

Nursing

CPEN
Certified Pediatric Emergency Nurse

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Question: 1

A 12-year-old male is admitted to the emergency department for wound management after an accident in which gasoline was thrown into a campfire, resulting in an explosion and flash burn. The pediatric nurse is asked to assist with initial debridement and cleaning of the wound.

Which of the following debridement methods is NOT indicated in this scenario?

- A. Mechanical debridement
- B. Immersion hydrotherapy
- C. Surgical debridement
- D. Enzymatic debridement

Answer: B

Explanation:

Correct answer: Immersion hydrotherapy

Wound care should only be initiated after all potentially life-threatening injuries have been addressed. Wound cleansing involves using water and mild soap in a bath basin, or various topical agents, to cleanse the wound(s). While hydrotherapy may be utilized for some burn wounds, immersion hydrotherapy is no longer indicated as a viable treatment option due to its increased risk of bacterial translocation.

Wound debridement involves the removal of necrotic tissue, debris, and foreign material. Depending on the type and location of the burn wound, debridement can be done via hydrotherapy, mechanical, enzymatic, or surgical debridement.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 808.

Question: 2

The initial evaluation of pulmonary hypertension involves all the following tests, EXCEPT:

- A. Cardiac catheterization
- B. Chest radiography
- C. Electrocardiogram (ECG) and echocardiogram
- D. B-type natriuretic peptide (BNP) level

Answer: A

Explanation:

Correct answer: Cardiac catheterization

The initial evaluation for PH consists of ECG and echocardiogram; BNP level (inversely proportional to prognosis in PH), and chest x-ray.

Cardiac catheterization confirms the diagnosis (after the initial workup has been completed) and assesses the severity of the disease. Cardiac catheterization is also helpful to assess the response to pulmonary vasodilators before starting therapy, evaluate the response to or the need for changes in therapy, exclude other potentially treatable diagnoses, and assist in the determination of suitability for heart or heart-lung transplantation.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 105-106.

Question: 3

For brain death testing on a child, which of the following findings is confirmatory?

- A. Presence of nystagmus and oculovestibular reflexes
- B. Electroencephalogram (EEG) revealing low-voltage amplitude
- C. Doll's eyes and absent gag reflex
- D. Absence of respiratory effort and PaCO₂ \geq 60 mm Hg

Answer: D

Explanation:

Correct answer: Absence of respiratory effort and PaCO₂ \geq 60 mm Hg

To determine brain death, the physical examination should demonstrate that coma and apnea coexist. The clinical examination should demonstrate a lack of function in the entire brain, including flaccidity, absence of movement (except for spinal cord reflexes), and absence of brainstem function.

Apnea testing must be performed with the clinical examination, and the patient must have a complete absence of respiratory effort with standardized apnea testing. After ventilator discontinuance, adequate time (5-10 min) must be given to allow PaCO₂ to increase to levels sufficient to stimulate respiration, adequate oxygenation, and absence of cardiovascular instability. The PaCO₂ must be 20 mm Hg above baseline PaCO₂ and \geq 60 mm Hg.

Complete absence of amplitude on EEG is consistent with brain death; doll's eyes and absent gag reflex are a part of the physical examination, but apnea testing must also accompany the physical exam and reveal a complete absence of respiratory effort with PaCO₂ \geq 60 mm Hg. The presence of nystagmus and oculovestibular reflexes indicate the brain is functioning and reacting to stimuli.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 380-381.

Question: 4

A nurse is caring for a 12-year-old female who underwent a laparoscopic appendectomy for a perforated appendix approximately 24 hours ago. The patient is being treated for peritonitis with IV antibiotic therapy and IV fluids, and she is currently on a clear liquid diet.

Which of the following is a major cause of death from peritonitis?

- A. Abscess formation
- B. Sepsis
- C. Shock
- D. Hypovolemia

Answer: B

Explanation:

Correct answer: Sepsis

A perforated appendix is a common cause of peritonitis (inflammation of the serous membrane lining the abdominal cavity and covering the viscera), as the inflammatory response causes exudation of fluid from the appendix into the peritoneal cavity. Sepsis is the most serious complication and a major cause of death from peritonitis.

Other complications include hypovolemia, abscess formation, and shock (resulting from hypovolemia or septicemia).

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 556.

