Question #1 **ANSWER=A**

Most major causes of acute renal failure can be differentiated by urinalysis and urinary chemistries. With tubular cell injury, the kidney is no longer able to reabsorb filtered salt and water (under normal conditions, approximately 99% of filtered NaCl and water are reabsorbed and 50-80% of all filtered urea is excreted). In acute tubular necrosis, renal tubular function is injured resulting in loss of filtered water which causes a decrease in urinary osmolality. In addition, failure to resorb filtered sodium and failure to excrete urea (other functions of the renal tubular cell) will result in an increased urinary sodium and decreased urinary urea.

Paller MS: Pathophysiology of acute renal failure, in Greenberg A (ed): PRIMERON KIDNEY DISEASES. San Diego, Academic Press, 1994, pp 126-133.

Goldfarb DA, Poggio ED, Demirjian S: Etiology, pathogenesis, and management of renal failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 46, pp 1048-1049.

Question #2 **ANSWER=B**

Properties of uropathogens, sexual activity, feminine hygiene practices, and the use of an IUD and/or spermicide may increase the frequency of UTIs in predisposed women; however, they are not the most important etiologic factors. Many women who have uropathogenic bacteria present in their bowel, use various contraceptive and hygiene methods, and are sexually active without developing infections. E. coli must colonize the peri-urethral area before an uncomplicated infection can occur. Coliform organisms are recovered only rarely from the region of the vaginal vestibule, and external urethra in otherwise healthy women who do not have recurrent UTIs. It is postulated by most researchers that host factors, rather than specific pathogenicity of the micro-organisms, are the prime determinants of colonization. E. coli tend to adhere more to vaginal and buccal epithelial cells obtained from women with recurrent infection than to controls. This explains why certain women are prone to frequent recurrent infections. It would also explain why women with asymptomatic bacteruria are more prone to recurrent infection with marriage and pregnancy, and would account for UTIs associated with intercourse, various contraceptive methods, etc., in highly susceptible women.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, pp 241-248.

Question #3 **ANSWER=C**

All the antibiotics listed including most tetracyclines, except doxycycline, are excreted primarily in the urine and their blood levels increase in the presence of renal insufficiency. Doxycycline is excreted mainly in the feces and does not require consideration for a dosage reduction in an azotemic patient.

Gilbert B, Robbins P, Livornese LL: Use of antibacterial agents in renal failure. MED CLIN AM 2011;95:677-702.

Question #4 **ANSWER=E**

Urethral and bladder neck injuries in women are rare but potentially devastating in their effects on long-term continence and bladder function. The urethra is short, mobile, and protected by the pubis in women. Female urethral and bladder neck injuries occur in 4.6% to 6% of women suffering pelvic fractures. The typical presentation includes gross hematuria or blood at the introitus. Despite blood in the vaginal vault, over 40% of female bladder neck and urethral injuries are missed in the emergency department and only half will be detected on CT cystogram. As a result, one must have a high index of suspicion and low threshold for performing a vaginal examination in females with pelvic fractures. Female bladder neck injuries should undergo immediate repair with primary closure of any vaginal lacerations to prevent fistula formation. Longitudinal tears of the female bladder neck have been associated with higher rates of incontinence. Such injuries should be repaired immediately to preserve the functional integrity of the bladder neck. In one recent series, despite operative repair, 16% of women developed vesicovaginal fistulas, 43% had moderate or severe lower urinary tract systems, and 38% had sexual dysfunction.

Black P, Miller E, Porter JR, Wessells H: Urethral and bladder neck injury associated with pelvic fracture in 25 female patients. J UROL 2006;175(6):2140-2144.

Morey AM, Brandes S, Dugi III DD, et al: UROTRAUMA: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014.
http://www.auanet.org/education/guidelines/urotrauma.cfm

Question #5 **ANSWER=A**

In a young patient with absent testes and normal penile development, testosterone stimulation was present at 16 weeks gestation. Loss of testicular function before this time leads to inadequate virilization. The finding of a blind-ending vas deferens and vessels is adequate to define the pathology and further exploration in this case is unnecessary. Chromosomal study of such cases is usually unnecessary as they carry none of the stigmata of intersexuality and will have a normal (46 XY) karyotype. At age of puberty, such anorchid patients will have elevated gonadotropin and require testosterone therapy.

Barthold JS, Hagerty JA: Etiology, diagnosis, and management of the undescended testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 148, p 3439.

Kolon TF, Herndon CDA, Baker LA, et al: EVALUATION AND TREATMENT OF CYPTORCHIDISM: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014.
http://www.auanet.org/education/guidelines/cryptorchidism.cfm

Question #6 **ANSWER=D**

This plain film AP view shows the lead lateral in the S3 foramen. The lateral view shows it too deeply placed, and this puts her at risk for deep stimulation of S2 roots causing leg and other lower extremity untoward stimulation. The use of the curved stylet would allow placement of the 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 deeper may create stimulation of leg and other untoward effects as mentioned above. S4 stimulation has not been shown to create better efficacy than S3. Lateral lead placement would not allow best contact with the nerve. It would be premature to remove the system and start onabotulinumtoxinA injections. If ultimately utilized, the dose 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.

Vasavada SP, Rackley RR: Electrical stimulation and neuromodulation in storage and emptying failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 81, p 1899.

Question #7 **ANSWER=D**

The management of the infant with a PUV depends on the severity of the obstruction and the degree of any renal dysplasia present. The main problems arise in management of the infant with severe obstruction and compromised renal function with dehydration, acidosis, and sepsis. Initially, a small infant feeding tube, placed transurethrally, can provide bladder drainage. Once stabilized, valve ablation can be undertaken. Vesicostomy is reserved for infants who cannot undergo primary valve ablation because of the inadequate size of their urethra or for very small, unstable infants. If initial bladder level drainage does not result in satisfactory clinical improvement, temporary supravesical diversion may be considered; however, the vast majority of these patients will be found to have renal dysplasia, not ureterovesical obstruction, as the etiology of the persistently elevated creatinine.

Shukla AR: Posterior urethral valves and urethral anomalies, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 141, pp 3258-3259.

Question #8 **ANSWER=A**

The femoral nerve arises from the second, third, and fourth lumbar spinal segments. It appears at the lateral edge of the psoas muscle and descends into the thigh. It supplies a number of muscles including the quadriceps femoris complex, articularis genu, sartorius, pectineus, and iliopsoas. Ilioinguinal, genitofemoral, and lateral femoral cutaneous nerves are sensory nerves. The obturator nerve would be responsible for adduction of his leg.

Berry M, Bannister LH, Standring SM: Nervous system, in Bannister LH, Berry MM, Collins P, Dyson M, Dussek JE, Ferguson MWJ (eds): GRAY'S ANATOMY, ed 38. New York, Churchill Livingstone, 1995, chap 8, pp 1280-1282.

Palmer DA, Moinzadeh A: Surgical, radiographic, and endoscopic anatomy of the retroperitoneum, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 33, p 765.

Question #9 **ANSWER=A**

This infant has a compromised urinary tract and a neurogenic cause must be considered. The conus normally ends above L3 and spinal ultrasound is a convenient and accurate method of screening in the neonatal period. Given his low conus, a CMG would be important to see if filling curve and storage pressure are abnormal with abnormal urodynamic findings substantiating the presence of a clinically significant tethered cord. Circumcision is not mandatory. Vesicostomy at this point is premature and cystoscopy is not necessary. The hydronephrosis, in this case, is related to the bladder dysfunction and a MAG-3 scan is unnecessary.

MacLellan DL, Bauer SB: Neuromuscular dysfunction of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 142, pp 3285-3286.

Question #10 **ANSWER=C**

The presence of small volume testes with an elevated FSH suggests the presence of non-obstructive azoospermia. Most men with non-obstructive azoospermia will have sperm retrievable from the testes that can be used in conjunction with in vitro fertilization for the wife. The most important characteristic to determine eligibility for treatment will be the wife's age and fertility. Screening for obstruction with vasography is not of value. Testicular biopsy may be useful as an indicator for success with intracytoplasmic sperm injection (ICSI) and sperm harvest. With an elevated FSH, diagnostic biopsy is not indicated.

Carpi A, Sabanegh E, Mechanick J: Controversies in the management of nonobstructive azoospermia. FERT STERIL 2009;91:963-970. Epub 2009 Mar 21.

Niederberger CS: Male infertility, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 24, p 573.

Question #11 **ANSWER=E**

This woman has hypertension due to primary hyperaldosteronism. The CT scan suggests hyperplasia of the left adrenal gland. In order to differentiate hyperplasia from an adenoma, adrenal vein sampling for aldosterone will show elevated levels on the left and suppressed levels on the right if an adenoma is present. MRI scan will not differentiate between an adenoma and hyperplasia. A serum aldosterone:renin ratio will not lateralize the lesion. If adrenal vein sampling does not lateralize, then medical therapy with spironolactone is indicated, rather than nifedipine, which is not potassium sparing. If an adenoma is present, surgical removal is the best treatment.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, pp 1541-1544.

Question #12 **ANSWER=E**

This patient has urodynamically demonstrable bladder outlet obstruction. While antimuscarinics may help his irritative symptoms (e.g., frequency, urgency, urge incontinence), it will not address his primary obstructive problem, and indeed, may worsen his symptoms. Obtaining a serum creatinine is not useful or recommended in the BPH guidelines for work-up of LUTS. Cystoscopy may help assess prostatic size, but would be unlikely to change management as his DRE shows a 35 gm prostate on exam. OnabotulinumtoxinA injections are not approved for, nor do they have documented efficacy for the treatment of LUTS related to bladder outlet obstruction. In this patient, TURP is the next step for the treatment of bladder outlet obstruction.

Welliver C, McVary KT: Minimally invasive and endoscopic management of benign prostatic hyperplasia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 105, pp 2506-2509.

Question #13 **ANSWER=C**

Given the positive margin, this patient requires further therapy around the scar. This can include the excision of the scar, laser therapy, or topical therapy with either 5-FU or imiquimod. Podophyllin is used to treat genital warts and has no role in the treatment of carcinoma. Partial or complete penile amputation and radiation therapy are too aggressive for this patient with CIS.

Pettaway CA, Crook JM, Pagliaro LC: Tumors of the penis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 37, pp 855-856.

Question #14 **ANSWER=C**

The differential diagnosis of a wet umbilicus in the infant, includes patent urachus, omphalitis, simple granulation of the healing stump, patent vitelline or omphalomesenteric duct, infected umbilical vessel, and external urachal sinus. The finding of a urinary creatinine level in the fluid draining from the umbilical stump suggests a patent urachus. While probing the urachal tract may aid in diagnosis, a VCUG should confirm the diagnosis and fully evaluate the lesion and any associated bladder outlet obstruction. Cauterization of the tract and closure of the fistula are not indicated until VCUG is performed to rule-out bladder outlet obstruction. Urethral catheter drainage will not definitively treat the patent urachus if obstruction is present.

Frimberger D, Kropp BP: Bladder anomalies in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 138, p 3176.

Question #15 **ANSWER=D**

In an older patient with medical problems, ureteroscopic biopsy, electro-resection, and laser destruction have been utilized to successfully manage small, low grade, non-invasive ureteral

tumors. This approach may avoid nephroureterectomy or partial ureteral resection. Although historically, distal ureterectomy and reimplantation has been considered, endoscopic management of solitary low-grade tumors has become the preferred treatment. Upper tract BCG may be effective for high-grade disease, but delivery of the agent is least consistent when relying on reflux around a ureteral stent.

Smith AK, Matin SF, Jarrett TW: Urothelial tumors of the upper urinary tract and ureter, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 58, pp 1388-1396.

Question #16 **ANSWER=B**

Hysterectomy accounts for over 50% of iatrogenic ureteral injuries and a high index of suspicion must be kept in this scenario. Anuria always implies complete ureteral obstruction until proven otherwise. The two most likely areas where the ureter can be occluded during hysterectomy are at the level of the broad ligaments and at the vaginal cuff and bladder trigone. Consequently, the most likely finding in this patient would be a ureteral obstruction at the level of the vaginal cuff. While hypovolemic shock and low urine output are commonly seen after all types of abdominal operations, the presence of anuria in this case suggests an obstructive etiology. Acute tubular necrosis does not normally occur in a precipitous fashion as in this case. Bladder perforation is unlikely if the catheter has been irrigated with good return.

Santucci RA, Chen, ML: Upper urinary tract trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 50, p 1158.

Question #17 **ANSWER=A**

The limits of dissection for a standard inguinal lymph node dissection are the triangular area bounded by the inguinal ligament superiorly, the sartorius muscle laterally, and the adductor longus medially. Modified templates are frequently used for inguinal lymph node dissections.

Angermeier KW, Sotelo R, Sharp DS: Inguinal node dissection, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 39, pp 894-896.

Question #18 **ANSWER=D**

This boy has a large proximal ureteral stone with acoustic shadowing and debris in the collecting system on ultrasound. With the size of the stone and duration of symptoms, the stone is unlikely to pass spontaneously and will require surgical intervention. The previous reconstructive procedure (bladder neck sling, cross trigonal reimplant, and Mitrofanoff) makes bladder/ureteral access difficult, and the small ureteral stent may become occluded from mucus in bladder from the bladder augmentation. The best way to remove the stone will likely be through the percutaneous approach, and in the face of fever, an initial drainage procedure with a nephrostomy tube will allow a period of antibiotic therapy and access for percutaneous removal. The patient is unlikely to have a secondary bladder perforation, making CT cystogram not helpful.

Schneck FX, Ost MC: Surgical management of pediatric stone disease, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 135, pp 3112-3118.

Question #19 **ANSWER=D**

The defective conversion of testosterone to dihydrotestosterone, due to 5-alpha-reductase deficiency, produces a unique form of male disorder of sexual differentiation. At birth, the Müllerian structures are absent (as Müllerian-inhibited substance is made appropriately by the testes) and testosterone-dependent Wolffian structures are well-differentiated. The genitalia are ambiguous to a variable degree. Gynecomastia can be seen in adults on 5-alpha-reductase inhibitors, but is not seen in congenital 5-alpha-reductase deficiency. The 5-alpha-reductase enzyme defect is generally incomplete, and at puberty, the plasma concentration of dihydrotestosterone, while low, is detectable. Plasma testosterone and LH are elevated while the dihydrotestosterone:testosterone ratio is abnormally low. This is due to dihydrotestosterone being a major inhibitor of LH production via the gonadal-pituitary negative feedback loop. 5-alpha-reductase deficiency is inherited as an autosomal recessive trait, and the enzymatic defect exhibits genetic heterogeneity.

Diamond DA, Yu RN: Disorders of sexual development: Etiology, evaluation, and medical management, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 150, p 3493.

Question #20 **ANSWER=C**

This woman most likely has chronic renal insufficiency, and the renogram reflects this condition. Diseased kidneys may respond poorly to diuretic in the absence of obstruction. The only way to establish, conclusively, if an obstruction exists, would be to place a nephrostomy tube. A pressure-flow study can then be performed and the serum creatinine observed. A renal biopsy, if performed, is likely to show focal segmental sclerosis and/or chronic pyelonephritis, but this is not helpful in management. Non-contrast CT scan would be helpful to rule-out an obstructing stone; however, a contrast CT scan is contraindicated due to poor renal function. It is unlikely that hydration would reverse any renal dysfunction, unless the patient were very dehydrated and pre-renal, which does not fit this scenario. Revision of the ileal conduit is not indicated until an obstruction has clearly been demonstrated.

Weiss RM, Martin DT: Physiology and pharmacology of the renal pelvis and ureter, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 43, pp 998-999.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, pp 2302-2305.

Bishoff JT, Rastinehad AR: Urinary tract imaging: Basic principles of computed tomography, magnetic resonance imaging, and plain film, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 2, pp 37-39.

