M_CNNPQ (1000+ Questions) - Quiz Questions with Answers

1.

Mr. Adler is started on an SSRI (fluoxetine 20 mg daily) for treatment of depression. After two weeks, the patient reports no improvement. The patient should be advised that

a different SSRI may be needed.

SSRIs may be ineffective for the patient.

four to six weeks are needed to evaluate response.

the patient may respond better to other types of therapy.

Explanation:

If a patient with ESKD and hemodialysis is started on an SSRI (fluoxetine 20 mg) daily for treatment for depression but shows no improvement after two weeks, the patient should be advised that four to six weeks are needed to evaluate response. Tricyclic antidepressants are associated with more adverse effects and are usually avoided. Depression adversely affects quality of life and increases the risk of both morbidity and mortality. Depression is common in patients with chronic kidney disease and is often exacerbated by hemodialysis.

2.

Ms. Williams complains of frequent nausea and a bad taste in her mouth and states that her spouse reports that her breath increasingly has an "ammonia" or "urine" smell. The most likely cause is

dental caries.

diabetic ketoacidosis.

uremic fetor.

gingivitis.

Explanation:

If a patient with stage 4 chronic kidney disease complains of frequent bad taste in the mouth and states that her breath increasingly has an "ammonia" or "urine" smell, the most likely cause is uremic fetor, which develops as chronic kidney disease progresses to stage 5, kidney failure. As excess urea in the body breaks down in the saliva, it produces ammonia, which gives off a urine-like odor.

3.

If a pseudoaneurysm occurs in a fistula, the most likely cause is

infection.

improper rotation of needle sites.

inadequate anastomosis.

incorrect needle size.

Explanation:

If a pseudoaneurysm occurs in a fistula, the most likely cause is improper rotation of needle sites. A pseudoaneurysm occurs when the graft widens because of weakness of the wall. This may result from a defect related to too numerous punctures of the same site. Signs include swelling at the site, shiny and stretched skin, discoloration of the skin, and pain. Because the pseudoaneurysm poses a risk of rupture and exsanguination, the nurse should never insert a needle into a pseudoaneurysm.

4.

A patient who has had severe recurrent episodes of gout has recently started hemodialysis. What effect should the patient expect related to episodes of gout?

Episodes of gout will be less responsive to medication therapy.

Episodes of gout will likely increase in frequency.

Hemodialysis should have no effect on gout.

Episodes of gout should decrease.

Explanation:

If a patient who has had severe recurrent episodes of gout has recently started on hemodialysis, the patient should expect that the episodes of gout would decrease. Uric acid is a small molecule so it is filtered from the blood during hemodialysis. However, if overproduction of uric acid continues, the patient may still experience some symptoms of gout because the production may still exceed the removal. Patients may need to continue with a low purine diet.

5.

A diabetic patient with chronic kidney disease is rapidly deteriorating and is starting hemodialysis. The patient has taken high doses of insulin for many years. What effects are end-stage kidney disease and dialysis likely to have on insulin dosage?

The insulin dosage will likely remain the same.

The insulin dosage will likely need to be increased.

The insulin dosage will likely need to be decreased.

The insulin dosage may vary widely from one day to another.

Explanation:

If a diabetic patient with chronic kidney disease is rapidly deteriorating and is starting hemodialysis and the patient has taken high doses of insulin for many years, the insulin dosage will likely need to be decreased. Insulin is dependent on the kidneys for excretion, so with kidney failure, the insulin remains active in the body for longer periods. Additionally, some patients who had been insulin dependent are able to stop taking insulin with dialysis. Glucose levels should be carefully monitored and insulin dosage individualized.

6.

A patient undergoing hemodialysis has been anemic for the last few months. When the patient comes to the hemodialysis center for treatment, the nurse reviews the patient's laboratory report and finds that the patient's hemoglobin has dropped to 6.2 and hematocrit 19.1. The nurse is unable to reach the nephrologist but leaves a message. The best initial action is to

continue with the dialysis treatment.

hold the dialysis treatment until the physician responds.

advise the patient to skip the dialysis treatment and make an appointment with the physician.

telephone an alternate physician, such as the patient's internist.

Explanation:

Because the patient's hemoglobin (6.2) and hematocrit (19.1) are dangerously low, the nurse should initially hold the dialysis treatment until the physician responds. Continuing with the dialysis when the patient's blood counts are so low puts the patient at risk of cardiac arrest. The patient may require transfusions in order to increase the blood counts and may need more aggressive management of anemia with EPO and iron. The patient should be assessed for signs of bleeding.

7.

A 70-year-old patient has developed dialysis-associated pericarditis with pericardial effusion, but the effusion had remained stable at about 75 mL in size. The patient has frequent echocardiograms, and the latest shows that the pericardial effusion has almost doubled in size. At what volume is surgical drainage usually considered?

>150 mL.

>200 mL.

>250 mL.

>350 mL.

Explanation:

Because pericardial effusions may suddenly enlarge and result in cardiac tamponade, surgical drainage is usually considered when the effusion volume exceeds 250 mL. The most common procedure is a subxiphoid pericardiostomy done under local anesthesia. If the effusion is less than 250 mL, increasing the frequency of dialysis to 5 to 7 times per week may resolve about

half of the pericardial infusions. Medications such as NSAIDS and steroids have not proven to be helpful.

8.

If a hemodialysis patient is experiencing severe anxiety, an appropriate medication is

lorazepam.

phenobarbitol.

gabapentin.

diazepam.

Explanation:

If a hemodialysis patient is experiencing severe anxiety, an appropriate medication is lorazepam, which is a short-acting benzodiazepine metabolized by the liver, although the medication should be given for a limited period of time. Diazepam is contraindicated for those on hemodialysis. Barbiturates, such as phenobarbitol, are removed through dialysis and should not be used for anxiety. In some cases, such as when the patient becomes extremely agitated, haloperidol may be prescribed.

9.

For a patient who has been treated for bacterial peritonitis with IP antibiotics, what changes in nutritional status may occur?

Increase glucose may result in weight gain.

Loss of protein may result in malnutrition.

Loss of fat may result in weight loss.

Nutritional status should not be affected.

Explanation:

For a patient who has been treated for bacterial peritonitis with IP antibiotics, loss of protein may result in malnutrition as well as poor healing. The patient's diet may need to be adjusted to ensure adequate protein intake, and the patient should be monitored closely. Prompt diagnosis and treatment of peritonitis are essential in preventing malnutrition. Patients may present with malnutrition on diagnosis of peritonitis, and the condition is likely to worsen during the course of treatment, increasing the risk of mortality.

10.

A patient on CAPD plans to take a trip out of state and stay for a week in a hotel. What is the best advice to help the patient plan for the trip?

Plan to pack and take all supplies on the plane.

Arrange to have supplies sent to the destination 2 to 4 weeks before arrival.

Arrange with a local supplier at the destination to supply dialysate.

Arrange for temporary hemodialysis in a center at the destination.

Explanation:

If a patient on CAPD plans to take a trip out of state and stay for a week in a hotel, the best advice to help the patient for the trip is to arrange to have supplies sent to the destination 2 to 4 weeks before arrival, contacting the hotel first to make sure they have storage space and to understand that a number of large boxes may arrive. The patient should also call a few days prior to arrival to make sure all of the supplies have arrived.

11.

A patient is switching from CAPD with a nighttime dwell to APD with a daytime dwell. What adjustment in the procedure is likely to result when receiving dialysis during sleep?

Decreased volume of dialysate for nighttime dwells.

Increased volume of dialysate for nighttime dwells.

Fewer exchanges in a 24-hour period.

More exchanges in a 24-hour period.

Explanation:

If a patient is switching from CAPD with a nighttime dwell to APD with daytime dwell, the adjustment in the procedure that is likely to result from receiving dialysis during sleep is an increased volume of dialysate for the nighttime dwells. In the supine position, there is less intra-abdominal pressure, so the abdomen can tolerate a larger volume of fluid. Typical dwells during the night are with 2 to 3L of dialysate while the daytime dwells are usually 1.5 to 2L. The number of exchanges may vary with CAPD and APD, although the nighttime dwells with APD are often of shorter duration.

12.

A patient on peritoneal dialysis has erythema about the exit site and purulent discharge, although the dialysate solution returns clear. While awaiting the results of culture and sensitivities, the patient is started on antibiotics. Which organism should always be covered by empiric therapy?

Staphylococcus aureus.

Pseudomonas aeruginosa.

Streptococci.

Diptheroids.

Explanation:

If a patient on peritoneal dialysis has erythema about the exit site and purulent discharge although the dialysate solutions return clear, then the patient most likely has an exit site and possibly a tunnel infection. Because Staphylococcus aureus is a common bacteria found on the skin and is one of the most common causes of exit-site infection, empiric therapy that is started before the return of culture results should cover this organism. If the patient has previous history of P. aeruginosa infection, then the antibiotic should cover this organism as well.

13.

Although the patient's control of her glucose levels had been poor, she reports that her glycemic control has improved in recent weeks, although she has had recent episodes of hypoglycemia. The most likely reason for this is

inadequate diet.

hyperinsulinism.

hypoinsulinism.

diabetic ketoacidosis.

Explanation:

If a patient with chronic kidney disease and type 1 diabetes mellitus reports that her glycemic control has improved in recent weeks although she has had recent episodes of hypoglycemia, the most likely reason is that the patient has developed hyperinsulinism, a common occurrence with kidney failure. The half-life of insulin is also prolonged, so patients are likely to require decreased doses of insulin (or in some cases, no insulin) and are at risk for hypoglycemia.

14.

The primary advantage to the use of the post-dilution mode for hemodiafiltration is

hemodilution.

accommodation of suboptimal blood flow.

high solute clearance of low to high molecular weight solutes.

reduced viscosity and oncotic pressure.

Explanation:

With the post-dilution mode of hemodiafiltration, the blood goes through the hemodialyzer and then the fluid is added as it leaves the dialyzer, so the blood in the dialyzer is not diluted. This means that low-to-high molecular weight solutes are well cleared through convection. All or part of the fluid infusion can be done upstream of the filter if desired to bring about hemodilution, but this decreases the clearance of solutes.

15.

A diabetic patient receiving acute hemodialysis is hyperglycemic with glucose level of 270 mg/dL. Which electrolyte imbalance is of primary concern for this patient?

Hyponatremia.

Hypernatremia.

Hypokalemia.

Hyperkalemia.

Explanation:

If a diabetic patient receiving acute hemodialysis is hyperglycemic with glucose level of 270 mg/dL, the electrolyte imbalance of primary concern is hyponatremia because sodium levels decrease as glucose levels increase because of a shift of water from the intracellular compartment to the extracellular. Excess plasma is retained rather than excreted when the usual osmotic diuresis triggered by hyperglycemia does not occur, preventing correction of the hyponatremia. Administration of insulin to lower the glucose level causes the retained fluid to shift back to the intracellular component, correcting the hyponatremia.

16.

If a patient scheduled for acute hemodialysis has a serum sodium level of 132 mmol/L, the initial goal should be to maintain the serum sodium level at

≥ 130 mmol/L.

≥ 140 mmol/L.

≥ 150 mmol/L.

≥ 160 mmol/L.

Explanation:

If a patient scheduled for acute hemodialysis has a serum sodium level of 132 mmol/L, the initial goal should be to maintain the serum sodium level at ≥140 mmol/L. The dialysate solution should be less than 10 mM higher than the patient's serum sodium level, especially if the patient is at risk for hypotension or cerebral edema. If the patient's serum sodium level is less than 130 mmol/L, then the sodium level should be corrected slowly (6 to 8 mmol/L in 24 hours) in order to prevent severe neurological impairment.

17.

A patient who is scheduled for acute hemodialysis is severely hyperkalemic with abnormalities noted on ECG, including depressed P waves, peaked T waves, and widening of the QRS complex. The patient feels severe weakness and appears lethargic. While awaiting hemodialysis, which of the following treatments is most appropriate?

Sodium bicarbonate infusion.

Insulin infusion.

Normal saline infusion.

Calcium chloride infusion.