Question: 5

A pediatric critical care nurse is developing a plan of care for an 11-year-old child admitted to the PICU with the syndrome of inappropriate antidiuretic hormone (SIADH). What would be a potential nursing diagnosis for this patient?

- A. Deficient fluid volume
- B. Risk for impaired skin integrity
- C. Fluid volume excess
- D. Acute pain

Answer: C

Explanation:

Correct answer: Fluid volume excess

SIADH is a disorder of impaired water excretion caused by the inability to suppress the secretion of antidiuretic hormone (ADH). If water intake exceeds the reduced urine output, the ensuing water retention leads to hyponatremia.

This syndrome should be suspected in any child presenting with hyponatremia, hypoosmolality, and a urine osmolality above 100 mOsmol/kg. In SIADH, the urine sodium concentration is usually above 40

mEq/L, serum potassium concentration is normal, there is no acid-base disturbance, and the serum uric acid concentration is often low.

Nursing diagnoses include fluid and volume excess and congestive heart failure related to excessive ADH secretion and water retention. Other potential diagnoses include an alteration in mental state related to underlying conditions, hyponatremia, or acute changes in serum osmolality; potential for seizures related to hyponatremia; and potential for cerebral hemorrhage that results from correcting the hypoosmolar state too rapidly.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 518-520.

Question: 6

A 6-year-old male is rescued, unconscious, from his bed by firefighters during a house fire. He is intubated in the field. An intravenous line is placed, and fluids are started. At the emergency hospital, he has 45% total-body-surface-area (TBSA) burns covering his torso and legs.

This child is at the highest risk of which of the following complications?

- A. Fractures of the femur due to muscle tetany
- B. Abdominal compartment syndrome
- C. Wound sepsis
- D. Hypothermia

Answer: D

Explanation:

Correct answer: Hypothermia

Children are more prone to developing hypothermia secondary to major burn injuries, as a result of their increased body surface-area-to-mass ratio. This places a child at a greater risk of evaporative water loss and conductive heat loss. Hypothermia remains a major problem until the burn wounds have been skin grafted and properly healed. Every effort should be made to minimize heat loss for a child with burn injuries, including providing care in a heated and humidified hospital room.

Abdominal compartment syndrome is a risk if resuscitation volumes are excessive, or if the child has suffered massive burns (>80% TBSA). Wound sepsis is always a risk, although not as great of a risk as hypothermia. Unrecognized femoral fractures due to muscle tetany are a less common complication associated with electrical burns, not thermal burn injuries.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 796.

Question: 7

A 3-year-old female presents to the emergency department accompanied by her mother, exhibiting signs and symptoms indicating acute epiglottitis. Which of the following is NOT a common clinical manifestation of this condition?

- A. High fever
- B. Stridor
- C. Dysphagia
- D. Exudate on tonsils

Answer: D

Explanation:

Correct answer: Exudate on tonsils

Acute epiglottitis is a severe, life-threatening condition requiring immediate medical attention. It primarily affects children ages 2 to 5 years but can occur from infancy to adulthood; it is characterized by a rapidly progressing bacterial infection of the epiglottis and surrounding area. The patient's history usually reveals an acute onset of symptoms, including a high fever, a sore throat and difficulty swallowing, dyspnea, and rapidly progressing respiratory obstruction from swelling tissue. The obstruction is supraglottic as opposed to subglottic (as seen in laryngitis). Stridor is a late finding and suggests near-complete airway obstruction.

Exudate on tonsils is not a clinical finding associated with epiglottitis.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 73-74.

Question: 8

A nurse is preparing to administer one unit of packed red blood cells to an anemic child. Just before beginning the infusion, the nurse must check which of the following?

- A. Latest hemoglobin and hematocrit (H&H) levels
- B. Oxygen saturation
- C. Skin color
- D. Vital signs

Answer: D

Explanation:

Correct answer: Vital signs

A change in the patient's vital signs may indicate that a transfusion reaction is occurring. The nurse should check the patient's vital signs immediately before the infusion begins and should stay with the patient for the first 15 minutes of the blood infusion to monitor for signs and symptoms of a transfusion reaction. The first 15 minutes are the most critical and the most likely time a transfusion will occur. Vital signs are monitored every 30 minutes to 1 hour according to hospital policy.

