=E

This child has a primary obstructive megaureter associated with diminished renal function. Although many children with a primary obstructive megaureter will show gradual progressive improvement in the degree of dilation and rapidity of washout with age, the decision to observe without surgical intervention is dependent upon the renal function and the absence of symptoms. In the presence of significantly impaired function (differential function of < 40%), surgical intervention is indicated. Since the child is otherwise healthy and uninfected, primary reconstruction with a tapered ureteral reimplantation is the method of choice. Temporary diversion by a distal cutaneous ureterostomy or alternatively, creation of a widely refluxing ureterovesical junction may be considered in the presence of extremely poor renal function and/or a premature or young infant (i.e., less than six to eight months old), where a tapered reimplantation may be technically challenging. Placement of a PCNT is mainly used in a

severely ill infant with urinary infection not responding to parenteral antibiotics.

Olsen LH, Rawashdeh YFH: Surgery of the ureter in children: Ureteropelvic junction, megaureter, and vesicoureteral reflux, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 42, p 826.

Question #71

ANSWER=D

Fibromuscular disease is more often seen in younger Caucasian women and is usually bilateral, and unlike atherosclerotic disease, it involves the more distal segments of the renal arteries. Ninety-one percent of affected patients are female with a mean age at diagnosis of 51.9 years. Patients with branch renal artery disease should undergo revascularization surgery and not angioplasty. The recommendation for patients with fibromuscular dysplasia without branch renal disease is percutaneous transluminal renal angioplasty (PCTA). Her blood pressure is poorly controlled on metoprolol; therefore progressing to PCTA is indicated as opposed to additional pharmacologic therapy (i.e., ACE-inhibitor). A CT scan would not provide further diagnostic value since her diagnosis has already been made with arteriography. Since the success rate of balloon angioplasty is high, it should be done prior to stenting and may make stenting unnecessary. Revascularization surgery is reserved for cases not amenable to percutaneous management, and therefore would not be the next step.

AUAUNIVERSITY CORE CURRICULUM: Renovascular diseases. Updated January 21, 2022. <https://university.auanet.org/core/renovascular-diseases/renovascular-diseases/index.cfm>

Question #72

ANSWER=D

Long-term ureteral stenting is associated with pyelonephritis, incomplete renal drainage, and progressive renal decline. Neither the size nor the number of ureteral stents in a ureter has been shown to do a better job of preserving renal function. This man with progressive renal decline after two years of stenting needs an intervention that will allow him to be stent-free. Balloon dilation should be avoided in lengthy (> 1 cm) ureteral strictures, due to very high recurrence rates. Open surgical reconstruction is the best means of preserving renal function. While he has had significant worsening of renal function, he is able to balance his serum electrolytes despite the neobladder; further, his neobladder is continent and he voids well. So, there is no reason to excise the neobladder and perform a conduit. The most appropriate next step is to reconstruct the ureters and preserve the neobladder. Given the lengthy strictures, it is unlikely that a primary anastomosis of the ureters to the neobladder will be possible; instead, a segment of bowel will likely need to be interposed. Conversion of the neobladder to a urinary conduit does not address the underlying issue of the bilateral ureteral strictures.

AUAUNIVERSITY CORE CURRICULUM: Upper tract obstruction. Updated January 25, 2022. [https://university.auanet.org/core/consults-emergencies/consults-emergencies-](https://university.auanet.org/core/consults-emergencies/consults-emergencies-32)

Question #73

ANSWER=C

PET/CT has demonstrated superiority (compared to conventional imaging) in the detection of local or distant recurrence after radical prostatectomy. PET scan with PSMA or fluciclovine outperforms CT/MRI and bone scan for the assessment of local recurrence, nodal disease, and distant metastases. While PET with FDG can identify local recurrence and distant metastases and the probability of a positive scan increases with PSA level, it has lower sensitivity compared to PSMA or fluciclovine, particularly at low PSA levels (i.e., 0.5 ng/mL). In a direct comparison of 18F-fluciclovine with 68Ga-PSMA PET, the 68Ga-PSMA PET tracer was superior. In terms of imaging biochemical recurrence, comparative studies suggest 18F-fluciclovine offers slightly improved sensitivity and specificity over 11C-choline across a wide range of serum PSA values. While PSMA PET has not been directly compared to 11C-choline, available data suggests it is likely superior. Multiparametric MRI performs well in detecting local recurrence, even at relatively low PSA levels, but would not be as good as PET imaging for identifying any site of recurrence.

Gorin MA, Rowe SP: Urinary tract imaging: Basic principles of nuclear medicine, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 5, p 91.

Calais J, Ceci F, Eiber M, et al: 18F-fluciclovine PET-CT and 68Ga-PSMA-11 PET-CT in patients with early biochemical recurrence after prostatectomy: a prospective, single-centre, single-arm, comparative imaging trial. LANCET ONCOL 2019;20(9):1286-1294.

Question #74

ANSWER=C

The pressure-flow UDS reveals detrusor overactivity (DO), coexisting with urodynamic evidence of bladder outlet obstruction. In this study, external sphincter activity is noted with each episode of DO. This is a normal guarding response to an uninhibited bladder contraction and will occur in an attempt to prevent urgency incontinence. When given permission to void, EMG activity, which measures the electrical potential of the external sphincter, appropriately quiets and the patient is able to void. Patients with MS may have DO which is seen in the urodynamic tracing. However, if high-pressure voiding was due to voiding dysfunction secondary to MS, then the EMG would be active throughout the voiding phase. Hinman syndrome (also termed non-neurogenic neurogenic bladder) and dysfunctional voiding are similar entities and would be characterized by simultaneous bladder emptying and voluntary striated sphincter contraction. Detrusor-external sphincter dyssynergia (DESD) is also characterized by simultaneous detrusor and involuntary striated sphincter contraction. The likely etiology of this patient's urodynamic findings is benign prostate enlargement with secondary DO. Bladder outlet obstruction on a UDS may be determined by use of either detrusor pressure flow rate nomograms, or alternatively may be diagnosed when two of the following four urodynamic criteria are met; flow rate < 12 mL/sec, detrusor pressure at peak flow > 50 cm/H₂O, elevated urethral resistance (Pdet at Qmax divided by 2 X Qmax > 0.2), or

significant residual urine (> 100-150 mL) in the presence of high detrusor voiding pressures, i.e., detrusor pressures > 50 cm of H₂O at maximum flow rate. This patient has detrusor pressures at peak flow > 50 cm H₂O, an elevated urethral resistance of approximately 0.3, and a peak uroflow at the cut-off level.

Kowalik CCG, Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 116, p 2600.

Brucker BM, Nitti VW: Urodynamic and video-urodynamic evaluation of the lower urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 114, p 2550.

AUAUNIVERSITY CORE CURRICULUM: Medical treatment. Updated January 28, 2022. <https://university.auanet.org/core/BPH/medical-bph/index.cfm?d=2883>

Capogrosso P, Salonia A, Montorsi F: Evaluation and nonsurgical management of benign prostatic hyperplasia, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 145, p 3343.

Question #75

ANSWER=D

Surrogate decision-making is the process of making healthcare decisions on behalf of patients who lack the capacity to make decisions themselves. The surgeon is responsible for determining whether the patient possesses decision-making capacity. If not, it is the physician's responsibility to identify the appropriate surrogate decision-maker. In general, the hierarchy of surrogate decision-making is as follows: (1) a court-appointed decision maker on behalf of the patient; (2) a proxy designated by a patient who once had decision capacity; (3) the patient's spouse (or domestic partner, in jurisdictions that recognize such a status); (4) an adult child of the patient; (5) a parent of the patient; (6) an adult sibling of the patient; (7) nearest living relative or close friend of the patient.

AUAUNIVERSITY. Clinical ethics for urologists (2020): Module 7: Surrogate decision. <https://auau.auanet.org/content/clinical-ethics-urologists-2020-module-7-surrogate-decision#group-tabs-node-course-default3>

Question #76

ANSWER=A

This boy has unilateral cryptorchidism. A relatively common finding with a non-descended or an absent testicle is a flattened hemi-scrotum. The AUA Guidelines state that in the absence of spontaneous testicular descent by six months (corrected for gestational age), specialists should perform surgery within the next year. Therefore, at this time the child should be observed for spontaneous testicular descent and neither scrotal exploration nor laparoscopy is indicated in this four-month-old. The AUA

Guidelines also state that providers should not perform ultrasound or other imaging modalities in the evaluation of boys with cryptorchidism as these studies rarely assist in decision-making. A karyotype and hormonal studies would be indicated in phenotypic male newborns with bilateral, non-palpable testes for evaluation of a possible disorder of sex development (DSD), or in those with increasing severity of hypospadias and cryptorchidism to assess the possibility of a DSD. In this child with unilateral cryptorchidism, a karyotype is not indicated.

Kolon TF, Herndon A, Baker LA, et al: Evaluation and treatment of cryptorchidism: AUA Guideline. J UROL 2014;192:337.

<https://www.auanet.org/guidelines/guidelines/cryptorchidism-guideline>

AUAUNIVERSITY CORE CURRICULUM: Undescended testis. Updated February 8, 2022.

<https://university.auanet.org/core/pediatric/undescended-testis/index.cfm>

Question #77

ANSWER=A

Multiple tissue-based genomic biomarkers have been shown to independently provide prognostic information for men with newly diagnosed localized prostate cancer: Decipher, Prolaris, and OncotypeDx. For select patients, such as those deciding between surveillance or treatment, they can provide supplemental and complementary information to standard clinical and pathologic characteristics. ConfirmMDx is a tissue-based epigenetic analysis on biopsy tissue in men with a previously negative biopsy (within the past 30 months) to assess the likelihood of finding cancer on a repeat biopsy. BRCA1 testing is a germline pathogenic mutation which has been associated with a higher likelihood of being diagnosed with prostate cancer but has not been associated with a higher likelihood of aggressive disease characteristics and therefore has no known role in this clinical setting. Polygenic risk score assesses germline small nucleotide polymorphisms (SNPs) and has been associated with prostate cancer risk but not associated with disease characteristics nor integrated into post-diagnosis counseling. ExoDx is a urine-based test for men undergoing prostate cancer screening to assess the likelihood of high-grade prostate cancer and can be used to determine the need for prostate biopsy.

AUAUNIVERSITY CORE CURRICULUM: Prostate cancer screening, diagnosis and risk stratification. Updated February 14, 2022. <https://university.auanet.org/core/oncology-adult/prostate-cancer-screening-diagnosis-and-risk-stratification/index.cfm?d=2885>

AUAUNIVERSITY CORE CURRICULUM: Prostate cancer localized and locally advanced treatment. Updated February 3, 2022. <https://university.auanet.org/core/oncology-adult/prostate-cancer-localized-and-locally-advanced-treatment/index.cfm?d=2993>

Egger SE, Rumble RB, Armstrong AJ, et al: Molecular biomarkers in localized prostate cancer: ASCO Guideline. J CLIN ONCOL 2020;38(13):1474-1494.

Question #78**ANSWER=C**

Surgeons should offer perineal urethrostomy to patients with long-segment urethral strictures who are unable or unwilling to undergo urethroplasty. Urethral dilation or urethrotomy will have no chance of long-term success in this man with several previous failed treatments and a long penile stricture. Self-dilation will allow for a procedure-free interval, but another surgical intervention is inevitable. Single stage urethroplasty would not be appropriate in this man who lacks healthy tissue in the penile urethra. While two-stage urethroplasty is an option, success rates are approximately 80% compared to > 90% with perineal urethrostomy. Success is typically defined by long-term patency, no need for CIC, and patient-reported outcome measures.

Wessells H, Angermeier KW, Elliott S et al: Male urethral stricture: AUA Guideline. J UROL 2017;197:182. <https://www.auanet.org/guidelines/guidelines/urethral-stricture-guideline>

Question #79**ANSWER=B**

This patient has mixed incontinence and the AUA Guidelines on stress urinary incontinence recommend that the next step should be further evaluation, particularly before considering invasive therapy. Cystoscopy would not help elucidate her diagnosis in this setting, but the UDS would clarify the etiology of her incontinence. Clinically, she may well be a candidate for surgical therapy, whether sling or urethral bulking for SUI or third-line treatment for OAB (sacral neuromodulation or onabotulinumtoxinA injection). This decision would depend on the UDS findings. Finally, while her PVR is not overly concerning as a single measure, it is worth examining the detrusor function and how well she empties during the pressure flow portion of the UDS as this could impact treatment choices.

Kobashi KC, Albo ME, Dmochowski RR, et al: Surgical treatment of female stress urinary incontinence: AUA/SUFU Guideline. J UROL 2017;198:875. [https://www.auanet.org/guidelines/guidelines/stress-urinary-incontinence-\(sui\)-guideline](https://www.auanet.org/guidelines/guidelines/stress-urinary-incontinence-(sui)-guideline)

Brucker BM, Nitti VW: Urodynamic and video-urodynamic evaluation of the lower urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 114, p 2550.