Explanation:

If a patient is severely hyperkalemic with abnormalities noted on the ECG, including depressed P waves, peaked T waves, and widening of the QRS complex, the treatment that is most appropriate while the patient is waiting to begin acute hemodialysis is infusion of calcium chloride or calcium gluconate to bind to the potassium. Alternate treatments include administration of IV glucose and insulin or administration of inhaled or intravenous albuterol.

18.

A patient involved in a sudden deceleration automobile accident experienced a severe blunt injury to the abdomen and complains of severe abdominal pain and has hematuria. The preferred method of evaluating for renal trauma is

IVP.

CT scan.

ultrasound.

angiography.

Explanation:

If a patient is involved in a sudden deceleration automobile accident and experienced a severe blunt injury to the abdomen and complains of severe abdominal pain and has hematuria, the preferred method of evaluating for renal trauma is with a CT scan because it can aid in accurately staging the degree of injury and can help identify any other abdominal injuries that may be present. With severe injury to the kidney, damage to other organs is a common finding.

19.

In order to be a candidate for renal transplant, the patient's GFR usually must be

≤50 mL/min/1.73 m^2.

≤40 mL/min/1.73 m^2.

≤30 mL/min/1.73 m^2.

≤20 mL/min/1.73 m^2.

Explanation:

In order to be a candidate for renal transplant, the patient's GFR usually must be equal to or less than 20 mL/min/1.73 m^2. Patients who want a preemptive transplant may want to be placed on the waiting list early, but time on the list is credited from the time the GFR falls to 20 mL/min/1.73 m^2. This GFR is categorized as stage 4 chronic kidney disease. Stage 5, kidney failure, occurs when the GFR falls to less than 15, the point at which the patient will require transplantation or dialysis.

20.

Which of the following is usually considered an absolute contraindication for kidney transplant?

Lack of financial resources/insurance to cover costs.

BMI >35.

History of malignancy within the past 5 years.

Hepatitis C infection.

Explanation:

While criteria may vary slightly from one transplant center to another, lack of financial resources or insurance to cover the costs of the transplant is usually considered an absolute contraindication because of the high costs associated with the procedure and immunosuppressive therapy that follows surgery. However, patients may be eligible for medical assistance through Medicaid, and Medicare covers transplantation. Additionally, the American

Kidney Fund through the Health Insurance Premium Program may provide some financial support so that patients can pay for their insurance.

21.

When teaching a patient about kidney transplantation, the patient should understand that the average lifespan of a transplanted kidney is:

5 to 7 years.

7 to 10 years.

10 to 15 years.

15 to 20 years.

Explanation:

Patients should have a realistic understanding of the lifespan of a transplanted kidney. The average lifespan is 10 to 15 years; however, in actuality the expected lifespan for an individual kidney varies according to the age and condition of the recipient. Kidneys implanted into younger patients may last longer than 15 years, while a kidney in an older adult may only last 4 to 5 years. Many patients will require more than one transplanted kidney over their lifetime, especially if they received the first transplant as a child or younger adult.

22.

Mr. Rivera has severe peripheral nephropathy, hypertension, and proteinuria. His cholesterol level is 240. His GFR is 58 mL/min/1.73$^{2.}$ Mr. Rivera has been taking metformin, an ACE inhibitor, a statin, and a thiazide diuretic. The patient's latest serum creatinine is 1.7. Which medication is cause for concern?

Statin.

ACE inhibitor.

Thiazide diuretic.

Metformin.

Explanation:

If a 68-year-old patient with diabetes, type 2, peripheral neuropathy, hypertension, and proteinuria has a serum creatinine of 1.7, then the patient should not be taking metformin because it may result in lactic acidosis when the serum creatinine reaches this level. Metformin is contraindicated for males with serum creatinine equal to or greater than 1.5 mg/dL or for females with serum creatinine equal to or greater than 1.4 mg/dL. Patients with kidney disease and taking metformin must be closely monitored.

23.

If Mr. Rivera's LDL level is 142, the goal of statin therapy and diet should be to decrease the patient's LDL to at least

<100 mg/dL.

<90 mg/dL.

<70 mg/dL.

<60 mg/dL.

Explanation:

If the patient's LDL level is 142, the goal of statin therapy and diet should be to decrease the patient's LDL to at least less than 100 mg/dL, although in some cases the goal may be set even lower, such as to below 70 mg/dL. The patient's LDL level is now categorized as borderline high (130 to 159 mg/dL). Because LDL is the primary cause of atherosclerotic plaques and arterial obstruction, it's important to lower the LDL level and increase the level of HDL, which functions to remove cholesterol and should be greater than 60 mg/dL.

24.

The patient complains of increasing weakness and fatigue, resulting in difficulty in carrying out activities of daily living, such as cooking, cleaning, and even dressing; and this is causing her frustration and anxiety. The most valuable resource for this patient is likely a(n)

housekeeping service.

physical therapist.

psychiatrist.

occupational therapist.

Explanation:

Because the patient's increasing weakness and fatigue have made it difficult to carry out activities of daily living, such as cooking, cleaning, and dressing, the best resource is probably an occupational therapist. The therapist can assess the patient in the home environment and can determine whether modifications or assistive devices could help the patient to manage better and to remain as independent as possible. If the patient's frustration and anxiety persist, the patient may benefit from a psychiatrist or other therapist.

25.

Mr. Rivera is scheduled for a serum creatinine test. Mr. Rivera should be counseled to avoid which of the following for 8 hours before a serum creatinine test?

Strenuous exercise and red meat.

Dairy products.

A bath or shower.

Anticoagulant drugs.

Explanation:

Patients should be counseled to avoid strenuous exercise and red meat for 8 hours prior to a serum creatinine test, as these may interfere with the results. Serum creatinine indicates the kidneys' abilities to excrete waste. Normal values vary from one laboratory to another but are usually less than 1.2 mg/dL. Elevation of the serum creatinine is an indication of renal disease. Urine creatinine should always be considerably higher than serum creatinine.

26.

A patient is scheduled for an IVP. When instructing the patient about preparation for the procedure, the patient should be advised to expect which of the following?

There is no special preparation.

The patient will be NPO for 8 hours prior to the test only.

The patient will have a bowel prep and will be NPO for 8 hours prior to the test.

The patient will have a bowel prep only before the test.

Explanation:

When instructing a patient about preparation for an intravenous pyelogram (IVP), the patient should be advised to expect to have a bowel prep the day before the test as well be NPO for 8 hours prior to the procedure. The IVP is a fluoroscopic procedure that requires injection of a radiopaque dye and a series of radiographs. Following the IVP, the patient should be encouraged to drink fluids to help flush the dye and should be monitored for signs of allergic response.

27.

Diabetic nephropathy results from damage to the

glomeruli.

renal artery.

loops of Henle.

proximal convoluted tubules.

Explanation:

Diabetic nephropathy results from damage to the glomeruli, which are part of the functioning unit of the kidney, the nephron. The nephrons comprise the renal corpuscle and the renal tubule. The filtering unit in the renal corpuscle is the glomerulus (a cluster of blood capillaries), and a sac-like structure that surrounds it, Bowman's capsule. With diabetic nephropathy, the glomeruli become scarred and are no longer able to adequately filter the blood of solutes. The first indication is often the finding of microalbuminuria.

28.

When a patient is severely dehydrated and hypotensive, the hypertonic plasma that results

stimulates the kidneys to secrete angiotensin.

stimulates the parathyroid gland to release parathyroid hormone.

stimulates the kidneys to release erythropoietin.

stimulates the posterior pituitary to release ADH.

Explanation:

When a patient is severely dehydrated and hypotensive, the hypertonic plasma that results stimulates the posterior pituitary to release ADH. ADH increases reabsorption at the renal tubules, decreasing urinary output in an effort to increase blood volume and to increase blood pressure. In response to hypotension, the kidneys release renin, which converts angiotensinogen (produced by the liver) to angiotensin I, which is in turn converted into angiotensin II by a lung enzyme. Angiotensin II is a vasoconstrictor that helps increase blood pressure.

29.

Based on these symptoms, the most likely diagnosis is

acute glomerulonephritis.

chronic glomerulonephritis.

acute pyelonephritis.

chronic pyelonephritis.

Explanation:

If a patient presents with sudden onset of hematuria, nausea, anorexia, severe left costovertebral angle pain, and tenderness in the left flank on palpation, the most likely diagnosis is acute pyelonephritis. Pyelonephritis, an inflammation of the renal pelvis, may affect one or both kidneys and is often the result of an ascending infection, such as cystitis. Chronic pyelonephritis may develop if the patient has longstanding or recurrent urinary tract infections, and this can lead to scarring of the kidneys.

30.

The physician orders a clean-catch urine for urinalysis and culture and sensitivities, a CBC, a dipstick leukocyte esterase test, and a nitrite production test. The purpose of the nitrite production test is to evaluate for the presence of

purulent material in the urine.

bacteria in the urine.

viral particles in the urine.

fungi in the urine.

Explanation:

The purpose of a nitrite production test is to evaluate for the presence of bacteria in the urine, specifically bacteria that produce nitrites, including Escherichia coli, Klebsiella, Proteus, Pseudomonas, Salmonella, Citrobacter, and some species of Staphylococcus. A negative finding, however, is not conclusive because negative results may occur when the patient has elevated specific gravity or is taking ascorbic acid. The nitrite production test will not detect the presence of pathogens that are non-nitrite-producing.

31.

Ms. Williamson is treated in the ED with a dose of parenteral ceftriaxone and discharged with a prescription for ciprofloxacin 500 mg twice daily. How many days should the patient expect to take the oral antibiotics if no complications arise?

7 days.

14 days.

21 days.

38 days.

Explanation:

If a patient is treated for acute pyelonephritis in the ED with a dose of parenteral ceftriaxone and sent home with a prescription of ciprofloxacin 500 mg twice daily, the antibiotics are usually taken for 7 days. The duration varies according to the medication prescribed, but first-line antibiotics are usually given for shorter durations (5 to 7 days) than second-line therapies, such as TMP-SMZ, which is administered for 14 days. The choice of antibiotic should be influenced by resistance patterns in the local area.

32.

A 32-year-old female patient has developed fever, maculopapular rash, pyuria, and acute renal insufficiency, suggestive of acute interstitial nephritis. The most common cause for the development of acute interstitial nephritis is

hypokalemia.

Sjögren syndrome.

systemic lupus erythematosus.

drugs.

Explanation:

While acute interstitial nephritis may occur as the result of infection or autoimmune disorders, such as Sjögren syndrome or systemic lupus erythematosus as well as electrolyte imbalances, such as hypokalemia or hypercalcemia, the most common cause is a reaction to drugs (7 out of 10 cases). The drugs that most often are associated with acute interstitial nephritis are cephalosporins, penicillins, sulfonamide-containing diuretics, rifampin, NSAIDs, phenytoin, and proton pump inhibitors. Infections associated with acute interstitial nephritis include CMV, histoplasmosis, streptococcal infections, leptospirosis, and Rocky Mountain spotted fever.

33.

Which blood abnormality is a common finding with acute interstitial nephritis?

Decreased hemoglobin.

Increased eosinophils.

Increased monocytes.

Increased lymphocytes.

Explanation:

The blood abnormality that is a common finding with acute interstitial nephritis is increased eosinophils. This occurs in about 8 out of 10 patients. While prognosis is usually good, recovery may be a slow process lasting months, and about a third of patients will require temporary acute hemodialysis, although most will not progress to end-stage kidney disease. Identifying

and removing the causative agent for drug-induced disease is critical to recovery. In some cases, patients may be treated with corticosteroids if they don't respond to supportive care.

34.

Mr. Robinson admits that he understands his dietary needs but finds cooking too difficult and has been eating primarily foods delivered from a fast-food restaurant across the street from his apartment. The most useful response is probably to

refer the patient to a Meals on Wheels program.

refer the patient to the renal dietitian.

recommend the patient to an occupational therapist.

remind the patient of the importance of diet.

Explanation:

If a patient understands the necessary dietary restrictions, further consultation with a renal dietitian may not be of use. The most useful response is probably to refer the patient to a Meals on Wheels program. Most of these programs provide limited special diets, such as low sodium and/or low carbohydrate, and the choices are likely more nutritious than fast food. Costs are generally low, and many programs deliver a main meal in the middle of the day and include cereal for breakfast the next day and a snack for dinner.