Question #21 **ANSWER=C**

The majority of patients tolerate BCG instillation well. In 2,602 patients treated with different strains of BCG, high fever (> 39 degrees C) was noted in 2.9% of patients. Life-threatening BCG sepsis was noted in 0.4%. Fever > 39.5 degrees C that does not resolve within 12 hours despite antipyretic therapy is potentially dangerous. Since most cases of BCG sepsis are associated with I.V. absorption of BCG, it is recommended that BCG not be given until at least one week after tumor resection. In the patients who died from BCG sepsis, almost all cases had traumatic catheterization before instillation therapy, or they were treated too early after TURBT or biopsy. Treatment should include isoniazid 300 mg, rifampin 600 mg, and ethambutol 1200 mg daily. After antituberculosis drugs are started, corticosteroids may be given if the patient is toxic. Given the timing of the signs and symptoms in relation to the BCG instillation, acute UTI is much less likely to be a cause of this patient's symptoms.

Jones JS: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 93, p 2215.

Question #22 **ANSWER=A**

Percutaneous or surgical revascularization of the internal pudendal arteries is not indicated owing to the patient's age and associated risk factors for atherosclerotic vascular disease, (e.g., hypertension and smoking). There is no indication for venous ligation. Owing to the vascular disease, penile injections may not be successful, but should be implemented prior to insertion of a penile prosthesis.

Burnett AL II: Evaluation and management of erectile dysfunction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 27, pp 664, 667.

Question #23 **ANSWER=A**

With sperm in the vas and a patent abdominal vas deferens, right vasovasostomy is indicated. For men with clear fluid in the vas deferens, the prognosis for return of sperm to the ejaculate is excellent after vasovasostomy alone; therefore, left vasovasostomy is also indicated. Epididymal exploration and intra-operative testis biopsy will not provide material information to affect treatment decisions. Varicocelectomy and vasovasostomy should not be performed simultaneously as venous outflow from the testis after varicocele repair is dependent primarily on the vasal vessels that are divided during vasectomy or vasovasostomy, and testicular atrophy may result.

Goldstein M: Surgical management of male infertility, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 25, p 590.

Question #24 **ANSWER=E**

Patients with tangential or superficial wounds clearly away from the urethra and that can void without urethral bleeding or hematuria, do not require a retrograde urethrogram. However, these patients should be explored except those with clearly superficial injuries. Patients with stab wounds usually can be expected to have preservation of potency. While most surgeons recommend retrograde urethrography in all patients with penetrating penile trauma, experience in the literature suggests that few truly occult urethral injuries occur in these patients. In patients with low velocity injuries, only those with blood at the meatus, hematuria, difficulty voiding, or injury near the urethra may require retrograde urethrography. Most patients will require retrograde urethrography to rule-out urethral injury and many will need surgical exploration to rule-out and repair any corporal injury or other cause of bleeding. However, select patients, such as the one in this patient scenario, do not require retrograde urethrography. Some patients with minimal wounds can be treated non-operatively. Pelvic MRI scan is not indicated for penetrating genital injuries but may be helpful in blunt genital trauma.

Morey AF, Zhao LC: Genital and lower urinary tract trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 101, p 2379.

Goldman HB, Dmochowski RR, Cox CE: Penetrating trauma to the penis: Functional results. J UROL 1996;155:551-553.

Question #25 **ANSWER=A**

The initial renal response to complete ureteral obstruction is to increase glomerular perfusion pressure. Postglomerular vasodilation without any change in the preglomerular vessels would result in lower glomerular perfusion pressures, not higher. Likewise, afferent arteriolar constriction and renal artery vasoconstriction would result in decreased glomerular perfusion pressure. Of the choices listed, only preglomerular vasodilation and efferent arteriolar constriction lead to increased glomerular perfusion pressures. Preglomerular vasodilation is the first response in both unilateral and bilateral ureteral obstruction. Efferent arteriolar constriction does occur as a second phase in bilateral ureteral obstruction but does not occur in unilateral obstruction.

Meldrum KK: Pathophysiology of urinary tract obstruction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 48, pp 1094-1095.

Question #26 **ANSWER=D**

Entero-pouch fistulas have been reported after ileal and right colon urinary diversion. The diagnosis should be suspected in patients who present with gastrointestinal symptoms and metabolic acidosis. These fistulas are most common after pelvic irradiation. Conservative therapy can be effective with low residue diet and continuous pouch drainage. Further diagnostic evaluation with colonoscopy or pouch endoscopy is of little value, and biopsy or fulguration may enlarge the fistula. Bilateral nephrostomy drainage alone will not achieve maximal drainage of the pouch. Open surgical exploration may be required if this regimen fails. Hyperalimentation

alone, without catheter drainage, is insufficient to resolve the fistula.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, pp 2131-2132.

Question #27 **ANSWER=E**

The presence of invasive urothelial carcinoma of the prostate carries a high risk of urethral recurrence and is a contraindication to orthotopic bladder replacement. All patients undergoing cystectomy should be counseled about the possibility that intra-operative findings might change the planned form of urinary diversion, and all of the alternatives should be discussed prior to surgery. Of the choices listed, the continent cutaneous urinary diversion is the best option for a patient who is strongly averse to an external appliance and has agreed to the concept of CIC.

Skinner EC, Daneshmand S: Orthotopic urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 99, pp 2347-2349.

Question #28 **ANSWER=B**

The conus medullaris of the spinal cord terminates between the second and third lumbar vertebra in the newborn. In the adult, the spinal cord usually terminates between the first and second lumbar vertebra. Understanding this relationship is critical to be able to diagnose a tethered cord. Cord tethering is often assumed to be present when the conus is below the L2 interspace, with termination below L3 resulting in an absolute diagnosis. It is important to note that imaging features support, rather than make, the diagnosis. The clinical diagnosis of a tethered cord is based on the radiologic findings of tethering along with the clinical findings of "neurological and musculoskeletal signs and symptoms." Clinical findings that help support the diagnosis of a tethered cord are foot deformities, leg weakness or pain, gait abnormalities, lower back pain, scoliosis, and fecal or urinary incontinence. From a urologic standpoint, urinary incontinence or symptomatic voiding difficulties will be present in up to 50% of patients with a tethered cord, and urodynamic abnormalities will be found in approximately 70% of patients.

MacLellan DL, Bauer SB: Neuromuscular dysfunction of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 142, p 3285.

Question #29 **ANSWER=D**

The patient has bulky retroperitoneal masses from NSGCT. Although the primary tumor was teratoma, there was a component of immature teratoma which would classify the patient as a NSGCT. Despite teratoma only, this patient should be treated like metastatic NSGCT, and the correct treatment is three cycles of BEP. The patient has "good risk" NSGCT, defined as primary testicular or retroperitoneal disease, no pulmonary metastases, and negative or low tumor markers. For "good risk" patients, three cycles of BEP are equivalent to four cycles of EP. If the masses remain after chemotherapy, which is likely in patients with teratoma, he will require an

extensive post-chemotherapy RPLND. A PET CT is not necessary as the patient needs chemotherapy regardless of the result. A biopsy is not necessary for the same reason.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 34, pp 788-789.

Question #30 **ANSWER=A**

It is unusual for extravasation of urine to reach the thigh. This suggests that the normal layers that more commonly contain urinary extravasation have been disrupted. The first layer that has to be disrupted for urine to reach the thigh must be Buck's fascia. The dartos fascia, Colles' fascia, and insertion of the fascia lata represent a continuation of the same fascial layer.

Chung BI, Sommer G, Brooks JD: Surgical, radiographic, and endoscopic anatomy of the male pelvis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 68, p 1612.

Question #31 **ANSWER=D**

The daily risk of acquisition of bacteriuria when an indwelling catheter in-situ is three to seven percent. The rate of bacterial acquisition is higher for women and older persons. Heath care surveys in the USA report that UTIs are the fourth most common infection, accounting for 13% of health care infections; two-thirds of UTIs are directly related to the presence of an indwelling urinary catheter. Catheter-associated UTIs result in increased morbidity and mortality among hospitalized patients. Factors proven to reduce catheter-associated UTIs include: a closed drainage system, early catheter removal, and an aseptic insertion technique. Prophylactic antibiotics (systemic or topical) have not been shown to reduce the risk of CAUTI, and indeed some studies have revealed their use increased the presence bacterial resistance and candiduria. Routine meatal cleansing, intravesical antibiotic irrigation, or hydrogen peroxide instillations into the drainage bag have not been demonstrated to reduce the frequency of catheter-associated infections.

Hooton TM, Bradley SF, Cardenas DD, et al: Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Disease Society of America. CLIN INFECT DIS 2010;50:625-663.

Averch TD, Stoffel J, Goldman HB, et al: AUA White Paper on catheter-associated urinary tract infections: Definitions and significance in the urological patient. UROL PRACTICE 2015;2:321-328.

Question #32 **ANSWER=E**

The pudendal nerve arises from the dorsal nerve roots at S2, S3 and S4. The pudendal nerve provides innervation of the striated external sphincter; transection would cause sphincter weakness. It also gives arise to the dorsal penile nerve which provides somatic sensation to the penis. Interruption of the pudendal nerve will cause decreased penile sensation, but not affect psychogenic erections. This may be clinically applicable to those patients who undergo dorsal

rhizotomy. The sympathetic chain arising from T10 to L2 is responsible for ejaculation, and will not be impacted by transection of the sacral dorsal nerve roots.

Vasavada SP, Rackley RR: Electrical stimulation and neuromodulation in storage and emptying failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 81, p 1909.

Question #33 **ANSWER=A**

Potassium citrate comes in a variety of formulations. Potassium citrate tablets are produced with a wax matrix to optimize their sustained release. It is not infrequent for these wax matrix tablet casts to be visualized in stools. This is most frequently seen in individuals with ileostomies. Patients should be reassured that the medicine is being delivered. To insure that the citrate is being absorbed, it would be appropriate to check the urine pH. If the urine is acidic, it may be necessary to increase the potassium citrate dose.

Pearle MS, Goldfarb DS, Assimos DG, et al: MEDICAL MANAGEMENT OF KIDNEY STONES: AUA GUIDELINE: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014. http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #34 **ANSWER=D**

Hyperuricemia can be seen during the initial treatment of acute leukemias and lymphomas, in response to either chemotherapy or radiotherapy. The rapid destruction and cellular lysis of neoplastic cells results in a rapid rise in uric acid levels. Elevated urinary uric acid crystals will, in the presence of acid urine, precipitate within the distal convoluted tubules, leading to intrarenal obstruction and renal failure. Prophylaxis (and treatment) is accomplished by a combination of alkalinization, allopurinol, and hydration.

Goldfarb DA, Poggio ED, Demirjian S: Etiology, pathogenesis, and management of renal failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 46, pp 1045-1046.

Question #35 **ANSWER=C**

The VCUG demonstrates the presence of posterior urethral valves and vesicoureteral reflux. The majority of neonates with the coexisting findings of posterior urethral valves and oligohydramnios prior to 20 weeks gestation will be found to have pulmonary hypoplasia and neonatal respiratory distress. The presence of pulmonary hypoplasia in these infants still accounts for the majority of neonatal deaths in boys with posterior urethral valves. Urosepsis can occur, but usually not in the neonatal period with early diagnosis and initiation of appropriate prophylactic antibiotics. Acute renal failure can present in the first week of life but can be managed with neonatal peritoneal dialysis to avoid immediate renal induced mortality. Urinary ascites is common with high-grade urethral obstruction, but is usually protective for the kidneys, and is almost always successfully managed with bladder drainage and broad spectrum antibiotics. Posterior urethral valves are not associated with lethal congenital cardiac disease.

Shukla AR: Posterior urethral valves and urethral anomalies, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 141, p 3259.

Question #36 **ANSWER=D**

The wild type VHL tumor suppressor gene product suppresses the expression of VEGF, a potent stimulator of angiogenesis, through down-regulation of hypoxia-inducible factor 1 (HIF1). Mutation or loss of the VHL tumor suppressor gene leads to dysregulated expression of VEGF, which contributes to the neovascularity associated with RCC. This pathway is of critical importance to practicing urologists as most recently developed tyrosine kinase inhibitors target the pathway directly or indirectly. All of the other listed genes are not directly regulated by HIF1, and, therefore, are not directly affected by VHL loss.

Walther MM, Enquist EG, Jennings SB, et al: Molecular genetics of renal cell carcinoma, in Vogelzang NJ, Scardino PT, Shipley WU, Coffey DS (eds): COMPREHENSIVE TEXTBOOK OF GENITOURINARY ONCOLOGY. Baltimore, Williams & Wilkins, 2000, chap 9, pp 116-128.

Neumann HP, Zbar B: Renal cysts, renal cancer and von Hippel-Lindau disease. KID INTL 1997;51:16-26.

Campbell SC, Lane BR: Malignant renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 57, pp 1321-1324.

Question #37 **ANSWER=D**

Permanent lower urinary tract dysfunction occurs in 15-20% of patients following radical pelvic surgery. The typical pattern is one of detrusor areflexia or hypocontractility in the presence of fixed residual striated sphincter tone. This fixed tone represents a functional obstruction that frequently results in decreased detrusor compliance. Although poor proximal sphincter function can also occur (intrinsic sphincter deficiency), this is often masked by prostate bulk in male patients.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, pp 1781-1782.

Question #38 **ANSWER=D**

In a woman presenting with the acute onset of chronic incontinence following a surgical procedure, she should be evaluated for possible simultaneous upper UTI and ureteral or combined ureteral-vaginal fistulas to rule-out the presence of a perivesical abscess or fluid collection. In the absence of pelvic infection, immediate repair is justified. In the presence of a large diameter vesicovaginal fistula in an irradiated field, an abdominal approach will concurrently allow an omental pedicle flap to be interposed between the irradiated bladder and vaginal wall tissues. In the presence of an irradiated field, obliteration of dead space, good

bladder drainage, control of infection, and interposition of healthy tissue are critical elements to successful fistula closure. Proximal urinary diversion with bilateral percutaneous nephrostomy tubes with delayed repair should be considered in patients where the initial evaluation suggests the presence of a concurrent pelvic abscess. An endoscopic approach with fulguration of the fistula tract and urethral catheter or suprapubic tube drainage may be considered in vesicovaginal fistulas where the diameter of the fistula is < 5 mm in size and radiographic evaluations (fistulogram) suggests the presence of a long-necked and tortuous fistula.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, pp 2111-2112.

Question #39 **ANSWER=C**

Incidentally discovered small asymptomatic renal tumors do not mandate a waiting period prior to transplantation. Repeating the CT scan with contrast risks further nephrotoxic injury with preexisting borderline renal function, and will not change the management of the renal mass. Although partial nephrectomy may carry the advantage of preserving additional renal mass, this is not applicable to this patient. The appropriate management in this setting is simultaneous nephrectomy and transplantation.

Gritsch HA, Blumberg JM: Renal transplantation, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 47, pp 1072-1075.

Question #40 **ANSWER=D**

A variety of host defense and bacterial virulence factors contribute to the pathogenesis of UTIs. Host defenses include high urine osmolality, low pH, high urea, efficient micturition, and a number of urine inhibitors of bacterial adherence (e.g., Tamm-Horsfall protein, lactoferrin, oligosaccharides, and mucopolysaccharides). Immune responses to UTIs affect hormonal immunity (secretory IgA), as well as, cytokine production (IL6, IL8). Cranberry juice contains substances that inhibit the adherence of uropathogenic bacteria to uroepithelial cells. Cranberry ingestion does not have a substantive effect on urine pH, urine osmolality, secretory IgA, or interleukin levels.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, p 274.

Jepson RG, Williams G, Craig JC: Cranberries for preventing urinary tract infections. Cochrane Database of Systematic Reviews 2012, issue 10. Art. No.: CD001321. DOI: 10.1002/14651858.CD001321.pub5.
http://www.cochrane.org/CD001321/RENAL_cranberries-for-preventing-urinary-tract-infections

Question #41 **ANSWER=D**

This neonate, with a normal-sized phallus for a male (> 2.5 cm), could be a female with elevated testosterone due to congenital adrenal hyperplasia. Therefore, an elevated testosterone does not equate with the presence of a testicle. Levels in newborns of LH, FSH, and testosterone can be normal or elevated with many intersex disorders and does not confirm the presence of a testicle. Elevated 17-hydroxyprogesterone and increased urinary ketosteroids would be findings of adrenal insufficiency, but would not confirm the presence of a testicle. An hCG stimulation test with an increase in testosterone may be of value, but the increase should be > 20 fold. In addition, the infant may already have an excessively elevated testosterone level which could mask the findings of an hCG stimulation test. A 46 XY karyotype does not confirm the presence of testes. Müllerian-inhibiting substance is secreted by testicular Sertoli cells and is the one test which would diagnostically confirm the presence of at least one testicle.