Question #80**ANSWER=A**

The ultrasound shows a typical "onion-peel" appearance of an epidermoid cyst, a benign circumscribed entity that typically doesn't require treatment. Further imaging with an MRI scan is not indicated. Staging evaluation with a CT scan isn't required since it is a benign tumor. TESE is performed for sperm retrieval for use with in vitro fertilization but does not have any clinical relevance for the current scenario. Since this

is clearly not a germ cell tumor, radical orchiectomy is not indicated and would worsen the patient's fertility.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 76, p 1680.

Question #81

ANSWER=D

Warfarin blocks the enzyme Vitamin K epoxide reductase in the liver, leading to reduced levels of Vitamin K-dependent clotting factors II, VII, IX, and X. The degree of anticoagulation can be impacted by fluctuations in Vitamin K intake as well as medication interactions. High levels of Vitamin K intake can lead to subtherapeutic INR values, and low levels of Vitamin K intake can lead to suprathereapeutic INR values. Therefore, the goal is to maintain moderate, constant daily levels of Vitamin K intake, rather than to eliminate Vitamin K from the diet. Foods that have high levels of Vitamin K include spinach, kale, and other greens (collard, mustard, beet, etc). Moderate alcohol consumption has no clear impact on warfarin metabolism, but 'binge drinking' or excess alcohol consumption may interfere with warfarin metabolism in the liver, resulting in an increased risk of bleeding. Orange juice consumption has not been associated with altered Vitamin K levels or any other warfarin interactions. Numerous medications and herbal supplements interact with warfarin via a variety of mechanisms. Antibiotics (especially fluoroquinolones, trimethoprim/sulfamethoxazole, metronidazole, and erythromycin) may cause suprathereapeutic INR values by altering the intestinal flora, resulting in reduced Vitamin K synthesis. Antifungal agents (i.e., fluconazole, clotrimazole) inhibit hepatic cytochrome P-450 enzymes, leading to reduced warfarin metabolism. Therefore, these agents should be avoided whenever possible in patients receiving warfarin. Neither nitrofurantoin nor oral iron supplements have demonstrated any significant interactions with warfarin.

Hull RD, Garcia DA, Vazquez SR (2017). Biology of warfarin and modulators of INR control, in Tirnauer JS (ed), UpToDate. Retrieved January 30, 2018.

https://www.uptodate.com/contents/biology-of-warfarin-and-modulators-of-inr-control/print?source=see_link

Ansell J, Hirsh J, Hylek E, et al: Pharmacology and management of the vitamin K antagonists: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (ed 8). CHEST 2008;133:1605-1985.

Question #82

ANSWER=A

Low-volume azoospermic acidic semen suggests a lack of seminal vesicle contribution to the semen. The differential diagnosis of this finding is bilateral ejaculatory duct obstruction and congenital bilateral absence of the vas deferens (CBAVD). Transrectal ultrasound can differentiate between the two entities, with CBAVD patients having either seminal vesicle agenesis or seminal vesicle hypoplasia. Bilateral ejaculatory ductal obstruction is usually associated with midline urethral cysts, bilateral seminal vesicle

cysts, or bilateral seminal vesical cysts with dilation of the ejaculatory ducts. CBAVD variants can include findings such as those noted in this patient, where one vas may be non-palpable while the other is present in the scrotum but absent in the pelvis. All CBAVD patients (including variants) should have genetic testing for cystic fibrosis gene mutations. Up to 15% of patients will have no identifiable cystic fibrosis mutation. Some of these patients will have unilateral renal agenesis (as part of a variant of bilateral renal agenesis). It is thought that these patients have CBAVD due to mesonephric ductal-ureteral bud abnormalities. Up to 5% of these patients will be found to have renal agenesis, a finding not associated with CBAVD due to cystic fibrosis gene mutations. It is therefore recommended that patients with CBAVD with a negative genetic test for cystic fibrosis have a renal ultrasound performed. Scrotal exploration and vasography are not indicated in CBAVD patients, as the diagnosis is made by physical exam. Similarly, scrotal ultrasound will not help with the diagnosis. The sweat test is not indicated in this patient with normal genetic testing and no clinical symptoms of cystic fibrosis. Testis biopsy is not indicated because the patient has CBAVD, normal FSH, and normal-sized testes. Treatment options for infertility in CBAVD patients is sperm retrieval with in vitro fertilization with intracytoplasmic sperm injection.

*Schlegel PN, Sigman M, Collura B, et al: Diagnosis and treatment of infertility in men: AUA/ASRM Guideline Part I. J UROL 2021;205:36.
<https://www.auanet.org/guidelines/guidelines/male-infertility>*

Schwarzer JU, Schwarz M: Significance of CFTR gene mutations in patients with congenital aplasia of vas deferens with special regard to renal aplasia. ANDROLOGIA 2012;44:305-307.

McCallum TJ, Milunsky JM, Munarriz R, et al: Unilateral renal agenesis associated with congenital bilateral absence of the vas defrens: Phenotypic and genetic considerations. HUM REPROD 2001;16:282-299.

Question #83

ANSWER=E

Patients undergoing cystectomy for BCG-refractory CIS are at increased risk of pan-urothelial disease including urethral and upper tract recurrences. These patients should be surveyed with periodic urine cytology and urethral washings. Patients with a suspicious or positive urethral wash cytology and no evidence of disease elsewhere should undergo urethrectomy. The rationale is that patients who develop an asymptomatic recurrence detected by surveillance have a 30% mortality reduction compared to patients developing a clinical recurrence. Approximately 40% of patients who develop a symptomatic recurrence die of urothelial cancer. The patient in the vignette has a suspicious urethral washing which has a high correlation with the presence of a recurrent tumor or CIS. The urethroscopy is negative, making CIS the most likely diagnosis. As this recurrence may be located in the paraurethral glands, which are unlikely to be adequately sampled by non-targeted biopsies, a repeat urethroscopy with biopsy has an insufficient negative predictive value to defer a urethrectomy and proceed with observation. An MRI scan of the pelvis is unlikely to add additional information in the presence of a normal endoscopic evaluation and a normal CT scan of the abdomen/pelvis. Intraurethral therapy is a reasonable option in a patient with a low-

grade recurrence where preservation of the urethra is important, for example, in a patient with a neobladder. In a patient with likely CIS and a non-functional urethra, not only is there no data to support the use of intraurethral 5-FU, but it is also likely to have limited efficacy and moderate toxicity.

Gakis G, Black PC, Bochner BH, et al: Systematic review on the fate of the remnant urothelium after radical cystectomy. EUR UROL 2017;71:545-557.

Ingimarsson JP, Seigne JD: The conundrum of prostatic urethral involvement. UROL CLIN N AM 2013;40:249-259.

Anderson CB, McKiernan JM: Tumors of the urethra, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 80, pp 1785-1789.

Question #84**ANSWER=B**

In a healthy patient, fistula repair may be undertaken early if identified within the first 7-10 days after surgery. Attempts at ureteral catheterization are an appropriate first step. Catheter drainage may help with spontaneous resolution of a small VVF, but not a ureterovaginal fistula. Additionally, as the upper tract is not completely obstructed, a PCNT is not necessary. For a distal ureteral injury, ureteroneocystostomy can usually be accomplished and is preferred over a ureteroureterostomy due to risk of stricture formation. A Boari bladder flap is not necessary given the very distal location of the fistula. If the ureterovaginal fistula is recognized more than two weeks after the initial surgery, definitive treatment should be delayed for three months.

AUAUNIVERSITY CORE CURRICULUM: Urinary fistulas. Updated January 27, 2022. <https://university.auanet.org/core/fpmrs/urinary-fistulas/index.cfm>

De Ridder DJMK, Greenwell T: Urinary tract fistulae, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 129, p 2924.

Question #85**ANSWER=C**

The patient has secondary hypertension due to the accumulation of mineralocorticoid precursors precipitated by abiraterone acetate therapy. The treatment is the co-administration of low-dose prednisone. The initial step in cortisol synthesis, the conversion of cholesterol to pregnenolone, is stimulated by ACTH, which is regulated by cortisol in a negative feedback loop. Blockade of CYP 17 by abiraterone leads to decreased cortisol production, which results in increased ACTH and as a consequence increase in the production of the CYP 17 precursor corticosterone. Corticosterone is a weak inhibitor of ACTH production but a moderate mineralocorticoid. The excess mineralocorticoid activity leads to fluid retention, hypertension, and hypokalemia. The administration of small doses of a steroid, such as prednisone, can reactivate the negative feedback loop, thus decreasing the level of the precursor mineralocorticoid

corticosterone. Amlodipine is a calcium channel blocker that is an appropriate management for essential hypertension but may worsen the peripheral edema. Hydrochlorothiazide is a diuretic that is an appropriate management for essential hypertension but may exacerbate the hypokalemia. Stopping metformin, an oral hypoglycemic, or simvastatin, a statin, will not resolve the hypertension, edema, or hypokalemia.

Sartor O, de Bono JS: Metastatic prostate cancer. NEJM 2018;378:645-657.

Thakur A, Roy A, Ghosh A, et al: Abiraterone acetate in the treatment of prostate cancer. BIOMED PHARMACOTHER. 2018;101:211-218.

Egger S: Hormonal therapy for prostate cancer, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 161, p 3671.

Question #86

ANSWER=C

The bleeding this man is experiencing is related to his liver disease. As bleeding may be life-threatening, the diagnosis must be made promptly. An MRI scan will likely show collaterals due to portal hypertension. Treatment to stop bleeding requires portal decompression with a transjugular intrahepatic portosystemic shunt or TIPS (a procedure that uses imaging guidance to connect the portal vein to the hepatic vein in the liver). Using a smaller catheter may be less traumatic but will not lead to a solution to the bleeding. Prolonged catheter placement may traumatize the varicosities and lead to erosion of the vessels. Endoscopy of the channel may demonstrate some other dilated vessels but an MRI scan will be better for diagnosis in this case. Revision of the channel may be necessary after the TIPS procedure is completed but would not be recommended prior to TIPS given the high risk of bleeding.

Wintner A, Dahl DM: Use of intestinal segments in urinary diversion, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 139, p 3160.

Question #87

ANSWER=A

The current CT scan demonstrates a lesion at the site of the prior tumor which demonstrates early, extensive enhancement and prompt washout on the delayed films, suggestive of a pseudoaneurysm. Pseudoaneurysm is a known complication of a partial nephrectomy, and although most present in the early postoperative period with gross hematuria, pseudoaneurysms may present as well in a delayed fashion, either as an incidental finding on follow-up CT scan or with a late rupture. While cancer recurrence is in the differential diagnosis, the size, grade and negative margin status of the initial tumor all suggest that a recurrence in this time frame would be unlikely. A renal ultrasound with Doppler imaging represents a non-invasive approach to differentiate between recurrence and pseudoaneurysm. Biopsy, radiofrequency ablation, and partial nephrectomy would be inappropriate management of a pseudoaneurysm. Although

radical nephrectomy would effectively treat the pseudoaneurysm, it would result in unnecessary loss of renal function and be overtreatment, relative to selective embolization, which would be performed if a pseudoaneurysm is confirmed on ultrasound.

Moreira DM, Kavoussi LR: Laparoscopic and robotic surgery of the kidney, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 102, p 2307.

Chen J, Yang M, Wu P, et al: Renal arterial pseudoaneurysm and renal arteriovenous fistula following partial nephrectomy. UROL INT 2018;100:368-374.

Question #88

ANSWER=A

Testicular microlithiasis is defined as multiple small, similar-sized echogenic non-shadowing lesions with >5 foci per testis. Testicular microlithiasis was once considered a risk factor for developing testicular cancer. Based on screening scrotal ultrasounds for men entering US military service, prevalence was 5%. At five-year follow-up, the rate of testicular cancer in men with microlithiasis was equivalent to the population-based incidence. Therefore, men with incidentally detected microlithiasis should not undergo further evaluation or screening. According to the AUA Guidelines (2019), among men with testicular microlithiasis the risk of testicular GCT is only increased in the presence of an additional risk factor (i.e., cryptorchidism, family history, personal history of GCT, or diagnosis of germ cell neoplasia-in-situ - GCNIS). Men with risk factors and testicular microlithiasis should be counseled about the potential increased risk of GCT, perform periodic self-examination, and be followed by a medical professional. Screening ultrasounds and biopsy are not indicated. Orchiectomy, partial or radical, can be performed in a solitary testicle with a solid testicular mass concerning for cancer. XRT to a testicle would be considered following partial orchiectomy for GCT with GCNIS present in the random biopsies of the parenchyma to lower the likelihood of subsequent GCT. However, XRT is not indicated in cases of microlithiasis.

Stephenson A, Eggener SE, Bass EB, et al: Diagnosis and treatment of early stage testicular cancer: AUA Guideline. J UROL 2019;202:272.
<https://www.auanet.org/guidelines/guidelines/testicular-cancer-guideline>

Barthold JS, Hagerty JA: Etiology, diagnosis, and management of the undescended testis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 46, p 949.

DeCastro BJ, Peterson AC, Costabile RA: A 5-year follow-up study of asymptomatic men with testicular microlithiasis. J UROL 2008;179(4):1420-1423.