35.

Mr. Clark often experiences intradialytic hypotension. Which of the following preventive measures is usually the best approach for patients who routinely experience intradialytic hypotension because of volume-related problems associated with large intradialytic weight gain?

Increasing the patient's dry weight.

Extending weekly dialysis time.

Increasing restriction of fluid intake .

Increasing restriction of sodium intake.

Explanation:

The preventive measure that is usually the best approach for patients who routinely experience intradialytic hypotension because of volume-related problems associated with large intradialytic weight gain is to increase restriction of sodium intake. Patients who experience intradialytic hypotension are at increased risk of poor outcomes. Blood pressure should generally be maintained at a systolic pressure of at least 90 mm Hg. Low predialytic blood pressure is often an indicator for intradialytic hypotension.

36.

Mr. Robinson's sister reports that the patient is having fluctuating periods of inattention, disorientation, and general confusion. Which of the following tools is intended to assess the development of delirium in patients as opposed to other causes of altered mental status?

MMSE.

Mini-Cog.

Palliative Performance Scale.

Confusion Assessment Method.

Explanation:

The Confusion Assessment Method is a tool designed to determine if a patient is experiencing delirium. The 9 factors covered by the tool include the onset, attention level, thinking ability, level of consciousness, orientation, memory, perceptual disturbances, psychomotor abnormalities, and sleep-wake cycle. The tool is intended to be used by those without psychiatric training. Delirium is characterized by fluctuating symptoms. Various factors can trigger delirium, such as electrolyte imbalances and dehydration, putting patients with chronic kidney disease at risk. Delirium may be precipitated by uremic encephalopathy and dialysis dysequilibrium.

37.

The nurse assesses the patient's mental status. Which of the following tasks is appropriate to assess a patient's ability to concentrate?

Naming the current president.

Providing the patient's social security number.

Stating the city and state of residence.

Repeating the days of the week backward.

Explanation:

The task that is appropriate to assess a patient's ability to concentrate is to ask the patient to repeat the days of the week backward, to count backward from 100 by 7s, and to spell the word world backward. Patients may also be asked to carry out a simple three-part task (giving the directions one step at a time in case memory is impaired). When assessing intellectual ability and sensorium, the nurse should evaluate orientation, memory, and ability to think abstractly.

38.

Mr. Robinson's condition deteriorates, and tests show he has almost reached stage 5 chronic kidney disease, but he is not a candidate for transplantation and the patient's prognosis, even with dialysis, is very poor because of multiple co-morbidities. The best solution is to

carry out a hemodialysis trial.

discuss prognosis and options with the patient.

provide palliative care only.

discuss options with family members.

Explanation:

If an elderly patient with multiple co-morbidities has almost reached stage 5 chronic kidney disease, but the patient is not a candidate for transplantation and the patient's prognosis, even with dialysis, is very poor, the best solution is to discuss the prognosis and options with the patient so the patient can decide if he wants a trial of hemodialysis or prefers to opt for palliative care only. While family members may be included in the discussion, unless the patient is not of sound mind, the decision rests with the patient.

39.

Mr. Robinson's PTH levels are elevated. For a patient with non-dialytic chronic kidney disease and elevated levels of PTH, the KDIGO guidelines recommend treatment with

vitamin D.

calcium.

prednisone.

cinacalcet.

Explanation:

For a patient with non-dialytic chronic kidney disease and elevated PTH, the KDIGO guidelines recommend treatment with vitamin D. Hyperparathyroidism, a common finding with kidney disease, acts as a uremic toxin and may result in bone disease. The target PTH level varies with the type of assay used and will increase over time because of resistance to PTH that develops in the bones. After patients are started on dialysis, the target PTH range is usually 2 to 9 times the normal range.

40.

The most important consideration for patients in their approaches to health beliefs and health practices is usually

educational background.

cultural background.

individual factors.

socioeconomic status.

Explanation:

The most important consideration for patients in their approaches to health beliefs and health practices is usually cultural background. Non-Western cultures may view illness as caused by an unnatural force, such as a deity or spirit, or as caused by a natural force, such as heat or

cold. Patients who consider the source of illness outside of themselves may not be receptive to changing personal behavior in order to treat or prevent illness.

41.

Prior to beginning treatment for diabetes, the patient's Hgb A1C was greater than 10%. What is a realistic target goal Hgb A1C for this patient?

<9%.

<8%.

<7%.

<6%.

Explanation:

If, prior to beginning treatment for diabetes, the patient's Hgb A1C was greater than 10%, a realistic target goal Hgb A1C for this patient is less than 7%. The patient will need to not only take medications but also modify his diet in order to achieve this response. Studies have shown that lowering the Hgb A1C in adults with chronic kidney disease to less than 6% increases the risk of mortality. If the patient's pre-diabetic baseline Hgb A1C is available, then the patient's target goal may be individualized to within 10% of normal.

42.

For a patient at stage 4 kidney disease considering options, the patient should understand that the best survival rate is associated with

post-dialytic transplantation.

pre-emptive transplantation.

hemodialysis.

peritoneal dialysis.

Explanation:

For a patient at stage 4 kidney disease considering options, the patient should understand that the best survival rate is associated with pre-emptive transplantation. Pre-emptive transplantation is an especially good option if the patient is receiving a donated kidney from a family member or friend because the surgery can be planned for and scheduled in advance without concern that a kidney may not be available. Another advantage is that long-term costs are decreased; however, the patient must take long-term immunosuppressive drugs.

43.

The three processes involved in the production of urine are

glomerular filtration, hormonal stimulation, and tubular reabsorption.

glomerular filtration, tubular reabsorption, tubular secretion.

glomerular filtration, ultrafiltration, and tubular reabsorption.

glomerular filtration, sodium regulation, and tubular reabsorption.

Explanation:

The three processes involved in production of urine are:

- *Glomerular filtration: Ultrafiltration process that produces glomerular filtrate.*
- *Tubular reabsorption: Much of the filtrate is reabsorbed through diffusion back into the blood, including water, electrolytes, and other solutes. This process demonstrates the ability of the kidneys to concentrate urine.*
- *Tubular secretion: Potassium and hydrogen ions are secreted back into the urine from the blood to regulate potassium levels and the acid-base balance.*

44.

The normal ratio of BUN to creatinine is

10:1.

8:1.

4:1.

2:1.

Explanation:

The normal ratio of BUN to creatinine is 2:1. Urea is the end product of protein metabolism, and the blood urea nitrogen (BUN) test determines the ability of the kidneys to excrete urea. BUN may elevate because of various factors, including high protein diet, dehydration, hemorrhage, and medications. Creatinine is produced as a waste product when muscle breaks down. Levels in the blood should be low and they should be elevated in the urine. If the blood level increases, then this indicates that the kidneys cannot adequately excrete waste products.

45.

If a patient with a Foley catheter requires a 24-hour urine collection for the creatinine clearance test, the proper procedure to collect the specimen is to

collect the urine from the catheter bag at the end of 24 hours.

place the catheter bag in a container of ice and collect urine every 8 hours.

place the catheter bag in container of ice and collect urine every hour.

collect the urine from the catheter bag every hour.

Explanation:

If a patient with a Foley catheter requires a 24-hour urine collection for the creatinine clearance test, the proper procedure to collect the specimen is to place the catheter bag in a container of ice so that the urine remains chilled and then to collect the urine every hour, placing the collected sample in a refrigerated container until the entire 24-hour collection is completed. The creatinine clearance test usually requires collection for 12 to 24 hours.

46.

If Mr. Clark's predialytic serum total cholesterol level falls to <150 mg/dL, this probably represents

an optimal cholesterol level.

excessive statin dosage.

poor nutritional status.

incorrect dialysate.

Explanation:

If a patient's predialytic serum total cholesterol level falls to <150 mg/dL, this probably represents poor nutritional status, usually associated with a low serum albumin level. Both poor nutrition and inflammation may result in lowered cholesterol levels. Patients who maintain their serum cholesterol between 200 and 250 mg/dL tend to have a lower risk of mortality, and levels of less than 150 mg/dl are associated with increased risk. There is some debate about the use of statins because of this, but patients on dialysis are also at high risk of cardiovascular disease.

47.

A hospitalized patient who is incontinent of urine has undergone a renal scan. What, if any, precaution is needed by the nurse following the procedure?

Gloves should be worn while handling urine and changing soiled linens.

Gown, gloves, and facemask should be used when handling urine and changing soiled linens.

No precautions are needed.

A Foley catheter should be placed to safely collect urine.

Explanation:

If a hospitalized patient who is incontinent of urine has undergone a renal scan, the nurse should wear gloves while handling the patient's urine and changing soiled linen. If the patient is not incontinent and is able to use the toilet, then no special precautions are needed. However, healthcare personnel and others who are pregnant should avoid the patient for 24 hours after the procedure to avoid exposing the fetus to radiation. The radiation dose is relatively small and is excreted rapidly.

48.

A patient with kidney failure is to be assessed for possible vesicoureteral reflux (VUR). The test most indicated to confirm VUR is a(n)

MRI.

IVP.

voiding cystourethrogram.

cystoscopy.

Explanation:

If a patient with kidney failure is to be assessed for possible vesicoureteral reflux, the test most indicated to confirm VUR is the voiding cystourethrogram. This procedure requires insertion of a catheter into the bladder and instillation of contrast dye. The dye outlines the bladder contour and shows reflux. The patient is asked to urinate while radiographs are taken as this provides extra information about the patency of the urethra and the bladder tone, as impairment may result in reflux.

49.

Following kidney transplantation, the patient requires medications not covered by his insurance drug plan, and the patient tells the nurse that he is concerned that he may have to sell his home to pay for the drugs. The best response is to

reassure the patient that a solution will be found.

refer the patient to a social worker.

suggest the patient apply for disability.

suggest the patient ask the physician about different medications.

Explanation:

If, after kidney transplantation, a patient requires medications not covered by his insurance drug plan and the patient is concerned that he may have to sell his home to pay for the drugs, the best response is to refer the patient to a social worker. Dealing with the financial problems of a patient requires expertise in knowing what resources are available, including programs for which the patient may meet the requirements, such as Medicaid or Medicare disability.

50.

A 38-year-old patient will soon require dialysis but lives 2 hours from a dialysis center. The patient wants to carry out home dialysis so she can continue working and avoid disrupting her daily activities but lives alone and has no one available to assist her. The best option for the patient is probably

in-center nocturnal dialysis.

home hemodialysis.

CAPD.

APD.

Explanation:

If a 38-year-old patient will soon require dialysis but lives 2 hours from a dialysis center and wants to carry out home dialysis so she can continue working and avoid disrupting her daily activities but lives alone and has no one to assist her, the best option for the patient is probably APD. The patient is not a candidate for home hemodialysis because she would need someone to assist her. Because of the distance to the hemodialysis center, peritoneal dialysis is likely a better choice, and APD would allow the patient to have minimal disruptions during the day.

51.

Which of the following HIV-infected groups is most at risk for development of HIV-associated nephropathy (HIVAN)?

Caucasian males.

African American males.

Asian females.

Caucasian females.

Explanation:

African American males who are HIV-infected have the most risk of developing HIV-associated nephropathy (HIVAN) although it can occur in all groups, especially in individuals with CD4+ counts of less than 200 cells/mm^3 and a high viral load. Diabetes, hypertension, older age, and co-infection with hepatitis B or hepatitis C are also risk factors. Patients with HIV should have routine kidney function tests, as almost a third of patients will eventually develop some degree of abnormal kidney function.

52.

Which of the following infections is commonly associated with membranous nephropathy?

Hepatitis A-related glomerulonephritis.

Hepatitis B-related glomerulonephritis.

Hepatitis C-related glomerulonephritis.

HIV-associated nephropathy.

Explanation:

Hepatitis B-related glomerulonephritis is commonly associated with membranous nephropathy. With membranous nephropathy, the small vessels and basement membrane of the glomeruli become inflamed and thickened, interfering with the ability of the glomeruli to adequately filter the blood and to reabsorb protein, so that large amounts of protein are excreted in the urine. The goal of treatment is to prevent the progression of kidney damage, but about 1 in 5 patients will progress to end-stage kidney disease over time.

53.

