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Aspiration and Airway Precautions Guideline

Purpose:

All medical personnel will assess for signs and symptoms of aspiration. Personnel will assess and implement necessary measures to maintain patency of airway in all clients and identify all clients at risk for aspiration and/or airway compromise

Aspiration Precautions: Nursing personnel will identify all clients at risk for aspiration and/or airway compromise.

Risk factors: Reduced level of consciousness, Depressed cough and gag reflex, presence of tracheostomy or endotracheal tube, presence of gastrointestinal tube (GTT, NGT etc., tube feedings), anesthesia or medication administered, decrease gastrointestinal motility, impaired swallowing, facial/oral/neck surgery or trauma, situations hindering elevation of upper body, GERD-gastroesophageal reflux, disease process that affect normal muscle functioning/swallowing- neuromuscular diseases, brain damage ie TBI-traumatic brain injury. Comatose patients, Alzheimers disease. Vomiting, Croup, Malaicia (partial list.)

Standard Nursing Practice: Assess and implement standards for clients at risk for aspiration

- **Head of Bed elevated**
Fowlers (90 degree angle) or semi-Fowlers (45 degree angle) when not providing care except as needed with diaper changes, changing clothes, range of motion exercises, linen changes, pulling up in bed.
- **Maintain upright position for 30-45 minutes after feeding and or follow Physician Orders.** Proper positioning of patients with swallowing difficulties/tube feeding patients is of primary importance during feeding or eating.
- **Monitor level of consciousness**
Decreased level of consciousness is a prime risk factor for aspiration/airway compromise.
- **GTT/NGT-check placement of tube prior to all feedings-**
air rush method instilling 5-10 ml of air into feeding port while listening with stethoscope on left side for a gurgle/growl is common sound-document.
- **GTT/NGT- check residual**
Insert 10 ml of water into feeding port and gently pull back on plunger until stomach contents appears and/or when resistance is met.(Stop when you meet resistance to prevent damage to the intestinal lining). Check MD orders for directives on residuals- most common practice is to re-feed residuals, and if residual is greater than ½ the hourly rate then check orders and/or contact Physician to determine if feeding are to be held, hourly rate decreased, and or switched to another formula/pedialyte.

Aspiration Precautions for PO clients: follow physician directives/orders:

- Positioned upright at minimum of semi-fowlers (30 degrees)
- Small sips of liquids or thickened liquids, small bites of food- per MD Orders
- Monitor swallowing ability carefully
- Stop the meal immediately if any signs of aspiration airway compromise are noted

Precautions for Clients on Enteral feeding and/or NPO:

- NPO mean absolutely NOTHING BY MOUTH
- Assess placement of feeding tube prior to feedings
- Check for residual and vent tube prior to feedings
- Avoid bolus feeding or flushes in high risk aspiration clients

Common Signs and/or Symptoms of Aspiration will possibly airway compromise:

Aspiration
Gagging
Choking
Frequent coughing/chronic coughing
Vomiting
Apnea and/or Bradycardia
Wheezing/stridor
Bronchospasm/ Noisy breathing
Cyanotic episodes- drop in saturations
Chest discomfort- pain/discomfort
Failure to Thrive
Night sweats/fevers
Hiccups
Chronic pulmonary infections
Excessive drooling

Nursing Measures to Implement if suspected Aspiration/Airway Compromise:

- Check Physician Orders for directives regarding feeding/Oxygen Use/Tolerance and follow
- Position client on side, elevate HOB-head of bed, Perform Head to Toe Assessment especially the Respiratory Status, and GI.
- Stop Feedings- Vent GTT- preventing oral vomiting/aspiration .
- Notify family /Physician for further directives.Institute ER measures as needed per clients Assessment- (pulse Oximetry reading, Resp rate, Heart rate, Breath sounds Assessment-changes, color, Bowel sounds, abdominal appearance/distention/ Residual volume from GTT.

