THE UPPER AIRWAY

A. components - nose, oral cavity, pharynx, larynx

B. primary functions
   1. conduct air
   2. prevent foreign material from entering the tracheobronchial tree
   3. produce speech, aids with smell
   4. warms and humidifies air

I. The Nose
   A. Outer portion -
      1. nasal bones, frontal process of maxilla
      2. cartilages
         a. lateral nasal cartilage
         b. greater alar cartilage
         c. lesser alar cartilage
         d. septal cartilage
         e. fibrous fatty tissue
      3. nostrils or nares are the two external openings
      4. vestibule of the nose
         a. hairs -
   B. Internal portion
      1. divides the nasal cavity into two equal chambers -
         a. posteriorly the nasal septum is formed by the perpendicular plate of the
            ethmoid bone, and vomer bone
         b. anteriorly -
      2. roof of nasal cavity
         a. nasal bones
         b. frontal process of maxilla
         c. cribriform plate of the ethmoid bone
      3. floor of nasal cavity
         a. palatine process of maxilla
         b. palatine bones -
         c. soft palate
      4. lateral walls of nasal cavity
         a. turbinates (concha) produce bone protrusions -
         b. form superior, middle and inferior turbinates -
         c. curve of a turbinate produces a cavity called a meatus

C. Sinuses and openings of internal nose
   1. frontal sinus -
   2. maxillary sinus -
   3. ethmoid sinus -
   4. sphenoid sinus -
   5. nasolacrimal ducts -
   6. eustachian tube -

D. Epithelium of nose
   1. stratified squamous epithelium -
UPPER AIRWAY - Section 1.A

1. Upper Airway - Section 1.A

   a. non ciliated
   b. relatively strong and resilient

2. pseudostratified ciliated columnar epithelium -
   a. ciliated
   b. lines posterior two-thirds of nasal cavity and all of sinuses
   c. cilia propels nasal mucus towards nasopharynx

3. filters particles down to 5 microns

II. The Oral Cavity

A. Consists of two major areas
   1. vestibule - small outer portion between teeth and lips
   2. buccal cavity - area behind the teeth and gums to the oral pharynx
      a. contains anterior two-thirds of the tongue -
   3. roof of oral cavity
      a. hard palate - palatine process of the maxilla, palatine bones
      b. soft palate - fleshy structure to uvula, can close off opening
         between nasal and oral pharynx
      c. muscles of soft palate
         i) levator veli palatinum -
         ii) palatopharyngeal muscle -

B. Epithelium of oral cavity
   1. stratified squamous epithelium (nonciliated)

C. Structures in the oral cavity
   1. palatoglossal arch
   2. palatopharyngeal arch
   3. palatine tonsils -

III. The Pharynx

A. Occupies the area posterior to the oral and nasal cavities
   1. inspired air moving from the nasal cavity must pass through the
      choanae into the pharynx
   2. divisions of the pharynx
      a. nasopharynx
      b. oropharynx
      c. laryngopharynx (hypopharynx)

B. Nasopharynx
   1. extends from the base of the skull to the soft palate
   2. epithelium - pseudostratified ciliated columnar epithelium
   3. openings of the eustachian tubes are located in the lateral walls
   4. adenoids (pharyngeal tonsils) are located on the superior wall of
      nasopharynx

C. Oropharynx
   1. extends from the soft palate to the epiglottis
   2. epithelium - stratified squamous epithelial cells
   3. forms a junction between the respiratory and digestive systems
   4. palatine tonsils are located on the anterolateral walls of oropharynx
      a. lingual tonsils are located at the base of the tongue
      b. inflammation may produce airway obstruction in children
   5. this area may be occluded by the tongue in an unconscious person

D. Laryngopharynx
1. extends from the tip of the epiglottis to the esophagus
2. epithelium - stratified squamous epithelium
3. note landmarks for intubation -
4. aryepiglottic folds form lateral border

IV. The Larynx
A. The larynx (voice box) is located between the base of the tongue and the upper end of the trachea
   1. the vestibule opens into the trachea from the larynx
   2. structure is located from C4 - C6 level
   3. the opening (glottis) is the narrowest point of an adult's airway
   4. superior portion of the larynx is the hyoid bone -

B. Epithelium
   1. above cords -
   2. below cords -

C. cartilages of the larynx -
   1. epiglottic cartilage (epiglottis) -
      a. attached to the thyroid cartilage and the aryepiglottic folds
      b. covers the glottis during swallowing -
   2. thyroid cartilage - "Adam's apple"
      a. largest laryngeal cartilage
      b. superior border -
      c. serves as anterior attachment of vocal cords
      d. inferior border -
   3. cricoid cartilage - shaped like a signet ring
      a. inferior to the thyroid c.
      b. cartilage completely surrounds the airway -
      c. narrowest part of an infant's upper airway
      d. superior to trachea
   4. arytenoid cartilages (2)
      a. attached to posterior aspect of cricoid cartilage
      b. posterior site of attachment of vocal cords
   5. corniculate cartilages (2)
      a. apical projection of each of the arytenoid cartilages
      b. structural support for the arytenoid cartilages
   6. cuneiform cartilages (2)
      a. club shaped, elastic cartilages attached to the arytenoids
      b. lie in aryepiglottic folds

D. Muscles of the larynx
   1. posterior cricoarytenoid muscles
      a. action -
      b. allows air to move through larynx
   2. lateral cricoarytenoid muscles
      a. action -
      b. blocks air movement -
   3. transverse arytenoid muscles
      a. action -
      b. generates sound
   4. thyroarytenoid muscles -
      a. action -
      b. lowers frequency of phonation
   5. cricothyroid muscles -
      a. action -
b. tenses vocal folds, changes frequency of phonation

F. Functions of larynx
   1. produces phonation -
   2. closes glottis during exhalation -
      a. adduction of laryngeal walls seal larynx -
      b. action is used with lifting, pushing, coughing, throat-cleaning, vomiting, urination, defecation, and parturition
   3. protects airway from foreign substance aspiration

VOCABULARY
1. adduction
2. cartilage
3. epithelium
4. maxilla
5. meatus
6. phonation