With chronic kidney failure, vascular calcification results from

hyperphosphatemia.

hypophosphatemia.

hypercalcemia.

hyperkalemia.

Explanation:

With chronic kidney failure, vascular calcification results from hyperphosphatemia, which in turn results in hypocalcemia because as phosphate levels increase in the serum, calcium levels fall. The decrease in serum calcium stimulates the parathyroid glands to secrete increased PTH. With kidney disease, the body does not respond normally to PTH, so calcium leaves the bones, resulting in osteomalacia, and builds up in the vessels, causing calcification. Additionally, vitamin D, which is needed for the body to properly utilize calcium, is not metabolized normally.

54.

A patient's urine osmolality is 300 Osm/kg. This probably indicates

a normal value.

dehydration.

early kidney disease.

end-stage kidney disease.

Explanation:

Urine osmolality indicates the amount of solutes in the urine. If the kidneys are unable to adequately filter the blood and remove waste products, the urine osmolality decreases. While urine osmolality may vary from 250 Osm/kg to 900 Osm/kg, the average adult with normal intake and kidney function has a urine osmolality of 500 Osm/kg to 800 Osm/kg of water. Therefore, an osmolality of 300 Osm/kg indicates early kidney disease. As urine osmolality decreases, serum osmolality should increase.

55.

How many grams of urea are usually produced and excreted in 24 hours?

5 to 10g.

20 to 30 g.

40 to 50 g.

60 to 70 g.

Explanation:

The number of grams of urea that is produced and excreted in 24 hours is 20 to 30. Urea is formed in the liver from ammonia and is an end product of protein metabolism. If the urine urea value decreases, this means that the kidneys are not adequately filtering out urea, so this can indicate renal disease. Because urea is synthesized in the liver, a decrease can also indicate liver disease. Urea may also be reduced if a patient is on a strict, low protein diet.

56.

A positive Chvostek sign is associated with

hyperkalemia.

hypokalemia.

hypercalcemia.

hypocalcemia.

Explanation:

A positive Chvostek sign is associated with hypocalcemia. If the patient's facial nerve is tapped at the masseter muscle of the jaw (1 cm inferior to the zygomatic process/2 cm anterior to the ear), this induces a spasm (tetany) of the facial muscles on the same side because of hyperexcitability of the nerve. Chvostek's sign may also be positive with hypomagnesemia and in those with respiratory alkalosis.

57.

If Mr. Clark has persistent headaches during dialysis, the medication usually given to manage headaches is

aspirin.

NSAIDs.

hydrocodone.

acetaminophen.

Explanation:

If a patient has persistent headaches during dialysis, the medication usually given for their management is acetaminophen. Up to 70% of patients on dialysis complain of headaches, and dialysis may exacerbate migraines. Headaches may result from hypomagnesemia, although magnesium supplementation must be used with caution in patients with kidney failure. NSAIDs are usually avoided because of their nephrotoxic affects, and aspirin should be avoided with heparin use during dialysis.

58.

Antidiuretic hormone (ADH) is secreted in response to

an increase in blood osmolality.

a decrease in blood osmolality.

release of aldosterone.

increased angiotensin II levels.

Explanation:

Antidiuretic hormone (ADH) (AKA vasopressin) is secreted in response to an increase in blood osmolality. ADH is secreted by the posterior pituitary gland. Blood osmolality tends to increase and fluid intake decreases, and this stimulates the release of ADH, which in turn stimulates the kidney to increase reabsorption of water in order to stabilize the blood osmolality. If however, the patient has excess fluid intake, ADH is suppressed and more water is excreted by the kidneys, resulting in diuresis.

59.

The kidneys regulate the acid-base balance by (1) reabsorbing bicarbonate and (2)

excreting acid.

excreting protein.

reabsorbing acid.

reabsorbing protein.

Explanation:

The kidneys regulate the acid-base balance by (1) reabsorbing bicarbonate and (2) excreting acid. Serum pH must be maintained between the narrow range of 7.35 to 7.45, and the kidneys have a critical role. Bicarbonate is reabsorbed primarily in the renal tubules. Acid is produced as the result of protein breakdown, and the accumulation of these acids in the blood lower the pH, increasing the blood's acidity. Normal kidneys excrete approximately 70 mEq of acid daily.

60.

The most common cause of secondary glomerular disease is

HIV-associated nephropathy.

sickle-cell nephropathy.

diabetic nephropathy.

collagen-vascular diseases.

Explanation:

The most common cause of secondary glomerular disease is diabetic nephropathy. Both primary and secondary glomerular disease are leading causes of chronic kidney disease, but diabetic nephropathy and hypertension are responsible for approximately 70% of end-stage kidney disease cases with most diabetic patients also exhibiting hypertension. Other causes of secondary glomerular disease include amyloidosis, HIV-associated nephropathy, sickle-cell nephropathy, and collagen-vascular disease. Acute glomerulonephritis may also result in chronic kidney disease, but it is not common unless extensive damage to glomeruli occurs.

61.

The three most common cardiovascular complications associated with chronic kidney disease are (1) hypertension, (2) congestive heart failure, and (3)

atrial fibrillation.

heart block.

ventricular tachycardia.

pericarditis.

Explanation:

The three most common cardiovascular complications associated with chronic kidney disease are (1) hypertension, (2) congestive heart failure, and (3) pericarditis. Hypertension is the most common complication and occurs in almost all patients because of sodium and water retention. About 75% of patients beginning dialysis have already developed left ventricular hypertrophy. Pericarditis may develop as the result of retaining metabolic toxins. A pericardial friction rub and/or jugular venous distention may be evident along with decreased cardiac output.

62.

A 68-year-old female patient with chronic kidney disease has been ambulatory but has come to the last two physician visits in a wheelchair. When questioned, the patient states that she is able to walk but finds that she is increasingly weak and has little stamina, so she resorts to a wheelchair. The best response is probably to refer the patient to a(n)

psychologist.

occupational therapist.

physical therapist.

social worker.

Explanation:

If a patient who had been ambulatory has begun to use a wheelchair because of increasing weakness and lack of stamina, the best response is to refer the patient to a physical therapist

for evaluation and rehabilitation. Patients often become increasingly sedentary, and this results in loss of muscle mass and weakness. The physical therapist may be able to assist the patient with strengthening exercises and with a regimen of exercises that may increase strength or prevent further deterioration.

63.

If a patient with chronic kidney disease has started to make threats against a member of his family and states that he wants the person dead and plans to use a gun to kill the person, the responsibility is to

refer the patient to a psychiatrist.

maintain the patient's confidentiality.

notify the police.

warn the person to whom the threats are directed.

Explanation:

If a patient with chronic kidney disease has started to make threats against a member of his family and states that he wants the person dead and plans to use a gun to kill the person, the responsibility is to warn the person to whom the threats are directed. This is one circumstance under which confidentiality can be breached. The patient should also be referred to a psychiatrist for evaluation and should be evaluated for uremic encephalopathy, which can result in bizarre behavior.

64.

Infection with *Clostridium difficile* may lead to kidney failure primarily because of

migration of bacteria into the kidney.

bacteremia.

dehydration.

sepsis.

Explanation:

Infection with Clostridium difficile may lead to kidney failure primarily because of dehydration that can occur very rapidly because of diffuse diarrhea and loss of fluids. Because of repeated contact with healthcare facilities and personnel, patients with chronic kidney disease are at increased risk of developing infection with C. difficile, and this increases risk of further morbidity and mortality. Spores of C. difficile are highly infectious, so the infection can spread readily from one patient to another. Risk increases for those receiving antibiotic therapy.

65.

A patient with chronic kidney disease has developed increasing urinary incontinence. The patient's caregiver has requested that the patient have a Foley catheter inserted to make care easier. The primary reason that Foley catheters are avoided in patients is because of

risk of infections.

increased costs.

risk of bladder perforation.

risk of urethral trauma/ulcerations.

Explanation:

If a patient with chronic kidney disease has developed increasing urinary incontinence and his caregiver requests insertion of a Foley catheter to make care easier, the primary reason to avoid a Foley catheter is because a catheter increases the risk of infection. Catheters pose a daily risk of infection of up to 7%. Foley catheter use should be limited to less than a week if at all possible and should not be used solely for incontinence unless the urine has caused severe skin breakdown.

66.

The primary coagulopathy associated with chronic kidney disease is

thrombocytosis.

factor II (prothrombin) deficiency.

factor X deficiency.

platelet dysfunction.

Explanation:

The primary coagulopathy associated with chronic kidney disease is platelet dysfunction. Mild thrombocytopenia may be present, but of greater concern is an abnormal ability of the platelets to adhere and aggregate. Patients may exhibit purpura and petechiae and may have prolonged bleeding times, increasing the risk of bleeding with surgical procedures. If the patient's hemoglobin is less than 10 g/dL, increasing the hematocrit to at least 30% may decrease the risk of bleeding.

67.

If normal intake of potassium is about 100 mEq (3900 mg) per day, what is the usual limit for potassium if a patient's GFR has fallen to 15 mL/min?

<20 to 30 mEq/d.

<40 to 50 mEq/d.

<50 to 60 mEq/d

<60 to 70 mEq/d.

Explanation:

If normal intake of potassium is about 100 mEq (3900 mg) per day, the usual limit for potassium if a patient's GFR has fallen to 15 mL/min/1.73 m^2 (<10 to 20 mL/min) is less than 50 to 60 mEq (1950 to 2340 mg) per day. Patients should be provided comprehensive lists that provide potassium content in various types of foods and given instructions in calculating the correct intake and planning meals. Because hyperkalemia is a common problem with kidney failure, patients must understand the importance of potassium restriction.

68.

During Mr. Clark's hemodialysis session, a low-pressure alarm for venous pressure sounds. This could indicate

infiltration of the venous needle.

a clotted dialyzer.

clotting in the access.

a poorly functioning central catheter.

Explanation:

If a low-pressure alarm for venous pressure sounds during hemodialysis, this could indicate a clotted dialyzer. Other causes of the low-pressure alarms include separation of the blood tubing from the venous needle or catheter, decreased blood flow rate, and blockage of the blood tubing before the monitoring site. A high-pressure alarm for venous pressure may indicate blockage of the blood tubing between the venous needle and the monitoring site, infiltration of the venous needle, poorly functioning central catheter, or access clotting.

69.

Immediate acute hemodialysis is needed to prevent

pulmonary emboli.

atrial fibrillation.

myocardial infarction.

cardiac tamponade.

Explanation:

If a uremic patient presents in the ED with anorexia, nausea, fatigue, altered mental status, and signs of pericarditis, including pericardial friction rub, immediate acute hemodialysis is needed to prevent cardiac tamponade. Pericarditis may occur in up to 10% of patients with uremia. Pericarditis often leads to pericardial effusion as vessels break, leading to cardiac tamponade

and, in some cases, cardiac arrest, so rapid intervention to reduce the inflammation associated with uremia is critical.

70.

Mr. Brown's blood urea nitrogen level is 130 mg/dL. What should the initial target urea reduction be?

<20%.

<40%.

<60%.

<80%.

Explanation:

If a patient requires acute dialysis and has a serum urea level of 130 mg/dL, the initial target urea reduction should be <40%. In order to achieve this level, the blood flow rate should be set low to 150 to 200 mL/min, depending on the size of the individual. The initial hemodialysis session should be limited to 2 hours. These restrictions are important to prevent the development of disequilibrium syndrome, which can occur if blood solutes are removed too quickly.

71.

When a venous catheter is inserted into the femoral vein for acute hemodialysis, the tip of the catheter should extend to the

inferior vena cava.

superior vena cava.

internal iliac vein.

right atrium.

Explanation:

When a venous catheter is inserted into the femoral vein for acute hemodialysis, the tip of the catheter should extend to the inferior vena cava as this location improves flow and prevents recirculation. The length required is about 20 cm. While use of the femoral vein is usually discouraged, it does have the advantage of being easy to access without risk of pneumothorax or hemothorax. Although the risk of infection is about the same as for other sites, risks include arterial puncture and retroperitoneal bleeding.

72.

Ms. Torres has developed sepsis as the result of a urinary tract infection, resulting in acute kidney injury (AKI) and the need for continuous veno-venous hemofiltration (CVVH). The maximum dose for dialysis is

15 mL/kg/hr.