Question #89

ANSWER=A

The patient's limited history and the stone's CT characteristics are consistent with uric acid composition (Hounsfield units approximately 300-500). To further characterize if a

stone could be uric acid, a urine pH \leq 5.5 combined with a Hounsfield unit \leq 500 has been shown to have a positive predictive value of 90% for uric acid stone composition. A KUB x-ray is a suboptimal option in obese patients but may show that the stone is radiolucent if it is uric acid. If the stone was suspicious for uric acid after further diagnostic testing, a trial of alkalinization therapy with potassium citrate is an option in this asymptomatic patient with a non-obstructing stone. As the patient is asymptomatic and the stone is not obstructing, neither ureteroscopy nor mini-PCNL are necessary at this time until further diagnostic information is obtained to see if a non-invasive option is available to the patient.

Spettel S: Using Hounsfield unit measurement and urine parameters to predict uric acid stones. UROL 2013;82:22-26.

*Assimos D, Krambeck A, Miller NL, et al: Surgical management of stones: AUA/Endourological Society Guideline, part II. J UROL 2016;196:1161.
<https://www.auanet.org/guidelines/guidelines/kidney-stones-surgical-management-guideline>*

*Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA Guideline. J UROL 2014;192:316.
<https://www.auanet.org/guidelines/guidelines/kidney-stones-medical-mangement-guideline>*

Question #90

ANSWER=C

Several hormonal changes occur with menopause in women including abrupt declines in estrogen and progesterone and gradual reductions in androgens. Decreased androgen levels, which occur with aging, are associated with impaired libido, arousal, orgasm, and genital sensation. Some investigators have studied testosterone supplementation, which appears to improve these symptoms. However, testosterone therapy remains off-label for this indication with limited data available. Estrogen and progesterone supplementation do not improve these symptoms. Estrogens, as found in oral contraceptives, can decrease bioavailable testosterone in two ways: first by decreasing FSH and LH levels, thus decreasing androgen production, and second, by increasing synthesis of sex hormone binding globulin (SHBG). SHBG complexes with testosterone and results in decreased free testosterone. This may subsequently, indirectly impair female sexual function. Serotonin is associated with orgasm but is not correlated with age-related declines in sexual function.

Kocjancic E, Iacovelli V, Acar O: Sexual function and dysfunction in the female, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 74, p 1627.

*AUAUNIVERSITY CORE CURRICULUM: Female sexual dysfunction: Disorders of desire, arousal and orgasm. Updated February 22, 2022.
<https://university.auanet.org/core/sexual-medicine-andrology/female-sexual-dysfunction-disorders-of-desire-arousal-and-orgasm/index.cfm?d=2991>*

A trocar injury of the bladder during midurethral sling (MUS) may occur in 2.7%-23.8% of cases. As long as the injury is recognized intraoperatively and hemostasis is excellent, the trocar can be safely re-passed and the case continued. However, urethral injury is a different problem. In this case, the sling procedure should be aborted. Catheter drainage is necessary and urethral repair is recommended if feasible. While a labial fat pad graft may be beneficial in fistula repairs and complex cases, it is probably not necessary during a repair of a small urethrotomy. The AUA/SUFU SUI Guideline Panel stated that physicians should not place a mesh sling if the urethra is inadvertently injured at the time of planned MUS procedure (Clinical Principle). While an autologous sling may theoretically be placed after a urethral repair, there is a different side effect profile, and this approach requires specific counseling.

Gomelsky A, Dmochowski RR: Slings: Autologous, biologic, synthetic, and mid-urethral, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 125, p 2830.

AUAUNIVERSITY CORE CURRICULUM: Stress urinary incontinence: Surgery (female). Updated February 1, 2022. <https://university.auanet.org/core/OAB/surgery-for-female-sui/index.cfm?d=2939>

This patient has had a recent febrile systemic illness, which can result in transiently elevated FSH levels with azoospermia. Patients who are otherwise healthy typically recover spermatogenesis in these circumstances within three to four months after resolution of the fever. Therefore, before other diagnostic or therapeutic measures are considered, he should have a repeat semen analysis performed to assess for the possible return of sperm in the ejaculate. A post-ejaculate urinalysis is performed in the setting of low ejaculate volume azoospermia, which this patient does not have. Diagnostic TRUS and seminal vesicle aspiration are performed when ejaculatory duct obstruction is suspected, which this patient is unlikely to suffer from given his normal ejaculate volume. His history of prior bilateral inguinal hernia repair might have resulted in bilateral iatrogenic vasal obstruction, but it is too early to pursue this possibility without repeat semen testing. Furthermore, while microdissection testicular sperm extraction (micro-TESE) would be a possible consideration if he remains azoospermic, at this time micro-TESE is not yet indicated given the possible return of sperm to the ejaculate as he recovers from the systemic illness with fever.

Sigman M, Lipshultz LI, Howards SS: Office evaluation of the subfertile male, in Lipshultz LI, Howards SS, Niederberger CS (eds): INFERTILITY IN THE MALE, ed 4. Cambridge University Press, New York, 2009, pp 153-156.

Schlegel PN, Sigman M, Collura B, et al: Diagnosis and treatment of infertility in men: AUA/ASRM Guideline Part II. J UROL 2021;205:44.

Question #93

ANSWER=A

The CT images demonstrate a trans-splenic nephrostomy tube. Studies based on CT and MRI have suggested that splenic injuries should be unlikely unless the kidney is accessed above the 10th rib, although access above the 11th or 12th rib might traverse these organs in rare cases. If splenomegaly or hepatomegaly is present, these relationships change, and access guided by CT is recommended. Splenic or hepatic injuries to orthotopic and normal-sized organs occur almost exclusively with supracostal upper pole renal access. Increased degrees of obesity do not affect the risk of trans-splenic puncture. The images do not demonstrate pathology associated with a retro-renal colon where you may reposition the nephrostomy and place a ureteral stent. The initial treatment in a stable patient should be observation with serial hemoglobin. Repositioning the nephrostomy may induce bleeding. Renal angiography is not indicated, as there is no renal injury or bleed. Splenic angioembolization and surgical exploration are not necessary in an otherwise stable patient.

Matlaga BR, Krambeck AE: Surgical management for upper urinary tract calculi, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 94, p 2094.

*AUAUNIVERSITY CORE CURRICULUM: Surgical treatment. Updated January 20, 2022.
<https://university.auanet.org/core/urolithiasis/surgical-stone-disease/index.cfm>*

Question #94

ANSWER=E

Patients with Lynch syndrome are at increased risk for upper tract urothelial carcinoma, in addition to colorectal, endometrial, and ovarian malignancies. Of note, while these patients may be presumed to have a higher risk of developing bilateral upper tract tumors, which would encourage efforts for renal preservation when treating upper tract tumors in the setting of Lynch syndrome, limited data exist demonstrating higher rates of bilaterality compared to patients with sporadic upper tract cancers. Moreover, clinical decision-making regarding the details of a specific patient's history should be paramount to developing an individualized treatment approach. Indeed, endoscopic management is typically not recommended in the setting of high-grade urothelial carcinoma of the upper tract, given the potential for high rates of recurrence and progression. Further, the efficacy of endoscopic ablation here would be limited by the size of the lesion. While segmental resection, as well as distal ureterectomy, may be considered for select ureteral lesions, the patient's extensive prior surgical history, size and location of tumor, as well as receipt of XRT, significantly increase the risks of these approaches, in particular the risks of anastomotic breakdown and subsequent stricturing, and thus would not be advised in such a patient with adequate renal function as here. While a potential role of neoadjuvant chemotherapy for upper tract urothelial carcinoma continues to be investigated, a survival benefit to this approach has not been demonstrated from prospective clinical trials to date. Moreover, current recommended regimens of neoadjuvant chemotherapy for urothelial carcinoma are

cisplatin-based and would not be advised in a patient with existing peripheral neuropathy. Therefore, given the various patient and tumor-based factors in this case, including the surgical/XRT history, renal function status, size and grade of tumor, along with the uncertain risk of developing a metachronous contralateral upper tract lesion in Lynch syndrome, nephroureterectomy represents the best cancer treatment.

AUAUNIVERSITY CORE CURRICULUM: Upper tract neoplasms. Sections 3 & 6. Updated February 4, 2022. https://university.auanet.org/core_topic.cfm?coreID=81

NCCN Guidelines, Bladder cancer, 2022.

Mork M, Hubosky SG, Roupret M, et al: Lynch syndrome: A primer for urologists and panel recommendations. J UROL 2015;194:21-29.

Question #95

ANSWER=E

Emptying of the bladder via manual compression, also known as the Credé maneuver, is most effective in those patients with detrusor hypocontractility or acontractility and decreased bladder outlet resistance. Bladder emptying by the Credé maneuver is generally discouraged, because it is non-physiologic and the resulting increase in abdominal pressure is typically opposed by the same forces that normally resist stress urinary incontinence (SUI). Reflex sphincteric opening of the bladder outlet does not occur with external compression maneuvers and an increase in outlet resistance may occur reflexively. While the Credé maneuver is often discouraged as a primary method of bladder management, the best chance for success with this mode of therapy is in the patient with bladder areflexia and some degree of outlet denervation. This is most commonly seen in the patient with a spinal cord injury between T11 and L2 in whom the sympathetic nervous supply is damaged. Many of these patients may already have SUI, and the Credé maneuver may overcome any remaining outlet resistance to empty the bladder. Outlet denervation may also occur as a result of a sphincterotomy or onabotulinumtoxinA injection into the sphincter. Patients with stroke and demyelinating disorder would be expected to have an intact outlet; thus the Credé maneuver would not be an optimal mode of management for their lower urinary tract.

Boone TB, Stewart JN, Martinez LM: Additional therapies for storage and emptying failure, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 127, p 2902.

Question #96

ANSWER=A

Opioid therapy should only be continued if there is clinically meaningful improvement in pain. Since the opioid prescription is inadequate after ten days, the opioid should be discontinued and alternative treatment plans discussed. Since the opioid prescription is not working, it should not be increased. This option of discontinuation should have been discussed prior to beginning treatment for chronic pain since clinicians should establish

treatment goals with all patients, including realistic goals for pain and function, and consider how opioid therapy will be discontinued if the benefits do not outweigh the risks. Combining benzodiazepines with opioids should be discouraged in all cases. While opioids may be combined with NSAIDs, it is not appropriate in this case since discontinuing the opioid is the correct next step. NSAIDs alone may be considered after that. A urine drug screen may be considered in patients with a history of abuse, but is not indicated here since the patient is likely taking the opioid, and the drug screen would be positive.

<http://www.auanet.org/guidelines/opioid-prescriptions-for-chronic-pain>

Question #97

ANSWER=A

This child has monosymptomatic enuresis or bedwetting in the absence of any other lower urinary tract symptoms such as daytime incontinence or urinary frequency. General advice on regular voiding and avoidance of constipation should be given to all children who wet the bed; however, active treatment should not usually be started before six years of age. Primary first-line active treatment options include the enuresis alarm and oral desmopressin. Desmopressin in nasal spray form has a higher risk of hyponatremia and is not indicated for monosymptomatic enuresis in children. Anticholinergics such as oxybutynin may be indicated in those whose standard treatment has failed. Although used commonly in the past for enuresis, imipramine is a third-line therapy because of its cardiotoxicity.

*AUAUNIVERSITY CORE CURRICULUM: Voiding dysfunction. Updated January 26, 2022.
<https://university.auanet.org/core/pediatric/voiding-dysfunction/index.cfm>*

Neveus T, Fonseca E, Franco I, et al: Management and treatment of nocturnal enuresis- an updated standardization document from the International Children's Continence Society. J PED UROL 2020;16(1):10-19.

Question #98

ANSWER=B

Compared to controls, absolute levels of free PSA and percent free PSA ratios (free/total PSA) are elevated in men with severe CKD. Renal dysfunction is not associated with levels of total PSA or other PSA isoforms such as proPSA. Free PSA is a component of the screening biomarkers prostate health index and 4Kscore. Therefore, in men with severe CKD, it would lead to an artificially lower estimated risk of cancer.

Salami SS: Principles of urologic surgery: Perioperative care, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 8, p 119.

Amiri FS: Serum tumor markers in chronic kidney disease: As clinical tool in diagnosis, treatment, and prognosis of cancers. REN FAIL 2016;38(4):530-544.

Bruun L, Savage C, Cronin AM, et al: Increase in percent free prostate-specific antigen

Question #99

ANSWER=A

The bilateral simple ureterocele are not a recognized cause of UTIs. They are an incidental finding and do not require treatment. Management should be directed at identifying other risk factors for recurrent UTIs. In a diabetic woman, this might include an elevated residual urine volume. The association between the UTIs and sexual activity should be assessed, as the patient may benefit from the use of peri-intercourse prophylaxis. Other potential treatments could include self-start antimicrobial therapy, nightly low-dose antimicrobial prophylaxis, or topical hormonal therapy if she is post-menopausal. Although VCUG may be performed to evaluate for reflux, it is unlikely that the findings of VCUG will alter the initial treatment decision to incise the ureterocele or not. It is unclear what additional information is gained with the retrograde pyelograms beyond the contrast phase of a CT urogram. A nuclear medicine scan will provide more useful information than retrograde pyelograms if obstruction is suspected; however, this patient has no evidence of obstruction. Transvaginal excision is not indicated; this is not a urethral diverticulum. Cystolitholapaxy is not indicated as there is no evidence of bladder stones which would have been apparent on the non-contrast phase of the CT scan.