Kolon TF, Herndon CDA, Baker LA, et al: EVALUATION AND TREATMENT OF CYPTORCHIDISM: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014. p 12-13. http://www.auanet.org/education/guidelines/cryptorchidism.cfm

Barthold JS, Hagerty JA: Etiology, diagnosis, and management of the undescended testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 148, pp 3439-3440.

Question #42 **ANSWER=E**

This is an unusual site for a benign ureteroileal stricture, and there is a high likelihood that this is the result of tumor recurrence in the ureter. Therefore, observation is not a good option. Endoscopic management, whether it be ureteroscopically or percutaneously, is unlikely to work, and does not establish the etiology of the obstruction. Since the kidney has little remaining parenchyma, reimplantation makes little sense, and, therefore, the best treatment is nephroureterectomy.

Smith AK, Matin SF, Jarrett TW: Urothelial tumors of the upper urinary tract and ureter, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 58, pp 1376-1377.

Question #43 **ANSWER=D**

Primary spermatocytes undergo one round of meiosis creating secondary spermatocytes which are 2N in DNA content and haploid. These subsequently undergo a second round of meiosis to form round spermatids which are 1N in DNA and haploid, which are the final products. The spermatids then eventually metamorphose into mature spermatozoa (spermiogenesis).

Turek PJ: Male reproductive physiology, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 22, p 526.

Question #44 **ANSWER=A**

Complications of inguinal lymph node dissection can include debilitating lower extremity edema, wound infection, skin flap necrosis, DVT, hemorrhagic events, and sepsis. The greatest risk factor for these complications is palliative indication, primarily in patients with advanced disease with impending erosion into the vessels or through the skin. In the series from MD Anderson Cancer Center, complication rates (minor and major combined) were 35% for a prophylactic dissection, 36% for a therapeutic dissection, and 67% for palliative indications. In addition, most major complications occurred in the latter or "palliative" group. The reasons for the increased complication rate is presumably due to reduced lymphatic and venous drainage and compromised blood supply. Together, these factors affect the viability of skin flaps and lymphatic flow, and the majority of the complications are due to infectious causes. While diabetes, heart disease, and obesity are all important surgical considerations, they have not been directly associated with complications related to inguinal node dissection. Similarly, prior chemotherapy has not been associated directly with increased complications after inguinal node dissection.

Pettaway CA, Crook JM, Pagliaro LC: Tumors of the penis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 37, pp 859-860.

Question #45 **ANSWER=E**

All patients with an output > 200 mL/hr have post-obstructive diuresis and should be closely monitored. High risk patients with chronic obstruction, edema, congestive heart failure, hypertension, weight gain, and azotemia are most likely to exhibit a post-obstructive diuresis after the release of obstruction. In the high risk patient, a spot check urine for osmolality, sodium, and potassium will allow for the determination of the type of post-obstructive diuresis and will provide guidance for further management. High risk patients should have vital signs, including postural blood pressure and output measured hourly. D5 1/2 NS is an appropriate replacement fluid in the patient with an elevated BUN and creatinine, but generally, replacement is given at half of the previous hour's urine output.

Meldrum KK: Pathophysiology of urinary tract obstruction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 48, p 1102.

Question #46 **ANSWER=B**

Abdominal CT studies with contrast offer a fast and all-inclusive evaluation of the abdomen in cases of trauma. With the advent of rapid image acquisition, the abdominal, renal vasculature, and the renal cortex will enhance. However, delayed images of the abdomen will usually be needed to see contrast in the distal ureter. If the initial CT cuts reveal a severe renal fracture, perinephric hematoma, or perinephric fluid collection, and especially if medial extravasation of contrast is found, delayed films are usually necessary to assess for the presence of contrast in the distal ureter. The presence of a UPJ disruption should be considered when there is absence of contrast in the ipsilateral distal ureter on a delayed CT study. CT cuts to assess for this finding are ideally taken 10-20 minutes post-contrast infusion. If delayed CT cuts reveal no contrast in the distal ureter, the next step is emergent surgery with a retrograde pyelogram to confirm the

presence of the UPJ injury and subsequently surgical repair. If the UPJ and ureter are intact, the patient may be managed in a non-operative fashion. Arteriography is not indicated as vital signs are stable.

Matsumoto JS, LeRoy AJ: Pediatric imaging, in Belman AB, King LR, Kramer, SA (eds): CLINICAL PEDIATRIC UROLOGY, ed 4. Martin Duntz, Florence KY, 2002, pp 125-126.

Husmann DA: Pediatric genitourinary trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 154, p 3539.

Question #47 **ANSWER=C**

Several randomized trials have revealed that ureteral stents are not required after uncomplicated ureteroscopic extraction of distal ureteral stones, even after balloon dilation of the ureter or intracorporeal lithotripsy. Ureteral strictures are uncommon after ureteroscopy for distal stones, whether or not a stent is inserted. Stents do not impact stone free rate, but do increase post-procedure pain, urinary symptoms, and narcotic use.

Matlaga BR, Krambeck AE, Lingeman JE: Surgical management of upper urinary tract calculi, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 54, p 1283.

Question #48 **ANSWER=A**

The most likely diagnosis is acute interstitial nephritis. The best treatment is to discontinue the offending drug, treat any related hypertension that may be present and limit protein intake. The vast majority of patients will have symptoms which spontaneously resolve. If symptoms persist, renal biopsy may be necessary to confirm the diagnosis. Both ampicillin and cephalosporins may cause interstitial nephritis and could actually be harmful if used in this setting. Indeed, adequate treatment for a UTI can be achieved in a single dose of medication and additional antibiotics are not indicated in this patient with a sterile gram stain at this time. The use of prednisone should be reserved following confirmation of the diagnosis with a renal biopsy. There is no role for the use of antihistamines in the treatment of interstitial nephritis.

Goldfarb DA, Poggio ED, Demirjian S: Etiology, pathogenesis, and management of renal failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 46, pp 1043-1044.

Question #49 **ANSWER=D**

Detrusor LPP is the most reliable urodynamic parameter to predict the risk of upper tract deterioration after sphincterotomy. A detrusor LPP of higher than 40 cm H_2O indicates that the sphincterotomy has failed, and may serve as a guide to determine whether a repeat sphincterotomy is necessary. Abnormal compliance, which may be detected on CMG, may also be a worrisome finding, but there is much less established predictive value. To date, there is no correlation of urethral function tests (urethral pressure profile, Valsalva LPP, EMG) to upper tract deterioration.

Nitti VW, Brucker BM: Urodynamic and video-urodynamic evaluation of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 73, p 1727.

Question #50 **ANSWER=C**

The International Continence Society has established a standardized system to quantify pelvic organ prolapse. This classification is known as the POPQ system, an acronym for pelvic organ prolapse quantification. The system uses the hymenal ring as its central identification point. The hymen was chosen over the vaginal introitus because it can be more precisely located within the vaginal vault; all measurements are based from this location. This classification avoids use of the terms, cystocele or rectocele, recognizing that the actual organ prolapsing may be unable to be determined by a physical examination. The examination to determine POPQ stage is performed in a dorsal lithotomy position with the patient straining. The POPQ staging system has excellent inter-observer and intra-observer reliability and has become the standard for reporting outcomes following prolapse repair. The staging system is, however, not perfect and can be significantly affected by patient positioning, with the degree of the prolapse being more severe if the patient is examined with the head of the table raised to 45 degrees or higher. In addition, it fails to assess for unilateral or asymmetric defects. The POPQ staging system is defined as: Stage 0 - no prolapse, Stage 1 - the most distal portion of the prolapse is more than 1 cm above the hymen, Stage 2 - the most distal portion of the prolapse is +/-1 cm above or below the hymen, Stage 3 - the most distal portion of the prolapse protrudes > 1 cm below the hymen and the total vagina has not prolapsed, and Stage 4 - the entire vagina everts (i.e., complete prolapse).

Kobashi KC: Evaluation and management of women with urinary incontinence and pelvic prolapse, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 71, pp 1698-1999.

Question #51 **ANSWER=C**

Active surveillance is a reasonable option for patients with low-risk prostate cancer. This patient's risk profile makes him a reasonable candidate for this approach. However, a six-core biopsy is likely inadequate tissue sampling to truly identify indolent disease. Therefore, initiation of active surveillance protocol with quarterly PSA and repeat biopsy in one year is premature and immediate systematic prostate rebiopsy is the next step. Additional imaging, with either bone scan or pelvic CT scan, is unnecessary in low-risk patients and would be inappropriate in this setting. There is no data supporting the use of finasteride in the management of prostate cancer.

Carter HB, Dall'Era MA: Active surveillance of prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 113, p 2634.

Question #52 **ANSWER=B**

Large amounts of Randall's plaque are unique to idiopathic calcium oxalate stone formers and are invariably composed of calcium apatite crystals. Using papillary biopsies obtained during the

time of PCNL, Randall's plaque were found to initially form on the basement membrane of the thin limbs of the loops of Henle and grow by the continued deposition of calcium apatite and organic matrix. With growth, the plaque will spread through the interstitium and eventually penetrate the urothelium, exposing the plaque to urine where it will serve as an anchor for urinary solutes. Although Randall's plaque can be found in other stone formers, Randall's plaque has been found to be a prerequisite for kidney stone formation in idiopathic calcium oxalate stone formers.

Pearle MS, Antonelli JA, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 51, p 1176.

Question #53 **ANSWER=B**

The use of fluoroscopic imaging in urological surgery requires a basic knowledge of radiation protection principles so that the dose to the patient, physician, and ancillary staff can be minimized. It is important to remember that with an increase in patient size, the dose rate will be greater and accumulate faster. In terms of manipulating the operational factors in fluoroscopy, there is generally a trade-off in terms of image quality and radiation dose. Increasing the tube current results in greater image quality and increased dose to the patient and staff. Increasing the tube kilovoltage diminishes image quality (less contrast), but is usually associated with less radiation dose if the tube current is appropriately reduced. Decreasing the image intensifier to skin distance usually increases image quality depending on focal spot size and decreases the dose to the patient without significantly changing the dose to staff. Removing the grid decreases image quality as well as the radiation dose to patient and staff. Increasing the source to skin distance usually improves image quality and decreases the dose to the patient without significantly changing the dose to staff.

Geise RA, Morin RL: Radiation management in uroradiology, in Pollack HM, McClennan BL (eds): CLINICAL UROGRAPHY, ed 2. Philadelphia, WB Saunders Co, 2000, vol 1, chap 3, pp 13-18.

Bishoff JT, Rastinehad AR: Urinary tract imaging: Basic principles of computed tomography, magnetic resonance imaging, and plain film, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 2, p 27.

Question #54 **ANSWER=D**

Parathyroid levels are suppressed in patients with absorptive hypercalciuria as a result of transient elevation of serum calcium due to increased intestinal calcium absorption. The other conditions are associated with secondary elevation of PTH due to PTH-resistance (i.e., obesity, African American), renal calcium loss, and/or elevated serum phosphorus.

Pearle MS, Antonelli JA, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 51, p 1183.

Question #55 **ANSWER=C**

A meta-analysis of seven randomized trials comprising nearly 1,500 patients with Ta-T1 bladder cancer, with a median follow-up of 3.4 years, demonstrated that one immediate post-TURBT instillation of intravesical mitomycin C resulted in a 40% reduction in tumor recurrence. Patients undergoing resection of single or multiple tumors benefited, and benefit was not affected by tumor size. The timing of instillation, however, appears to be critical. In all studies documenting efficacy, the instillation was given within the first 24 hours post-TURBT. One study has demonstrated that if the instillation is given 24 hours after tumor resection, the risk of tumor recurrence increased two-fold. Peri-operative instillation is contraindicated in the setting of overt or suspected extra or intraperitoneal perforation or concurrent dilation of a urethral stricture or urethral injury, as severe complications, (e.g., chronic pain, bladder necrosis, necrosis of adjacent soft tissue, and necrosis of either the corporal spongiosus or cavernosum), have all been reported in these settings. Intravesical mitomycin C is most effective in alkaline urine.

Jones JS: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 93, pp 2215-2216.

Sylvester R, Oosterlinck W, van der Meijden A: A single immediate postoperative instillation of chemotherapy decreases the risk of recurrence in patients with stage Ta T1 bladder cancer: a meta-analysis of published results of randomized clinical trials. J UROL 2004;171:2186-2190.

Question #56 **ANSWER=D**

Prostate MRI scan, especially with combined endorectal and phase-array coils, is used in prostate cancer staging with up to 82% accuracy. The T1 and T2 weighted images are helpful in differentiating between post-biopsy hemorrhage, which presents as a high T1 and a low T2 lesion, and prostate cancer, which presents as a low T1 and low T2 lesion.

Barnes AS, Tempany CMC: Image-guided minimally invasive therapy, in Richie JP, D'Amico (eds): UROLOGIC ONCOLOGY. Philadelphia, Elsevier Saunders, 2005, chap 7, p 115.

Bishoff JT, Rastinehad AR: Urinary tract imaging: Basic principles of computed tomography, magnetic resonance imaging, and plain film, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 2, p 56.

Question #57 **ANSWER=C**

The scan reveals bilateral small renal masses. The largest of which is in the left kidney and on this T1-weighted image, the high intensity of the lesion indicates fat within the tumor. This is consistent with an angiomyolipoma. This finding in conjunction with pulmonary lymphangioleiomyomatosis (LAM) is indicative of tuberous sclerosis complex (TSC). Familial leiomyomatosis would be associated with skin fibromas and renal carcinoma. VHL does not cause pulmonary LAM. Birt-Hogg-Dubé is associated with chromophobe tumors and oncocytomas. It is also associated with lung cysts which can result in spontaneous pneumothorax, but not LAM. Hereditary papillary RCC has no common pulmonary manifestations and does not cause angiomyolipomas.

Pope JC IV : Renal dysgenesis and cystic disease of the kidney, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 131, pp 3023-3025.

Question #58 **ANSWER=B**

Chronic antibiotic use may reduce normal levels of Oxalobacter formigenes in the intestine. This anaerobe metabolizes as much as 50% of ingested oxalate. High calcium diets are associated with decreased oxalate absorption. Few cystic fibrosis patients have ileal absorption disorders. Vitamin C and glycine, while associated with oxalate metabolism, are unlikely to increase urinary levels significantly. An emerging treatment for reduced intestinal Oxalobacter formigenes is probiotics.

Pearle MS, Antonelli JA, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 51, p 1181.

Question #59 **ANSWER=A**

Temsirolimus is a specific inhibitor of the mammalian target of rapamycin (mTOR) kinase which is a component of intracellular signaling pathway involved in growth and proliferation of cells. Level 1 evidence in a recent study comparing temsirolimus to interferon alpha focused on patients with a poor prognosis, (e.g., poor risk metastatic RCC patients). Poor risk metastatic RCC patients in this trial had to have at least three of the following poor risk features: LDH > 1.5 times upper level or normal, Hgb below normal, calcium > 10 mg/dL, time from diagnosis of cancer > 12 months, metastases spread to multiple organs, and/or Karnofsky score = 60 or 70. This patient has multiple features that put him in a poorer risk group, including multiple sites of metastasis, anemia, and hypercalcemia. In patients with poor risk features, I.V. weekly infusion of temsirolimus, when compared to interferon, prolongs overall survival, and is the first agent that has demonstrated an overall survival advantage in this category of patients. Sunitinib, bevacizumab, and sorafenib have not been shown to improve overall survival or prolong survival in patients with multiple poor risk features.

Hudes G, Carducci M, Tomczak P, et al: Temsirolimus, interferon alfa, or both for advanced renal cell carcinoma. NEJM 2007;356:2272-2281.