25 mL/kg/hr.

35 mL/kg/hr.

45 mL/kg/hr.

Explanation:

If a patient developed sepsis as the result of a urinary tract infection, causing acute kidney injury (AKI) and the need for CVVH, the maximal dose of dialysis is 25 mL/kg/hr, as higher rates have not been shown to reduce mortality rates or to improve the rate of recovery. It is important to identify kidney injury as soon as possible and to institute early renal replacement therapy as any delay increases the risk of death. Use of citrate rather than unfractionated heparin results in better outcomes.

73.

Ms. Torres has a catheter placed in the right jugular vein. In order to avoid puncture of the carotid artery when a venous catheter for acute hemodialysis is placed in the right internal jugular vein of a patient with sepsis, the best preventive is

anatomic landmark guidance.

angiography.

ultrasound.

radiography.

Explanation:

In order to avoid puncture of the carotid artery when a venous catheter for acute hemodialysis is placed in the right internal jugular vein of a patient with sepsis, the best preventive is use of ultrasound for guidance during the procedure. The veins of the neck may exhibit a range of variability, so use of anatomic landmarks may not be sufficient. In some cases, the carotid arteries may also be atypical, increasing the risk of carotid artery punctures and hematoma.

74.

Ten months after kidney transplant, Mr. Whitlow develops severe hypertension and pulmonary edema as well as increasing signs of acute kidney injury with increasing serum creatinine. The

surgeon suspects renal artery stenosis. The test that is most commonly used to confirm the diagnosis is

angiography.

CT scan.

MR angiography.

radiograph.

Explanation:

If a patient exhibits signs of renal artery stenosis (refractory hypertension, pulmonary edema, acute kidney injury, bruit over site of transplant), screening procedures may include ultrasound or MR angiography, but confirmation requires angiography. Renal artery stenosis is the one of the most common vascular complications of kidney transplant with symptoms usually occurring 3 to 24 months after transplantation. Complications of angiography are not common but can include bleeding at insertion site, perforation of the artery, thrombosis, and arterial dissection.

75.

Which of the following is a risk factor for renal artery stenosis?

Hepatitis B infection.

Hepatitis C infection.

Cytomegalovirus infection.

Fungal infection.

Explanation:

Risk factors for development of renal artery stenosis following kidney transplantation include cytomegalovirus infection, surgical trauma, fibromuscular dysplasia, and arterial disease with atherosclerosis a primary cause of renal artery stenosis. Other risk factors include the use of a pediatric donor kidney and delay in function of the donated kidney after surgery as well as lifestyle issues, such as inactivity, obesity, and smoking. One or both renal arteries may be affected. Renal artery stenosis is most common in males over 45 and in females over 55.

76.

After confirmation of the advanced renal artery stenosis, the treatment of choice is most often

vasodilators.

transluminal angioplasty with/without placement of stents.

surgical revascularization.

hemodialysis.

Explanation:

After confirmation of advanced renal artery stenosis, the treatment of choice is most often transluminal angioplasty with or without placement of stents. The stenosis may recur in about 1 out of 10 patients, and patients are at risk of acute rejection. If the stenosis is less than 50% and the patient is stable without significant deterioration of kidney function, the patient may be managed conservatively with medications. If angioplasty procedures are unsuccessful, then revascularization may be indicated.

77.

Since Ms. Abramov has received a deceased donor kidney, what information about the donor can be shared with the recipient?

General location, age, and gender.

Age, gender, and race.

Address, name, and age.

Name, age, and gender.

Explanation:

If a patient has received a deceased donor kidney, the information about the donor that can be shared with the recipient is the donor's age, gender, and race. The recipient cannot be told the donor's location, name, or address. If the recipient wants to contact the donor's family, the recipient can write an anonymous letter that will be forwarded to them. While some recipients have managed to track down a donor family, some donor families may not be receptive, and doing so is a violation of privacy.

78.

Which of the patient's drugs is classified as an antiproliferative and is often used in maintenance therapy after kidney transplantation?

Cyclosporine.

Tacrolimus.

Prednisone.

Mycophenolate mofetil.

Explanation:

Mycophenolate mofetil (MMF) is classified as an antiproliferative and is often used in maintenance therapy after kidney transplantation. Other antiproliferatives include azathioprine and sirolimus. MMF inhibits the activation of lymphocytes by preventing their proliferation. Patients must be carefully monitored for adverse effects, which can include infections and malignancies. Nausea and GI disturbances are common. Blood tests should be monitored for leucopenia and thrombocytopenia, which can increase the risk of infection and bleeding. MMF is usually administered in oral form.

79.

Ms. Johnson complains of severe muscle pain and stiffness. Medications include calcitriol 0.25 mg daily, atorvastatin 20 mg daily, insulin glargine 26 units twice daily, regular insulin per sliding scale as needed before meals and at bedtime, and furosemide 20 mg daily. Which of these medications is most likely the cause of the muscle pain?

Atorvastatin.

Calcitriol.

Furosemide.

Insulin glargine.

Explanation:

If a patient on hemodialysis complains of severe muscle pain and stiffness, the medication that is most likely the cause is atorvastatin, as statins are associated with myopathy. The extent of

myopathy may vary widely and symptoms usually recede within 2 months of stopping the medication, although some patients may develop rhabdomyolysis and persistent muscle damage. The patient may tolerate a different statin, or non-statin agents may be used.

80.

Two weeks after kidney transplantation, Ms. Abramov has experienced an increase in temperature and flu-like symptoms as well as weight gain of 2.5 kg in 48 hours with decreased urinary output and pain in the operative site. The patient is scheduled for a core biopsy to determine if she is experiencing rejection. What guidance is usually used for the core biopsy?

Anatomic guidelines.

CT scan.

Ultrasound.

Angiography.

Explanation:

Core needle biopsies are usually done under ultrasound guidance, although the biopsies can also be done with CT, but CT–guided biopsy is more expensive and exposes the patient to radiation. Core needle biopsies are done with special 18-gauge core biopsy needles. The patient may receive conscious sedation as well as a local anesthetic while in the supine position. The core biopsy is usually obtained from the lower pole of the kidney.

81.

If the patient is confirmed through renal biopsy as having acute rejection, which of the following initial treatments is usually indicated?

Corticosteroids.

OKT3.

High-dose cyclosporine.

High-dose tacrolimus.

Explanation:

If a patient is confirmed through renal biopsy as having acute rejection, the initial treatment is usually high doses of corticosteroids to depress the immune system. If the patient does not respond adequately to the steroids, then monoclonal antibodies, such as OKT3 or basiliximab are administered. In some cases, high doses of an antiproliferative agent, such as mycophenolate mofetil (MMF) may also be administered. Different centers use different protocols, but treatment may be individualized depending on patient response.

82.

If Ms. Abramov develops hand tremors, back and abdominal pain, somnolence, loss of memory, and dark urine as well as increased serum creatinine and BUN, the medication that is most likely responsible is

mycophenolate mofetil.

cyclosporine.

tacrolimus.

prednisone

Explanation:

If a patient on immunosuppressive drugs following kidney transplant develops hand tremors, back and abdominal pain, somnolence, loss of memory, and dark urine as well as increased serum creatinine and BUN, the medication that is most likely responsible is cyclosporine. The increased blood pressure, hand tremors, somnolence, and loss of memory are especially indicative of cyclosporine. The cyclosporine level should be evaluated and will probably indicate toxicity. Cyclosporine levels are often taken daily until the optimal dose is established.

83.

Mr. El-Amin received basiliximab perioperatively and tacrolimus and mycophenolate mofetil (MMF) as immunosuppressive therapy. The patient was placed on a corticosteroid for one week only. Early steroid withdrawal is most associated with which of the following complications?

Hyperlipidemia.

Mortality.

Acute rejection.

Graft loss.

Explanation:

Early steroid withdrawal (after one week) following kidney transplantation is most associated with acute rejection, although steroid withdrawal is not associated with increased graft loss or death. Protocols differ from one center to another. KDIGO guidelines suggest one week of steroids and withdrawal or long-term steroids if initially given for longer than a week, but some centers give steroids for 2 weeks or even 3 months and then withdraw them. Early withdrawal of

steroids decreases the risk of steroid-associated conditions, such as hyperlipidemia and diabetes.

84.

With kidney transplantation, therapy with basiliximab is primarily used to

prevent T-cell replication and organ rejection.

potentiate the effects of other immunosuppressive agents.

reduce the risk of post-operative infection.

reduce the risk of post-operative renal stenosis.

Explanation:

With kidney transplantation, therapy with basiliximab is primarily used to prevent T-cell replication (which in turn prevents activation of B cells) and organ rejection. It is most often used as an induction therapy, given initially immediately prior to transplantation. Other induction therapies include thymoglobulin, OKT3, and daclizumab. While induction therapy targets T-cells, it also affects other cells and increases the risk of infection, so induction therapy is often given along with antimicrobials to reduce risk.

85.

Following hospital discharge a week after a kidney transplantation, the patient had been doing well but has sudden onset of fever of 38.8 °C, chills, tenderness about the incision, and headache. The urine appears cloudy. The most likely cause is

acute rejection.

infection.

hyperacute rejection.

delayed graft function.

Explanation:

If following hospital discharge a week after a kidney transplant, the patient who had been doing well has sudden onset of fever of 38.8 °C, chills, tenderness about the incision, headache, and cloudy urine, the most likely cause is infection. The incision should be examined carefully for any drainage or signs of redness. Infections may be superficial or internal, so the patient should be advised to immediately report signs of infection to the physician because immunosuppression increases risk of severe infection.

86.

Ms. Johnson should be taught to monitor bowel function and to avoid constipation because constipation increases risk of:

hypercalcemia.

hypokalemia.

hyperkalemia.

hyperphosphatemia.

Explanation:

A patient on hemodialysis should be taught to monitor bowel function and to avoid constipation because constipation increases risk of hyperkalemia. With normal kidney function, only about 5 to 10% of the potassium load is excreted through the intestines because the kidneys excrete the rest, but with impaired kidney function, the intestines increase excretion up to 25%. Thus, constipation directly impacts potassium excretion, although hyperkalemia usually involves constipation coupled with excessive potassium intake.

87.

Ms. Johnson has not responded well to an erythropoiesis stimulating agent (ESA). Which of the following treatments is indicated specifically for hemodialysis patients with epoetin-resistant anemia?

Iron infusion.

L-carnitine.

RBC transfusion.

Oral ferrous sulfate.

Explanation:

L-carnitine, a naturally produced amino acid, is indicated specifically for hemodialysis patients with epoetin-resistant anemia. Patients on hemodialysis frequently are deficient in L-carnitine because of both poor nutritional intake and loss during dialysis. Patients with low levels of carnitine are more likely to suffer severe anemia that requires treatment with erythropoietin and more likely to have epoetin-resistant anemia, so supplementation with L-carnitine may be effective for some patients.

88.

If the patient continues to have persistent episodes of depression despite taking an SSRI for 3 months, which of the following non-pharmaceutical therapies may best help the patient to cope with

the depression?

Psychoanalysis.

Cognitive behavioral therapy.

Group therapy.

Electroconvulsive therapy.

Explanation:

If a patient on hemodialysis has persistent episodes of depression despite taking an SSRI, the non-pharmaceutical therapy that may best help the patient to cope is cognitive behavioral therapy. CBT helps patients to change the way they think about things and provides methods to help substitute positive thoughts for negative ones. Patients are taught to recognize automatic thoughts (cognitive distortions) such as all-or-nothing thinking, catastrophizing, "mind reading," and personalization. Treatment is usually relatively short term (5 to 20 sessions).

89.

During hemodialysis, Ms. Johnson, who is lying in the supine position, complains of chest pain, begins coughing, and shows evidence of cyanosis of the distal extremities and lips. The nurse should suspect that the patient has

anaphylaxis.

a myocardial infarction.

disequilibrium syndrome.

an air embolism.

Explanation:

During hemodialysis, if a patient complains of chest pain, begins coughing, and shows evidence of cyanosis of the distal extremities and lips, the nurse should suspect that the patient has an air embolism. In the supine recumbent position, the air often enters the heart (as opposed to the brain if the patient is sitting upright), generating foam in the right ventricle and into the lungs. If air returns from the lungs to the left atrium and ventricle, it can enter the arterial system and cause severe cardiac and neurological impairment.