Stanasel I, Peters CA: Ectopic ureter, ureterocele, and ureteral anomalies, Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 41, pp 802-811.

AUAUNIVERSITY CORE CURRICULUM: Congenital anomalies of the kidney and urinary tract. Updated February 18, 2022. https://university.auanet.org/core_topic.cfm?coreID=111

Question #100

ANSWER=D

There are no sonographic differences in the appearance of the duplex kidney with upper pole hydronephrosis that help differentiate an ectopic ureter from a ureterocele. Bladder images are most useful in differentiating these two anatomic variants. An ectopic ureter extends beyond the bladder and the thickness of the bladder wall is maintained. An ectopic ureter with a very large diameter may push up on the bladder but the two layers of the bladder and ureter are most often still visualized. With a ureterocele, there is a thin-walled, cystic dilation within the bladder. A full bladder may flatten the ureterocele making it less evident.

Stanasel I, Peters CA: Ectopic ureter, ureterocele, and ureteral anomalies, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 41, p 798.

AUAUNIVERSITY CORE CURRICULUM: Hydroureteronephrosis. Updated January 19, 2022. <https://university.auanet.org/core/pediatric/hydroureteronephrosis/index.cfm>

This patient would be classified by the AUA/SUO Guidelines on non-muscle invasive bladder cancer (NMIBC) as high risk based on high-grade T1 (lamina propria invasion) pathology. Further, the patient has two additional adverse risk factors – the persistence of high-grade T1 disease at repeat TURBT and the presence of variant histology (sarcomatoid features). These patients are at particular risk for tumor progression. Moreover, patients who experience disease progression to muscle invasion have been found to have adverse outcomes relative to patients presenting initially with muscle-invasive disease. As such, the AUA/SUO Guidelines state that clinicians should consider offering patients with these risk factors radical cystectomy. In light of these factors, together with the relatively young age of the patient, cystectomy would be the preferred management strategy here. Intravesical BCG or other intravesical therapies may be used in a variety of settings for patients with NMIBC but would not be recommended as a first-line therapy in this patient, given the additional risk factors. Limited data exist to date on the use of chemotherapy + XRT for non-muscle invasive bladder cancer or sarcomatoid differentiation. Indeed, chemotherapy with XRT is not recommended for NMIBC by current guidelines. Dose-dense M-VAC represents a preferred neoadjuvant chemotherapy regimen for patients with muscle-invasive urothelial carcinoma but is not indicated at this time for patients with NMIBC. Similarly, pembrolizumab was approved by the FDA in January 2020 for the treatment of BCG-unresponsive CIS, with or without concurrent papillary disease, in patients unwilling/unable to undergo radical cystectomy. However, pembrolizumab is not approved for usage in the BCG-naïve setting as this patient represents.

Kates M, Bivalacqua TJ: Tumors of the bladder, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 135, pp 3087-3090.

NCCN Guidelines, Bladder Cancer, version 2.2022.

Balar AV, Kamat AM, Kulkarni GS, et al: Pembrolizumab monotherapy for the treatment of high-risk nonmuscle invasive bladder cancer unresponsive to BCG (KEYNOTE-057): An open-label, multicenter, phase 2 study. LANCET ONCOL 2021;22(7):919-930.

Pietzak EJ, Zabor EC, Begrodia A, et al: Genomic differences between "primary" and "secondary" muscle-invasive bladder cancer as a basis for disparate outcomes to cisplatin-based neoadjuvant chemotherapy. EUR UROL 2019;75:231-239.

Krasnow RE, Drumm M, Roberts HJ, et al: Clinical outcomes of patients with histologic variants of urothelial cancer treated with trimodality bladder-sparing therapy. EUR UROL 2017;72:54-60.

Weiss C, Wolze C, Engehausen DG, et al: Radiochemotherapy after transurethral resection for high-risk T1 bladder cancer: An alternative to intravesical therapy or early cystectomy? J CLIN ONCOL 2006;24:2318-2324.

*Chang SS, Bochner BH, Chou R, et al: Treatment of non-metastatic muscle-invasive bladder cancer: AUA/ASCO/ASTRO/SUO Guideline. J UROL 2017;198:552.
<https://www.auanet.org/guidelines/guidelines/bladder-cancer-non-metastatic-muscle-invasive-guideline>*

Question #102

ANSWER=C

This patient most likely has a patent urachus, characterized by continuous or intermittent drainage of fluid in the neonatal period. This usually will not resolve spontaneously. Therefore, observation is not a desired option. Fluid culture is indicated when patients demonstrate signs of infection but is not required in asymptomatic patients. Silver nitrate would be considered for umbilical granulomas but should be avoided if a patent urachus is suspected. A bladder ultrasound should reveal a fluid-filled canal on longitudinal view and is the best next step to confirm the diagnosis. If ultrasound findings are equivocal, then a VCUG can confirm the presence of a urachal anomaly. Cystoscopy is not generally recommended for initial evaluation of suspected urachal anomaly.

Martin AD, Roth CC: Bladder anomalies in children, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 30, pp 523-524.

Question #103

ANSWER=B

Prior to any urologic surgery, the urologist is responsible for ensuring the patient is in optimized medical condition, including nutritional status. Assessment of recent weight loss, lymphocyte count, and serum albumin can help classify the patient's nutritional status. Preoperative nutrition in the form of parenteral or enteral nutrition prior to surgery has been shown to be of benefit to some patients. A loss of 20 pounds or more in the three months prior to surgery or lower levels of lymphocyte count or serum albumin can indicate severe malnutrition. Multiple studies have shown that seven to ten days of total parenteral nutrition (TPN) in those suffering from severe malnutrition and with a non-functional gastrointestinal tract improves postoperative outcomes. However, the use of TPN in well-nourished or mildly undernourished patients provides no benefit and could even place them at risk for sepsis. This patient has lost several pounds prior to surgery and has a serum albumin in the low range of normal, so he could be considered mildly undernourished. Some enteral nutritional supplementation prior to surgery may be of benefit, but TPN should not be administered in this patient to avoid the risk of sepsis. Ileus, need for postoperative TPN, anastomotic leak, and fascial dehiscence are all risks associated with radical cystectomy but do not occur with greater frequency in those who have received preoperative TPN.

Salami SS: Principles of urologic surgery: Perioperative care, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 8, p 122.

The patient likely has lichen sclerosus (LS). This diagnosis can be made by clinical appearance or by confirmatory biopsy. When a non-healing ulcer is present in the setting of LS, a biopsy must be performed to rule out malignancy. Topical steroids are the treatment of choice to manage cutaneous LS; however, in this case, it does not address the obstruction or the concerning ulcer. Given the patient's chief complaint of a weak stream, a meatal dilation is also an appropriate first step. Nystatin will not be helpful for the patient's LS. Meatoplasty may be needed; however, this action fails to biopsy his concerning ulcer.

Wessells H, Angermeier KW, Elliott S et al: Male urethral stricture: AUA Guideline. J UROL 2017;197:182. <https://www.auanet.org/guidelines/guidelines/urethral-stricture-guideline>

The CT scan demonstrates a renal laceration with extravasation of contrast. Distal ureteral contrast is present. A period of observation without intervention is advised in stable patients where renal pelvis or proximal ureteral injury is not suspected. Parenchymal collecting system injuries most often heal spontaneously. Given that the fever is early and may be related to atelectasis, observation is warranted. At this time, surgical interventions such as retrograde pyelography, stent/nephrostomy placement, perinephric drain, or renal exploration are premature. A CT scan is repeated at 48-72 hours for patients who have persistent fever, ileus, worsening flank pain, or persistent gross hematuria, or who have had high-grade (4 and 5) trauma.

Morey AF, Brandes S, Dugi DD III, et al: Urotrauma: AUA Guideline. J UROL 2014,192:327. <https://www.auanet.org/guidelines/guidelines/urotrauma-guideline>

AUAUNIVERSITY CORE CURRICULUM: Renal, ureter. Updated January 25, 2022. <https://university.auanet.org/core/trauma/renal-ureter/index.cfm>

According to the AUA Recurrent UTI Guideline (2019), D-mannose, vaginal lactobacillus suppository, and daily methenamine are not recommended for recurrent UTI prophylaxis. In peri- and post-menopausal women, vaginal estrogen therapy is recommended, but this patient is pre-menopausal. In a randomized controlled trial, increasing fluid intake to 1.5 L per day has been shown to be effective for UTI prophylaxis.

Anger J, Lee U, Ackerman AL, et al: Recurrent uncomplicated urinary tract infections in women: AUA/CUA/SUFU Guideline. J UROL 2019;202:282. <https://www.auanet.org/guidelines/guidelines/recurrent-uti>

Hooton TM, Vecchio M, Iroz A, et al: Effect of increased daily water intake in premenopausal women with recurrent urinary tract infections: A randomized clinical trial. JAMA INTERN MED 2018;178(11):1509-1515.

Question #107

ANSWER=E

This patient has primary testicular dysfunction, as evidenced by his elevated FSH. His semen volume is normal, and there is no evidence or etiology for retrograde ejaculation, so post-ejaculate urinalysis is not indicated; additionally, with his extremely low sperm concentration, his overall sperm production is compromised. A TRUS would be used to rule out ejaculatory duct obstruction (EDO); however, he is not azoospermic and his ejaculate volume is normal, thus making EDO unlikely. Clomiphene will not be effective in someone who already has a normal testosterone. Additionally, exogenous testosterone would only further suppress spermatogenesis. IVF with ICSI is their best next step, as the success rates will be equivalent to age-matched couples without male factor infertility.

Niederberger CS, Ohlander SJ, Pagani RL: Male infertility, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 66, p 1445.e3.

*Schlegel PN, Sigman M, Collura B, et al: Diagnosis and treatment of infertility in men: AUA/ASRM Guideline Part II. J UROL 2021;205:44.
<https://www.auanet.org/guidelines/guidelines/male-infertility>*

Question #108

ANSWER=D

The goal is to access the peritoneal cavity as far away from the uterus as possible. Left costal margin in the midclavicular line (Palmer's point) is the safest site of access during pregnancy. Initial access must be away from the gravid uterus, and the second trimester is the ideal time for surgery that cannot be postponed until after pregnancy. This timing is after fetal organogenesis and has a lower risk of inducing premature labor. The right upper quadrant (anterior axillary or midclavicular lines) is unsafe for access due to the liver. Supraumbilical access risks damage to the fundus of the uterus. Access to the peritoneal cavity is difficult in the anterior axillary line.

Patel RM, Kaler KS, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 14, p 204.

Question #109

ANSWER=B

Many patients with urothelial cancer of the bladder have some form of divergent differentiation, most commonly squamous or glandular differentiation. Some patients have multiple components of differentiation or even mixed variant histology (i.e.,

micropapillary, sarcomatoid, plasmacytoid, nested, neuroendocrine, etc.). This patient has glandular differentiation, and while reports suggest that patients with squamous or glandular differentiation present with more advanced features than patients with pure urothelial carcinoma, stage for stage, they have a similar prognosis. As such, in the presence of muscle-invasive disease, the correct choice here would be neoadjuvant cisplatin-based chemotherapy (dose-dense M-VAC or gemcitabine and cisplatin), followed by consolidative radical cystoprostatectomy. In fact, patients with squamous and glandular features have been suggested to have a particularly favorable response to neoadjuvant chemotherapy. Colonoscopy is indicated as part of the initial work-up for primary bladder adenocarcinomas to exclude metastatic spread or direct involvement from a gastrointestinal source, but would not be indicated as this patient does not have a primary bladder adenocarcinoma. Similarly, while partial cystectomy with excision of the urachus may be utilized for urachal adenocarcinoma of the bladder, AUA Guidelines do not advise partial cystectomy as primary curative therapy for patients with muscle-invasive bladder cancer who are medically fit and consent to radical cystectomy. Moreover, if partial cystectomy were being considered for urothelial carcinoma, the patient should undergo prior biopsies throughout the bladder to assess for concurrent CIS. Oxaliplatin, leucovorin, and 5-FU is a gastrointestinal chemotherapy regimen that may be utilized for metastatic progression from primary bladder or urachal adenocarcinoma but would not be indicated for a urothelial carcinoma with glandular differentiation.

Kates M, Bivalacqua TJ: Tumors of the bladder, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 135, pp 3087-3090.

Chang SS, Bochner BH, Chou R, et al: Treatment of non-metastatic muscle-invasive bladder cancer: AUA/ASCO/ASTRO/SUO Guideline. J UROL 2017;198:552. <https://www.auanet.org/guidelines/guidelines/bladder-cancer-non-metastatic-muscle-invasive-guideline>

Scosyrev E, Ely BW, Messing EM, et al: Do mixed histological features affect survival benefit from neoadjuvant platinum-based combination chemotherapy in patients with locally advanced bladder cancer? A secondary analysis of Southwest Oncology Group-Directed Intergroup Study (S8710). BJU INT 2011;108:693-699.