Oxygen saturation, skin color, and H&H levels may be checked, but are not the most important immediately preceding a blood transfusion.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 620-622.

Question: 9

A pediatric patient is being prepped for cardiac catheterization to obtain a cardiac biopsy. Which allergies should the patient be assessed for prior to this procedure?

- A. Penicillin
- B. Antiarrhythmic medications
- C. Opioid pain medications
- D. Iodine or shellfish

Answer: D

Explanation:

Correct answer: Iodine or shellfish

Cardiac catheterization is an invasive procedure that can be used to diagnose a congenital heart defect, as well as repair certain congenital heart defects. It can also help identify rejection in a transplanted heart, aid in the diagnosis of infectious etiology or continued inflammatory response in myocarditis (both via a biopsy), and assess for cellular disease such as mitochondrial disease.

A catheter is inserted into the femoral artery and then threaded to the heart. Prior to the procedure, it is important to assess for any allergies to iodine or shellfish. If a patient has an allergy to either of these, this increases the risk of an allergic reaction to the contrast dye used in the procedure.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 181-182.

Question: 10

A 7-year-old female presents to the emergency department with her mother after a fall off of her bike approximately four hours ago. Her mother reports she was riding her bike and fell with her handlebars "bumping into her chest and stomach." The child has been complaining of intense abdominal pain since the fall.

The nurse notes a positive Kehr sign upon assessment. Based on this finding, the nurse suspects damage to which organ?

- A. The left kidney
- B. The liver
- C. The spleen
- D. The pancreas

Answer: C

Explanation:

Correct answer: The spleen

Blunt abdominal trauma is caused by compression of a solid or hollow, viscous organ against the spine; rapid acceleration and deceleration with subsequent tearing of structures; or increased abdominal pressure resulting in contusion, laceration, or rupture of organs with subsequent hemorrhage. Solid organs are most often injured, and the spleen is the most commonly injured organ in children.

Signs and symptoms of spleen injuries consist of LUQ tenderness, bruising, or abrasion, a positive Kehr's sign (LUQ pain radiating to the left shoulder), signs of decreased perfusion, and nausea and vomiting. Other signs may include Cullen's or Turner's sign (indicative of retroperitoneal bleeding).

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 550.

Question: 11

Which of the following diuretic agents, indicated in the management of pediatric heart failure (HF), has a common side effect of hyperkalemia?

- A. Chlorothiazide
- B. Spironolactone
- C. Furosemide
- D. Butemadine

Answer: B

Explanation:

Correct answer: Spironolactone

Spironolactone is a potassium-sparing diuretic. Therefore, it can increase potassium levels, causing hyperkalemia as a potential side effect. It is not a strong diuretic but can be used in the treatment of HF. Furosemide (Lasix), chlorothiazide, and butemadine (Bumex) are all diuretic agents that have the potential for hypokalemia.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 208.

Question: 12

A pediatric nurse is educating the parents of a child with pulmonary stenosis about the pathophysiology of this condition. The nurse should explain that this disorder involves which of the following?

- A. Obstruction to blood flow from the right ventricle to the pulmonary artery
- B. Obstruction of blood flow from the left ventricle to the pulmonary artery

- C. Absence of blood flow from the right atrium to the right ventricle
- D. Restriction of blood flow from the left atrium to the left ventricle

Answer: A

Explanation:

Correct answer: Obstruction to blood flow from the right ventricle to the pulmonary artery

Pulmonary stenosis (PS) involves a narrowed pulmonary valve obstructing flow from the right ventricle to the pulmonary artery, resulting in right ventricular hypertrophy. This defect involves a stiff pulmonic valve, further contributing to the obstruction of blood flow. PS is most often a congenital heart defect, resulting from an embryologic error in the formation of pulmonary leaflets.

In noncritical PS, conservative management and monitoring are recommended. Intervention is required for moderate or greater PS, with balloon valvuloplasty as the currently accepted treatment modality, providing excellent short- and long-term results.

Tricuspid atresia involves an absence of blood flow from the RA to the RV, due to a lack of tricuspid valve formation. Survival of this condition is contingent upon the placement of an obligatory right-to-left atrial shunt. Mitral stenosis (not pulmonary stenosis) involves narrowing of the mitral valve orifice, restricting blood flow from the LA to the LV.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 284-285.