90.

To prevent further complications, the nurse should immediately

clamp the venous line and stop the blood pump.

provide nasal oxygen at 4 L/min.

increase the blood flow rate and the dialysate flow rate.

administer a saline bolus to the patient.

Explanation:

To prevent further complications, the nurse should immediately clamp the venous line and stop the blood pump to avoid the introduction of more air. Air emboli are usually venous although arterial emboli can occur. Hypovolemia and sitting upright during dialysis are risk factors because they reduce venous pressure. Air emboli may result from leaks in the circuit or air in dialysate solution. Air can also be introduced during insertion or removal of central venous catheters.

91.

In response to these symptoms, the patient should be positioned

upright at 90°.

in the semi-Fowler's position.

Trendelenburg on the left side or flat supine.

Trendelenburg on the right side.

Explanation:

In response to these symptoms, the patient should be positioned in the Trendelenburg position on the left side or flat supine (depending on center protocol). Treatment is symptomatic and may include oxygen, intubation and ventilation, and cardiac catheterization or percutaneous needle insertion for aspiration of air from the atrium or ventricle. In some cases, treatment in a hyperbaric oxygen chamber may be utilized to prevent cerebral edema.

92.

When evaluating Ms. Kim in preparation for creation of a fistula, the blood pressure difference between the arms should be less than

5 mm Hg.

10 mm Hg.

15 mm Hg.

20 mm Hg.

Explanation:

When evaluating a patient in preparation for creation of a fistula, the blood pressure difference between the arms should be less than 10 mm Hg. This is a normal finding. A difference of 10 to 20 mm Hg is a borderline finding, and a difference of more than 20 mm Hg is cause for concern. All upper extremity pulses should be assessed as well as pulse oximetry. The Allen Test should be carried out to assess circulation of the radial and ulnar arteries.

93.

When conducting the Allen test to assess circulation of the radial and ulnar arteries, arterial insufficiency is indicated when the blanching persists for

≥2 seconds.

≥3 seconds.

≥4 seconds.

≥5 seconds.

Explanation:

When conducting the Allen test to assess circulation of the radial and ulnar arteries, arterial insufficiency is indicated when the blanching persists for ≥5 seconds. For the test, the patient should extend the arm and hand, palm upward. The nurse compresses both the radial and ulnar arteries at the wrist while the patient pumps the hand repeatedly to help the hand to blanch. Once the hand is blanched, the ulnar artery is released and duration of blanching of the palm is noted. Then, all compression is released and the procedure is repeated for the radial artery.

94.

For preoperative assessment of vessels, Doppler ultrasonography is often done under regional anesthesia of the arm because

it is a painful procedure.

anesthesia causes the veins to dilate.

anesthesia causes the veins to constrict.

the patient must hold completely still.

Explanation:

For preoperative assessment of vessels, Doppler ultrasonography is often done under regional anesthesia of the arm because anesthesia causes the veins to dilate, making them easier to visualize and assess. Doppler ultrasonography is used to measure the inner diameters of the arteries and veins as well as the flow velocity. However, central veins cannot be adequately visualized with Doppler ultrasonography. The vein dilation and arterial dilation tests are done during Doppler ultrasonography as well as vein mapping.

95.

Following a period of maturation after the creation of an AV fistula, what diameter of the AV fistula is considered necessary before the fistula can be used for hemodialysis?

3 mm.

6 mm.

1 cm.

1.5 cm.

Explanation:

Following a period of maturation, an AV fistula should have a diameter of at least 6 mm before it is used for hemodialysis. According to the "rule of 6s," the diameter should be at least 6 mm and the depth below the skin less than 6 mm. Additionally, a straight segment of at least 6 cm should be present and the AV fistula should accommodate a flow rate of at least 600 mL/min. This degree of maturation usually takes about 6 weeks but may extend up to 4 months in some patients.

96.

When auscultating Ms. Kim's AV fistula to listen for the bruit, if the nurse notes the bruit is very high pitched. This may indicate

normal functioning.

collateral circulation.

stenosis.

inadequate anastomosis.

Explanation:

When auscultating an AV fistula to listen for the bruit, if the nurse notes the bruit is very high pitched, this may indicate stenosis. The thrill should be low-pitched and constant. The other indications of stenosis include a pounding ("water-hammer") pulse, decreased thrill, intermittent bruit, edema of the access limb, increased venous pressure during treatment, recirculation, clotting of the extracorporeal system during treatment, excessive bleeding after removal of

needles at completion of hemodialysis, "black blood syndrome," and decreased Kt/V and URR. Common sites for stenosis are inflow (juxta-anastomotic stenosis), outflow, and central vein.

97.

Ms. Kim asks about using the buttonhole technique for cannulation. When using the buttonhole technique for vascular access for hemodialysis, the needles are placed

in the same sites in a graft.

in rotating sites in a graft.

in rotating sites in a fistula.

in the same sites in a fistula.

Explanation:

When using the buttonhole technique for vascular access for hemodialysis, the needles are placed in the same sites in a fistula with one site for the arterial needle and one for the venous needle. KDOQI guidelines recommend teaching the patient to self-cannulate. The buttonhole technique cannot be utilized with a graft because the grafts lack muscle fibers to close the hole after the needle is removed. Using the same holes with a graft could result in a permanent opening and exsanguination.

98.

When teaching Ms. Kim about inserting a needle for hemodialysis, which of the following should the patient understand increases the risk of infiltration?

Rotating the needle 180 degrees.

Flushing the needle with NS after insertion.

Leveling the needle to the surface of the skin to advance.

Using a wet needle for insertion.

Explanation:

When inserting a needle for hemodialysis, rotating the needle to any degree increases the risk of infiltration, and even one incidence of infiltration may damage an access. The nurse should be very gentle and proceed slowly when cannulating and should level the needle to the surface of the skin before advancing it. Using a wet needle reduces the risk of infection and makes observing for flashback easier. The needle should be gently flushed with NS after insertion to ensure it is placed properly.

99.

If one hemodialysis patient reacts to a complication with little apparent stress and copes well and another patient, such as Mr. Adler, reacts to the same complication with severe stress and anxiety and copes poorly, the difference may lie in the patients'

sense of belonging.

self-efficacy.

resilience.

hardiness.

Explanation:

If one hemodialysis patient reacts to a complication with little apparent stress and copes well and another patient reacts to the same complication with severe stress and anxiety and copes poorly, the difference may lie in the patients' resilience. Resilience is the ability to respond to stressful situations in a healthy and productive manner. A high degree of resilience allows a patient to cope well. Resilience is often associated with a positive outlook, good family support, and spirituality.

100.

Following formation of an AV fistula and beginning of hemodialysis, the nurse notes that Ms. Kim's nail beds and skin on the hand below the fistula are cyanotic during hemodialysis, and the patient complains of pain in the hand. This is likely an indication of

steal syndrome.

stenosis.

aneurysm.

infection.

Explanation:

If, following formation of an AV fistula, the nurse notes that the patient's nail beds and skin on the hand below the fistula are cyanotic during hemodialysis and the patient complains of pain in the hand, this is likely an indication of steal syndrome (AKA dialysis access-associated hand ischemia). The hand may feel noticeably cooler than the opposite hand. Steal syndrome may occur in up to 20% of accesses. Upper arm access increases risk of steal syndrome as does diabetes and peripheral arterial disease. Patients may complain of pain, paresthesia, and coldness of the hand during dialysis.

101.

The permeability of a dialyzer membrane to water is indicated by its

transmembrane pressure.

osmotic ultrafiltration.

diffusion pressure.

ultrafiltration coefficient.

Explanation:

The permeability of a dialyzer membrane to water is indicated by its ultrafiltration coefficient (K_{UF}). The ultrafiltration coefficient listed for a dialyzer indicates the amount of water that will pass through a membrane at a given pressure in a specified unit of time (generally one hour). For example, if the K_{UF} is 10, then 10 mL of water will pass through the membrane for each mL of mercury (mm Hg) of transmembrane pressure. So, if the transmembrane pressure were 100, then the patient would lose 1000 mL (10 X 100) of water each hour.

102.

If a dialyzer is to be reprocessed in 3 hours, the dialyzer must be

heated to body temperature (37 °C).

frozen.

maintained at room temperature.

refrigerated.

Explanation:

Dialyzers should be processed within 2 hours. If a dialyzer is to be reprocessed after more than 2 hours (such as in 3 hours), the dialyzer must be refrigerated because the cold helps to retard the growth of bacteria. The dialyzer must be refrigerated during any transportation to another facility for reprocessing. However, the dialyzer should not be frozen. The exact temperature is usually set by the manufacturer and/or the hemodialysis center.

103.

What color is arterial blood tubing for hemodialysis most often color-coded?

Red.

Blue.

Green.

Yellow.

Explanation:

Blood tubing for hemodialysis is generally color-coded to help decrease the chance of errors with arterial tubing color-coded red and venous tubing color-coded blue. Some types of equipment may require custom tubing sets for individual patients. Blood tubing includes patient connectors that connect the blood tubing segments to the patient's needles/catheter ports, dialyzer connectors that allow connection to the dialyzer, and drip chamber or bubble trap to check the arterial or venous pressure. The heparin and saline infusion lines are usually placed on the arterial tubing segment.

104.

During hemodialysis, how much blood is usually outside of a patient's body at one time?

50 to 100 mL.

100 to 250 mL.

250 to 400 mL.

400 to 500 mL.

Explanation:

During hemodialysis, usually 100 to 250 mL of blood is outside of the patient's body at one time. However, if a separation of a bloodline occurs, much more blood may be lost in a small amount of time because the blood flow rate is usually set to pump between 300 and 500 mL per minute. This continuous flow, if undetected, could result in exsanguination. For this reason, it is imperative that the access site is open to view at all times and that the patient be carefully monitored during treatment.

105.

A hemodialysis center has set up a surveillance system to monitor bloodstream infections (BSIs). Once this event has been chosen for monitoring, what should be determined next?

Methods of data collection.

Methods of data analysis.

Data elements for collection.

Time period for observation.

Explanation:

When setting up a surveillance program for a hemodialysis center to monitor bloodstream infections (BSIs), once this event has been chosen for monitoring, the next step is to determine the time period for observation, such as a month, quarter, or year. If BSIs are rare, then a longer time period is indicated in order to ensure measurement validity. Then, surveillance criteria and data elements to be collected must be determined followed by outlining the method for data analysis and methods for data collection.

106.

For patients on oral iron, in order to increase absorption, patients should be advised to

take the supplement with dairy products, such as milk.

take enteric-coated preparations of the supplement.

take the supplement on an empty stomach.

take the supplement with phosphate binders.

Explanation:

In order to increase absorption of iron for patients with chronic kidney disease on oral iron supplements, patients should be advised to take the supplement on an empty stomach because taking it with food may decrease absorption. Additionally, patients should avoid enteric-coated preparations and should not take the supplement with phosphate binders. Patients are usually prescribed 325 mg ferrous sulfate three times daily, as this is equivalent to 200 g of elemental iron daily.

107.

According to the NHSN Dialysis Event Surveillance guide, the standardized infection ratio (SIR) is calculated based on the

number of bloodstream infections (BSIs) observed in a facility.

number of observed BSIs divided by the number of at-risk patients.

number of predicted BSIs divided by the number of observed BSIs.

number of observed BSIs divided by the number of predicted BSIs.

Explanation:

According to the NHSN Dialysis Event Surveillance guide, the standardized infection ratio (SIR) is calculated based on the number of observed bloodstream infections (BSIs) divided by the number of predicted BSIs, based on national statistics and the number of patients. If the results show a SIR greater than 1.0, then the facility has a rate of BSIs higher than predicted. A score of 1.0 indicates the rate of infection is the same as predicted and an SIR of less than 1.0 indicates that the BSI rate is lower than that predicted.

108.

Which of the following molecules has the highest molecular weight?

Creatinine.

Urea.

Calcium.

Albumin.