Question #110

ANSWER=E

Matrix stones are usually radiolucent concretions composed primarily of noncrystalline mucoprotein matrix and occasionally with a radiodense calcific center or faint peripheral rim of radio density. These stones invariably occur in the presence of UTI, usually with *Proteus* species or *E. coli*. Urinary obstruction is common, as these stones do conform to the shape of the collecting system. SWL is ineffective and unsuccessful due to the gelatinous nature of the stone with minimal mineral content. Although there are case reports of successfully treated matrix stones via ureteroscopy, it is not the preferred approach in the majority of cases since it will have a lower success rate than PCNL. PCNL is the treatment of choice secondary to its high success rates and low recurrence rates. Acetohydroxamic acid is used in the treatment and/or prevention of stones in patients

with chronic urea-splitting infections when surgical treatment options are not ideal based on a patient's co-morbidities. However, its significant side effects limit its widespread use. Urinary alkalinization therapy is used for uric acid stone dissolution and/or prevention but is not effective in matrix stone treatment.

Leavitt DA, de la Rosette JJMCH, Hoenig DM: Strategies for nonmedical management of upper urinary tract calculi, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 93, p 2076.

Pearle MS, Antonelli JA, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 91.

Question #111

ANSWER=E

For penetrating or blunt trauma, if a patient is stable and a partial or complete ureteral transection injury is diagnosed intraoperatively, the necrotic edges should be debrided, and the injury should be repaired intraoperatively under the same anesthetic. Placing a ureteral stent or nephrostomy tube and then returning for a staged repair is no longer advisable unless the patient is unstable, and surgery must be rapidly completed. Similarly, simply placing a stent and returning in a few days is acceptable if the patient is unstable but otherwise not necessary. Bringing the proximal and distal ureteral ends out as ureterostomies is also not necessary since immediate repair is preferred.

Morey AF, Brandes S, Dugi DD III, et al: Urotrauma: AUA Guideline. J UROL 2014, 192:327. <https://www.auanet.org/guidelines/guidelines/urotrauma-guideline>

Schlomer BJ, Jacobs MA: Pediatric genitourinary trauma, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 52, p 1068.

Question #112

ANSWER=B

During male radical cystectomy, the posterior dissection between the prostate and the rectum is completed toward the apex, similar to radical prostatectomy. With nerve sparing, the seminal vesicles are released with particular emphasis on dissecting out the lateral extent of the seminal vesicles. This is critical to thinning out the lateral pedicle of the prostate for nerve sparing. The dissection to release the bladder from the abdominal wall (space of Retzius) and the anterior and posterior bladder pedicle dissections are carried out in a similar manner, regardless of nerve sparing. However, after the posterior bladder dissection, the neurovascular bundle is released laterally from the prostate starting with high ligation and division of the lateral pedicle of the prostate; hence, the significance of the need for lateral seminal vesicle dissection with nerve sparing, which is extraneous and not routinely performed during a non-nerve sparing robotic-assisted radical cystectomy.

Navai N, Dinney CPN: Surgical management of bladder cancer: Transurethral, open, and robotic, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 138, pp 3146-3155.

Question #113

ANSWER=D

This patient has recurrent post-coital UTIs. Taking prophylactic antibiotics before or after intercourse is a reasonable next step. The choices include: Bactrim SS once, Bactrim DS once, nitrofurantoin 50-100 mg once, or cephalexin 250 mg once, before or after intercourse (timing does not matter), according to the 2019 AUA Recurrent UTI Guideline. Cephalexin 500 mg is not the appropriate dosing for prophylaxis. Studies have demonstrated that changes in hygiene practices (i.e., front-to-back wiping), voiding before intercourse, and voiding after intercourse do not help to reduce recurrent UTI.

*Anger J, Lee A, Ackerman AL, et al: Recurrent uncomplicated urinary tract infections in women: AUA/CUA/SUFU Guideline. J UROL 2019;202:282.
<https://www.auanet.org/guidelines/guidelines/recurrent-uti>*

Question #114

ANSWER=C

The correct answer is penile ultrasound. The patient did not hear a pop or have immediate detumescence, signs highly suggestive of a fracture. Patients with equivocal signs of penile fracture should undergo ultrasound to help confirm or exclude the diagnosis of a penile fracture. Ultrasound is primarily recommended because it is rapid, frequently available, and inexpensive. If ultrasound is not available, then MRI is recommended. Analgesics and supportive care are recommended in cases where a fracture is not present but that should be established first. A urinalysis may be useful but will not aid in determining whether a fracture is present. Given that the patient did not experience immediate detumescence and does not have extensive swelling or hematoma, it is unclear if a fracture is present. In equivocal cases, obtaining imaging first to aid in decision-making is preferred rather than going immediately to surgical repair.

Morey AF, Brandes S, Dugi DD III, et al: Urotrauma: AUA Guideline. J UROL 2014, 192:327. <https://www.auanet.org/guidelines/guidelines/urotrauma-guideline>

Question #115

ANSWER=A

Obesity is associated with increased excretion of uric acid, which can lead to hyperuricosuria. This, in the setting of low urine pH, is the greatest risk factor for uric acid stone formation. Recurrent UTIs are a known risk factor for kidney stones when infection is caused by urease-producing organisms. Urease catalyzes the hydrolysis of urea to ammonia, inducing a rise in the pH of the urine. This is not likely a concern for this patient given that E. coli does not produce urease, and her urine pH is low. Excessive sodium intake can lead to kidney stones due to increased calcium excretion, but this

patient has a normal urine calcium. Even if her sodium intake is high, it is not affecting her risk factors for stone formation. High protein intake can lead to uric acid stones, but urinary sulfate and urea nitrogen would usually be elevated in this setting. Gout is commonly associated with uric acid stones but is extremely rare in children.

Negri AL, Spivacow FR, Del Valle EE et al: Role of overweight and obesity on the urinary excretion of promoters and inhibitors of stone formation in stone formers. UROL RES 2008;36:303-307.

Tasian GE, Copelovitch LA: Management of pediatric kidney stone disease, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 43, p 859.

*AUAUNIVERSITY CORE CURRICULUM: Urolithiasis. Updated January 27, 2022.
<https://university.auanet.org/core/pediatric/urolithiasis/index.cfm>*

Question #116

ANSWER=C

The UDS is consistent with detrusor overactivity. This patient has failed medical therapy, so the next option to improve his continence would be bladder augmentation or onabotulinumtoxinA. Sacral nerve stimulation does not have an FDA indication for the treatment of neurogenic bladder. An artificial urinary sphincter would be indicated for SUI which would be unlikely with this level of injury and was not demonstrated on the UDS. Doses of onabotulinumtoxinA should not exceed 400 units every 12 weeks due to the potential increased risk of generalized muscle weakness. Since this patient was injected for his spasticity last month, he would be best treated in two months and not immediately. In addition, further treatment of both his detrusor overactivity and lower extremity spasticity with onabotulinumtoxinA should be coordinated between his urologist and physiatrist to eliminate the potential for overdosage over a period of time. Regarding the treatment of neurogenic bladder with onabotulinumtoxinA, 200 units is an efficacious starting point with the dose increased to 300 units for refractory cases. Studies comparing injections of onabotulinumtoxinA into the detrusor only, compared to a combined injection, with two-thirds of the volume injected into the detrusor and one-third of the volume injected into the trigonal areas, have found that the combination injection had better relief of symptoms, improved compliance, and no increased risk of vesicoureteral reflux compared to detrusor-only injections.

Anderson KE: Pharmacologic management of lower urinary tract storage and emptying failure, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 120, p 2679.

Gulanhusein A, Mangera A: OnabotulinumtoxinA in the treatment of neurogenic bladder. BIOLOGICS 2012;6:299-306.

Ginsberg DA, Boone TB, Cameron AP, et al: The AUA/SUFU Guideline on adult neurogenic lower urinary tract dysfunction: Treatment and follow-up. J UROL 2021;206:1106. <https://www.auanet.org/guidelines/guidelines/adult-neurogenic-lower->

Question #117

ANSWER=A

This man has ESRD on dialysis, severe CHF, isn't eligible for organ transplant, and has a limited life expectancy. According to the AUA Guidelines, in asymptomatic patients with clinically localized prostate cancer and life expectancy less than five years, clinicians should recommend observation. Treatment with XRT, surgery, ablation, ADT alone, or any combination is not warranted. If local symptoms were present, the AUA Guidelines state: clinicians may recommend ADT alone for patients with high-risk, clinically localized prostate cancer with local symptoms and limited life expectancy.

Eastham JA, Aufferberg GB, Barocas DA, et al: Clinically localized prostate cancer: AUA/ASTRO Guideline part II: Principles of active surveillance, principles of surgery and follow-up. J UROL 2022. <https://www.auanet.org/guidelines/guidelines/clinically-localized-prostate-cancer-uaa/astro-guideline-2022>

Question #118

ANSWER=A

Screening for pre-existing cancers is part of the pre-transplant evaluation. Men with prostate cancer who qualify for active surveillance should be offered this option without delay in transplantation. They may continue active surveillance after transplantation. Men with high-risk prostate cancer who are otherwise transplant candidates can be treated with radiation or surgery but can proceed to transplant after they have recovered, usually around six months.

AUAUNIVERSITY CORE CURRICULUM: Renal transplant. Updated April 13, 2022. <https://university.auanet.org/core/renal-transplant/renal-transplant/index.cfm>

Al-Adra DP, Hammel L, Roberts J, et al: Pre-transplant solid organ malignancy and organ transplant candidacy: A consensus expert opinion statement. AM J TRANSPLANT 2021;21(2)460-474.

Question #119

ANSWER=A

Acute lymphoblastic leukemia in children can involve the testes at diagnosis and/or relapse. With improved chemotherapy regimens, the incidence of testicular relapse has decreased over time. Since 2000, the incidence of isolated testicular relapse has ranged from 0 to 2%. In boys treated for leukemia who present with a testicular mass after remission, the next step is a biopsy. Local treatment by either scrotal irradiation or orchiectomy is not indicated because bone marrow relapse usually occurs within a few months. Isolated testicular leukemia should be considered a systemic disease and is treated with salvage chemotherapy. In the absence of this patient's history of leukemia, because most prepubertal testicular masses are benign, partial orchiectomy with a frozen section would have been appropriate.

Nguyen HTK, Terao MA, Green DM, et al: Testicular involvement of acute lymphoblastic leukemia in children and adolescents: diagnosis, biology, and management. CANCER 2021;127(17):3067-3081.

AUAUNIVERSITY CORE CURRICULUM: Genitourinary oncology. Updated January 20, 2022. <https://university.auanet.org/core/pediatric/genitourinary-pediatric-oncology/index.cfm?d=2961>

Question #120

ANSWER=C

In adults, 5 mm laparoscopic ports do not routinely require closure. There are rare circumstances where closure can be considered (previous hernias, risk of ascites, connective tissue disorders, which may impact healing). However, because of a thinner, more pliable abdominal wall and smaller bowel diameter in the pediatric population, 5 mm ports should be closed with absorbable suture(s). Cutaneous glue (i.e., Dermabond) or subcuticular layer alone should not be used as it increases the likelihood of a hernia. Non-absorbable sutures should not be used for port closure in pediatric patients.

Patel RM, Kaler KS, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 14, p 219.

Question #121

ANSWER=D

Patients with spina bifida have normal desires for sexual activity. Therefore, it is important for clinicians to discuss sexual activity and safe sex practices with their patients and recognize that amenorrhea may represent pregnancy. The level of neural tube defect will affect sexual response. Males with defects below L3 often have normal erectile and ejaculatory function. Women with defects below L3 have a greater chance of reaching orgasm. A patient such as this should have the pregnancy confirmed with a serum hCG as patients with a segment of bowel in their urinary tract have a 57% false positive rate with urine pregnancy tests. If the pregnancy is confirmed, a urine culture should be obtained as many patients in this scenario will require prophylactic antibiotics. Ultrasound would be indicated later in the pregnancy to confirm an intrauterine fetus and can usually be accomplished via a transabdominal approach. At this time, however, ultrasound is not necessary.

Wood D: Adolescent and transitional urology, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 50, p 1052.

Question #122

ANSWER=D

The CT demonstrates a left adrenal lesion containing macroscopic fat. This radiographic finding is consistent with the diagnosis of an adrenal myelolipoma, a benign lesion

containing both adipose tissue and hematopoietic elements. Management for these lesions, particularly when asymptomatic, is typically conservative. While no specific protocols for follow-up have been outlined, imaging may be obtained every several years to evaluate for tumor growth, as lesions may increase in size over time. While a CT scan with washout protocol is a useful study for identifying lipid-poor adrenal adenomas, this test would not be necessary to establish the diagnosis of myelolipoma in this patient given the non-contrast CT scan findings. Likewise, neither an MRI scan nor biopsy adds meaningful information to inform clinical care beyond the CT scan and would therefore be unnecessary. It is rare for myelolipomas to be metabolically active in older patients, and therefore metabolic evaluation is not necessary. Although adrenal venous sampling has been reported to have a sensitivity of 95% and a specificity of 100% for detecting lateralized autonomous aldosterone secretion and is thereby a component of the evaluation for hyperaldosteronism, this test would not be appropriate in the setting herein with radiographic features consistent with a myelolipoma. Moreover, adrenal vein sampling would not be performed as a first-line study (i.e., without obtaining prior serum renin and aldosterone) in the diagnostic evaluation of hyperaldosteronism.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 106, p 2392.