Signs and Symotoms of Airway Obstruction

Compared with adults, infants and young children have small airways and can quickly develop clinically significant upper airway obstruction. The increased work of breathing that results can rapidly progress to respiratory failure because these young patients have less respiratory reserve. Therefore, prompt recognition of airway compromise and the institution of appropriate therapy are necessary to prevent progressive deterioration in respiratory function and improve outcomes.

Some Common Symptoms of Partial Airway Obstruction:

- Snoring
- Retraction of the sternum
- Rocking motion of the chest not in sync with respiratory effort
- Harsh, high-pitched sound upon inspiration (stridor)

Some Common Symptoms of Complete Airway Obstruction:

- Lack of any air movement perceived by feeling with the hand over the mouth or placing the ear over the mouth
- Lack of breath sounds while listening with stethoscope to lung fields
- Retraction of the sternum and rib cage
- Rocking motion of the chest not in sync with respiratory effort
- Cyanosis

Important Facts: Respiratory Failure

- The airway is the key to success in pediatric resuscitation. Cardiovascular compromise can often be treated with oxygenation and ventilation alone. (Remember CAB-Basic life support for Children)
- Clinical state characterized by inadequate elimination of carbon dioxide and/or inadequate oxygenation of the blood
- Seen as the end stage of respiratory distress of any cause or with inadequate respiratory drive (e.g. the patient with shallow respirations or apnea due to a head injury, seizure, or meningitis)
- Respiratory failure is often preceded by a “compensated” state characterized by respiratory distress: use of accessory muscles, retractions, tachypnea and tachycardia.
- Clinical signs of respiratory failure reflect inadequate oxygen delivery to the tissues and organs: decreased level of consciousness, tachycardia/bradycardia, weak proximal pulses, and poor skin perfusion.

Field Assessment:

The pediatric initial assessment begins with your general impression.

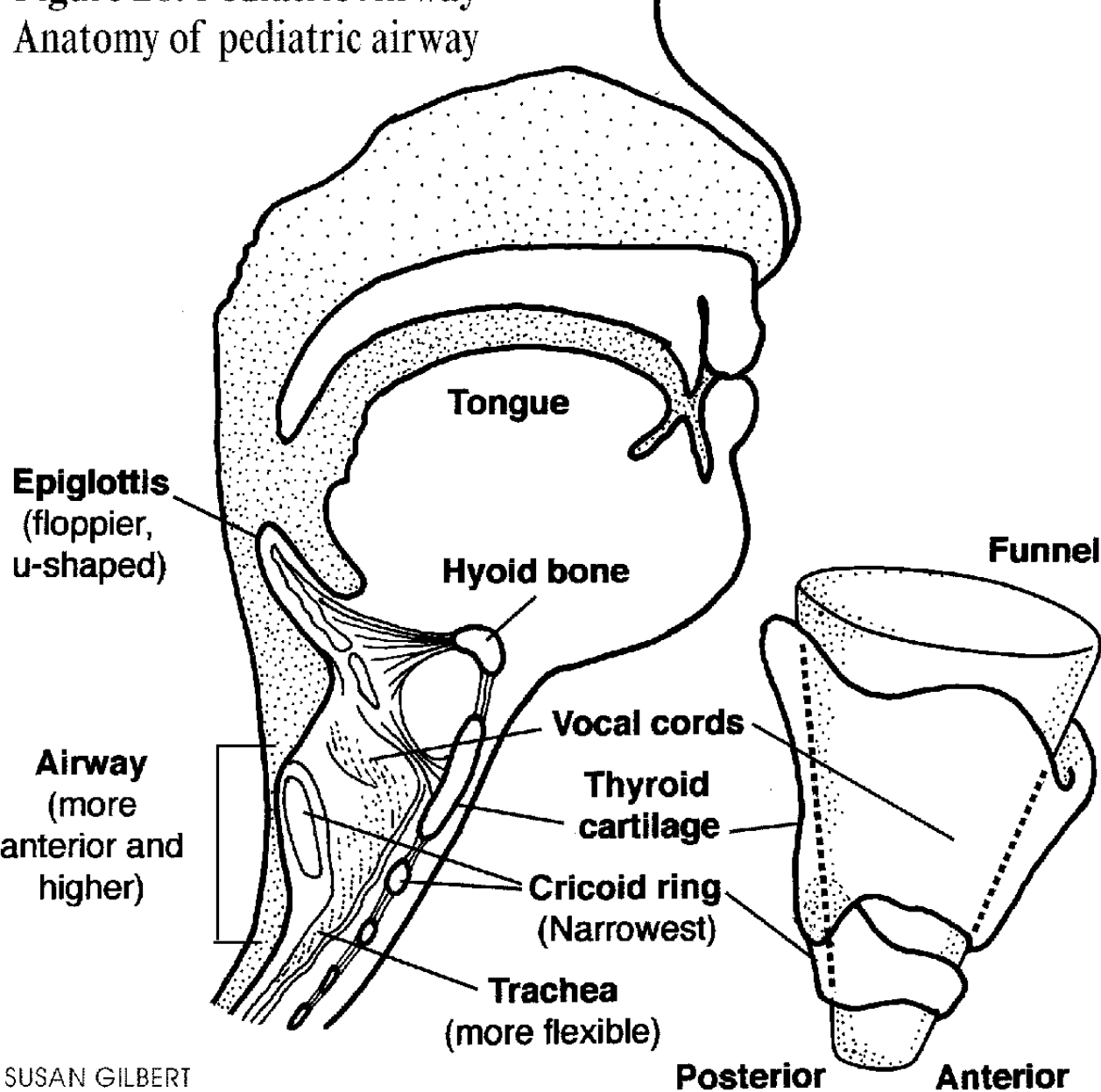
This information is gained by observation. It is called the pediatric assessment triangle or PAT and includes three important components:

1. General appearance of the child – this includes the following observations:
 - Muscle tone and movement
 - Alertness/interaction with environment or caregiver
 - Crying or agitation that is inconsolable
 - Ability to speak or cry
2. Work of breathing (impression gathered before touching)
3. Circulation to the skin – includes your first impression regarding presence of pallor, mottling or cyanosis

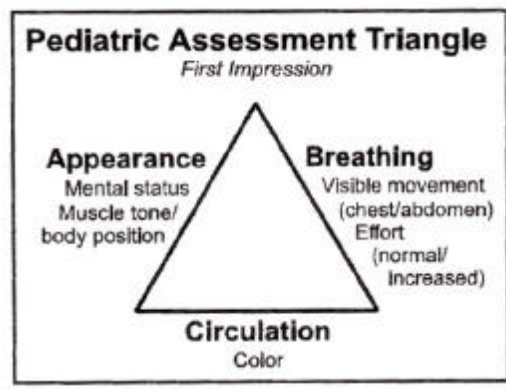
The PAT, which is your general impression, allows you to immediately determine the severity of the child’s illness or injury and assists you in determining the urgency for care- Basic CPR for pediatrics.

Figure 26: Pediatric Airway

Anatomy of pediatric airway



SUSAN GILBERT



- Always look before touching!
- Agitation tends to make respiratory distress worse.

Respiratory distress may result from abnormalities anywhere in the tracheobronchial tree, lungs, pleura, or chest wall.

Symptoms and signs of Pediatric Respiratory Distress, regardless of etiology, may include:

I. Abnormal respiratory rate:

- a. Normal respiratory rate varies with age.

Age Normal Rate

- Newborn 30-60
- 6 months 25-40
- 1-3 years 20-30
- 6 years 18-25
- 10 years 15-20

- b. Rate is best assessed by observation – have parent expose child’s chest while seated on their lap. Watch rise and fall of chest and abdomen.
- c. Rate greater than 60 is abnormal in child of any age.
- d. Abnormally slow rate is more worrisome than tachypnea, and signals respiratory failure.