Explanation:

Albumin is the molecule that has the highest molecular weight, calculated in daltons (Da): 66,000 Da. Dialyzer membranes screen for different molecular weights with the molecular weight cutoff representing the molecule with the highest molecular weight able to pass through the membrane. Larger molecules have greater molecular weight. Creatinine has a molecular weight of 113 Da, urea has a molecular weight of 60 Da, and calcium has a molecular weight of 40 Da.

109.

Backwashing to free residue from sediment filters in the water system should be done at least

every 8 hours.

one time daily.

every 4 hours.

one time weekly.

Explanation:

Backwashing to free residue from sediment filters in the water system should be done at least one time daily. Sediment filters strain residue, such as particles and solutes, from the feed water. The filters are layered with each layer screening out more and more particles, but the channels in the filter can plug if the sediment builds up, so the water flow through the unit is reversed to flush the sediment out of the filter. This process may be done automatically.

110.

Mr. Adler has recently begun missing treatments and failing to take prescribed medications, despite the adverse physical response. When queried, the patient appears cheerful and insists that he is fine but "busy" and "forgot" about the treatments. The nurse should consider

suicidal ideation.

dementia.

an electrolyte imbalance.

anxiety.

Explanation:

If a patient on hemodialysis with a history of ongoing depression has recently begun missing treatments and failing to take prescribed medications, despite adverse physical response, and the patient appears cheerful and insists he is fine but "busy" and "forgot" about the treatments, the nurse should consider suicidal ideation. When hemodialysis patients skip treatments and medications, they are putting their lives at risk, and this provides an easy method of suicide. Once patients have decided to commit suicide, they may sometimes appear to be in a better mood, even cheerful.

111.

If the usual dose of potassium in dialysate is 2.0 mM, what is the usual dose for a patient who is taking digitalis?

1.0 mM.

2.0 mM.

3.0 mM.

4.0 mM.

Explanation:

The usual dose of potassium in dialysate is 2.0 mM, although the dose may be increased to 3.0 mM if the patient experiences hypokalemia (<4.5). Patients on digitalis also require a higher dose of 3.0 mM. If this results in higher potassium levels between dialysis treatments, then patients may require routine administration of sodium polystyrene sulfonate resin (Kayexalate®). Utilizing potassium doses of 1.0 mM routinely to control hypokalemia is contraindicated because of increased risk of cardiac arrest.

112.

The physician has prescribed midodrine 10 mg for a patient to take 2 hours prior to hemodialysis. The most likely reason for this medication is to prevent intradialytic

hypotension.

hypertension.

muscle cramps.

nausea and vomiting.

Explanation:

If a physician has prescribed midodrine 10 mg for a patient to take 2 hours prior to hemodialysis, the most likely reason for this medication is to prevent intradialytic hypotension resulting from inadequate vasoconstriction. Contraindications to this drug include supine hypertension and active cardiac ischemia (although the drug may be administered with coronary artery disease without ischemia). However, if a cooler dialysate solution is being used to prevent intradialytic hypotension, adding midodrine does not provide increased benefit.

113.

In order to reuse dialyzers, the dialysis center must follow standards developed by the

FDA.

CMS.

AAMI.

OSHA.

Explanation:

In order to reuse dialyzers, the dialysis center must follow standards developed by the Association for the Advancement of Medical Instrumentation (AAMI). CMS utilizes these standards as well under their conditions of coverage or ESRD facilities. Standards are set for both manual and automated reprocessing, but most reprocessing is done by companies that specialize in reprocessing because of the cost of equipment and the strict standards. All automated equipment must be approved by the FDA.

114.

Prior to using a reprocessed dialyzer, a recirculating rinse with NS should be completed with recirculating flow rate through the blood compartment and the dialysate compartment of at least

200 mL/min for BFR and 200mL/min for DFR.

200 mL/min for BFR and 500 mL/min for DFR.

500 mL/min for BFR and 200 mL/min for DFR.

500 mL/min for BFR and 500 mL/min for DFR.

Explanation:

Prior to using a reprocessed dialyzer, a recirculating rinse with NS should be completed with recirculating flow rate through the blood compartment (BFR) of 200 mL/min and recirculating flow rate of 500 mL/min through the dialysate compartment (DFR). The rinse is carried out for a period of 15 to 30 minutes, being careful to avoid introduction of air into the arterial circuit, as air may interfere with the removal of germicide. Test strips are used to ensure all germicide is cleared from the dialyzer.

115.

When influencing others to continuously improve practice, the nurse should recognize that the first step in the change process is to

believe in the possibility of change.

decide to bring about change.

take action to bring about change.

understand the results of change.

Explanation:

When influencing others to continuously improve practice, the nurse should recognize that the first step in the change process is to believe in the possibility of change. Without a positive frame of mind, the nurse is not likely to convince others that taking action will make a difference. Believing is following by making a decision to change and then taking action. Understanding the results of change is usually the last step in the process.

116.

As a leader of the interdisciplinary team, the nurse notes that a new team member is less productive than other team members and is often late finishing work. The best response is to

remind the entire team of their responsibilities.

speak directly with the team member about the observations.

report the team member to a supervisor.

give the team member a negative evaluation.

Explanation:

The best response to a new team member who is less productive than others on the interdisciplinary team and often finishes work late is to speak directly with the team member about the observations. There may be many reasons that a new team member is less productive than others on the team, including insecurity, lack of knowledge, lack of experience, or poor time management. It often takes new team members time to achieve the same level of expertise as those with more experience on the team.

117.

With the formula for urea kinetic modeling (UKM), the "K" in the Kt/V formula stands for

duration of dialysis in minutes.

mL of fluid in the patient's body.

urea clearance (mL/min) plus residual urinary output.

urea clearance (mL/min).

Explanation:

With the formula for urea kinetic modeling (UKM), the "K" in the Kt/V formula stands for urea clearance (mL/min) plus residual urinary output. UKM is one method of estimating the dose of dialysis delivered. The "t" refers to the duration of dialysis in minutes. The "V" refers to the volume of fluid in mL in the patient's body. This volume is not measured but is calculated by a computer program, and accurate volumes can be difficult to estimate.

118.

During peritoneal dialysis, the concentration gradient of a substance, such as urea

decreases.

increases.

remains consistent.

varies widely.

Explanation:

During peritoneal dialysis, the concentration gradient of a substance, such as urea, decreases. That is, more urea diffuses into the instilled dialysate when the concentration is low than when the concentration increases. In order to compensate for this change in concentration gradient, more frequent exchanges can be done (such as is common with APD) or dwell volume may be increased, although this typically cannot exceed 2.5 to 3 L.

119.

When considering interdisciplinary communication, which of the following is an example of collegial communication?

The nurse reports on the patient's condition in a team meeting.

The nurse responds to a patient's questions about occupational therapy.

The nurse chats about vacation plans with the physical therapist over lunch.

The nurse provides one-on-one instruction to a patient regarding wound care.

Explanation:

When considering interdisciplinary communication, the nurse's reporting on a patient's condition in a team meeting is an example of collegial communication (AKA inter-collegial communication). The three basic types of communication are social (chatting about vacation), therapeutic (answering a patient's questions and providing one-on-one instruction), and collegial (communicating with colleagues). Collegial communication may be in spoken form (such as reporting on a patient's condition) or written form (such as writing a summary of the patient's condition or problems).

120.

What is the purpose of the peritoneal equilibration test?

Determine the amount of glucose absorbed from dialysate and the amount of urea and creatinine filtered into the dialysate in a 4-hour dwell.

Determine the patient's serum urea and serum creatinine after a 4-hour dwell is drained.

Determine the amount of urea in a 24-hour collection of drained dialysate compared to the

amount of urea in the blood.

Determine the amount of residual glucose that remains in the dialysate after a 4-hour dwell is drained.

Explanation:

The purpose of the peritoneal equilibration test is to determine the amount of glucose absorbed from dialysate and the amount of urea and creatinine filtered into the dialysate in a 4-hour dwell. This is one method of assessing the effectiveness of peritoneal dialysis. This test also helps to identify those with high rate of transport because these patients may rapidly absorb glucose and may need to have shorter dwell times. If the amount of urea and creatinine filtered is inadequate, the patient may need a longer dwell time or more exchanges.

121.

Mr. Adler states that one of his primary worries is that he is no longer able to work full time but is not eligible for Medicaid. The patient is concerned that he cannot afford to pay for his insurance. The organization that may provide financial assistance is the

American Association of Kidney Patients.

National Organization for Renal Disease.

National Kidney Foundation.

American Kidney Fund.

Explanation:

The American Kidney Fund provides financial assistance to patients on dialysis through a number of programs:

- *Grants Management System (GMS): Patients can apply directly for grants.*

- *Health Insurance Premium Program (HIPP): Provides assistance with Medicare part B, Medigap, COBRA, and other insurance premiums.*
- *Safety Net Grants: Assists with treatment-related expenses that are not covered by insurance.*
- *Sanofi Renal/Genzyme Patient Assistance Programs: Provides Renvela® and IV formulations of Hectorol® for those with no prescription drug coverage.*
- *Prescription Drug Resources: Provides lists of drug companies with special programs and resources for those without prescription drug coverage.*

122.

Glucose in dialysate must be heat sterilized at a low pH in order to

decrease generation of glucose degradation products.

increase generation of glucose degradation products.

prevent crystallization in the dialysate.

prevent the dialysate from becoming cloudy.

Explanation:

Glucose in dialysate must be heat sterilized at low pH in order to decrease generation of glucose degradation products (GDPs), which can irritate the peritoneal membrane. For single-compartment dialysate bags, the dialysate is heated at 5.5 pH because a lower pH solution would be too painful for instillation. However, in a double-compartment bag, the glucose-containing dialysate is heat sterilized at about 3.2 pH, while the other compartment is heat-sterilized at an alkaline pH. Then, the two compartments are mixed before instillation.

123.

The primary purpose of using an amino-based dialysate solution is for

increased ultrafiltration.

decreased ultrafiltration.

electrolyte imbalance.

nutritional supplementation.

Explanation:

The primary purpose of using an amino-based dialysate solution for PD is for nutritional supplementation as it promotes uptake of amino acids in skeletal muscles. However, the amino-based solution can only be used one time daily in order to prevent acidosis and increased serum urea levels. The solution is usually absorbed within 4 to 6 hours and is most effective if administered after meals to aid in protein synthesis. Amino-acid solution is osmotically comparable to 1.36% glucose.

124.

If Ms. Walker's itching persists and the patient's Kt/V is 1.1, the first dialysis adjustment should be to

decrease Kt/V to <1.0.

increase Kt/V to >1.1.

increase Kt/V to >1.2.

increase Kt/V to >1.5.

Explanation:

If a hemodialysis patient's itching persists and the patient's Kt/V is 1.1, the dialysis adjustment should be to increase the Kt/V to greater than 1.2. The usual target is 1.4 to ensure that the patient's level doesn't fall below 1.2. Improving the quality of dialysis may, in some patients, relieve itching to some degree, although the evidence is not clear. Elevated calcium, phosphorus, and parathyroid hormone levels may also cause itching in some patients.

125.

If adjusting Ms. Walker's Kt/V and changing dialyzers do not relieve itching, the intervention most indicated is

gabapentin.

moisturizers/oil bath.

tacrolimus ointment.

UBV phototherapy.

Explanation:

If adjusting a patient's Kt/V and changing dialyzers do not relieve itching, the intervention most indicated should be moisturizers and oil bath as dry skin is generally the most common cause of itching. High levels of phosphorus, especially, may cause itching. If emollients do not control itching, then antihistamines, such as Benadryl, or other treatments, such as ultraviolet lights or gabapentin, may be considered. Naltrexone or tacrolimus ointment may relieve severe and persistent itching.

126.

For a patient with chronic kidney disease, at what GFR should education about the different options for renal replacement therapy generally begin?

≤50 mL/min/1.73 m^2

≤40 mL/min/1.73 m^2

≤30 mL/min/1.73 m^2

≤20 mL/min/1.73 m^2

Explanation:

For a patient with chronic kidney disease, education about the different options for renal replacement therapy should generally begin when the patient's GFR is equal to or less than 30 mL/min/1.73 m^2. Patients are often very stressed when dealing with the reality of dialysis, so they may be more receptive to education and better able to make a considered choice before their need for dialysis is imminent. Discussion should include different types of access (catheters, grafts, fistula) as well as different types of dialysis (CAPD, APD, home dialysis, nocturnal dialysis, in-center dialysis).