Question #123**ANSWER=C**

Cystitis cystica et glandularis(CCEG) are red, polypoid lesions found in the bladder. They are abnormal but generally considered benign, although it is unclear if they are premalignant or simply found in the presence of concurrent malignant bladder lesions. Histologically, the lesions demonstrate columnar or cuboidal cells often with proliferation of von Brunn's nests. Although controversial and the risk is low if present, there is some thought that lesions can undergo malignant transformation developing into adenocarcinoma. Due to this possibility, observation alone is not recommended out of an abundance of caution, and patients should be followed with periodic cystoscopy or urinalysis every one to two years. Repeat resection or partial cystectomy is not recommended for this specific diagnosis alone in the absence of cancer or more concerning pathology. Prophylactic antibiotics will not prevent the recurrence of these lesions and will risk antibiotic resistance, and long-term nitrofurantoin has been associated with pulmonary fibrosis.

Kates M, Bivalacqua TJ: Tumors of the bladder, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 135, p 3082.

AUAUNIVERSITY CORE CURRICULUM: Bladder neoplasms: Non-muscle invasive bladder cancer. Updated February 3, 2022. <https://university.auanet.org/core/oncology-adult/bladder-neoplasms-non-muscle-invasive-bladder-cancer/index.cfm?d=2887>

The concern with this patient is that he has an unrecognized intestinal injury. The hallmarks of such injuries in the early postoperative setting following minimally invasive surgery include leukopenia with a left shift, abdominal distension, low-grade fever, nausea, and diarrhea. Free air is expected following abdominal surgery and might be present for up to seven days in many patients. Surgeons must have a high index of suspicion in this setting as typical signs of an acute abdomen might be absent and unrecognized injuries lead to significant morbidity and mortality. Although there was no mention of an obvious intestinal leak on the patient's CT, the colonic inflammation and the classic signs of bowel injury could herald an evolving complication, so a repeat CT scan in six to eight hours is the best step given the high index of suspicion. If the patient deteriorates, then exploratory laparotomy should be considered rather than waiting on additional imaging, especially if there would be a significant delay. However, a laparotomy is not indicated at this time based on the clinical characteristics. Colonoscopy might exacerbate an intestinal injury in this setting and thus is not recommended. Oral metronidazole is used for *C. difficile* colitis and diarrhea. While it might be indicated, a stool sample is usually obtained prior to administration. Cholestyramine is a resin that binds bile salts thereby helping to prevent colonic irritation and diarrhea due to malabsorption. However, while the patient has colonic stranding, there is nothing to suggest that he is at risk for intestinal malabsorption.

AUA UNIVERSITY CORE CURRICULUM: Laparoscopy and robotics. Updated January 27, 2022. <https://university.auanet.org/core/lap-robotics/laparoscopy-and-robotics/index.cfm?d=2933>

Based on this patient's mechanism of injury, there is an approximately 29% chance of bladder rupture. In patients presenting with pelvic fracture and gross hematuria, immediate cystography is absolutely indicated. When using plain film, three key images are required: a scout radiograph before contrast administration, an anterior-posterior image at the end of filling, and a post-drainage image to assess for extravasation that could otherwise be obscured by a bladder filled with contrast. The bladder must be sufficiently filled with contrast (at least 300 mL) to visualize extravasation in the setting of small bladder ruptures. False-negative studies have been reported in cystography with only 250 mL, which is why the cystogram should be repeated with a higher volume in this case. The patient should not be allowed to void spontaneously until bladder rupture has been excluded. A urinary catheter would be indicated once bladder rupture is confirmed and could be the definitive long-term management if the bladder rupture is extraperitoneal. The patient's presentation and mechanism of injury do not suggest a urethral injury. A retrograde urethrogram (RUG) should be performed in the setting of blood at the meatus or if a urinary catheter does not pass easily. Visualizing a bladder rupture and confirming the location (intra- versus extraperitoneal) may be challenging with cystoscopy. The diagnosis should be confirmed on imaging, or in an unstable patient undergoing emergent operative intervention to treat other injuries; the bladder

should be explored surgically.

Morey AF, Simhan J: Genital and lower urinary tract trauma, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 133, p 3055.

AUAUNIVERSITY CORE CURRICULUM: Bladder, urethra, genitalia. Updated February 10, 2022. <https://university.auanet.org/core/trauma/bladder-urethra-genitalia/index.cfm?d=2898>

Question #126

ANSWER=A

Viral-induced hemorrhagic cystitis may affect children and immunosuppressed adults (i.e., after renal or bone marrow transplantation). BK virus, a member of the polyomavirus family, is the most common virus associated with hemorrhagic cystitis. Treatment for viral hemorrhagic cystitis is primarily supportive with hydration and analgesics. Foley placement and bladder irrigation is only necessary in the setting of clot retention. Cystoscopy is not absolutely indicated in pediatric patients with hematuria and should be reserved only in extreme cases of intractable hemorrhage and the need for clot evacuation. Case reports of success with cidofovir and hyperbaric oxygen exist, but these treatments are not first-line. Although cidofovir has broad-spectrum activity against many DNA viruses including polyomaviruses, this medication requires hydration first, is usually used to treat CMV retinitis and can cause neutropenia (a concern in this patient who has undergone stem cell transplantation). Acyclovir is an antiviral agent used to treat herpes virus infections and has not been studied as a therapy for BK virus cystitis.

AUAUNIVERSITY CORE CURRICULUM: Abnormal urinalysis/hematuria and medical renal disease. Updated January 25, 2022. <https://university.auanet.org/core/pediatric/abnormal-urinalysis-hematuria-and-medical-renal-disease/index.cfm>

Question #127

ANSWER=B

The pudendal nerve carries sensation from the external genitalia and perineum and provides motor supply to the levator ani and urinary/anal sphincters. Nerve roots from S2-S4 join to form the pudendal nerve. It exits the pelvis through the greater sciatic foramen and crosses the piriformis, ischiococcygeus, and sacrospinous ligament where it attaches to the ischial spine. It then re-enters the pelvis through the lesser sciatic foramen. A pudendal nerve block targets the nerve as it enters the lesser sciatic foramen. Pudendal nerve blockade can provide analgesia for penile, perineal, and vaginal procedures. The nerve then passes through the obturator internus fascia (Alcock's canal) with the internal pudendal vessels but does not pass through the obturator foramen. The pudendal nerve divides into branches in Alcock's canal. The pudendal nerve terminates as the dorsal nerve of the penis/clitoris. The dorsal nerve passes through the perineal membrane and passes deep to Buck's fascia where the dorsal nerve block is

directed.

AUAUNIVERSITY CORE CURRICULUM: Penis and female urethra. Updated March 1, 2021. https://university.auanet.org/core_topic.cfm?coreID=64

Question #128

ANSWER=C

The CT image demonstrates emphysematous pyelonephritis, which requires emergent management. Patients require rapid decompression (i.e. PCNT) to prevent life-threatening sepsis. Urine culture is an appropriate management step, but metabolic stone evaluation is not appropriate in the acute setting nor contributory. PCNL and ureteroscopic laser lithotripsy are not appropriate given the presence of gas-forming bacteria; surgical treatment of the stone is not warranted at this time. At this time, there is no role for functional studies such as a MAG-3 renal scan as the next step required is to relieve the obstruction expeditiously. In addition in the setting of obstruction, functional studies would be inaccurate.

Cooper KL, Badalato, GM, Rutman MP: Infections of the urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 55, p 1129.

Question #129

ANSWER=C

The ureter begins at the UPJ posterior to the renal artery and vein. It continues on the surface of the psoas muscle. It passes posterior to the gonadal vessels and enters the pelvis by crossing anteromedially over the iliac vessels. It passes medial and deep to the medial umbilical ligament (obliterated hypogastric artery). In women, the ureter passes posterior to the uterine artery and runs lateral to the anterior portion of the uterosacral ligament in close proximity to the cervix. In men, the ureter passes posterior to the vas deferens as it courses from the internal inguinal ring to join the seminal vesicles medially. Ureteral injuries are rare, but the ureter can be injured during seminal vesicle dissection during robotic prostatectomy. The ureter may be kinked by the vas in a cutaneous ureterostomy if the distal aspect of the ureter is pulled up without transposing it to the anterior side of the vas. In addition, the proximity of the vas to the ureter may result in inadvertent injury to the vas during ureteral reimplantation and other distal ureteral operations.

AUAUNIVERSITY CORE CURRICULUM: Kidney, adrenal, ureter. Updated March 30, 2021. https://university.auanet.org/core_topic.cfm?coreID=59

Padmanabhan P: Surgical, radiographic, and endoscopic anatomy of the female pelvis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 108, pp 2430-2432.

Elkoushy MA, Andonian S: Surgical, radiologic, and endoscopic anatomy of the kidney and ureter, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds):

Question #130

ANSWER=B

Belzutifan (MK-6482) is an oral HIF-2a inhibitor that has been approved by the FDA in August 2021 to treat adult patients with VHL disease who require therapy for VHL-associated non-metastatic RCC, central nervous system hemangioblastomas, or pancreatic neuroendocrine tumors not requiring immediate surgery. An overall response rate of 49% was reported in patients with VHL-associated RCC. Axitinib, pazopanib, nivolumab with ipilimumab, and axitinib with pembrolizumab are approved for the treatment of metastatic RCC, but not localized RCC as in this patient.

AUAUNIVERSITY CORE CURRICULUM: Renal neoplasms. Updated February 1, 2022. https://university.auanet.org/core_topic.cfm?coreID=75

Choueiri TK: Inhibition of hypoxia-inducible factor-2a in renal cell carcinoma with belzutifan: A phase 1 trial and biomarker analysis. NAT MED 2021;27(5):802-805.

Jonasch E: Phase II study of the oral HIF-2a inhibitor MK-6482 for Von Hippel-Lindau disease-associated renal cell carcinoma. J CLIN ONC 2020;38(15_suppl):5003.

Question #131

ANSWER=A

This patient has evidence of valve bladder syndrome. Urine volume increases because of nephrogenic diabetes insipidus. As the bladder undergoes deleterious remodeling from overdistention, the bladder cannot meet the demand of emptying increasing volumes of urine. In addition to timed voiding and anticholinergics/alpha-blockers, CIC may become necessary. In addition to CIC, overnight continuous bladder drainage allows an extended period of decompression to interrupt deleterious bladder remodeling. The success rates of anti-reflux procedures are lower in posterior urethral valves compared to normal bladders. Bladder augmentation is uncommonly performed in children with posterior urethral valves as the natural history of the bladder changes over time from being hypertonic, low capacity to larger, more compliant. If possible, delaying bladder augmentation may be advantageous as the bladder often evolves over time to a more compliant reservoir. Anti-reflux surgical procedures, such as subureteric injection of bulking agent and ureteral reimplant, should be considered only after optimizing bladder function. Intradetrusor onabotulinumtoxinA has been described prior to proceeding to bladder augmentation in patients with neurogenic bladder but not posterior urethral valves.

AUAUNIVERSITY CORE CURRICULUM: Posterior urethral valve and other urethral obstruction. Updated February 14, 2022. <https://university.auanet.org/core/pediatric/posterior-urethral-valve/index.cfm?d=2985>

Shukla AR, Srinivasan AK: Posterior urethral valves, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12.

Question #132

ANSWER=B

Hematuria, gross and microscopic, is one of the most common urologic findings in individuals with sickle cell disease and trait. Hematuria is likely due to sickling, vaso-occlusive events, microinfarction, and ischemic injury. Ischemia may result in renal papillary necrosis (RPN) and infarction of the renal papillae leading to gross hematuria and potentially ureteral obstruction due to tissue sloughing. Another potential etiology to consider is renal medullary carcinoma, which is more common in Black men with sickle cell trait. The excretory phase of a CT with contrast is now the gold standard for diagnosing RPN. It is recommended that this be performed before cystoscopy. Retrograde pyelography may be necessary if the CT scan is inconclusive. Ureteroscopy can assess the ureter or collecting system when a filling defect is noted on CT or retrograde pyelography. Papillary sloughing can show as a filling defect on CT. This papillary sloughing can cause obstruction and lead to hydronephrosis and renal colic. A MAG-3 renal scan may reveal obstruction but will not identify the cause. Having a diagnosis of RPN is helpful in initiating appropriate supportive treatment, including supplemental oxygen and hydration. This is important because ischemia is most likely to contribute to RPN. In acute obstruction, urologic intervention may be necessary to relieve obstruction as one would proceed in obstructing renal calculi. Aminocaproic acid can be used to treat intractable hematuria but should be administered with caution in bleeding of upper urinary tract origin due to the risk for intrarenal obstruction. This can arise from glomerular capillary thrombus or clots in the renal pelvis or ureter. Tamsulosin can help dilate the upper urinary tract in the setting of obstruction, but the cause of obstruction should be identified first before initiating.