Question: 13

A nurse is caring for a pediatric patient who recently underwent surgery to remove a pituitary adenoma and is now experiencing an antidiuretic hormone (ADH) deficiency secondary to the surgery. This lack of ADH secretion is likely to cause which fluid and electrolyte imbalances if not properly treated and managed?

- A. Hyponatremia and oliguria
- B. Hypokalemia and polyuria
- C. Hypernatremia and polyuria
- D. Hyperkalemia and oliguria

Answer: C

Explanation:

Correct answer: Hypernatremia and polyuria

The pituitary gland is responsible for storing and secreting ADH (a hormone that tells the kidneys how much water to conserve). Therefore, when a patient has surgery in this area and the pituitary has been damaged, it cannot secrete ADH; ADH deficiency secondary to surgery is generally an acute problem but can be chronic. When there is a lack of ADH, the patient will urinate large amounts of dilute urine (resulting from the blunted release of ADH), leading to severe dehydration. Hypernatremia ensues with serum sodium levels above 145 mEq/L.

The decision to use fluid, ADH replacement therapy, or both is often based on the severity of the illness, chronicity of the hypernatremia, and the underlying cause.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 492, 521.

Question: 14

A 9-year-old male arrives at the emergency department via ambulance with a left leg fracture. Radiologic findings reveal a closed fracture of the fibula. The physician performs a closed reduction and casts the extremity. The patient is receiving IV morphine every 2-4 hours as needed for pain control. The mother calls the nurse on the call light and states her son is experiencing severe pain in the casted extremity with even the slightest movement, despite the pain medication.

The nurse suspects which of the following complications?

- A. Fat embolism
- B. Osteomyelitis
- C. Compartment syndrome
- D. Thrombus formation

Answer: C

Explanation:

Correct answer: Compartment syndrome

Compartment syndrome occurs when too much pressure is exerted within the myofascial compartments, decreasing blood flow to the tissues. As the pressure builds within the affected compartment, this will inhibit blood supply and nerve function to this muscle. If it is left untreated for over 6 hours, the damage is irreversible.

While compartment syndrome is rare in children, it does still happen. It is more often seen in the lower extremities compared to the upper extremities. High suspicion of compartment syndrome should be raised if the child complains of sharp pain or numbness in the casted extremity, despite adequate pain relief.

The other choices are complications of a fracture but not likely given this patient's symptoms.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 710, 717.

Question: 15

Positive end-expiratory pressure (PEEP) levels that are too high in an intubated and mechanically ventilated child can cause which of the following complications?

- A. Decreased afterload
- B. Decreased lung compliance

- C. Decreased cardiac output (CO)
- D. Decreased intrathoracic pressure

Answer: C

Explanation:

Correct answer: Decreased cardiac output (CO)

Optimal PEEP improves CO by decreasing left ventricular transmural pressure and decreasing afterload, making the ejection of blood from the left ventricle easier.

Decreased CO caused by compression of the great vessels secondary to elevated intrathoracic pressures (most often from high levels of PEEP) is a potential complication of mechanical ventilation. This can be remedied with adequate volume (preload) expansion.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 131.

Question: 16

Per an annual survey, hospital nursing staff members feel routine 5 a.m. lab draws cause an extreme interruption in pediatric sleep patterns. What is the BEST strategy for addressing this issue?

- A. Move all non-emergent 5 a.m. lab draws to daytime hours
- B. Create a group of staff members to discuss current hospital policy
- C. Request an in-service session for phlebotomy personnel on the effects of sleep deprivation in children
- D. Send the results of the survey to the hospital administrator

Answer: B

Explanation:

Correct answer: Create a group of staff members to discuss the current hospital policy

Utilizing the nurse competencies, which reflect the integration of nursing knowledge, skills, and experiences that are required to meet the patient's and family's needs and optimize their outcomes, a systematic, collaborative approach to problem-solving is necessary for this scenario. An alternative strategy to not interrupt typical patient sleep patterns may be identified by various team members working together.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 2.

Question: 17

The nurse is caring for a 4-year-old female with diagnostic studies confirming pneumococcal meningitis. The child has no known drug allergies. The nurse anticipates administering which of the following antibiotics?