127.

When teaching a patient about hemodialysis, the best way to determine that the teaching plan is geared to the patient's educational ability is to

routinely simplify instructions based on the patient's nonverbal cues.

assess the patient's abilities through a written test.

assess vocabulary level during conversations.

ask the patient directly about educational background and preferred style of learning.

Explanation:

When teaching a patient about hemodialysis, the best way to determine that the teaching plan is geared to the patient's educational ability is to ask the patient directly about his or her educational background and preferred style of learning. While, for example, a person with an advanced degree may be able to understand more complex explanations than a high school dropout, this is not true for all people. When people are under stress, this can interfere with their ability to learn and to remember.

128.

When discussing options, the nurse points out that a disadvantage of hemodialysis as compared to peritoneal dialysis is

poor control of blood pressure.

increased risk of hypertriglyceridemia.

increased risk of malnutrition.

increased incidence of back pain.

Explanation:

A disadvantage of hemodialysis compared to peritoneal dialysis is poor control of blood pressure, with the patient especially at risk for hypotension. Other disadvantages to hemodialysis include the need for heparin, which may increase the risk of bleeding, the need for vascular access, and the necessity of following a relatively strict diet. Peritoneal dialysis, on the other hand, increases the risk of obesity, peritonitis, hernia, malnutrition, hypertriglyceridemia, and back pain.

129.

If Mr. Chang chooses hemodialysis, which of the following is would be a contraindication?

Hemodynamic instability.

Metabolic acidosis.

Changes in mentation.

Hyperkalemia.

Explanation:

There are few contraindications to hemodialysis because it is used in life-threatening circumstances. However, hemodialysis is contraindicated if the patient exhibits hemodynamic instability, inability to coagulate blood, or if there is a lack of access to systemic circulation. Metabolic acidosis, changes in mentation, and hyperkalemia are all indications for hemodialysis. Other indications include fluid overload, elevated BUN (>90 mg/dL), elevated serum creatinine (≥9 mg/dL), drug toxicity, and signs of uremia. Hemodialysis is also indicated if there are contraindications to other forms of dialysis.

130.

When teaching a patient about hemodialysis, the patient should understand that the primary advantage of short daily hemodialysis (at least 5 to 6 times weekly) is

improved serum albumin levels.

better control of anemia.

improved nutritional measures.

reduced left ventricular hypertrophy.

Explanation:

When teaching a patient about hemodialysis, the patient should understand that the primary advantage of short daily hemodialysis (at least 5 to 6 times weekly) is reduced left ventricular hypertrophy, a common complication associated with chronic kidney disease and hemodialysis. Patients also experience improved physical functioning. These advantages hold true even if the total hours are similar to those of patients receiving hemodialysis in a center 3 times weekly for 4 hours. Short daily hemodialysis is usually done in-home rather than in a hemodialysis center.

131.

Mr. Chang is concerned about the time needed for dialysis. How many hours of peritoneal dialysis are approximately equivalent to 6 to 8 hours of hemodialysis?

12 to 20.

20 to 36.

36 to 48.

48 to 56.

Explanation:

Approximately 36 to 48 hours of peritoneal dialysis are equivalent to 6 to 8 hours of hemodialysis. Patients typically have 4 or 5 exchanges every 24 hours (often 3 to 4 during daytime hours and a longer one at night) with dwell times in the daytime typically averaging about 4 to 6 hours. Hemodialysis, on the other hand, is more commonly done for 3 to 4 hours 3

times weekly. Thus, hemodialysis is less time-consuming and requires less effort on the part of the patient, but the patient also may be more restricted in travel and less independent.

132.

When considering a hemodialysis patient's socioeconomic status, the three factors to focus on are

age, income, and education.

residence, income, and race.

income, education, and occupation.

age, occupation, and income.

Explanation:

When considering a patient's socioeconomic status, the three factors to focus on are income, education, and occupation. Income can influence the patient's access to healthcare, adequate housing, and nutritious foods. Patients with little income often have few of the options available to those with high income. Education may influence the patient's choices and understanding of disease. Occupation may affect the patient's ability to remain employed. For example, blue-collar workers may find it much harder to continue working because of physical limitations when compared to white-collar workers.

133.

Mr. Chang is considering CAPD. Which of the following may be a contraindication to CAPD?

History of cervical disk disease.

History of diverticulitis.

The patient is legally blind.

The patient is deaf.

Explanation:

A history of diverticulitis is a contraindication to CAPD because the increased intra-abdominal pressure may result in rupture of the diverticulum. Other contraindications (not all absolute) include abdominal adhesions from previous surgeries, immunosuppressive drugs, colostomy, ileostomy, nephrostomy, or ileal conduit, and severe arthritis in the hands or impaired mobility of the hands. Inability to carry out the treatment independently is usually considered a contraindication. Patients who are legally blind or who have partial vision loss may be able to manage CAPD.

134.

Mr. Chang reports that his wife developed shingles, and he wonders if he should get the herpes zoster (shingles) vaccination. Patients with kidney disease considering the herpes zoster (shingles) vaccination should be advised to

avoid the vaccination.

take 1 dose if age 60 or older.

take the dose if on immunosuppressive therapy.

take 3 doses if age 65 or older.

Explanation:

Patients with kidney disease considering the herpes zoster (shingles) vaccination should be advised to take 1 dose if age 60 or older in order to decrease the risk of developing shingles and decrease the severity of shingles should they occur. However, post-transplant patients or any other patient receiving immunotherapy should not receive the immunization because the herpes zoster vaccine is a live virus vaccine, and those with depressed immune systems may develop the disease if they take the immunization.

135.

An ultrasound is conducted to evaluate the patient's kidneys. Which of the following findings on ultrasound is diagnostic of autosomal dominant polycystic disease?

Two or more total cysts.

Two or more cysts in each kidney.

Four or more total cysts.

Four or more cysts in each kidney.

Explanation:

The patient is presenting with typical signs and symptoms of autosomal dominant polycystic kidney disease—enlarged kidneys, gross hematuria, and flank (or abdominal) pain. Diagnosis is per ultrasound, and criteria varies according to age, reflecting the fact that the number of cysts tends to increase over time:

- *< 30: Two or more total cysts.*
- *30 to 59: Two or more cysts in each kidney.*
- *≥60: Four or more cysts in each kidney.*

136.

The patient is most at risk for additional cysts in the

intestines.

pancreas

spleen.

liver.

Explanation:

If a patient with autosomal dominant polycystic kidney disease has enlarged kidneys because of multiple cysts, the patient is most at risk for additional cysts in the liver. Hepatic cysts occur in up to one-half of patients with ADPKD. Cysts may also occur in the pancreas and spleen, but they are less common. The cysts are distinct from the relatively harmless cysts that develop in the kidneys associated with older age.

137.

The gross hematuria associated with autosomal dominant polycystic kidney disease most often results from

rupture of a cyst into the renal pelvis.

development of renal lithiasis.

a urinary tract infection.

an infected renal cyst.

Explanation:

The gross hematuria associated with autosomal dominant polycystic kidney disease most often results from rupture of a cyst into the renal pelvis, especially as the cysts enlarge. However, in some cases, the hematuria may result from development of renal lithiasis or urinary tract infection. Bleeding usually recedes within a week of bedrest and adequate hydration. Persistent bleeding should arouse suspicion of renal cell carcinoma.

138.

Mr. Pham reports that he has had three episodes of kidney stones over the previous 2 years. What type of kidney stone is most likely to occur in a patient with autosomal dominant polycystic kidney disease?

Struvite.

Cystine.

Calcium oxalate.

Uric acid.

Explanation:

The type of kidney stone that is most likely to occur in a patient with autosomal dominant kidney disease is calcium oxalate. These kidney stones occur in about 1 in 5 patients. Hydration of 2 to 3 L of fluid daily is encouraged to help prevent formation. Foods high in oxalate should be limited, including chocolate, soy products, nuts, nut butters, blackberries, blueberries, raspberries, figs, kiwis, concord grapes, beans, beets, greens (collard, beet, kale, spinach, Swiss chard), squash, peppers, olives, and okra.

139.

If Mr. Pham develops sudden onset of excruciating pain in the lower back, right flank, and lower right abdomen, the most likely cause is

infection.

ischemia.

hepatic cysts.

bleeding in a cyst.

Explanation:

If a patient with autosomal dominant polycystic kidney disease and enlarged cystic kidneys develops sudden onset of excruciating pain in the lower back, right flank, and right abdomen, the most likely cause is bleeding in a cyst, causing it to rapidly expand in size. As cysts expand in size, the traumatized vessels stimulate angiogenesis, which in turn increases the risk of bleeding. If the bleeding is confined, the patient may not have hematuria. If the cyst ruptures, the patient may experience retroperitoneal bleeding and severe pain and/or hematuria.

140.

Goodpasture syndrome is typically characterized by kidney failure and

liver failure.

pulmonary hemorrhage.

pancreatitis.

splenomegaly.

Explanation:

Anti-glomerular membrane glomerulonephritis (Goodpasture syndrome), an autoimmune disorder that destroys collagen in glomeruli and alveoli, is typically characterized by kidney failure and pulmonary hemorrhage, although about 33% of patients may not exhibit pulmonary injury. Goodpasture syndrome is more common in males than females and is most common in males in their teens or 20s. Kidney failure may occur very rapidly. The disorder is often preceded by a viral infection or exposure to toxins, such as hydrocarbon solvents.

141.

The primary treatments for anti-glomerular membrane glomerulonephritis (Goodpasture syndrome) include

plasmapheresis and corticosteroids.

blood transfusions and cyclosporine.

plasmapheresis and IgG.

IgG and corticosteroids.

Explanation:

The primary treatments for anti-glomerular membrane glomerulonephritis (Goodpasture syndrome) include plasmapheresis to remove the circulating antibodies and corticosteroids (or sometimes other drugs) to serve as immunosuppressive agents. Plasmapheresis is usually done daily for up to 14 days. Antihypertensives, such as ACE inhibitors and ARBs are usually provided to control hypertension in order to protect the kidneys. Patients who require dialysis often have poor prognosis.

142.

According to KDOQI guidelines, when administering hemodialysis to a patient, a facemask should be worn

for all access connections.

if the nurse has a cough.

if the patient has a cough.

to discontinue the hemodialysis.

Explanation:

According to KDOQI guidelines, when administering hemodialysis to a patient, a facemask should be worn for all access connections. If patients are doing their own cannulations, they should be advised to also don facemasks. Strict aseptic technique and proper hand hygiene with soap and water and/or alcohol-based hand rub are also critical elements in preventing infections. Patients should be advised to monitor staff members for compliance and to insist staff wear masks and use appropriate techniques.

143.

Mr. Adler's depression seems to improve over time, although the patient continues to have multiple problems. Additionally, he brings a dog to a clinic appointment with him without explanation. If the staff is unsure if the dog is a service animal, a question that is legally permitted is

"What kind of disability do you have that requires a service animal?"

"Do you have proof that this animal is certified?"

“What jobs has the dog been trained to perform for you?”

“Can you ask the dog to demonstrate carrying out a task?”

Explanation:

If a patient brings a dog to a clinic appointment and the staff is unsure if the dog is a service animal, a question that is legally permitted is “What jobs has the dog been trained to perform for you?” It is also legal to ask if the dog is needed because of a disability, but it is not legal to ask what the disability is, to ask for proof that the animal is certified or trained, or to have the animal demonstrate its skills.

144.

If two patients in the hemodialysis center are afebrile with no complaints at the onset of hemodialysis but begin to have chills and each spikes a fewer within 45 to 60 minutes, the most likely cause is

local infection.

a pyrogenic reaction.

dialysis disequilibrium syndrome.

systemic infection.

Explanation:

If two patients in the hemodialysis center are afebrile with no complaints at the onset of hemodialysis but begin to have chills and spike a fever with 45 to 60 minutes, the most likely cause is pyrogenic reaction. Pyrogenic reactions result from pyrogens such as bacterial toxins, and commonly affect more than one patient at the same time. If pyrogenic reaction is