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 63, pp 1514-1515.

Question #60 **ANSWER=A**

Individuals with a neurogenic bladder that are being managed with CIC will have bacteriuria 40-80% of the time. Only symptomatic infections (i.e., pain, fever, new onset of urinary incontinence, or foul smelling, cloudy, urine lasting longer than three days) should be treated with antibiotics. The presence of intermittent cloudy urine and/or mild pyuria is not enough to

warrant antibiotic treatment. Overtreatment of asymptomatic bacteriuria in this patient population will lead to resistant organisms that are difficult to manage. The efficacy of prophylactic antibiotics in the setting of recurrent symptomatic infections in patients on CIC is not entirely clear. Gentamicin bladder irrigations have been shown to be effective in some patients with recurrent symptomatic infections. Changing CIC to sterile technique will likely be ineffective as well as unfeasible. Circumcision can reduce the risk of infection and should be considered if recurrent symptomatic UTIs occur. Vesicostomy is not indicated for non-febrile UTIs in this patient.

Cooper CS, Storm DW: Infection and inflammation of the pediatric genitourinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 127, p 2932.

Wyndaele JJ: Complications of intermittent catheterization: Their prevention and treatment. SPINAL CORD 2002;40:536-541.

Question #61 **ANSWER=C**

Endogenous creatinine and creatinine clearance is the most widely used surrogate for GFR. In the presence of normal renal function, 90% of creatinine is filtered and 10% is secreted by the proximal tubules. As GFR declines, tubular secretion may contribute up to 35% of all creatinine removal at levels of 40-80 mL/min. The commonly utilized antibiotic trimethoprim blocks the tubular secretion of creatinine. Since creatinine is produced at a steady state, the serum creatinine will rise, but the GFR does not change. Captopril and spironolactone might alter renal perfusion causing a change in the GFR that leads to an altered creatinine level. Cisplatin has a direct nephrotoxic effect but would not raise creatinine without altering GFR. Cephalexin could increase the serum creatinine through an acute drug-induced injury to the kidney, such as interstitial nephritis.

Goldfarb DA, Poggio ED, Demirjian S: Etiology, pathogenesis, and management of renal failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 46, p 1060.

Question #62 **ANSWER=A**

Several useful prognostic parameters exist for tumor progression in patients with Ta/Tis/T1 bladder cancer. The most important of these are tumor stage, grade, and presence of CIS. Tumor size and multiplicity are other factors that may predict progression. Early recurrence is not associated with progression of the disease, except in patients with BCG treatment failure. The relationship between p53 status and tumor progression remains unclear. Age and tumor location do not impact progression risk.

Jones JS: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 93, p 2208.

Millan-Rodriguez F, Chechile-Toniolo G, Salvador-Bayarri J, et al: Multivariate analysis of the prognostic factors of primary superficial bladder cancer. J UROL 2000;163:73-78.

Question #63 **ANSWER=B**

This child has massive grade 5 reflux into the right kidney. No information is available from the VCUG about the left kidney or the function of the right kidney. The abnormal calyces on the VCUG suggest that the function may be compromised. Urodynamics are often not interpretable in the face of high grade reflux (VUR). A DMSA renal scan is needed to determine function of the right kidney, which will help determine whether reconstruction versus nephrectomy is suitable. Ureteral reimplantation is not indicated before assessment of renal function. An MR urogram will also give this information; however, the MR urogram will most likely require either a general anesthetic or closely monitored sedation. Creatinine clearance may be abnormal, but it will not be possible to tell which kidney has the deficit.

Peters CA, Skoog SJ, Arant BS Jr, et al: AUA GUIDELINE FOR MANAGEMENT AND SCREENING OF PRIMARY VESICOURETERAL REFLUX IN CHILDREN. American Urological Association Education and Research, Inc, 2010. p 5. http://www.auanet.org/education/guidelines/vesicoureteral-reflux-a.cfm

Question #64 **ANSWER=D**

Percutaneous radiofrequency ablation of small renal masses has been offered in recent years as a less invasive method of treatment. Treatment efficacy is generally determined by follow-up CT or MRI scan evaluating for enhancement within the lesion. If enhancement is noted, this is considered suggestive of residual or recurrent tumor. In most series, between 5-20% of patients treated by radiofrequency ablation require re-treatment within the first year due to persistent enhancement. While long-term data is not available, those patients undergoing a second ablative procedure appear to have a similar outcome to those treated effectively in the first ablation. While partial nephrectomy could be considered in this patient, the frequency of persistent enhancement after the first ablation suggests that a second ablation is warranted prior to proceeding with more aggressive therapy. Additionally, this is an older patient with multiple co-morbid conditions, suggesting a less invasive approach is warranted prior to surgical intervention. Biopsy is not indicated in this patient given the fact that the previous ablation may obscure histologic interpretation and that the biopsy outcome would not likely influence the desire to complete treatment. PET scan has poor specificity and would not be informative in this case of localized renal mass. As the enhancement likely represents residual tumor, it is not likely to abate with continued observation.

Tracy CR, Cadeddu JA: Nonsurgical focal therapy for renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 62, pp 1489-1490.

Question #65 **ANSWER=C**

This patient has developed an uncomplicated large diameter > 5 mm vesicovaginal fistula following abdominal hysterectomy. Because of its size, it is very unlikely to close with prolonged Foley catheterization. Endoscopic treatment with fulguration is an option for management in small diameter fistula < 5 mm and is most successful if the fistula tract is long neck and tortuous. 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 and the transabdominal approach used in the prior hysterectomy, a transvaginal approach with interposition of labial or peritoneal

flaps between the vesical and vaginal tissues at the time of repair would be optimal.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, p 2109.

Question #66 **ANSWER=B**

Small cell carcinoma of the bladder is a relatively rare tumor that may arise in combination with urothelial carcinoma. It is usually biologically aggressive with early vascular and muscular invasion. These malignancies usually respond to but are not cured by chemotherapy regimens. Neither partial or initial radical cystectomy nor intravesical chemotherapy is appropriate in this setting. Radiation or extirpative surgery alone may result in cure rates of 5-20%. However, neoadjuvant chemotherapy followed by surgery or radiation therapy results in cure rates of 40-65%. Therefore, the best treatment is chemotherapy followed by local treatment such as surgery or radiation if the patient does not progress.

Guzzo TJ, Vaughn DJ: Management of metastatic and invasive bladder cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 94, p 2223.

Question #67 **ANSWER=B**

Elevated urinary cortisol levels confirm the diagnosis of Cushing's syndrome, but do not provide information about the etiology of the condition. The next step to determine the etiology is to measure a plasma corticotrophin or ACTH level. This will determine if the Cushing's is ACTH-dependent or ACTH-independent. If ACTH levels are not elevated, then the likely source is adrenal, and an abdominal CT scan with attention to the adrenals is appropriate. However, it is preferable and more efficient to determine if ACTH levels are elevated as the etiology of the Cushing's is unlikely to be of adrenal origin if ACTH is elevated. The high-dose dexamethasone suppression test, and the meta pyrone tests are used in patients with ACTH-dependent Cushing's syndrome to determine if the source of excess ACTH secretion is pituitary or ectopic in nature, and are only appropriate if serum corticotrophin levels are elevated. The high-dose dexamethasone suppression test and the metapyrone test have now largely been supplanted by direct measurements of ACTH in the venous plexus downstream from the pituitary gland (inferior petrosal sinus sampling).

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, p 1537.

Question #68 **ANSWER=D**

The success of chemotherapy for high-stage seminoma has led investigators to examine its use in low-stage disease. Its use has been supported by several non-randomized trials. In addition, the Medical Research Council recently completed a randomized clinical trial comparing carboplatin with standard retroperitoneal irradiation in the setting of stage 1 seminoma. The two treatments

had similar efficacy. Therefore, for stage 1 seminoma, the correct chemotherapy agent is carboplatin.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 34, pp 808-809.

Question #69 **ANSWER=A**

The patient has bilateral UPJ obstructions incidentally noted on an abdominal CT scan with the radiographic evaluation revealing little to no renal tissue on the left side. In this asymptomatic patient with advance age and multiple medical co-morbidities, observation is most appropriate. Indications for intervention include the development of symptoms, calculi, or infection. Since there is no renal tissue on the left, UPJ repair, whether laparoscopic or open, will not improve renal function and is inappropriate. If the patient became symptomatic, a nephrectomy could be considered.

Nakada SY, Best SL: Management of upper urinary tract obstruction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2016, vol 2, chap 49, pp 1107-1108.

Question #70 **ANSWER=B**

Following bladder neck procedures in children with neurogenic sphincter incompetence, the unmasking or development of detrusor hostility can be seen in a subset of children. This is manifested by a decrease in bladder compliance and/or increase in detrusor overactivity. In severe cases, hydronephrosis and secondary reflux can develop. Thus, the bladder and upper tracts must be monitored very carefully following bladder outlet procedures when augmentation is not performed concomitantly. When bladder hostility is recognized, antimuscarinics should be instituted as first line management. However, this will not be effective therapy in approximately one-third of patients. In this patient population, serial urodynamic studies and onabotulinumtoxinA injections can be used for management, or alternatively definitive treatment with a bladder augmentation can be pursued. In the presence of new onset of hydronephrosis and VUR, antibiotic prophylaxis will not be adequate therapy. The outlet resistance is likely adequate for continence, and the new incontinence is more likely due to worsening bladder dynamics. Bladder augmentation without a trial of antimuscarinics would not be the next step. Ureteral reimplantation is not indicated, as the low grade VUR may resolve with bladder management.

Adams MC, Joseph DB, Thomas JC: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 145, p 3336.

Question #71 **ANSWER=D**

The management of high-grade PIN has changed. With the standard biopsy now including 10 to 12 cores, it is no longer considered mandatory for patients to undergo immediate rebiopsy of

their prostate. However, in the setting of accompanying atypical small acinar proliferation (ASAP), immediate rebiopsy and/or additional examination of the original biopsy with deeper sections is usually recommended. In this case, however, the patient has atypical adenomatous hyperplasia (adenosis), which is felt to be a benign process and, therefore, does not require immediate rebiopsy. The patient, therefore, should be treated as if he has isolated high-grade PIN and should have serial PSA monitoring. If the PSA is increased in six months, repeat biopsy can be considered.

Zynger DL, Yang XJ: High grade prostatic intraepithelial neoplasia and other atypical lesions of the prostate. AUA UPDATE SERIES 2008, vol 27, lesson 35, p 341.

Epstein JI: Pathology of prostatic neoplasia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 110, p 2593.

Question #72 **ANSWER=B**

Bariatric surgery patients typically develop enteric hyperoxaluria, which should be managed with calcium supplementation. Calcium will bind intestinal oxalate, thereby reducing absorption of free oxalate, and ultimately decreasing urinary oxalate. Increasing fluids will have little effect as these patients are chronically dehydrated, and the other treatments do not address the problem.

Lipkin ME, Ferrandino MN, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 52, p 1220.

Question #73 **ANSWER=C**

The urodynamic data documents 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 obstruction. 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. TURP in Parkinson's patients carries with it a risk of urinary incontinence and should be utilized only in patients with definite bladder outlet obstruction due to BPH who have failed more conservative therapy. A trial of alpha-blocker is warranted prior to initiation of CIC or a TURP.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, pp 1767-1768.

Question #74 **ANSWER=B**

This patient is found to have stress urinary incontinence on exam. She has no prolapse on POP-Q testing. She has no other medical problems, and there is no reason to suspect an abnormal flow or elevated residual (which might be suspected with prolapse or prior pelvic surgery); therefore, further testing with urodynamics, particularly prior to starting non-invasive therapy, is

unnecessary. Since she can contract her pelvic muscles on exam, biofeedback may not be required and she should be started on a program of pelvic floor exercises. Mid-urethral sling may be offered to patients failing conservative management.

Newman DK, Burgio KL: Conservative management of urinary incontinence: Behavioral and pelvic floor therapy and urethral and pelvic devices, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 80, p 1883.

Question #75 **ANSWER=A**

The only recommended test prior to surgery, beyond those already mentioned, is a urinalysis. A positive urinalysis may trigger other testing. PSA was normal within the last year and need not be repeated. Cystoscopy, uroflowmetry, and postvoid residual testing are all optional. Cystoscopy may be appropriate if the size of the prostate is in doubt, particularly if it may be too large for endoscopic management. Uroflowmetry, although not specific, may be a reasonable indicator of bladder outlet obstruction. Pressure flow testing is the best assessment for outlet obstruction, but is costly, invasive, and not recommended routinely unless the diagnosis is in doubt (for example, younger men with small prostates and severe LUTS, or if there is concern for neurogenic detrusor dysfunction).

Welliver C, McVary KT: Minimally invasive and endoscopic management of benign prostatic hyperplasia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 105, p 2509.

Question #76 **ANSWER=E**

Nerve-sparing RPLND can be performed for stage 1 disease. Normally, the post-ganglionic sympathetic fibers are identified below the renal vessels and are dissected out of the lymphatic tissue during a nerve-sparing RPLND. Regardless of the side of the dissection, great care is taken during dissection over the aortic bifurcation, as this is the site where the hypogastric plexus crosses anterior to the great vessels. This is the area where the sympathetic nerves are most vulnerable to injury, and this is why the aortic bifurcation is not included in the modified RPLND template.

Rice KR, Cary CK, Masterson TA, Foster RS: Surgery of testicular tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 35, p 821.

Question #77 **ANSWER=A**

If the patient is asymptomatic, no immediate treatment is necessary. There is evidence that a 24-hour urine collection will be normal as the stone is most likely secondary to urinary stasis. SWL, ureteroscopic, and percutaneous approaches are not necessary unless the patient becomes symptomatic. Indications for intervention would include pain and recurrent UTIs. In this case, if he was symptomatic, both ureteroscopic and laparoscopic approaches would be reasonable for a caliceal diverticulum in an anterior location.

Leavitt DA, de la Rosette JJMCH, Hoenig DM: Strategies for nonmedical management of upper urinary tract calculi, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 53, p 1243.

Question #78 **ANSWER=A**

Most traumatic arterio-venous (AV) fistulas of the kidney, such as those caused by percutaneous biopsy, are asymptomatic, small, and will close spontaneously without intervention. Symptomatic fistulas can cause poorly controlled hypertension, persistent hematuria, or high-output heart failure. Symptomatic AV fistulas can be managed by embolization, operative ligation of the feeding vessels, or partial/complete nephrectomy depending upon their size and location. This patient's hypertension is well-controlled with medication, and there is, therefore, no indication for intervention.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, p 2137.

Question #79 **ANSWER=C**

The presence of seminal vesicle invasion is the highest risk feature of this case scenario. Although bladder neck invasion is assigned to pathologic T4 status, it has not been associated with any independent increased risk of recurrence following radical prostatectomy. The pre-operative PSA and final Gleason score in this case are categorized as intermediate risk in the D'Amico classification system. In cases of down grading from Gleason 8 to Gleason 7 on final pathologic analysis, the final pathologic grade is most closely associated with risk of relapse.

Yossepowitch O, Sircar K, Scardino PT, et al: Bladder neck involvement in pathological stage pT4 radical prostatectomy specimens is not an independent prognostic factor. J UROL 2002;168:2011-2015.

Epstein JI: Pathology of prostatic neoplasia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 110, p 2605.

Question #80 **ANSWER=B**

The postvoid films show missing sacral segments and abnormal lumbar vertebra. The cystogram shows a trabeculated bladder with no reflux. The voiding films show a dilated prostatic urethra, as well as, dilation of the bulbar urethra. However, there are no urethral valves, so valve ablation is not needed. Given the bony abnormalities, urodynamics, and an MRI scan of the lumbar sacral spine to rule-out a coexisting tethered spinal cord are the next diagnostic steps. Starting medications are indicated only after a baseline urodynamic study is performed. The appearance of the urethra is secondary to detrusor sphincter dyssynergia. The patient does not have a bulbar urethral stricture; therefore, a retrograde urethrogram is not indicated.