- A. Ampicillin and gentamicin
- B. Gentamicin and acyclovir
- C. Acyclovir and ceftriaxone
- D. Vancomycin and cefotaxime

Answer: D

Explanation:

Correct answer: Vancomycin and cefotaxime

Specific antimicrobial therapy for central nervous system (CNS) infections depends on the pathogen suspected or identified, the age of the patient, and any associated complications. In a child older than 1 month, general recommendations often include third-generation cephalosporins (cefotaxime or ceftriaxone) plus vancomycin to cover the emergence of cephalosporin-resistant organisms.

Empiric antimicrobial therapy in neonates has traditionally been ampicillin and gentamicin. Still, with increasing resistance of *Escherichia coli* and other gram-negative enterococci to ampicillin, a third-generation cephalosporin often takes the place of gentamicin. Acyclovir is indicated for the treatment of HSV (herpes simplex virus) encephalitis.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 397.

Question: 18

A nurse is caring for a 2-year-old toddler who just underwent a diagnostic cardiac catheterization via the right groin. As part of the head-to-toe assessment, the nurse checks bilateral pedal pulses frequently to monitor for which complication?

- A. Hemorrhage
- B. Stroke
- C. Thrombosis
- D. Cardiac tamponade

Answer: C

Explanation:

Correct answer: Thrombosis

Caring for a child post-cardiac catheterization includes checking bilateral pedal pulses to ensure they are present and equal; a loss of pulse or a decrease in pulse strength could indicate the formation of a potential blood clot (arterial or venous thrombosis).

Hemorrhage, stroke, and cardiac tamponade are also all potential complications of cardiac catheterization, but they are not monitored with a pulse assessment.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 180-182.

Question: 19

A 2-year-old male presents to the emergency department with symptoms indicative of acute epiglottitis. The child is intubated for airway management and admitted to the pediatric intensive care unit (PICU). The nurse caring for the child would NOT expect orders to administer which treatment?

- A. Parenteral antibiotics
- B. Corticosteroids
- C. Racemic epinephrine
- D. Antipyretics

Answer: C

Explanation:

Correct answer: Racemic epinephrine

Acute epiglottitis is a life-threatening medical emergency in which the epiglottis swells due to a bacterial infection, and the airway is compromised. Signs and symptoms include an abrupt onset of a high fever, a sore throat, dysphagia, drooling, a muffled voice, and stridor. Airway management with the placement of an endotracheal tube (ETT) is generally indicated, along with parenteral antibiotics (ceftriaxone, cefotaxime, or a combination of ampicillin and sulbactam, pending culture and susceptibility reports). Antibiotics should be given for 7 to 10 days. Antipyretics for fevers and comfort with intravenous fluids are also given; corticosteroids should be administered to reduce edema during the early treatment phase.

Racemic epinephrine is indicated for the treatment of acute laryngotracheobronchitis (LTB), not for acute epiglottitis. Croup is the general medical term that refers to this inflammatory process.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 73-74.

Question: 20

All the following are associated with an increased risk of central line-associated bloodstream infections (CLABSIs), EXCEPT:

- A. Utilizing the femoral vein for percutaneous catheter placement
- B. Frequent handwashing
- C. Changing dressings every 10 days or when loose, damp, or visibly soiled
- D. Longer dwell times for catheters

Answer: B

Explanation:

Correct answer: Frequent handwashing

CLABSIs remain a prominent concern in PICU settings. As a subset of nosocomial infections, CLABSI is defined as a bloodstream infection with an initial positive blood culture that occurs at least 2 days after placement or within 2 days before a central line is placed or removed, with the infection not attributable to another site.

Hand hygiene remains the single most important procedure for controlling infection in the PICU and preventing healthcare-acquired infections. Meticulous and frequent hand hygiene must be implemented to prevent CLABSIs.

Longer dwell times for catheters are associated with increased CLABSIs. Utilizing the femoral vein for catheter placement increases the risk of infection; thus, the femoral vein should be avoided. Dressings should be changed every 5 to 7 days with a transparent dressing or every 2 days with a gauze dressing. If the dressing becomes moist, loose, or visibly soiled or has a break in the seal, it must be changed immediately.

Reference:

AACN Core Curriculum for Pediatric High Acuity, Progressive, and Critical Care Nursing, 3rd Edition. Pg 819.

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