

## Medical Equipment Problems

### Questions

1. An 8-year-old girl with tracheostomy suddenly desaturates and becomes cyanotic. The first thing you should do is:
  - A) Begin chest compressions
  - B) Administer 100% oxygen by tracheostomy
  - C) Perform needle decompression
  - D) Check for tracheostomy tube patency
2. An 18-month-old boy post-op day 7 after a G-tube and Nissen fundoplication pulls his tube out. All of the following should be performed EXCEPT:
  - A) Call surgery
  - B) Place a deflated foley in the stoma
  - C) Place an NG tube and start pedialyte to maintain hydration
  - D) Check new tube placement using a dye study before starting feeds
3. Admission orders for a child with a tracheostomy should include all of the following:
  - A) oxygen, suction, ambu-bag, albuterol
  - B) suction, oxygen, ambu-bag, spare tracheostomy in the same size, spare tracheostomy that is 0.5mm larger
  - C) suction, oxygen, ambu-bag, spare tracheostomy in the same size, spare tracheostomy that is 0.5mm smaller
  - D) oxygen, suction, ambu-bag, spare ventilator at bedside
4. In a patient with a gastrostomy tube who has frequent vomiting, all of the following should be considered in treatment EXCEPT:
  - i. Gastro-jejunal tube placement
  - ii. Changing bolus feeds to slow, continuous feeds
  - iii. Concentrating the formula
  - iv. Nissen fundoplication
  - v. Changing to an elemental formula
  - A) i and ii only
  - B) i, ii and iii
  - C) i, ii and iv
  - D) all of the above are possibilities

5. You are called to the bedside of a patient to look at a gastrostomy site because it is red. All of the following would make you concerned about cellulitis in this patient EXCEPT:
- A) Spreading erythema
  - B) Warmth to touch
  - C) Scant drainage from the stoma
  - D) Tenderness to palpation
6. All of the following are disadvantages of cuffed tracheostomy tubes EXCEPT:
- A) Decreased vocalization due to decreased air flow through the vocal cords
  - B) Decreased blood flow to the capillary epithelium of the tracheal mucosa
  - C) Decreased ability to mechanically ventilate
  - D) Possible side-effect of acquired tracheomegaly

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### Answers

1. D. Assessment of tracheostomy problems should always begin with the ABCs, starting with airway patency. The first thing to do is to check for tube patency, usually by suctioning.
2. C. For all patients with a gastrostomy tube who have tube displacement, a foley should be placed in the stoma. Because this is a new gastrostomy tube, the surgeon should be immediately notified and a dye study performed to ensure that the tube is placed properly in the stomach, and not in a false passage, before using the tube.
3. C. Both in the hospital and at home, patients with tracheostomies should always have a spare tracheostomy of the same size and one size smaller available in case of the need for emergent replacement. Suction, oxygen and an ambu-bag should also be readily available. In addition, for the home management of a child with a tracheostomy, there should be two caregivers who are knowledgeable and able to care for the child's tracheostomy. Both caregivers should be trained in CPR and should have experience changing the child's tracheostomy.
4. D. In a patient with a gastrostomy tube who has frequent vomiting, any surgical cause of vomiting, such as obstruction, should first be excluded. However if the vomiting persists and is attributed to GERD, a number of options may be helpful. Changing the feeds so that they are more concentrated and therefore less volume may be helpful. Slowing the feeds down may also decrease GERD symptoms. In addition, maximizing treatment with acid suppression and consideration of prokinetic agents, such as metoclopramide or erythromycin, may be helpful. Elemental formulas may be more easily digested, resulting in improvement in gastric emptying. Finally, procedural options include gastro-jejunal tube placement or Nissen fundoplication.
5. C. Remember that a small amount of drainage from the stoma of a gastrostomy tube is considered acceptable. In addition, if a granuloma is present, drainage may be yellow, green, brown or serosanguinous in nature without necessary signaling infection. Antibiotics should not be used for isolated granuloma because they may result in antibiotic resistance. However should other signs of infection arise, including redness, warmth, tenderness, or swelling, then systemic antibiotics are indicated.
6. C. Cuffed tracheostomy tubes occlude the entire trachea such that all air flow is directed through the tracheostomy tube. As a result, children who require long-term mechanical ventilation often require a cuffed tracheostomy tube for adequate ventilation. However cuffed tubes may be problematic because they may decrease blood flow to the capillary epithelium, resulting in acquired tracheomegaly. In addition, children are not able to vocalize as no air flows

through the vocal cords. In patients who require a cuffed trach tube, it is best to deflate the cuff during the day and inflate the cuff only at night, if possible. In addition, the cuff should be inflated with as little volume as possible to achieve the desired effect.