MacLellan DL, Bauer SB: Neuromuscular dysfunction of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 142, pp 3286-3289.

Question #81 **ANSWER=A**

Small cell carcinoma of the prostate is rare but associated with a high likelihood of metastatic disease at diagnosis and poor prognosis after treatment. Radical prostatectomy is not associated with good outcomes. Small cell carcinoma of the prostate does not secrete PSA significantly, and is apparently androgen resistant. Systemic chemotherapy is thought to be the most effective strategy followed by, or concurrent with radiation therapy. Chemotherapy agents used are similar to those used in patients with other small cell carcinoma (e.g., lung) with combinations of cisplatin and etoposide or paclitaxel or docetaxel and topotecan.

Epstein JI: Pathology of prostatic neoplasia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 110, p 2599.

Question #82 **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 Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, p 1581.

Question #83 **ANSWER=C**

The main indications for partial adrenalectomy are solitary adrenal gland, bilateral disease, and patients with familial syndromes. Pheochromocytoma has been treated with partial adrenalectomy, especially in patients with VHL, familial pheochromocytoma, or multiple endocrine neoplasia type 2a. Observation and biopsy are not appropriate for patients with pheochromocytoma. Open adrenalectomy and partial nephrectomy may be appropriate for patients with larger renal masses (> 3 cm). This patient will likely require multiple surgeries on both kidneys and adrenals, so the maximum functioning renal and adrenal tissue should be preserved.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, p 1552.

Question #84 **ANSWER=A**

This is a typical presentation of pediatric, benign, daytime urinary frequency syndrome. The etiology of this disorder is unclear but often follows a systemic illness. Treatment is with parental reassurance, maintenance of a voiding diary and behavioral modification therapy to reward for progressive lengthening of the voiding interval. Resolution of symptoms will invariably occur within a few months. Antimuscarinic agents are rarely helpful. Imaging and urodynamic studies do not yield any significant findings. In the presence of a normal urinalysis, cystoscopic evaluation is not indicated.

Zoubek J, Bloom DA, Sedman AB: Extraordinary urinary frequency. PED 1990;85:1112-1114.

Austin PF, Vricella GJ: Functional disorders of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 143, p 3310.

Question #85 **ANSWER=C**

The corporal septum is the weakest portion of the corporal body. This is of particular importance during insertion of a penile prosthesis, as the corporal septum may be perforated and an unrecognized cylinder cross over may occur after septal perforation. This complication may be avoided by placing the penis on traction, aiming the tip of the dilator laterally, and placing a spacer in the contralateral corpora while its mate is dilated. Thus, the other locations described (dorsally, ventrally, distally, and proximally) would be incorrect.

Lue TF: Physiology of penile erection and pathophysiology of erectile dysfunction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 26, p 614.

Question #86 **ANSWER=B**

The paired calcified tubular structures in the center of the pelvis are the vas deferens. Calcification of the vas deferens is virtually pathognomonic for diabetes mellitus. Although tuberculosis can, on rare occasions, have similar findings. This patient has also had a left iliac fossa renal transplant which contains a radio-opaque urinary stone.

Adam A, Dixon AK, Gillard JH, et al: Male genitourinary tract, in Adam A, Dixon AK, Gillard JH, et al (eds): GRAINGER AND ALLISON'S DIAGNOSTIC RADIOLOGY, ed 6. London, Churchill Livingstone, 2014, chap 40, p 944.

Question #87 **ANSWER=B**

The most common cause of hypomagnesuria is inflammatory bowel disease, and an appropriate referral to a gastroenterologist to rule-out this disorder should be performed. The benefit of oral magnesium supplementation in the management of hypomagnesuric calcium nephrolithiasis has not been well-established. Though tofu and brown rice are rich in magnesium, the impact of

dietary intervention on hypomagnesuria has not been tested. Though increased fluid intake is an empiric measure to decrease the risk of stone formation, it will not address this specific metabolic abnormality. Allopurinol does not impact urinary magnesium levels.

Lipkin ME, Ferrandino MN, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 52, p 1228.

Question #88 **ANSWER=C**

This is a common clinical scenario. Newborns are relatively oliguric for the first 48 hours of life primarily due to neonatal decreased renal blood flow and low glomerular filtration rates of the immature neonatal kidney. The normal neonatal renal physiology is associated with diminished urine production and may lead to either an underestimation of the severity of hydronephrosis and/or to the presence of a "normal" renal ultrasound shortly following birth. For this reason, it is always recommended that the child with mild to moderate antenatal hydronephrosis have a follow-up neonatal ultrasound two to six weeks following birth. There has been some debate about whether such patients also deserve a VCUG to rule-out vesicoureteral reflux. The 2010 AUA Guideline on reflux management, however, does not recommend a VCUG in patients with mild to moderate antenatal hydronephrosis unless the postnatal ultrasound reveals a dilated ureter or the presence of coexisting renal anomalies that would suggest the possibility of reflux. Serum creatinine is unlikely to be helpful in cases of mild hydronephrosis and renal scan is not indicated unless moderate or severe hydronephrosis is actually documented to be present via ultrasound.

Lee RS, Borer JG: Perinatal urology, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 124, pp 2888-2889.

Question #89 **ANSWER=E**

The management of reflux has become extremely controversial. Although there is improvement in the evidence-based literature evaluating reflux, there is still a lack of data to definitively establish the role of antibiotics and surgery in the management of low to moderate grade reflux. However, the relationship between bladder and bowel dysfunction (BBD) and reflux is now widely recognized and accepted. When present, it is the overriding factor that most affects the incidence of recurrent infections, spontaneous resolution of reflux, and successful surgical correction of reflux. When BBD is recognized to be present, it needs to be treated aggressively given its effect on both the medical and surgical management of reflux. While all of the other listed factors may impact resolution rates of reflux (age), infection (circumcision status), and susceptibility to develop renal scarring (intrarenal reflux), none of them have the impact of BBD collectively.

Peters CA, Skoog SJ, Arant BS Jr, et al: AUA GUIDELINE FOR MANAGEMENT AND SCREENING OF PRIMARY VESICOURETERAL REFLUX IN CHILDREN. American Urological Association Education and Research, Inc, 2010; 184. http://www.auanet.org/education/guidelines/vesicoureteral-reflux-a.cfm

Khoury AE, Bägli DJ: Vesicoureteral reflux, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 137, p 3134.

Question #90 **ANSWER=A**

The AUA Best Practice Statement on urologic surgery antimicrobial prophylaxis states that antimicrobial prophylaxis is not indicated prior to urodynamic testing, unless specific risk factors exist. These risk factors include: advanced age, anatomic abnormalities of the urinary tract, poor nutritional status, and immunodeficiency. Furthermore, the American Heart Association does not recommend the use of antimicrobial prophylaxis prior to any urologic procedure, solely for the prevention of infectious endocarditis. Therefore, this patient does not require antimicrobial prophylaxis prior to undergoing urodynamic testing.

Wolf JS Jr, Bennett CJ, Dmochowski RR, et al: BEST PRACTICE POLICY STATEMENT ON UROLOGICAL SURGERY ANTIMICROBIAL PROPHYLAXIS. American Urological Association Education and Research, Inc, 2008. (Updated January 2014)
http://www.auanet.org/education/guidelines/antimicrobial-prophylaxis.cfm

Question #91 **ANSWER=B**

The most potent stimulator of aldosterone secretion is angiotensin II. The juxtaglomerular apparatus is sensitive to renal perfusion. Decreased perfusion stimulates renin secretion which is converted in the lungs to angiotensin II and stimulates the secretion of aldosterone. Aldosterone secretion is also under the influence of both ACTH and potassium, but they are secondary influences. Sodium has no direct influence other than through volume expansion and contraction.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, p 1530.

Question #92 **ANSWER=E**

This patient presents with a complex case of recurrent stress urinary incontinence (SUI) in spite of previous treatment, a fixed urethra, and a low Valsalva LPP. The only reasonable option presented would be an autologous sling. Pelvic floor exercises would be unlikely to successfully address her symptoms. Imipramine can be considered for off-label utilization for mixed incontinence, but is also unlikely to cure this degree of SUI. Sacral neuromodulation is primarily indicated for urinary urgency, and/or urge incontinence, and is not indicated for the treatment of stress incontinence. Of the two sling options presented, the autologous pubovaginal sling is the better option for recurrent intrinsic sphincter deficiency, particularly in the face of a fixed urethra.

Dmochowski RR, Osborn DJ, Reynolds WS: Slings: Autologous, biologic, synthetic, and midurethral, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 84, pp 2020-2021.

Question #93 **ANSWER=B**

Radiographic assessment for possible genitourinary trauma is required for all symptomatic pediatric patients that have sustained blunt trauma with microscopic hematuria. A normal Focused Assessment with Sonography for Trauma (FAST) exam and serial physical exams for 24 hours will nearly rule-out all significant renal injuries and spare the patient radiation. CT scan with delayed views is recommended if the FAST exam is abnormal or gross hematuria is present. MRI scan is not indicated in the evaluation of trauma.

Husmann DA: Pediatric genitourinary trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 154, pp 3538-3539.

Question #94 **ANSWER=B**

Patients with distal or type 1 RTA have a basic defect in eliminating H+ from the distal tubule. Associated urinary changes include both an increase in calcium and a distinct decrease in citrate levels. This combination results in most type 1 patients forming renal calculi. In distinction, type 2 RTA is caused by diminished bicarbonate reabsorption in the proximal tubule. While this defect also results in high urinary calcium levels for reasons that are not fully understood, it does not lower urinary citrate, and thus, these patients do not commonly form renal calculi. Sodium and phosphate handling are altered in both forms of RTA but do not seem to have much impact on stone formation. In patients with type 1 RTA, the administration of potassium citrate is the mainstay of attempting to minimize nephrocalcinosis and the formation of renal calculi.

Lipkin ME, Ferrandino MN, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 52, pp 1211-1212.

Question #95 **ANSWER=E**

Bladder rupture should be suspected in patients with pelvic fractures. Bladder injury may be intraperitoneal or extraperitoneal. Small extraperitoneal lacerations may be managed non-operatively with urethral catheter drainage and antibiotics. Contraindications to conservative management include gross hematuria with repetitive clot retention, concomitant rectal or vaginal injury, bladder neck injury, the presence of a foreign body in the bladder (such as a piece of bone or a bullet), or injury due to a gunshot. This patient has clot retention, and, therefore, should be managed by surgical repair. The injury should be approached by an intraperitoneal approach in those with pelvic hematomas. Entering the hematoma through an extraperitoneal approach risks release of a contained pelvic hematoma and significant hemorrhage. Continuous bladder irrigation is contraindicated in the presence of a bladder rupture since the fluid will extravasate, increasing the risk of pelvic abscess and pelvic osteomyelitis. The placement of a percutaneous suprapubic tube will not correct the injury and may be difficult and risky in the presence of a pelvic hematoma. Cystoscopy with clot evacuation will not correct the injury.

Morey AM, Brandes S, Dugi III DD, et al: UROTRAUMA: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014.
http://www.auanet.org/education/guidelines/urotrauma.cfm

Question #96 **ANSWER=A**

Fish oil is an effective, first-line therapy for mild-moderate hypercalciuria. Fish oils are rich in n-3 fatty acids, more specifically eicosapentaenoic acid (EPA), which undergoes the same pathway of eicosanoid metabolism as the n-6 fatty acids found more commonly in Western diets. EPA is an essential dietary fatty acid as humans are unable to synthesize it from its precursor fatty acid, linoleic acid. EPA is found mainly in such cold-water seafood as salmon, mackerel, tuna, herring, sardines, bluefish, trout, whitefish, and striped bass. Fish oils are sold in pill and liquid form as a source of n-3 fatty acids. EPA is thought to have a protective role in preventing nephrolithiasis by decreasing urinary calcium and oxalate excretion through alteration of prostaglandin metabolism. EPA competes with arachidonic acid for cyclooxygenase, resulting in the formation of less PGE2. When PGE2 is inhibited, urinary calcium excretion is reduced. Decreased PGE2 also leads to an activation of the nephron Na/K/2Ca transporter, which results in increased renal calcium reabsorption. Greenland Eskimos, a population which has an extraordinarily low incidence of renal stone disease, consume approximately 5 to 10 gm of n-3 fatty acids daily. Most human clinical trials using fish oils have given 1200-1800 mg daily to their subjects. None of the other vitamins or supplements listed have any impact on calcium metabolism.

Pearle MS, Goldfarb DS, Assimos DG, et al: MEDICAL MANAGEMENT OF KIDNEY STONES: AUA GUIDELINE: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014.
http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #97 **ANSWER=A**

A prostatic utricle is present in 10-15% of boys with a proximal hypospadias, and is the most common cause of difficulty in catheterizing the bladder with proximal hypospadias. The embryologic origin of the utricle is the paramesonephric duct or Müllerian duct. Remnants of the mesonephric duct give rise to Gartner's cyst, whereas, the mesonephric duct gives rise to the vas deferens and seminal vesicle. The urorectal septum divides the common cloaca into the hindgut and urogenital sinus. The urethral plate gives rise to the urethra and prostate from the urogenital sinus. A narrow urethral plate does not cause difficulty with catheterization.

Park JM: Embryology of the genitourinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 122, p 2839.

Question #98 **ANSWER=A**

Adrenal incidentalomas are unsuspected adrenal masses > 1 cm in diameter identified on imaging performed for seemingly unrelated causes. Ultrasound is a suboptimal imaging modality for detecting and fully characterizing adrenal lesions. Nevertheless, many incidentalomas will be discovered on ultrasound imaging performed for unrelated reasons. An unenhanced CT scan is the first, and perhaps single best, and most easily interpreted test for intracellular lipid, and can diagnose an adrenal adenoma in more than 70% of cases. Low attenuation (< 10 Hounsfield

units (HU)) on unenhanced CT scan corresponds to high intracytoplasmic lipid content, and is diagnostic for an adrenal adenoma. Ninety-eight percent (98%) of lesions with an attenuation of 10 HU or less on non-contrast CT scan are adrenal adenomas, while less than 30% of adrenal adenomas are lipid-poor (also known as, atypical adenomas) and have an attenuation of > 10 HU. If a lesion demonstrates an attenuation of >10 HU, then additional radiological evaluation can be performed, including CT washout study to help discriminate lipid-poor adenomas from other adrenal lesions. Gadolinium-enhanced MR washout studies do not exhibit the diagnostic strength of iodine-based CT washout studies, and are not commonly employed. When MRI scan is used, opposed phase chemical-shift MR imaging to evaluate for intracellular lipid content can help distinguish an adenoma from other adrenal lesions. Functional studies such as PET imaging and an MIBG scan (used to evaluate for pheochromocytomas) are not indicated in the initial evaluation of an adrenal incidentaloma.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, p 1557.

Question #99 **ANSWER=D**

Hematuria is one of the most common genitourinary abnormalities in children. An association with hypercalciuria and hematuria in children is well-documented. Calcium excretion exceeding 4 mg/kg is considered abnormal. In children, the collection of 24-hour urine can be difficult. A spot urine calcium:creatinine ratio can be used for screening, but hypercalciuria must be confirmed with a 24-hour urine calcium. A fasting level > 0.21 or a post-prandial level > 0.28 are abnormal. It is unclear how the hematuria is produced by the hypercalciuria. However, these children are at risk for subsequent urolithiasis which has been reported in over ten percent of individuals. The imaging evaluation should include a renal ultrasound to exclude both calculi and structural abnormalities. Further imaging studies are not warranted. C3 and ASO titers are unwarranted, as this child has no red cell casts or proteinuria. The yield of cystoscopy in this pediatric population is very low. Evaluation for renal inflammatory disease or parenchymal abnormality by biopsy or contrast imaging is very low in the absence of significant proteinuria.

Norwood VF, Peters CA: Disorders of renal functional development in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 123, pp 2852-2854.

Garcia D, Miller L, Stapleton FB: Natural history of hematuria associated with hypercalciuria in childhood: AJDC 1991;145:1204-1207.