Cooper KL, Badalato, GM, Rutman MP: Infections of the urinary tract, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 55, p 1139.

Nail RP, Derebail VK: The spectrum of sickle hemoglobin-related nephropathy: from sickle cell disease to sickle trait. EXPERT REV HEMATOL 2017;10(12):1087-1094.

Henderickx MMEL, Brits T, De Baets K, et al: Renal papillary necrosis in patients with sickle cell disease: How to recognize this 'forgotten' diagnosis. J PED UROL 2017;13(3):250-256.

Question #133

ANSWER=C

Initial treatment of metastatic castration-sensitive prostate cancer includes ADT combined with either apalutamide, enzalutamide, docetaxel, or abiraterone. ADT can consist of LH-RH agonists such as leuprolide, goserelin, triptorelin, or histrelin, LH-RH antagonists such as degarelix and relugolix, or surgical orchiectomy. In the setting of spinal metastases, LH-RH agonists can induce a flare with an increased risk of spinal cord compromise. Therefore, pre-treatment with an androgen receptor (AR) antagonist (i.e., bicalutamide), treatment with an LH-RH antagonist, or surgical orchiectomy would be

recommended. Since this man has many serious medical conditions, is on coumadin, and has DVTs, orchiectomy is not optimal. Abiraterone is not indicated as primary ADT but is often combined with traditional ADT as front-line therapy for metastatic castration-sensitive prostate cancer. However, risks of abiraterone include HTN, hypokalemia, and lower extremity edema, a condition he already has. Leuprolide would not be indicated in the setting of vertebral lesions, due to risk of spinal cord compromise, unless pre-treatment with an androgen receptor antagonist was instituted. Degarelix (a GnRH antagonist) is an option for ADT but requires appointments for injection. Due to his frailty and difficulty with transportation to medical appointments, relugolix (an oral gonadotropin-releasing hormone antagonist) would be the recommended option. In the HERO randomized trial of men with advanced prostate cancer requiring ADT, relugolix was compared to leuprolide (an LH-RH agonist). Relugolix is orally dosed 120 mg daily and leuprolide is injected as a depot, most commonly every three months (other durations available). Relugolix was superior in achieving castration levels of testosterone at day 4 (56% versus 0%) and day 15 (98% versus 12%) and likelihood of testosterone < 20 ng/dL at day 15 (78% versus 1%). Castration levels of testosterone (< 50 ng per deciliter) at 48 weeks was superior for relugolix (96.7% versus 88.8%). The incidence of major adverse cardiovascular events was lower with relugolix (2.9% versus 6.2%). Cancer-specific survival was not assessed in this trial.

Shore ND, Saad F, Cookson MS, et al: Oral relugolix for androgen-deprivation therapy in advanced prostate cancer. NEJM 2020;382:2187-2196.

Eggener S: Hormonal therapy for prostate cancer, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 161, p 3671.

Question #134

ANSWER=B

Bothersome urinary incontinence four years after radical prostatectomy is an indication for surgical treatment. This patient has SUI with no obvious signs of an OAB because he is dry at night and has no nocturia, so UDS is not indicated. If he had urgency, nocturia, or leaked at night, UDS could be performed, particularly because of his history of XRT. Pelvic floor therapy is most effective in the first three months and in this case, more therapy is unlikely to help. Male slings are generally not offered to patients with a history of XRT. An artificial urinary sphincter is indicated in this case but only after ruling out bladder or bladder neck pathology. This is why cystoscopy is the best next step.

AUAUNIVERSITY CORE CURRICULUM: Stress urinary incontinence: Surgery (male). Updated February 10, 2022. <https://university.auanet.org/core/OAB/surgery-for-male-sui/index.cfm?d=2940>

Sandhu JS, Breyer B, Comiter C, et al: Incontinence after prostate treatment: AUA/SUFU Guideline. J UROL 2019;202:369. <https://www.auanet.org/guidelines/guidelines/incontinence-after-prostate-treatment>

Wessells H, Vanni AJ: Surgical procedures for sphincteric incontinence in the male, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH

Question #135

ANSWER=E

When there is no pre-operative imaging, ureteral injuries are best evaluated by exploring the retroperitoneum. Ureteral injuries are more common after penetrating than blunt trauma and must be suspected when a penetrating injury is in the vicinity of the natural course of the ureter. For example, an iliac vessel injury should raise suspicion of a ureteral injury. Direct inspection is best because the ureteral wall may be intact but necrose a couple of days later, especially after a GSW. One-shot IVP will be ineffective and unreliable in a hypotensive patient. A retrograde pyelogram could be informative; however, it may waste critical time. Furthermore, the site of the injury will be explored by the trauma team so the urologist should at that time directly inspect the ureter. Follow-up imaging will not help in the immediate setting and is not warranted after a midureteral injury. Cystotomy and retrograde ureteral catheterization could be helpful if one has a difficult time identifying the ureter; however, it should not be the first action.

Morey AF, Brandes S, Dugi DD III, et al: Urotrauma: AUA Guideline. J UROL 2014,192:327. <https://www.auanet.org/guidelines/guidelines/urotrauma-guideline>

Question #136

ANSWER=E

This patient is in urinary retention despite alpha-blockade. Finasteride has been shown to prevent urinary retention but is unlikely to help in the setting of acute urinary retention. Bethanechol is thought by some to improve bladder contractility but has not been shown to be effective for chronic or acute urinary retention. A suprapubic tube could be a solution for patients who do not want prostate surgery and are willing to regularly change the suprapubic tube. However, this man has a clear indication for surgery, and a TURP would be an appropriate option. A biopsy is not indicated, given the patient's age. Prior to proceeding with TURP or another prostate ablative procedure, sizing of the prostate should be done with imaging or cystoscopy.

Carter HB, Albertsen PC, Barry MJ, et al: Early detection of prostate cancer: AUA Guideline. J UROL 2013;190:419. <https://www.auanet.org/guidelines/guidelines/prostate-cancer-early-detection-guideline>

Capogrosso P, Salonia A, Montorsi F: Evaluation and nonsurgical management of benign prostatic hyperplasia, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 145, p 3343.

AUAUNIVERSITY CORE CURRICULUM: Medical treatment. Updated January 28, 2022. <https://university.auanet.org/core/BPH/medical-bph/index.cfm?d=2883>

AUAUNIVERSITY CORE CURRICULUM: Surgical treatment. Updated July 21, 2022.

<https://university.auanet.org/core/BPH/surgical-bph/index.cfm?d=2884>

Lerner LB, McVary KT, Barry ML, et al: Management of lower urinary tract symptoms attributed to benign prostatic hyperplasia: AUA Guideline Part II—Surgical evaluation and treatment. *J UROL* 2021;206:818.

[https://www.auanet.org/guidelines/guidelines/benign-prostatic-hyperplasia-\(bph\)-guideline](https://www.auanet.org/guidelines/guidelines/benign-prostatic-hyperplasia-(bph)-guideline)

Question #137

ANSWER=D

Antimuscarinics should be used with caution in elderly patients due to concern for cognitive impairment and dementia. Vaginal estrogen cream is effective for Genitourinary Syndrome of Menopause and can treat some lower urinary tract symptoms but is not effective for incontinence. A pessary is a treatment for stress incontinence, not typically used for urgency urinary incontinence; in addition, a pessary may be uncomfortable in the setting of vaginal atrophy. Mirabegron and vibegron are beta-3 agonists and do not have a known effect on cognition. Mirabegron is contraindicated in patients with uncontrolled hypertension and should probably not be started in the setting of worsening hypertension. Vibegron has not been shown to affect blood pressure in the EMPOWUR study and is therefore the appropriate treatment of choice for this patient. Sacral neuromodulation is a third-line treatment for overactive bladder refractory to medication and is an option if she does not respond to the beta-agonist. This is a common scenario in which shared decision-making should be employed to weigh medication efficacy versus potential medication side effects versus potential complications of third-line therapy.

AUAUNIVERSITY CORE CURRICULUM: Urinary incontinence & voiding dysfunction (geriatric). Updated January 19, 2022. <https://university.auanet.org/core/OAB/geriatrics-urinary-incontinence-voiding-dysfunction/index.cfm?d=2936>

Lightner DJ, Gomelsky A, Souter L, et al: Diagnosis and treatment of overactive bladder (non-neurogenic) in adults: AUA/SUFU Guideline amendment 2019. *J UROL* 2019;202:558. [https://www.auanet.org/guidelines/guidelines/overactive-bladder-\(oab\)-guideline](https://www.auanet.org/guidelines/guidelines/overactive-bladder-(oab)-guideline)

Staskin D, Frankel J, Varano S, et al: International phase III, randomized, double-blind, placebo and active controlled study to evaluate the safety and efficacy of vibegron in patients with symptoms of overactive bladder: EMPOWUR. *J UROL* 2020;204(2):316-324.

Question #138

ANSWER=E

Injury to the obturator nerve can occur with cautery, clips, or partial/complete transection. Following a cautery injury, no further action is required except for physical therapy. If a clip is inadvertently placed, it should be removed. Following partial or complete resection, repair with fine non-absorbable suture should be performed. The remainder of the surgery should be completed. No data supports intra-operative

amniotic membrane wrapping, debridement, omental wrap, segmental resection, or nerve autograft.

Schaeffer EM, Partin AW, Lepor H: Open radical prostatectomy, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 155, p 3548.

Question #139

ANSWER=A

Edema after ureteral reimplant is not uncommon one month after surgery. Observation is indicated as long as the patient is asymptomatic. The patient should remain on prophylactic antibiotics and a follow-up sonogram should be obtained four to six weeks after surgery. If the hydronephrosis has not resolved at further follow-up, then a MAG-3 Lasix renogram should be completed to evaluate ureteral obstruction. If the patient developed acute abdominal pain with nausea or vomiting, then a more rapid MAG-3 followed by PCN or an attempt at ureteral stent placement may be considered. VUCG may be considered to evaluate whether VUR is persistent after surgery but is not the correct next step to evaluate the significant hydronephrosis. Importantly, pre-existing hydronephrosis, perhaps due to dilating VUR, usually implies that there is a greater likelihood of hydronephrosis post-operatively and helps guide in determining whether there is obstruction or expected post-operative dilation.

Olsen LH, Rawashdeh YFH: Surgery of the ureter in children: Ureteropelvic junction, megaureter, and vesicoureteral reflux, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 42, pp 844-845.

Question #140

ANSWER=C

Cystinuria is an autosomal recessive disorder characterized by a lack of reabsorption of the amino acids cystine, ornithine, lysine, and arginine. The excessive concentration of cystine in the urine results in precipitation and crystal formation. Cystinurics may suffer from recurrent calculi if metabolic management is not initiated or optimized. Mainstays of therapy include adequate hydration (1.5 to 2 L/day in children, 2 to 2.5 L/day in adolescents), a low salt diet (ideally 2-3 g/day), and urinary alkalinization to achieve a pH > 7.0. This boy is practicing adequate hydration and sodium restriction for a patient at risk for recurrent stones. Furthermore, his urine pH is within optimal range while on potassium citrate therapy. Given the new stone on ultrasound despite compliance with these measures, additional pharmacotherapy should be initiated. Thiol-containing agents such as alpha-mercaptopyrionylglycine (tiopronin) and D-penicillamine are used exclusively for patients with cystinuria in whom fluid/dietary modifications and urinary alkalinization are ineffective in preventing stone recurrence by reducing the disulfide bond that bridges two molecules of cysteine to form cystine. Alpha-mercaptopyrionylglycine is usually better tolerated than D-penicillamine, which can cause gastrointestinal discomfort, myasthenia gravis, skin eruptions, pancytopenia, and nephrotic syndrome among other adverse effects. Therefore, starting D-penicillamine or using it in combination with alpha-mercaptopyrionylglycine is usually not preferable.

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Hydrochlorothiazide is more useful in patients with hypercalciuria refractory to other preventive measures. Allopurinol is a medical treatment option for patients with uric acid stones and is not used in cystinuria.

Tasian GE, Copelovitch LA: Management of pediatric kidney stone disease, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 43, pp 859, 869-870.

Miller NL, Borofsky MS: Evaluation and medical management of urinary lithiasis, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 92, pp 2052, 2061-2062.

Question #141

ANSWER=E

To properly assess a patient with a newly diagnosed renal mass, anatomy of the mass, whether it enhances, and its relationship within the kidney are critically important to guide clinical decisions. With stage 4 CKD (eGFR < 30 mL/min/1.73 m²), administration of iodinated contrast for a CT scan poses a significant risk of contrast-induced nephropathy and gadolinium for MRI scan has been associated with nephrogenic systemic fibrosis (NSF). The American College of Radiology (ACR) and European Society of Urogenital Radiology Guidelines recognize differences in risk of NSF between gadolinium-based contrast agents (GBCAs) and classify them into three groups. The ACR terms the lowest-risk GBCAs as group II agents (gadobenate dimeglumine, gadoteridol, gadoterate meglumine, and gadobutrol), representing those GBCAs with “very low, if any, risk of NSF development.” In a meta-analysis of 4900 patients with stage 4 or 5 CKD receiving group II GBCA's, none experienced NSF. A non-contrast CT scan will provide kidney anatomy but is suboptimal to define mass characteristics, including location, borders, and presence of enhancement. Neither half-dose contrast nor N-acetylcysteine (NAC) has been shown to lower the likelihood of contrast-induced nephropathy.