II. Increased work of breathing

- a. Retractions:
- 1) Prominent sign in infants and young children due to thin, unstable chest wall.
 - 2) Intercostal, subcostal, and suprasternal retractions increase with progressive respiratory distress.
 - 3) Decreasing respiratory rate and diminished retractions in a child with history of distress signal severe fatigue and respiratory failure
- b. Nasal flaring: Seen with hypoxemia.
- c. Grunting: *Expiratory noise made to generate positive end expiratory pressure (PEEP)*

III. Altered mental status

- a. Agitation and irritability may indicate hypoxemia.
- b. Lethargy and decreased responsiveness may signal severe hypoxemia and/or carbon dioxide retention.

IV. Color: Cyanosis is an unreliable sign of hypoxemia in children. *Cyanosis reflects presence of critical level of Deoxygenated hemoglobin. Children are relatively anemic and may not look blue until blood oxygen is dangerously low.*

V. Position:

- a. "Sniff" position: Child seated with jaw thrust forward to maximally open airway.
 - 1) Seen with critical upper airway obstruction.
 - 2) Immunologic immaturity leads to increased susceptibility to respiratory infections Croup, epiglottitis, and bronchiolitis are seen almost exclusively in young children.
Developmental immaturity leads to increased susceptibility to foreign body aspiration.
- b. "Tripod" position: Child seated and leaning forward supported on outstretched arms to maximally utilize accessory muscles of respiration. Seen with severe distress and increased work of breathing.

VI. Cardiovascular status:

- a. Tachycardia commonly seen in child with respiratory distress.
- b. Bradycardia seen with severe hypoxemia and acidosis due to respiratory failure. Bradycardia in child with respiratory distress signals imminent cardiopulmonary arrest.

Determining Upper or Lower Airway Compromise:

Localizing site of illness to upper or lower airway may assist in field treatment decisions.

1. History:

- a. Has the child had fever? For how long?
 - 1) Acute onset of respiratory distress in absence of fever, may suggest foreign body aspiration.
 - 2) Pneumonia, croup, and epiglottitis all have associated fever:
 - a. Croup often has history of several days of low-grade fever (100.4-102.2 F., 38-39 C)
 - b) In epiglottitis, onset of respiratory distress occurs within 12 hours of appearance of fever.
 - c) Temperature in epiglottitis often >104.0 F, 40 C
- b. Has the child had acute episode of coughing or choking suggestive of foreign body aspiration?
- c. Will the child drink? Has he/she been drooling?
 - 1) Difficulty swallowing suggests upper airway obstruction.
 - 2) Fever and drooling points to epiglottitis.
- d. Has the child's voice changed?
 - 1) Hoarse voice suggests croup.
 - 2) Muffled voice or refusal to talk suggests epiglottitis.
- e. Has the child had similar problems in past?
 - 1) Infants born prematurely often have chronic lung disease.
 - 2) May have history of wheezing with colds and undiagnosed asthma.
- f. Is the child a known asthmatic? On what medication? Last dose??

2. Auscultation of lung sounds:

Abnormal lung sounds may be difficult to appreciate under noisy conditions in the field. If adequate auscultation is possible, the following sounds may help localize site of illness:

- a. Snoring:
 - 1) Due to very proximal upper airway obstruction (tongue falling back against posterior pharynx).
- b. Stridor:
 - 1) High pitched noise heard on inspiration.
 - 2) Due to upper airway obstruction (croup, epiglottitis, or foreign body).
- c. Wheezing:
 - 1) Heard most commonly on expiration.
 - 2) Indicates lower airway obstruction (asthma, bronchiolitis).
- d. Crackles:
 - 1) Inspiratory noises; heard with parenchymal lung disease (pneumonia, bronchiolitis).