Question #100 **ANSWER=D**

This case exemplifies the classic one-kidney, one-clip animal model of renovascular hypertension and is similar to the findings of the two-kidney, two clip animal model of renovascular hypertension. In these models, during the acute phase of obstruction, there is an increase in renin release and activation of the renin-angiotensin-aldosterone system (RAAS) by the ischemic kidney(s) resulting in hypertension. With the absence of a contralateral kidney, or if both kidneys are involved, contralateral natriuresis by the unaffected kidney will not occur. Consequentially, the stenotic kidney begins to conserve sodium and fluid, resulting in volume expansion and an elevated renin (transitional phase). In the chronic phase, the elevated blood pressure, excess

sodium retention, and volume expansion all act as negative feedback mechanisms for suppression of renin release resulting in volume-expanded hypertension with normal renin-angiotensin-II levels. These patients do not respond well to ACE inhibitors or angiotensin-II antagonists unless concurrent sodium restriction is prescribed. In contrast, the two-kidney, one-clip model is characterized by unilateral release of renin from the ischemic kidney accompanied by contralateral suppression of renin from the normal kidney and natriuresis. Consequently, there is sodium retention from the ischemic kidney and excretion from the contralateral kidney. This results in euvolemia and hypertension dependent upon angiotensin-II vasoconstriction. Medical management of these patients is directed at the renin-angiotensin system (i.e., ACE inhibitors and angiotensin-II antagonists) with or without sodium restriction based on the type of renal hypertension model.

Gulmi FA, Reiser IW, Spitalewitz S: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 45, p 1029.

Question #101 **ANSWER=A**

Pre-pubertal (in distinction to post-pubertal) mature teratoma of the testis have a benign clinical course. AFP levels are initially elevated in newborns and decline during the first year of life, therefore, in this patient, the AFP elevation does not indicate yolk sac elements. Treatment is partial orchiectomy after confirmation of the frozen section. Orchiectomy and further treatment, such as, chemotherapy, radiation, or RPLND are reserved for malignant tumors such as yolk sac. Serial ultrasounds are not necessary in pre-pubertal patients with teratoma.

Ferrer FA: Pediatric urologic oncology: Bladder and testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 156, pp 3593-3596.

Question #102 **ANSWER=C**

In a febrile but clinically stable patient, endoscopic incision has the advantage of both draining the system and the possibility that it could be a definitive treatment. The best management is cystoscopic incision of the ureterocele in order to promptly and fully drain the infected urine from the ureterocele. Endoscopic incision of the ureterocele with subsequent decompression of the upper tract would obviate the need for stent placement. Percutaneous nephrostomy placement can be of benefit in a clinically labile patient where general anesthesia for endoscopic incision of the ureterocele would be hazardous. Definitive management may require an open approach including ureterocele excision and ureteral reimplantation. However, that would not be recommended at present in this acute setting.

Peters CA, Mendelsohn C: Ectopic ureter, ureterocele, and ureteral anomalies, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 134, pp 3080-3086.

Question #103 **ANSWER=C**

She has small bowel herniation which is compressing her ileal loop, resulting in outlet obstruction at the fascial level. Stomal stenosis can present similarly, but without CT scan findings of a hernia. Lymphoid depletion does result in late-onset loop strictures but these are generally mid-loop. Stomal prolapse does not result in obstruction. Intestinal volvulus could result in obstruction of the loop, but again, the principal finding on the CT scan is the hernia.

Dahl DM: Use of intestinal segments in urinary diversion, Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier Saunders, 2015, vol 3, chap 97, pp 2290-2292.

Question #104 **ANSWER=A**

During microsurgical reconstruction of the amputated penis, the urethra is reapproximated, the two dorsal arteries, the deep dorsal vein, and as many nerve fascicles as possible, are anastomosed. The cavernosal arteries are typically not reconstructed as they are difficult to access and the dorsal arteries provide adequate circulation.

Jordan GH: Lower genitourinary tract trauma and male external genital trauma (nonpenetrating injuries, penetrating injuries, and avulsion injuries) Part II. AUA UPDATE SERIES, 2000, vol 19, lesson 11.

Morey AF, Zhao LC: Genital and lower urinary tract trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 101, pp 2381-2382.

Question #105 **ANSWER=A**

This patient has a T2 squamous cell carcinoma of the distal urethra with negative margins. Assuming that his cystoscopy is normal and there are no other signs of disease, the proper management is observation. Total penectomy is not advocated in the setting of negative margins. Currently, there is no data that prophylactic inguinal node dissection provides any benefit. Adjuvant chemotherapy is not indicated for T2 disease. Radical penectomy with cystoprostatectomy is also not indicated with the finding of negative margins and no evidence of disease in the bladder.

Sharp DS, Angermeier KW: Tumors of the urethra, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 38, pp 881-883.

Question #106 **ANSWER=D**

Blood pressure control has been identified as one of several measures to help prevent progression of chronic kidney disease (CKD). Others include: lifestyle modification, glycemic control, reduction of proteinuria, protein restriction, lipid control, correction of anemia,

correction of acidosis, and maintenance of fluid balance. Angiotensin II is thought to be central to the progression of CKD via both hemodynamic and non-hemodynamic mechanisms. ACE inhibitors can reduce glomerular pressure as well as proteinuria, which has a sentinel role in renal scarring. In addition, ACE inhibitors appear to improve interstitial capillary pO2 levels, thus decreasing renal sclerosis risk. All other therapies, including calcium channel blockers (e.g., amlodipine), beta-blockers (e.g., atenolol), alpha-agonists (e.g., clonidine), and diuretics (e.g., hydrochlorothiazide) do not provide as much reno-protection as ACE inhibitors or angiotensin receptor blockers (e.g., losartan).

Goldfarb DA, Poggio ED, Demirjian S: Etiology, pathogenesis, and management of renal failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 46, pp 1062-1063.

Question #107 **ANSWER=C**

According to the American Society of Gastroenterology, diarrhea, with a positive test for clostridium difficile with significant volume loss and electrolyte abnormalities, is defined as severe and/or complicated infection. I.V. fluid resuscitation, electrolyte replacement, and pharmacological DVT prophylaxis is recommended. In the absence of ileus or significant abdominal distention, oral or enteral feeding should be given. CT scan of the abdomen and pelvis is recommended. Vancomycin, orally or via the enteral tube at 125 mg PO four times daily plus metronidazole 500 mg I.V. three times daily, is strongly recommended in the guidelines. Oral metronidazole is recommended for mild to moderate infection and considered under treatment for severe cases. Single agent treatment with vancomycin alone is also considered under-treatment. Rectal vancomycin and/or metronidazole is reserved for severe infection with ileus, abdominal distention, or toxic colon.

Surawicz CM, Brandt LJ, Binion DG, et al: Guidelines for diagnosis, treatment, and prevention of Clostridium difficile infections. AM GASTROENTEROL 2013;108:478-498.

Question #108 **ANSWER=B**

The determination of stress urinary incontinence (SUI) secondary to sphincter deficiency should be performed at bladder volumes of 200 mL or greater, and require that the patient reaches Valsalva intra-abdominal pressures of greater than or equal to 60 cm H_2O. Failure to reach these intra-abdominal pressures or bladder volumes during the performance of a videourodynamic study are two of the main reasons for a false negative test for sphincteric incontinence. In the presence of a urodynamic study reaching adequate bladder volumes and adequate Valsalva pressures, the next most common cause for a videourodynamic to fail to diagnose sphincteric incontinence is the presence of an indwelling catheter during the time of urodynamic study. An indwelling catheter may prevent demonstration of SUI at the time of testing by causing a physical obstruction of a coexisting bladder neck contraction, or alternatively, by causing spasm of the urethral sphincter related to catheterization. In these situations, the urethral catheter should be removed while at maximum bladder capacity and a Valsalva maneuver performed. Leakage can be confirmed by the concurrent use of video portion of the study. If no leakage is found, the patient should be requested to void and confirmation of complete bladder emptying noted, to rule-out the possibility of coexisting impaired detrusor contractility and overflow incontinence. Alternatively, a simple postvoid ultrasound residual could have been performed as part of the initial evaluation in a patient with post-prostatectomy urinary incontinence to rule-

out this possibility. The use of straining, tapping, and Crede maneuvers are classically used in a patient with an underactive bladder in an attempt to elicit a detrusor contraction when the patient is unable to void on request. Valsalva intraabdominal pressures of 100 cm or higher are required to evaluate for hypermobility of the bladder neck in women complaining of stress urinary incontinence.

Dector RM, Harpster L: Pitfalls in leak point pressure determination. J UROL 1992;149:588-591.

Maniam P, Goldman HB: Removal of transurethral catheter during urodynamics may unmask stress urinary incontinence. J UROL 2002;167:2080-2082.

Nitti VW, Brucker BM: Urodynamic and video-urodynamic evaluation of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 73, p 1727.

Question #109 **ANSWER=D**

Patients with an oncocytoma, or small renal tumors with indeterminate histology, should be followed with the same imaging protocols used for untreated, low risk (cT1, N0, Nx) renal cancer patients. This recommendation for benign tumor follow-up is based on two concerns: 1) benign tumors can exhibit substantial growth patterns over time that may threaten destruction of the renal unit by compression/invasion of surrounding parenchyma and vascular structures; 2) although the accuracy of percutaneous biopsy has improved substantially in the past several years, the pathologic differentiation between oncocytoma and oncocytic neoplasms (e.g., chromophobe renal cell carcinoma) and renal cell carcinoma can at times be difficult, with the true pathology of the mass only coming to attention by rapid tumor growth. The purpose of routine imaging of these benign neoplasms is, therefore, to capture undue tumor growth and allowing for expedient surgical/ablative intervention and avoidance of radical nephrectomy. AUA Guidelines for the follow-up of renal cancers and untreated low-risk tumors, including oncocytoma, include: 1) history and physical examination; 2) basic laboratory testing to include blood urea nitrogen (BUN)/creatinine, urine analysis (UA), and estimated glomerular filtration rate (eGFR); 3) continued renal imaging (US, CT or MRI scan) at least annually, and annual chest X-ray (CXR) to assess for pulmonary metastases. Repeat biopsy is not indicated or warranted for the routine follow-up of such patients, as therapeutic intervention is based on subsequent neoplasm growth rate.

Donat SM, Chang SS, Bishoff JT, et al: FOLLOW-UP FOR CLINICALLY LOCALIZED RENAL NEOPLASMS: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2013. http://www.auanet.org/education/guidelines/renal-cancer-follow-up.cfm

Question #110 **ANSWER=C**

Spontaneous bladder perforation following enteric bladder augmentation occurs in 8 to 10% of cases, most commonly presenting with signs of peritonitis and acute abdomen. It can be life-threatening, especially in the neuropathic population, as often their neurologic deficit causes atypical presenting symptoms and sepsis can occur rapidly. Late perforations most often occur in the bowel segment, approximately 1 cm from the anastomotic line. A standard cystogram has a high false negative rate, and a CT cystogram is recommended in patients with abdominal symptoms suggestive of bladder rupture. While most perforations are managed with laparotomy

and primary closure, conservative treatment with catheter drainage has been reported successful in very selected cases, usually with contained, late perforations in patients without VP shunts. Endoscopy is not diagnostic for perforation, and can lead to worsening dissemination of infected urine in the abdomen. Shunt externalization is often required due to peritonitis and contamination of the abdominal shunt catheter, but shunt series is not necessary.

Adams MC, Joseph DB, Thomas JC: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 145, p 3354.

Question #111 **ANSWER=C**

These symptoms are likely related to the sling being too tight leading to her de novo symptoms. The best option at this time would be to initiate CIC to allow for adequate emptying and minimization of symptoms. Alpha-blockers would not impact this anatomic obstruction. Urethral dilation is likely to be ineffective. Fascial slings tend to loosen up over time, and with the use of CIC, her residuals can be continually monitored for possible improvement. Sling loosening would not likely be effective. Sling incision should be considered if these symptoms do not improve with time. The optimal time for sling incision post-sling placement is not known, though many authors advocate waiting three to four months after the sling has been placed. This is certainly different than how obstruction is managed after mid-urethral sling, with many considering sling incision within the first month after sling placement.

Dmochowski RR, Osborn DJ, Reynolds WS: Slings: Autologous, biologic, synthetic, and midurethral, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 84, p 2005.

Question #112 **ANSWER=A**

This patient has had an adrenal hemorrhage and displays the classic triad of mass, anemia, and jaundice (secondary to blood absorption from the retroperitoneum). Males can present with scrotal hemorrhage. Ultrasound is the best way to confirm the diagnosis, and after excluding neuroblastoma, is an ideal follow-up tool. CT scanning often requires heavy sedation or anesthesia in the very young child. Biopsy and surgery are not required. Spontaneous complete resolution will usually occur within months.

Lee RS, Borer JG: Perinatal urology, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 124, p 2886.

Question #113 **ANSWER=A**

Roughly 74% of men who take chronic opioids will have low testosterone. Opioids have been shown to have an inhibitory effect on gonadotropin-releasing hormone secretion in the hypothalamus, thus, to decrease gonadotropin production and testosterone production. Weaning opioids may result in an increase in serum testosterone levels. Because this couple wants to have children in the future, exogenous testosterone with gels and injections should not be used as this can impair semen parameters. The likely cause of this patient's erectile

dysfunction (ED) is his low testosterone, thus, sex therapy will probably not solve his ED problem. Urethral alprostadil suppositories should not be used during unprotected intercourse with a pregnant partner, as this may induce uterine contractions, and should not be used in couples trying to achieve pregnancy.

Burnett AL II: Evaluation and management of erectile dysfunction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 27, pp 659-660.

Daniell HW, Lentz R, Mazer NA: Open-label pilot study of testosterone patch therapy in men with opioid-induced androgen deficiency. J PAIN 2006;7:200.

Kalyani RR, Gavini S, Dobs AS: Male hypogonadism in systemic disease. ENDOCRINOL METAB CLIN N AM 2007;36:333.

Question #114 **ANSWER=E**

Delayed bleeding following percutaneous nephrolithotomy indicates the presence of an arteriovenous fistula or arterial pseudo aneurysm. New onset bright red blood favors an arterial pseudo aneurysm. The next best step is selective angioembolization. The pseudo aneurysm is at risk to bleed, so bed rest is not appropriate in this scenario. A nephrostomy tamponade catheter and/or fulguration is most effective for immediate bleeding following the nephrolithotomy procedure. Renal exploration is reserved for recalcitrant bleeding if angioembolization fails or life threatening bleeding ensues.

Wolf JS Jr: Percutaneous approaches to the upper urinary tract collecting system, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 8, p 153.

Question #115 **ANSWER=D**

This woman has an uncomplicated UTI. Urine culture is not necessary when symptoms are present, she has no risk factors for a complicated UTI, and urinalysis reveals pyuria and/or bacteriuria. Trimethoprim/sulfamethoxazole is the best empirical agent for uncomplicated UTI in women. Quinolones should be reserved for cases of recurrent UTI or a history of trimethoprim/sulfamethoxazole resistance. Three day therapy is the preferred treatment regimen for uncomplicated cystitis in women. Single dose therapy has a high rate of recurrence.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, pp 266-268.

Question #116 **ANSWER=A**

According to the AUA Guidelines on overactive bladder (OAB), a therapeutic trial of therapy is a minimum of four to eight weeks for pharmacologic therapy and eight to twelve weeks for behavioral therapy. This patient has only been treated for two weeks, and further improvement

may be seen with her present management plan. A change in oral therapy (solifenacin or mirabegron) should be considered only after she has failed an adequate trial length of her present therapy. Failure is defined as lack of improvement after four to eight weeks of pharmacologic therapy and/or the development of intolerable pharmacologic side effects. OnabotulinumtoxinA is indicated for patients that have failed oral pharmacologic therapy. In the routine evaluation of the OAB patient, cystoscopy is not indicated unless the screening urinalysis is abnormal.

