P. **SELF-ASSESSMENT – MODULE A-4 – Suctioning of the Artificial Airway**

1. List three situations that would indicate that suctioning of an artificial airway may be needed.

   a. **THE NEED TO REMOVE ACCUMULATED PULMONARY SECRETIONS AS EVIDENCED BY ONE OF THE FOLLOWING:**
      i. **COARSE BREATH SOUNDS BY AUSCULTATION OR 'NOISY' BREATHING**
      ii. **INCREASED PEAK INSPIRATORY PRESSURES DURING VOLUME-CONTROLLED MECHANICAL VENTILATION OR DECREASED TIDAL VOLUME DURING PRESSURE-CONTROLLED VENTILATION.**
      iii. **PATIENT'S INABILITY TO GENERATE AN EFFECTIVE SPONTANEOUS COUGH.**
      iv. **VISIBLE SECRETIONS IN THE AIRWAY**
      v. **CHANGES IN MONITORED FLOW AND PRESSURE GRAPHICS**
      vi. **SUSPECTED ASPIRATION OF GASTRIC OR UPPER AIRWAY SECRETIONS**
      vii. **CLINICALLY APPARENT INCREASED WORK OF BREATHING**
      viii. **DETERIORATION OF ARTERIAL BLOOD GAS VALUES**
      ix. **RADIOLOGIC CHANGES CONSISTENT WITH RETENTION OF PULMONARY SECRETIONS**
   b. **THE NEED TO OBTAIN A SPUTUM SPECIMEN TO RULE OUT OR IDENTIFY PNEUMONIA OR OTHER PULMONARY INFECTION OR FOR SPUTUM CYTOLOGY**
   c. **THE NEED TO MAINTAIN THE PATENCY AND INTEGRITY OF THE ARTIFICIAL AIRWAY**
   d. **THE NEED TO STIMULATE A PATIENT COUGH IN PATIENTS UNABLE TO COUGH EFFECTIVELY SECONDARY TO CHANGES IN MENTAL STATUS OR THE INFLUENCE OF MEDICATION**
   e. **PRESENCE OF PULMONARY ATELECTASIS OR CONSOLIDATION, PRESUMED TO BE ASSOCIATED WITH SECRETION RETENTION**

2. Given the following inner diameters of artificial airways, determine the appropriate size suction catheter.

a. 7.0 mm ID $\frac{ID \times 3}{2} = \frac{7 \times 3}{2} = \frac{21}{2} = 10.5, 10\,Fr$

b. 6.5 mm ID $\frac{ID \times 3}{2} = \frac{6.5 \times 3}{2} = \frac{19.5}{2} = 9.75, 8\,Fr$

c. 4.5 mm ID $\frac{ID \times 3}{2} = \frac{4.5 \times 3}{2} = \frac{13.5}{2} = 6.75, 6\,Fr$

d. 8.0 mm ID $\frac{ID \times 3}{2} = \frac{8 \times 3}{2} = \frac{24}{2} = 12, 12\,Fr$

3. For what duration of time should preoxygenation be performed prior to suctioning an artificial airway?
PRE-OXYGENATE WITH 100% OXYGEN FOR A MINIMUM OF 30 SECONDS (ETS CPG)

4. What is the maximum amount of time vacuum pressure should be applied?
NO MORE THAN *10 – 15 SECONDS*

5. List three hazards to suctioning of an artificial airway.

a. **TRAUMA TO MUCOSA**
b. **HYPOXEMIA**
c. **ARRHYTHMIAS (BRADYCARDIA FROM VAGAL NERVE STIMULATION, TACHYCARDIA USUALLY FROM HYPOXEMIA, CARDIAC ARREST…)**
d. **HYPERTENSION / HYPOTENSION**
e. **ATELECTASIS**
f. **CARDIAC/RESPIRATORY ARREST**
g. **UNCONTROLLED COUGHING**
h. **GAGGING AND VOMITING (NT ONLY)**
i. **NOSOCOMIAL INFECTION**
j. **BRONCHOSPASM**
k. **LARYNGOSPASM (NT ONLY)**
l. **INFECTION**
m. **PULMONARY HEMORRHAGE**
n. **ELEVATED INTRACRANIAL PRESSURE (ICP)**
o. **PATIENT DISCOMFORT**
p. **INTERRUPTION OF MECHANICAL VENTILATION**
q. **FAILURE OF THE SUCTION SYSTEM TO GENERATE SUFFICIENT VACUUM PRESSURE**

6. Describe three precautions should be taken to prevent dysrhythmias.

   a. **PRE & POST OXYGENATE**
   b. **SUCTION PROCEDURE TIME 20 SECONDS TOTAL**
   c. **SUCTION APPLICATION TIME 10 – 15 SECONDS**

7. List three benefits of a closed-suction system over an open one.

   a. **DOESN'T REQUIRE DISCONNECTION FROM THE VENTILATOR. THIS MAY BE USEFUL IN THE FOLLOWING SITUATIONS:**
      i. **UNSTABLE PATIENTS WITH:**
         (A) **HIGH PEEP**
         (B) **HIGH PAW**
         (C) **LONG T INSP.**
         (D) **HIGH FIO_2**
      ii. **HEMODYNAMICALLY UNSTABLE PATIENTS**
      iii. **PATIENTS WHO HAVE SIGNIFICANT DESATURATIONS DURING CONVENTIONAL SUCTIONING**
      iv. **PATIENTS NOT TOLERATING OPEN SUCTION**
      v. **PATIENTS WITH CONTAGIOUS PULMONARY INFECTION (TB)**
      vi. **PATIENTS NEEDING FREQUENT SUCTIONING (E.G. SIX TIMES PER DAY)**
      vii. **PATIENTS INHALING SPECIALTY GAS MIXTURES (NO, HE/O_2)**

8. Describe the purpose of the black line on the closed suction catheter.
   NOTES THAT THE CATHETER HAS BEEN REMOVED FAR ENOUGH FROM THE AIRWAY.

9. List three possible solutions for correcting a situation where there is no vacuum pressure present.

   a. **TIGHTEN CONNECTIONS (LEAKS).**
   b. **EMPTY CANISTER (FULL?).**
   c. **CHECK ASSEMBLY OF CANISTER AND TUBING.**
   d. **MAKE SURE WALL REGULATOR IS PLUGGED IN.**
   e. **MAKE SURE WALL REGULATOR IS ON AND SET TO CONTINUOUS.**

10. Name the collection device used when obtaining a sterile sample for analysis.
    LUKEN'S TRAP