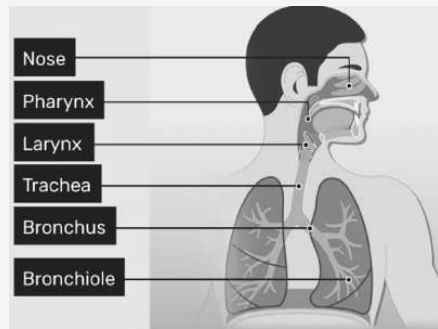


Major Functions

- ☞ Gas exchange
- ☞ Blood pH regulation
- ☞ Voice production
- ☞ Olfaction
- ☞ Protection against airborne diseases

Basic Respiratory Parts



Associated Cells/Structures

Cilia

- ☞ Hair-like
- ☞ Traps and wafts out dirt, pathogens etc.

Goblet Cells: Makes mucous

Mucous Properties

- ☞ Sticky for trapping
- ☞ Has lots of H₂O for air humidifying

Age-Related Changes

- ☞ Decreased respiratory function, O₂ amount in blood & cilia/macrophage activity
- ☞ Stiffened lung tissue & rib cage
- ☞ Increased COPD/emphysema risk

Key Respiration Terms

Ventilation Respiration

- ☞ Breathing ☞ Gas exchange

Inspiration Expiration

- ☞ Inhaling ☞ Exhaling

Key Respiration Terms (cont)

- ☞ Gas exchange between blood & lungs
- ☞ Gas exchange between blood & cells

Gas Exchange (Diffusion)

- ☞ Gas exchange balances gas pressures on 'both sides'

Partial Pressure (P)

- ☞ Air-caused pressure inside alveoli & blood vessels

Internal Respiration External Respiration

- ☞ Between blood & cells
- ☞ Between blood & alveoli
- ☞ O₂ from blood to cells
- ☞ O₂ from alveoli to blood
- ☞ CO₂ from cells to blood
- ☞ CO₂ from blood to alveoli

Upper Respiratory Tract (URT)

Organs Of URT

- ☞ Nasal cavity
- ☞ Pharynx
- ☞ Trachea
- ☞ Mouth
- ☞ Larynx

Roles

- ☞ Prevents infection
- ☞ Warms/cool's air (via nasal cavity & pharynx)
- ☞ Cleans air (via mucous, nose hairs, cilia, tonsils and epiglottis)
- ☞ Humidifies air (via mucous)

Nose & Nasal Cavity (URT)

- ☞ Lined by epithelial tissues and goblet cells
- ☞ Highly vascular

Nose Hairs: Traps pathogens, dirt & dust

Pharynx (URT)

Sections

- ☞ **Nasopharynx:** Back of nasocavity
- ☞ **Oropharynx:** Back of oral cavity
- ☞ **Laryngopharynx:** Joins the larynx

Functions/Properties

- ☞ Passage for air and food
- ☞ Highly vascular
- ☞ Has goblet cells
- ☞ Fights infections via tonsils

Larynx (URT)

- ☞ Produces speech
- ☞ Contains voice box & vocal cords
- ☞ Epiglottis seals off trachea when swallowing
- ☞ Has goblet cells

Neural Control Of Breathing

Main Brain Structures Involved

Medulla Oblongata

- ☞ For normal, passive breathing
- ☞ Automatic signal spot
- ☞ Signals from inspiration centre contract diaphragm & intercostal muscles

Pons

- ☞ Increases breathing rate by overriding medulla oblongata's automatic signals
- ☞ Accommodates for exercise, fear etc.

Trachea (LRT)

- ☞ Main passage for air
- ☞ Has cilia (stimulates cough reflex)

C-Shaped Cartilage Rings

- ☞ Surrounds trachea
- ☞ Allows food accomodation
- ☞ Holds trachea open

Bronchi (LRT)

- ☞ Both have cartilage rings

Right Bronchus

- ☞ Shorter, wider & more vertical
- ☞ Common site for foreign objects

Left Bronchus

- ☞ 2x longer than right
- ☞ Narrower

Bronchioles (LRT)

- ☞ Branches off bronchi
- ☞ Air passage
- ☞ Has goblet cells
- ☞ Surrounded & lined by smooth muscle

Pleura (LRT)

- ☞ Double-layered lining
- ☞ Fluid-filled

Alveoli (LRT)

- ☞ Grape-like air sacs at end of bronchioles
- ☞ 1 cell thick
- ☞ Surrounded by capillaries

O₂ Saturations

- ☞ Oxygen % in area of measurement

O₂ Saturation Unit: SpO₂

O₂ Saturation Ranges

- ☞ **Normal:** 97-100%
- ☞ **Low:** 90-96%
- ☞ **Critical:** 89% and below

Respirations (R or RR)

Normal Rate (No. Breaths/Min)

- ☞ **Adults:** 12-20 (16 average)
- ☞ **Children:** 20-28 (22 average)

Rhythm (Regularity)

- ☞ Normal or irregular

Depth (Breath Deepness)

- ☞ Shallow, normal or deep

Sounds

- ☞ Normal: None
- ☞ Abnormal: Wheezing, bubbling, crackling and/or stridor

Temperature

Peripheral Temperature

- ☞ Recorded from surface

Core Temperature

- ☞ Recorded from body's center

Temperature Ranges

- ☞ **Normal:** 36°C - 37.4°C
- ☞ **Low:** Below 35°C
- ☞ **High:** 38°C and above

Low Temperature

- ☞ **Name:** Hypothermia
- ☞ **Causes:** Shock, liver/kidney disease, extreme cold, hyperthyroidism

High Temperature

- ☞ **Name:** Hyperthermia, pyrexia or febrile
- ☞ **Causes:** Infection, heat stroke, virus