Gormley EA, Lightner DJ, Burgio KL, et al: DIAGNOSIS AND TREATMENT OF OVERACTIVE BLADDER (NON-NEUROGENIC) IN ADULTS: AUA/SUFU GUIDELINE. American Urological Association Education and Research, Inc, 2012|Amended 2014.
http://www.auanet.org/education/guidelines/overactive-bladder.cfm

Question #117 **ANSWER=C**

Recent studies on post-prostate biopsy sepsis have noted significant resistance to fluoroquinolones (90%), piperacillin (72%), trimethoprim/sulfamethoxazole (44%), and even gentamicin (22%). However, minimal to no bacterial resistance is noted to the carbapenems (imipenem and meropenem) and amikacin. In addition, the oral second (Cefuroxime, Cefaclor) and third-generation cephalosporins (Cefixime, Cefdinir) maintain a good bacterial sensitivity pattern.

Gonzalez C M, Averch T, Boyd LA, et al: AUA/SUNA WHITE PAPER ON THE INCIDENCE, PREVENTION AND TREATMENT OF COMPLICATIONS RELATED TO PROSTATE NEEDLE BIOPSY. American Urological Association Education and Research, Inc, 2012.
http://www.auanet.org/common/pdf/education/clinical-guidance/AUA-SUNA-PNB-White-Paper.pdf

Question #118 **ANSWER=A**

The low plateau-shaped curve and elevated PVR are indicative of bladder outlet obstruction, and the increased pelvic floor activity suggests uncoordinated detrusor-pelvic floor function during voiding. The absence of other neurologic signs or symptoms, high volume incontinence, or high PVR would make neurogenic bladder less likely. VCUG is not necessary in the absence of febrile UTIs to rule-out reflux, although imaging of the outlet can show sphincteric dysfunction during voiding. Antimuscarinics are contraindicated in the setting of elevated PVR without CIC. The PVR volume is not of a sufficient volume to warrant CIC, and CIC is unnecessarily invasive. Biofeedback has been shown to normalize micturition pattern to improve emptying, incontinence, and frequency of UTI. OnabotulinumtoxinA injection in the external sphincter can be used in refractory cases but is not approved for use in the sphincter or in children. Alpha-blocking agents have been shown to be effective but do not offer the potential of a long-term cure.

Austin PF, Vricella GJ: Functional disorders of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 143, p 3307.

Question #119 **ANSWER=C**

Hand-assisted laparoscopic radical nephrectomy is comparable to conventional laparoscopic techniques by all measures of peri-operative and oncologic outcomes except for higher wound complications, such as hernias and infections at the hand-port site. The published incidence of these complications with hand-assisted nephrectomy is approximately 4-9%.

Schwartz MJ, Rais-Bahrami S, Kavoussi LR: Laparoscopic and robotic surgery of the kidney, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 61, p 1468.

Ordon M, Eichel L, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 10, p 223.

Question #120 **ANSWER=D**

The patient presents with muscle-invasive bladder cancer (cT2) with a notable history of renal insufficiency and advanced age. Nevertheless, he remains a candidate for radical cystectomy and this should be the primary recommendation. Comorbidities, not age, should be used when deciding on radical cystectomy, and surgery can and should be considered for this patient as multiple series have demonstrated benefits of radical cystectomy in elderly patients with invasive disease. Multifocal CIS is a contraindication for chemoradiation therapy alone. Neoadjuvant chemotherapy is intended for patients with operable clinical stage T2 to T4a muscle-invasive disease. Although the data available supports the use of either M-VAC (Methotrexate, Vinblastine, Adriamycin, and Cisplatin) or CMV (Cisplatin, Methotrexate, and Vinblastine) as neoadjuvant chemotherapy, it has been estimated that more than 50% of patients are ineligible for cisplatin based chemotherapy because of impaired renal function or medical comorbidities. This patient has impaired renal function that will preclude the use of cisplatin-based neoadjuvant chemotherapy. In patients with compromised renal function, carboplatin + gemcitabine has been utilized. However, the efficacy of carboplatin-based regimens in the neoadjuvant setting is unproven and may contribute to a delay in definitive surgery without a known oncologic benefit. Adjuvant chemotherapy has been advocated for high-risk patients (pT3-4, N+ patients) in an effort to delay recurrence and prolong survival. Unfortunately, the question of the true benefit of adjuvant chemotherapy in high-risk patients with pT3, pT4, and N+ disease is currently unknown. Although this patient may be a candidate for adjuvant chemotherapy, the decision to pursue such an approach will depend on his pathologic staging, and is, therefore, not a foregone conclusion.

Guzzo TJ, Vaughn DJ: Management of metastatic and invasive bladder cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 94, p 2230.

Wosnitzer MS1, Hruby GW, Murphy AM, et al: A comparison of the outcomes of neoadjuvant and adjuvant chemotherapy for clinical T2-T4aN0-N2M0 bladder cancer. CANCER 2012;118:358-364.

Question #121 **ANSWER=A**

Clinicians should offer allopurinol to patients with recurrent calcium oxalate stones who have hyperuricosuria and normal urinary calcium. A prospective randomized, controlled trial demonstrated that allopurinol reduced the risk of recurrent calcium oxalate stones in the setting of hyperuricosuria (urinary uric acid excretion > 800 mg/day) and normocalciuria. Whether the drug is effective in patients with hypercalciuria has not been established. Hyperuricemia is not a required criterion for allopurinol therapy. In addition to medication, limiting non-dairy animal protein may maximize the efficacy of allopurinol. Chlorthalidone and hydrochlorothiazide would be indicated in the setting of hypercalciuria. Potassium citrate is indicated for hypocitraturia, which is not present either. Triamterene, although it is a potassium-sparing diuretic, should be avoided as stones of this compound have been reported.

Pearle MS, Goldfarb DS, Assimos DG, et al: MEDICAL MANAGEMENT OF KIDNEY STONES: AUA GUIDELINE: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014. http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #122 **ANSWER=E**

Everolimus (RAD001) is an orally administered inhibitor of mTOR. In the RECORD 1 trial which compared everolimus to placebo in a phase 3 prospective randomized trial of patients who received previous targeted therapy, progression-free survival was improved in the everolimus-treated patients (4.0 vs. 1.9 months). As such, treatment with everolimus is a category 1 recommendation after tyrosine kinase inhibitor therapy according to the NCCN Kidney Cancer panel. Axitinib is also a category 1 recommendation for this group of patients. A variety of other studies have evaluated the use of temsirolimus, bevacizumab, and sorafenib in the setting of failure after initial therapy and each of these agents have shown some effect. However, given the limited outcomes, these agents are given a category 2A recommendation in the recurrence. The NCCN guideline panel considers pazopanib a category 3 recommendation because no data exists for this drug in this setting.

Motzer RJ, Jonasch E, Agarwal N, et al: NCCN clinical practice guidelines in oncology: Kidney cancer (version 1.2015) http://www.nccn.org/professionals/physician_gls/pdf/kidney.pdf (accessed 10/21/2014)

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 63, pp 1515-1516.

Question #123 **ANSWER=A**

There are several appropriate analyses in the setting of a trial with a binary variable. Fisher's exact test should be used when the expected number of subjects in any subgroup is below five. Chi-square test is also appropriate when the dependent variable is measured as a binary variable, and any of the expected sample size of subjects per subgroup is five or greater. ANOVA is used to compare more than two groups. Logistic regression would be the appropriate test if there was an additional independent variable. The Pearson correlation coefficient is the appropriate test when assessing the relationship between two variables.

AUAUniversity Core Curriculum: Statistics. American Urological Association website. https://www.auanet.org/university/core_topic.cfm?coreID=122 Updated May 14, 2014.

Question #124 **ANSWER=C**

Abiraterone acetate is a specific, potent, and irreversible inhibitor of CYP17. CYP17 both facilitates the conversion of cholesterol to androstenedione and dehydroepiandrosterone (DHEA), made in the adrenal glands, and also inhibits the conversion of secondary androgens into testosterone and dihydrotestosterone. CYP17 activity can be inhibited by both ketoconazole and abiraterone acetate; however, ketoconazole competitively inhibits CYP 17. Its pharmacological effectiveness is, therefore, a reflection of the concentration of ketoconazole within the cell and are temporizing in nature. By contrast, once abiraterone acetate binds to a molecule of CYP17, the CYP17 molecule is permanently disabled. Because abiraterone effectively shuts down the effects of CYP17, it inhibits the synthesis of androgens by both the testes and the adrenal. The completeness of this blockade will lead to loss of inhibitory feedback on the pituitary gland, resulting in excess adrenal stimulation and a build-up in steroid precursors that will be diverted into alternative pathways that will eventually result in an increased production of aldosterone. The increase in mineralocorticoids leads to fluid retention and hypokalemia. To prevent this complication, low dose prednisone is administered to enhance a negative feedback on the pituitary system. Although steroids can help reduce inflammation, bone pain, nausea, and anorexia in any cancer patient, steroids are not used for this indication during treatment with abiraterone. Enzalutamide, not abiraterone, is involved in the process of nuclear translocation of the androgen receptor as part of prostate cancer anti-tumor activity. Abiraterone is not involved in cellular microtubule assembly; this is the anti-tumor mechanism of docetaxel.

Antonarakis ES, Carducci MA, Eisenberger MA: Treatment of castration-resistant prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 121, pp 2811-2812.

Question #125 **ANSWER=B**

Human papillomavirus (HPV) is the most common sexually transmitted infection in the United States and worldwide. The highest prevalence of genital HPV is found in sexually active adolescents and young adults. HPV is associated with cervical and other cancers, including: penile, anal, vulvar, vaginal, and oropharyngeal. The FDA-approved HPV vaccines have been shown to be very safe. This quadrivalent vaccine (Gardasil) contains no viral DNA and is bioengineered to contain virus-like particles produced from the major capsid protein of HPV types 16, 18, 6 and 11. There is no data to suggest that there are vaccine-specific adverse effects with the exception of rare anaphylaxis to the vaccine components. The HPV vaccines appear to be very effective, but are beneficial only if an individual has not previously been exposed to HPV. Therefore, it is recommended that the vaccine is administered before the onset of sexual activity. The duration of vaccine-induced antibodies is known to be at least five years in males and nine years in females. Clinical studies demonstrate a high degree of effectiveness in preventing genital lesions and intraepithelial neoplasia associated with HPV genotypes 6, 11, 16, and 18. The American Academy of Pediatrics recommends routine vaccination of both boys and girls who are 11-12 years of age.

American Academy of Pediatrics Policy Statement HPV Vaccine Recommendations www.pediatrics.org/cgi/doi/10.1542/peds.2011-3865 Doi:10.1542/peds.2011-3865 Pediatrics 2012

The American Congress of Obstetricians and Gynecologists Committee on Adolescent Health Care Opinion March 2014.
http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Adolescent-Health-Care/Human-Papillomavirus-Vaccination

Question #126 **ANSWER=A**

This patient has adrenal insufficiency secondary to bilateral adrenal hemorrhage. This can occur in anticoagulated patients, typically during the first three weeks of therapy. The initial therapy should be administration of I.V. fluids and glucocorticoid therapy. Fresh frozen plasma is not acutely indicated with an adequate hemoglobin level. Kayexalate will help lower a high potassium but not improve the hypotension from adrenal steroid deficiency. Chronic but not acute adrenal insufficiency is treated with fluorohydrocortisone. Vitamin K will help restore clotting factors depleted by warfarin therapy, but is not the initial therapy for this patient.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, pp 1553-1555.

Question #127 **ANSWER=C**

This patient has poor prognosis NSGCT because he has non-pulmonary visceral metastases. In that setting, the standard first line regimen is BEP times four cycles. EP times four cycles or BEP times three cycles are both appropriate first-line options for good prognosis disease, but not poor prognosis as is demonstrated here. The last two regimens, VIP (Vinblastine, Ifosfamide, and Cisplatin) and high dose chemotherapy with bone marrow rescue, can be used for salvage therapy in patients who relapse or are refractory to first-line therapy but are not standard first line regimens.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 34, p 802.

Question #128 **ANSWER=A**

This patient has calciphylaxis, an obliterative small vessel vasculopathy that causes skin necrosis and ulceration. Calciphylaxis predominantly affects patients with chronic kidney disease; obesity and diabetes mellitus appear to be additional risk factors. Skin debridement should be carried out very judiciously, as the debrided areas tend to demonstrate poor wound healing and have little impact on the pain. Corticosteroids have not demonstrated efficacy in the management of calciphylaxis. Infections have not been implicated in the pathophysiology of calciphylaxis; therefore, antibiotics and antifungals are not indicated. Biopsy is contraindicated in this individual as these lesions are easily identified visually.

Nigwekar SU, Kroshinsky D, Nazarian RM, et al: Calciphylaxis: Risk factors, diagnosis, and treatment. AM J KID DIS 2015;66:133-146.

Cimmino CB, Costabile RA: Biopsy is contraindicated in the management of penile calciphylaxis. J SEX MED 2014;11:2611-2617.

Question #129 **ANSWER=A**

The side effects of cytotoxic chemotherapy for metastatic testicular cancer are well-established, as BEP chemotherapy has been a mainstay regimen for decades. The major toxicity of cisplatin is neuropathy, while the most major side effect of etoposide is bone marrow suppression. Bleomycin has pulmonary toxicity risks that have also been well-documented with an incidence of approximately 10%. Pulmonary toxicity is dose-dependent, and, thus increasing in severity with more cycles of BEP. The reported fatal pulmonary toxicity after three cycles of BEP is <1%, and after four cycles is 1-2%. In patients with known bleomycin pneumonitis during chemotherapy, the typical maneuver would be to discontinue the bleomycin at the next cycle. There is no clear evidence that decreasing the dose of bleomycin affords the same efficacy, and additionally still exposes a patient with known bleomycin-induced pneumonitis to the drug. Administration of prophylactic steroids do not counteract the possible bleomycin exposure, and thus are not indicated. Additionally, repeating pulmonary function tests, while possibly giving additional information on pulmonary function, are not necessary before the next cycle. Giving granulocyte colony stimulating factor (GCSF) will not affect pulmonary function. Lastly, a change of chemotherapy is not indicated, except for excluding the bleomycin.

Montgomery RB, Lin DW: Toxicities of chemotherapy for genitourinary malignancies, in Taneja SS (ed): COMPLICATIONS OF UROLOGIC SURGERY, ed 4. Philadelphia, Elsevier, 2010, chap 10, p 119.

Question #130 **ANSWER=B**

Cystinuria is an inherited autosomal recessive disorder characterized by excessive urinary excretion of cystine. Average age at first stone diagnosis is 12.2 years. The most important factors in preventing cystine stone formation in the urinary tract are lowering urinary cystine concentration and maintaining an alkaline urinary pH. Adequate hydration with fluid intake of 3-4 L per day, with waking at night to imbibe, is recommended. Potassium citrate alkalinizes the urine and increases the solubility of cystine in the urine. Renacidin irrigation of the renal collecting system is indicated for apatite (calcium carbonate) or struvite stones. Acetohydroxamic acid enhances efficacy of antibiotic therapy directed toward UTI caused by urea-splitting organisms. Penicillamine and alpha-mercaptopropionlglycine (alpha-MPG are chelating agents that combine with cystine to increase solubility and are used when hydration and alkalinization therapies fail. Penicillamine has a higher rate of adverse reactions compared to alpha-MPG.

Lipkin ME, Ferrandino MN, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 52, p 1229.

Question #131 **ANSWER=C**

The differential diagnosis in this patient, includes cystitis, infected ventricular peritoneal (VP) shunt with secondary peritonitis, peritonitis from an alternative source (e.g., appendicitis), or perforation of the augmented bladder. The chief diagnosis to rule-out in this situation is a rupture of the bladder augment and a CT cystogram should be obtained. If a CT scan documents intra-peritoneal fluid collection around the VP shunt and the absence of a bladder perforation, strong consideration should be made for a VP shunt infection and appropriate neurosurgical evaluation is indicated. An abdominal and pelvic ultrasound may demonstrate intra-peritoneal fluid but could not differentiate an infected VP shunt with an associated fluid collection versus rupture of the augment. Cystoscopy places the individual at a higher risk of sepsis if a bladder rupture has occurred and is not as diagnostically accurate as a CT cystogram. Starting I.V. antibiotics may be appropriate, but would not allow the physician to accurately diagnose the underlying etiology. Exploratory laparotomy is not diagnostically indicated at this time.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, p 2290.