Field Management:

- A. Early recognition of the need for life support in the child with respiratory distress is the goal of field assessment.

Regardless of the underlying cause of respiratory distress, early intervention to correct inadequate oxygenation and/or ventilation is the key to a good outcome

Cardiopulmonary failure is the final common pathway of inadequate tissue oxygen delivery, whatever the initial problem.

1. Prognosis following resuscitation from isolated respiratory arrest is excellent.

2. Prognosis following resuscitation from full cardiopulmonary arrest is grim, even if a perfusing rhythm is restored.

Irreversible central nervous system damage has occurred when hypoxemia is sufficiently severe to precipitate cardiovascular collapse.

B. Your general impression or PAT, and in particular, the level of consciousness, should guide you in deciding the severity of the situation and in determining how aggressive your field treatment and interventions should be.

1. Agitation may precipitate worsening respiratory distress in the conscious child.

a. Offer supplemental oxygen as tolerated as per physician orders dictate.

b. Infants and young children may not tolerate mask or nasal prongs. Allow parent to administer blow by O2.

c. Allow the responsive, conscious child to remain with parent. Monitor the child closely because he/she may deteriorate and you will need to be prepared to intervene more aggressively.

d. Allow child to remain in position of comfort. Do not force child to lie down for exam or transport.

2. Impending respiratory failure should be suspected in a child with decreased level of consciousness. The child who is poorly responsive or unresponsive to the parent or caregiver needs aggressive intervention. Begin CPR- rescue breathing and transport 911.

Foreign Body Aspiration Management

a. Minimize field interventions if child is conscious and maintaining his own airway.

b. Administer 100% O2 as tolerated.

c. Mouth sweeps should not be attempted unless foreign body is visible and child's cooperation can be assured.

Blind sweeps may lead to impaction of foreign body in glottis and complete obstruction.

d. If wheezing present, foreign body is in a small airway and attempts to dislodge should not be undertaken in field.

e. Tracheal foreign body causing complete obstruction, loss of consciousness, central cyanosis unresponsive to 100% O2, or gasping respirations the foreign body must be removed.- call 911 and initiate CAB for appropriate age level.

1) If <1 year old, use back blows/chest compressions.

2) If > 1 year old, use Heimlich maneuver

Basic airway management

Immediate action must be taken at the first signs of compromised respiratory function. If initial attempts to relieve airway obstruction through verbal and tactile stimulation are unsuccessful, the following techniques can be employed to restore effective ventilation.

Manual Maneuvers

When the muscles of the tongue and mouth floor relax, the tongue lies close to or on the back wall of the oropharynx. The epiglottis may obstruct the glottic opening or seal against the back wall of the pharynx, as well. The following positioning maneuvers can be performed to relieve the soft tissue obstruction and improve airflow.

- Position client on side- assess respiratory status.
- Jaw thrust. This maneuver moves the tongue forward with the mandible which reduces the tongue's ability to obstruct the airway. Standing at the head of the bed, the middle finger of the right hand is placed at the angle of the patient's jaw on the right. The middle finger of the left hand is similarly placed at the angle of the jaw on the left. An upward pressure is applied to elevate the mandible which will lift the tongue from the posterior pharynx.
- Chin lift. The fingers of one hand are placed under the mandible, which is gently lifted upward to bring the chin anterior. The thumb of the same hand depresses the lower lip to open the mouth.

Precautions for client with artificial airway:

- Maintain trach cuff pressures at the appropriate level to prevent secretions from leaking into lungs, follow Physician Orders with regards to cuff inflation/ deflation.
- Clear secretions from the airway as needed- as directed by Physician Orders
- Clean the trach site and trach as ordered to promote a patent and healthy airway
- Change trach ties as ordered and PRN when soiled to reduce the risk of contaminants entering the airway and respiratory tract
- Maintain proper clean or sterile techniques when providing trach care and suctioning