Woolen SA, Shankar PR, Gagnier JJ, et al: Risk of nephrogenic systemic fibrosis in patients with Stage 4 or 5 chronic kidney disease receiving a Group II gadolinium-based contrast agent: A systematic review and meta-analysis. JAMA INTERN MED 2020;180(2):223-230.

*AMERICAN COLLEGE OF RADIOLOGY ON CONTRAST MEDIA, 2021.
https://www.acr.org/-/media/ACR/files/clinical-resources/contrast_media.pdf*

Weisbord SD, Gallagher M, Jneid H, et al: Outcomes after angiography with sodium bicarbonate and acetylcysteine. NEJM 2018;378:603-614.

AUAUNIVERSITY CORE CURRICULUM: Computed tomography (CT). Updated February 3, 2022. [https://university.auanet.org/core/uroradiology/computed-tomography-\(ct\)/index.cfm?d=2957](https://university.auanet.org/core/uroradiology/computed-tomography-(ct)/index.cfm?d=2957)

AUAUNIVERSITY CORE CURRICULUM: Magnetic resonance imaging (MRI). Updated April 13, 2022. <https://university.auanet.org/core/uroradiology/magnetic-resonance->

Question #142

ANSWER=A

The patient reports stress urinary incontinence (SUI) and is noted to have SUI on examination, and therefore a midurethral (MUS) sling is justified. Seeing or feeling a vaginal bulge is the most sensitive indicator of prolapse beyond the introitus. She does not have specific vaginal bulge symptoms. Similarly, while the POP-Q exam reveals some descent of the anterior (Aa/Ba) and posterior (Ap/Bp) walls, there is no descent of any wall to the introitus and no apical descent (point C represents the cuff), therefore a prolapse procedure is not indicated. Vaginal wall support is unlikely to be related to her symptoms of discomfort and pressure. Her vaginal symptoms may be related to Genitourinary Syndrome of Menopause (GSM) and potentially addressed with vaginal estrogen cream.

AUAUNIVERSITY CORE CURRICULUM: Pelvic organ prolapse evaluation and treatment. Updated January 19, 2022. <https://university.auanet.org/core/fpmrs/pelvic-organ-prolapse-evaluation-and-treatment/index.cfm?d=2942>

Kobashi KC, Albo ME, Dmochowski RR, et al: Surgical treatment of female stress urinary incontinence: AUA/SUFU Guideline. J UROL 2017;198:875. [https://www.auanet.org/guidelines/guidelines/stress-urinary-incontinence-\(sui\)-guideline](https://www.auanet.org/guidelines/guidelines/stress-urinary-incontinence-(sui)-guideline)

Question #143

ANSWER=B

Most immune-related adverse events (irAE) occur within one to five months after initiation of immunotherapy. This patient is tolerating therapy well and is now at lower risk of developing irAE as he has been on the same therapy for the past year. Regimens that can be used in first-line settings include axitinib+pembrolizumab, cabozantinib+nivolumab, and ipilimumab+nivolumab. Most immunotherapy agents (ipilimumab, nivolumab, pembrolizumab) can be stopped within two weeks prior to surgery as they have no effects on wound healing. Axitinib has a two to five-hour half-life and can be stopped one to two days prior to surgery, while cabozantinib has a 99-hour half-life and should be stopped at least four weeks prior to surgery.

AUAUNIVERSITY CORE CURRICULUM: Renal neoplasms. Updated February 1, 2022. <https://university.auanet.org/core/oncology-adult/renal-neoplasms/index.cfm?d=2886>

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 104, p 2324.

NCCN Guidelines, version 1.2022. Management of immunotherapy-related toxicities.

Complete inability to catheterize the appendicovesicostomy without any means to drain the bladder (because of the bladder neck closure) is a urologic emergency. The urologist should attempt to catheterize the channel using the size catheter that the patient typically uses or smaller. The resistance below the level of the skin can either be due to tightness as the stoma goes through the abdominal wall fascia or a kink in the channel due to the overdistended bladder or a false passage. Flexible endoscopy with placement of a catheter over a wire can be attempted. If the bladder cannot be drained, the bladder should be drained percutaneously with a fine spinal needle. Once the bladder is emptied, catheterization through the channel can be attempted again, which may now be successful if the resistance was from compression of the appendix in the wall of the distended bladder. If the channel still cannot be catheterized, the puncture site can be converted to a percutaneous suprapubic catheter to be left in place until the stoma can be formally revised. Abdominal imaging does not alter management and would not address the problem. Stomal stenosis at the level of the skin can be managed with dilation followed by catheter placement for a few days but would be inadvisable for stenosis below skin level. Bilateral PCNT placement would divert urine but does not address the already distended bladder. Formal surgical revision may ultimately be needed but would not be performed urgently without additional information.

Skinner E, Zlatev D: Complications of Continent Cutaneous Diversion, in Taneja SS, Shah O (eds): COMPLICATIONS OF UROLOGIC SURGERY, ed 5. Philadelphia, Elsevier, 2018, chap 46, pp 501-502.

Thomas JC, Clayton DB, Adams MC: Lower urinary tract reconstruction in children, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 37, p 680.

With the recent opioid epidemic, several methods of reducing opioid prescribing have been identified. Electronic medical records have proven an effective means of reducing opioids prescribed, particularly when defaults are set to decrease the number of pills dispensed. State mandates for electronic prescribing have decreased opioid prescribing by up to 50%. Communication through an electronic patient portal has not been shown to have an effect on opioid prescribing. While there has been concern that decreased opioid prescribing may lead to an increase in unplanned visits, patient communications, or patient dissatisfaction, recent studies have suggested this does not hold true. Setting expectations and providing preoperative education for patients has been shown to reduce opioid prescribing after surgery. Recent studies have had mixed results on whether the amount of opioids prescribed is higher when written by advanced practice providers versus physicians. Preoperative opioid prescriptions have been associated with increased major complications and should be avoided.

AUA WHITE PAPER: Rationale and strategies for reducing urologic post-operative opioid prescribing (2021). <https://www.auanet.org/guidelines/guidelines/rationale-and-70>

O'Brien SJ, Chen RC, Stephen VT, et al: Preoperative opioid prescription is associated with major complications in patients with Crohn's disease undergoing elective ileocolic resection. DIS COLON RECTUM 2020;63(8):1090-1101.

Question #146

ANSWER=C

Prostate health index (phi) and 4Kscore® are both serum tests available to assess the likelihood of prostate cancer on biopsy. Phi includes total PSA, free PSA, and proPSA. 4Kscore® includes total PSA, free PSA, hK2 (human kallikrein 2), and intact PSA. IsoPSATM is a separate blood test assessing prostate cancer risk, using a structure-based assay to analyze different PSA isoforms. PCA3 is a urine-based biomarker assessing likelihood of prostate cancer.

Loeb S, Eastham JA: Diagnosis and staging of prostate cancer, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 3, chap 152, p 3514.

AUAUNIVERSITY CORE CURRICULUM: Prostate cancer screening, diagnosis, and risk stratification. Updated February 14, 2022. <https://university.auanet.org/core/oncology-adult/prostate-cancer-screening-diagnosis-and-risk-stratification/index.cfm?d=2885>

Question #147

ANSWER=E

Transgender women can be in varying stages of transitioning but usually have a prostate still in place. This patient has worsening LUTS. LUTS can be due to a host of etiologies in transgender women who may have undergone lower urinary tract reconstruction. With a normal cystoscopy and obstructive voiding symptoms, this patient's LUTS are likely related to BPH. If symptoms are bothersome, the first-line treatment is alpha-blockers such as tamsulosin. Reassurance is an option if the patient is not bothered. The only test required on presentation is a urinalysis which in this patient is normal. PVR is also often recommended but not required. Uroflowmetry and UDS are not normally performed on presentation. Bethanechol is a cholinergic agent and could theoretically help with bladder contractions but is not recommended as a treatment for underactive bladder. It is important to note that even though this patient may be on hormonal therapy, she still has a prostate and should be treated as such.

*Lerner LB, McVary KT, Barry ML, et al: Management of lower urinary tract symptoms attributed to benign prostatic hyperplasia: AUA GUIDELINE PART I—Initial work-up and medical management. J UROL 2021;206:806.
[https://www.auanet.org/guidelines/guidelines/benign-prostatic-hyperplasia-\(bph\)-guideline](https://www.auanet.org/guidelines/guidelines/benign-prostatic-hyperplasia-(bph)-guideline)*

Reisner SL, Poteat T, Keatley J, et al: Global health burden and needs of transgender population: A review. LANCET 2016;388:412-436.

This patient should be suspected to have a genetic syndrome given his young age, multifocal enhancing renal tumors, and presence of an adrenal mass that is not typical of an adenoma (since it is more than 10 HU) or a metastasis (since it is not enhancing as the primary renal tumors are, and since the primary tumors are quite small and with a low likelihood of resulting in an adrenal metastasis). An MRI scan of the abdomen will not necessarily influence management at this point and cannot conclusively differentiate a metastasis from a primary adrenal functional adenoma. This patient should be suspected of having a pheochromocytoma in a setting of VHL syndrome and should undergo an adrenal metabolic work-up including plasma-free metanephrines prior to having any invasive procedure such as renal mass biopsy, adrenal mass biopsy, or surgery. If the diagnosis of a pheochromocytoma is made based on the metabolic work-up, the patient will then need to be medically managed for pheochromocytoma prior to partial nephrectomies and adrenalectomy (since the largest renal tumor is > 3 cm).

Campbell SC, Lane BR, Pierorazio PM: Malignant renal tumors, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 2, chap 97, p 2133.

Zeiger MA, Thompson GB, Duh QY, et al: The American Association of Clinical Endocrinologists and American Association of Endocrine Surgeons medical guidelines for the management of adrenal incidentalomas. Association of Clinical Endocrinologists; American Association of Endocrine Surgeons. ENDOCR PRACT 2009;Jul-Aug;1:Suppl 1:1-20. doi: 10.4158/EP.15.S1.1.PMID: 19632967

This is an example of face validity, which is based on expert opinion and is a qualitative assessment. This is widely considered to have the lowest credibility of all validity measures. In this setting, the team of urologic oncologists does not provide a 'gold standard' or represent the full extent of the content this instrument is expected to address. There are multiple other well-recognized methods of validating survey instruments, each of which addresses different aspects of the validation process. Criterion validity is defined by how well an instrument compares against the outcome of interest or a 'gold standard'. Content validity is defined by how well an instrument adequately addresses all facets of the problem it intends to measure. Construct validity measures how well the instrument's outcome is in line with the conceptual model of the condition being studied. Predictive validity is a type of criterion validity that refers to how well an instrument can predict future health states.

Penson DF, Tyson MD: Assessment of urologic and surgical outcomes, in Partin AW, Peters CA, Kavoussi LR, Dmochowski RR, Wein AJ (eds): CAMPBELL WALSH WEIN UROLOGY, ed 12. Philadelphia, Elsevier, 2020, vol 1, chap 6, p 101.

Jiang R, Kelly MS, Routh JC: Assessment of pediatric bowel and bladder dysfunction: A critical appraisal of the literature. J PED UROL 2018;14(6):494-501.

Question #150

ANSWER=A

Iatrogenic ureteral injuries in children are rare and their management can be challenging. By and large, management reflects general principles in adults. The complicating factor here is that this child has an elevated creatinine and will need further sarcoma treatment (specifically, radiation and chemotherapy). At the time of injury, PCN placement and ligation of the proximal ureteral stump is the best next step, followed by a thorough discussion of risks, benefits, and alternatives with the family, and multidisciplinary discussion with radiation oncology to determine whether the radiation field can be adjusted to safely avoid whatever reconstructive option is ultimately chosen. While auto-transplantation may ultimately be reasonable, it is not the immediate next step in this complex situation. Appendiceal or other bowel interpositions in ureter are at risk for recurrent obstruction (typically at the site of the bowel-ureter anastomosis) due to mucous production within the bowel segment and will be even more at risk for stricture due to radiation. While transureteroureterostomy would be a reasonable option for a distal or potentially midureteral stricture, it would be less likely to reach the contralateral ureter in the setting of a proximal ureteral injury. Nephrectomy would be reasonable if other options fail, but in the setting of an elevated creatinine, preserving all nephrons is desirable for a child who will be undergoing further chemotherapy.

Routh JC, Tollefson MK, Ashley RA, Husmann DA: Iatrogenic ureteral injury: can adult repair techniques be used on children? J PED UROL 2009;5(1):53-55.

*AUAUNIVERSITY CORE CURRICULUM: Pediatric trauma. Updated February 14, 2022.
<https://university.auanet.org/core/pediatric/pediatric-trauma/index.cfm?d=2927>*