Question #132 **ANSWER=D**

First line therapy in patients with uric acid stones is dietary restriction of animal proteins and alkalinization of urine to pH > 6 with potassium citrate. If this fails, then increasing allopurinol to 100-300 mg/day will reduce the urinary uric acid. Alpha-mercaptopropionylglycine is used for treatment of cystine stones. Reducing sodium intake will reduce stone risk in patients with hypercalciuria. Increase in intake of fruits and vegetables does not have sufficient clinical evidence to reduce stone occurrence in patients with low urinary citrate.

Morgan MSC, Pearle MS: Medical management of kidney stones. AUA UPDATE SERIES 2015, vol 34, lesson 20, pp 188-193.

Question #133 **ANSWER=A**

In the study of animal models of erection and detumescence, there are six to seven phases that occur. In the flaccidity or detumescence phase, there are three phases. The initial event that occurs is cavernosal smooth muscle contraction (not relaxation which initiates an erection) that causes an initial rise in the intracorporal pressure. Thus, endothelial relaxation does not initially occur. This is followed by a slow pressure decrease as the reopening of the venous channels occurs with resumption of the baseline arterial flow. The final phase is a rapid drop in intracorporal pressure leading to complete flaccidity.

Lue TF: Physiology of penile erection and pathophysiology of erectile dysfunction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 26, pp 623-629.

Question #134 **ANSWER=C**

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 condition 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.

Schneck FX, Ost MC: Surgical management of pediatric stone disease, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 135, pp 3107-3112.

Question #135 **ANSWER=C**

The majority of testosterone that circulates is primarily bound to serum hormone binding globulin (SHBG), with albumin and cortisol 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 thus 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 breakdown to estradiol, which further lowers the total testosterone level and elevates the estradiol level.

Parsons JK, Hsieh TC: Integrated men's health: Androgen deficiency, cardiovascular risk, and metabolic syndrome, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 23, p 539.

Question #136 **ANSWER=B**

This is a scenario of a significant arterial injury due to blind placement of a large bore trocar. The most likely injury, in this case, is either to the aorta or common iliac arteries from blind passage of a trocar. As the patient is rapidly becoming unstable, a vascular surgeon should be consulted, but immediate action is required. Simply increased insufflation pressure would not address this major vascular injury. With the trocar presumably still within the injured vessel, the trocar should be closed and kept in place, if possible, to allow for the exploratory laparotomy to be directed to the precise location of the injury. The trocar should not be completely removed as it may be providing some element of tamponade of the injured vessel. Withdrawal of the trocar from the vessel lumen, in addition to the loss of pneumoperitoneum, could result in rapid exsanguination; however, if the trocar has already been withdrawn out of the injured vessel and a laparoscope placed, attempts can be made to assess the degree and site of injury laparoscopically. Rapid conversion to exploratory laparotomy should be performed, especially in the scenario of cardiovascular collapse. In such a case, the trocar and laparoscope can be angulated along the anterior abdominal wall, allowing for rapid cut down onto the trocar. As this particular patient is in rapid clinical decline, adding an additional trocar or converting to a hand-assisted technique to attempt to repair the injury laparoscopically would be too time consuming and potentially

dangerous. However, in a more stable situation, both may be reasonable approaches depending on the laparoscopic experience and skill level of the surgeon.

Ordon M, Eichel L, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 10, p 218.

Question #137 **ANSWER=E**

The patient is bothered by his disease, and his condition is unlikely to improve; therefore, reassurance would not be an appropriate option. Additional collagenase would be considered off-label use as only eight injections are currently indicated for treatment. In addition, collagenase injections are only indicated for greater than 30 degrees of curvature. There is no data to suggest that switching to verapamil injections would offer a better response and verapamil injections are considered off-label use. A penile plication should be avoided in men with moderate ED. The best option is insertion of penile prosthesis.

Nehra A, Alterowitz R, Culkin DJ, et al: PEYRONIE'S DISEASE: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2015; 194: pp 745-753. http://www.auanet.org/education/guidelines/peyronies-disease.cfm

Question #138 **ANSWER=A**

Groin/thigh pain after transobturator sling in women with thin, athletic builds is not uncommon. Indeed, some experts believe women fitting this description should preferentially undergo a retropubic mid-urethral sling, rather than a transobturator sling. If a patient should develop groin/thigh pain following a transobturator sling, conservative therapy with NSAIDs for analgesia and the passage of time should resolve the majority of symptoms. If, however, the pain persists after six to eight weeks, consideration for referral to a pain clinic for trigger point injections and a physical therapy consultation may be of benefit. Sling urethrolysis and removal should be reserved for recalcitrant problems failing the aforementioned interventions.

Dmochowski RR, Osborn DJ, Reynolds WS: Slings: Autologous, biologic, synthetic, and midurethral, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 84, pp 2031-2033.

Question #139 **ANSWER=B**

This patient is at risk for a local recurrence and this may present as a fistula, especially with a history of XRT. Biopsy is indicated rather than fulguration. He eventually may need resection and appropriate therapy, but radical surgery is not indicated until a diagnosis is confirmed.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, p 2103.

Question #140 **ANSWER=E**

An injury to the vertebral column at L-4 injures the cauda equina, and depending on the extent of neural damage, will produce a loss of motor and sensory fibers to the bladder, pelvic floor, and external sphincter. Detrusor sphincter dyssynergia is produced by suprasacral spinal cord lesions that interrupt the ascending and descending pathways between the sacral spinal cord and the center for reflex detrusor and urethral function in the brain stem. Reflex detrusor function requires sacral root and sacral cord integrity. While an areflexic bladder faces fixed internal sphincter activity, that activity is normal and not truly dyssynergic. Since within the sacral and lumbar canal the nerve roots are intermingled, a lesion that produces detrusor areflexia would be expected to have a similar effect on the external sphincter, hence, the denervation potentials.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, pp 1773-1775.

Question #141 **ANSWER=A**

According to the 2015 AUA Guideline on Peyronie's, NSAIDS are an appropriate treatment option for men presenting with penile pain in the active phase. Vitamin E is not recommended as a treatment option for men with Peyronie's disease. Pentoxifylline and penile stretching device are considered off-label use for the treatment of Peyronie's disease. Finally, intralesional collagenase injections should only be offered during the stable phase of the disease. No oral agents, such as Potaba, other than NSAIDS are indicated for the treatment of Peyronie's disease.

Nehra A, Alterowitz R, Culkin DJ, et al: PEYRONIE'S DISEASE: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2015;194:745-753.
http://www.auanet.org/education/guidelines/peyronies-disease.cfm

Question #142 **ANSWER=D**

Unlike conventional laparoscopy, a robotic instrument must first be successfully engaged to the instrument faceplate before it can be advanced into the operative field. During routine exchange of a robotic instrument, a safety mechanism is built into the system that allows for safe and automatic return of the instrument tip to 1 mm short of the final position of the prior instrument. In addition, the precise trajectory of the previous instrument is saved, allowing the new instrument to return to the same exact location by simply advancing the instrument once engaged by the faceplate. This feature is called the guided instrument exchange. Although all laparoscopic and robotic instruments should be inserted under laparoscopic view, this safety feature, in essence, returns the new instrument to nearly the exact same location, thus obviating the absolute need for the console surgeon to visualize the actual insertion and advancement of the new instrument tip. Taken together, this guided instrument exchange safety feature prevents "past pointing" of the new instrument into surrounding vital anatomy, whether by gentle or forceful insertion. However, once the clutch button of the robotic arm is reset, this safety mechanism is lost and the instrument requires manual introduction under laparoscopic view in coordination with the console surgeon. In the above scenario, the bedside assistant likely activated the clutch button accidentally, thus releasing the safety mechanism. Proper and

successful engagement of the instrument to the faceplate would not be possible if the instrument was defective or the instrument faceplate was dislodged.

AUA Urologic Robotic Surgery Course: Fundamentals of Robotic Surgery (https://www.auanet.org/education/modules/robotic-surgery/module1.cfm)

Question #143 **ANSWER=A**

Renal artery stenosis is estimated to be the etiology of elevations in blood pressure in < 1% of the total hypertensive patient population and in 10-20% of patients with refractory hypertension. The radiographic presence of renal arterial stenosis alone, is not, however, adequate justification to warrant a correction in a hypertensive patient. The stenotic lesion must be functionally significant, in essence, reduce blood flow in an amount sufficient to activate renin release. Classically arteriographic findings associated with an increase in renin secretion are renal arterial narrowing exceeding greater than 75 percent or greater than 50 percent renovascular stenosis with post-stenotic dilation. However, the exact degree of renal artery stenosis that would justify revascularization is not known. In patients found to have a 50% or greater arterial stenosis, duplex Doppler ultrasonographic scanning is recommended. This test is noninvasive, relatively inexpensive, can be used in patients with any level of renal function, and is both sensitive (98%) and specific (98%) for the presence of renovascular induced hypertension. Currently, this patient is asymptomatic with excellent blood pressure control and with a normal Doppler ultrasound study. Serial monitoring of blood pressure and renal function are sufficient for follow-up. In patients with a 75% narrowing, 10% may progress to complete occlusion within two years and up to 60% will progress to stage 3 or higher renal failure within six years. Consideration for interval radiologic follow-up is usually added to the follow-up protocols in this asymptomatic patient population. Split differential renal vein renin measurements are now performed very infrequently because of their limited clinical utility and need for invasive catheterization. A renal vein renin ratio of greater than or equal to 1.5 (affected to non-affected side) is considered significant for the presence of renin-dependent hypertension; its clinical utility in being able to determine who will respond to renal revascularization is controversial. However, it has been found to be useful for prognostic purposes in pediatric patients where there is an ipsilateral diminished renal function (less than 25%) and nephrectomy is a consideration for resolution of hypertension. Percutaneous transluminal balloon angioplasty +/- stenting is not indicated in this patient who does not have renovascular hypertension. Randomized, controlled trials comparing renal stent placement with balloon treatment alone have documented procedural superiority for primary stent placement. The need to re-intervention in the percutaneous transluminal renal angioplasty group is approximately three-fold higher (48%) compared with that of the stent group (14%). The reduced restenosis with stenting compared with angioplasty alone was not, however, associated with a significant difference in benefits in hypertension control or renal function.

Gulmi FA, Reiser IW, Spitalewitz S: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 45, p 1028.

Question #144 **ANSWER=B**

The primary and direct mechanism by which angiotensin II (ATII) maintains GFR during hypoperfusion is by efferent arteriolar vasoconstriction. The effect of vasoconstriction is greater

for the efferent than afferent arteriole. ATII causes a decrease in renal medullary blood flow rather than an increase. ATII may result in renal artery constriction during hypovolemia. ATII increases aldosterone production that affects the cortical collecting tubule, activating sodium channels resulting in net sodium and water absorption.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 44, pp 1009-1010.

Question #145 **ANSWER=A**

Urethrocutaneous fistula is a complication of hypospadias repair. Although all of the choices listed may reduce fistula recurrence, the most important step for a successful outcome of fistula repair is evaluation for and assurance of absence of urethral stricture distal to the fistula site. Repair, therefore, needs to include assessment for distal obstruction as well as excision of the fistula tract with closure of the urethral opening and vascularized flap coverage over the defect. Successful fistula repair requires healthy skin and subcutaneous tissue immediately surrounding the fistula site. In general, urethral stenting does not impact outcome following a straight forward urethrocutaneous fistula repair, and post-operative care requirement should be minimal.

Snodgrass WT, Bush NC: Hypospadias, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 147, p 3419.

Question #146 **ANSWER=E**

The patient has a vocational indication for stone removal. The procedure most likely to render him stone-free in a single procedure is ureteroscopy. As the stones are in the kidney, medical expulsive therapy is not indicated. The patient has not yet undergone metabolic work-up, so potassium citrate at this point is premature. SWL will not permit a bilateral treatment in the same session, and does not provide for immediate stone clearance so that the patient may resume his vocation.

Pearle MS, Goldfarb DS, Assimos DG, et al: MEDICAL MANAGEMENT OF KIDNEY STONES: AUA GUIDELINE: AUA GUIDELINE. American Urological Association Education and Research, Inc, 2014. http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #147 **ANSWER=C**

The use of a conventional Hasson trocar following balloon dilation in retroperitoneal laparoscopic procedures is often fraught with unique challenges, including leakage of gas around the trocar despite securing fascial sutures to the cone portion of the Hasson trocar. This occurs as the initial fascial incision is often larger than the size of the 12 mm trocar allowing for diffusion of CO_2 gas around the trocar and into the subcutaneous space. Subsequent systemic absorption of the subcutaneous gas results in hypercarbia. With the advent of balloon access trocars, this problem is less common than with standard 12 mm trocars that may not form as tight a seal against the fascia. The retention doughnut-shaped balloon placed on the inside of the fascia and peritoneum is secured against a foam cuff on the outside of the fascia creating a

tight seal, thus minimizing gas leakage around the trocar. This patient is healthy and has no history of underlying pulmonary disease. A rupture of an occult pulmonary bleb would result in a pneumothorax but not subcutaneous emphysema. Entry into the peritoneal cavity would not necessarily increase the risk of hypercarbia. Lastly, there is no mention of bleeding or entry into a large vascular structure that would lead one to suspect venous absorption of gas.

Ordon M, Eichel L, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 10, p 201.

Question #148 **ANSWER=E**

Asymptomatic renal stones in native kidneys do not require any pre-operative intervention. Thus, this patient should proceed with renal transplantation and the stone does not need to be addressed with procedures such as SWL, ureteroscopy, PCNL, and nephrectomy.

Gritsch HA, Blumberg JM: Renal transplantation, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 47, p 1069.

Question #149 **ANSWER=D**

Fowler's syndrome, first described in 1985, refers to the development of urinary retention in young women in the absence of overt neurologic disease. The typical clinical history is that of a woman younger than 30 years who has found herself unable to void for a day or more. It is noteworthy that 50% of affected patients will be found to have polycystic ovaries in association with the urinary pathology. Patients classically will not complain of urinary urgency, but invariably complain of increasing lower abdominal pain and discomfort. Clinical suspicion for Fowler's syndrome should be given if a young woman is found in urinary retention, bladder capacity of over 1 L, with no sensation of urinary urgency. On needle electrode, electromyographic (EMG) examination of the external urethral sphincter, abnormal EMG activity with complex repetitive discharges, and decelerating bursts will be noted. This abnormal EMG electrical activity impairs external urinary sphincter relaxation. Simultaneous CMG studies reveal excellent bladder compliance associated with detrusor acontractility. Due to the absence of detrusor contractility, true detrusor external sphincter dyssnergy is not seen. While the same EMG abnormality on occasion may be found in women with obstructed voiding, it will not be associated with detrusor acontractility; rather, the patient will be found to have high voiding pressures and low urinary flow rates.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, p 1789.

Question #150 **ANSWER=E**

The CHAARTED trial has shown clear survival benefits to ADT and docetaxel chemotherapy in the setting of high volume, hormone-sensitive, metastatic prostate cancer. In the pivotal trial, Sweeney, et al, showed an HR of 0.61 (0.47-0.80), p=0.0003, with median overall survival

advantage from 44.0 months to 57.6 months for the entire cohort. Specifically for the high volume disease, the HR was 0.60 (0.45-0.80), p=0.0006 with median overall survival advantage from 32.2 months to 49.2 months. The STAMPEDE trial has shown similar results, thus, confirming the efficacy of cytotoxic chemotherapy with ADT in the hormone-sensitive metastatic setting. While ketoconazole could certainly aid in attaining castrate levels of testosterone, this patient does not display impending pathologic fracture or cord compression, and there is no clear indication for the addition of ketoconazole. Sipuleucel-T, enzalutamide, and abiraterone are all approved only for metastatic castration-resistant prostate cancer.

Sweeney CJ, Chen Yu-Hui, Carducci M, et al, Chemohormonal therapy in metastatic hormone-sensitive prostate cancer. NEJM 2015;373:737-746.

