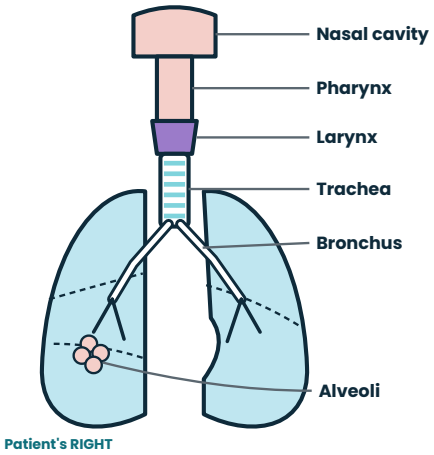
Respiratory System

Study Sheet · Learn It with Prof. Melanie

1 The Airway



Right lung: 3 lobes · Left lung: 2 lobes and a cardiac notch

2 Structures

Structure	Key facts
Nasal cavity	Warms, moistens, filters air
Pharynx	Throat; naso-, oro-, laryngopharynx
Larynx	Voice box; epiglottis covers it when swallowing
Trachea	C-shaped cartilage rings; cilia
Bronchi	Right is shorter, wider, more vertical
Alveoli	Gas exchange; surfactant
Pleura	Visceral (lung) and parietal (chest wall)
Diaphragm	Main breathing muscle

Hoots' tip: Inhaled objects usually go to the **right** bronchus.

3 Breathing

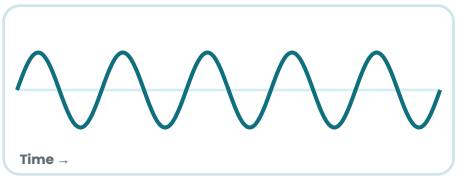
- **Inhale:** diaphragm contracts and flattens; pressure drops; air flows in
- **Exhale:** muscles relax; passive at rest
- **External respiration** = lungs · **Internal** = tissues
- Gases move by **diffusion**; O_2 rides on hemoglobin
- **Medulla** controls rhythm; rising **CO_2** triggers breathing

4 Lung Volumes

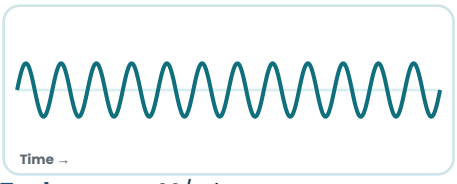
Tidal volume	Normal breath, about 500 mL
Vital capacity	Most air exhaled after deepest breath
Residual volume	Air left after forced exhalation

Adult RR: 12–20/min · **SpO_2:** about 95–100%

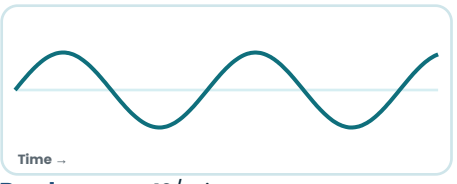
5 Breathing Patterns



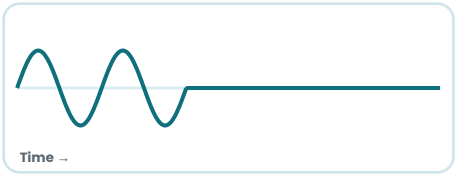
Eupnea normal



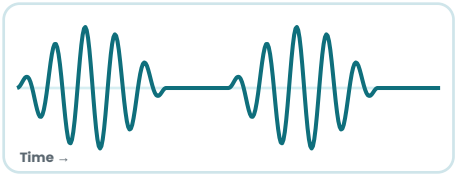
Tachypnea > 20/min



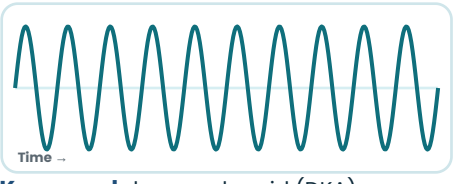
Bradypnea < 12/min



Apnea no breathing



Cheyne-Stokes deep, shallow, pause



Kussmaul deep and rapid (DKA)

Dyspnea difficult · **Orthopnea** worse lying flat · **Wheezes** narrowed airways · **Crackles** fluid · **Stridor** upper airway blockage · **Cyanosis** low O_2

Respiratory System · Study Sheet

6 Disorders

Disorder	Key facts	Disorder	Key facts
Asthma	Reversible bronchospasm; wheezing	**Influenza**	Viral; yearly vaccine
COPD	Chronic bronchitis + emphysema; smoking	**Strep throat**	Group A strep; rapid strep test
Pneumonia	Alveoli fill with fluid; crackles	**Pertussis**	Whooping cough; DTaP/Tdap
Tuberculosis	Airborne; N95; latent not contagious	**Croup**	Barking cough in children
Pneumothorax	Air in pleural space; collapse	**Cystic fibrosis**	Thick mucus; sweat chloride test
Pleural effusion	Fluid in pleural space	**Sleep apnea**	Pauses in sleep; CPAP
Pulmonary embolism	Clot in lung artery; emergency	**Lung cancer**	Smoking is the main risk

7 Tests

Test	Purpose and MA tips
Pulse oximetry	SpO_2; warm finger, no dark polish, keep still
Peak flow	Blow hard and fast after a deep breath; best of 3
Spirometry (PFT)	Volume and speed of air (FVC, FEV_1)
Sputum culture	Early morning, deep cough, not saliva
Throat swab	Back of throat and tonsils; avoid tongue and cheeks
TB skin test / IGRA	Read skin test in 48–72 hours; IGRA is a blood test
ABG, chest X-ray, bronchoscopy, sleep study	Blood gases; images; scope of airways; sleep apnea

8 Treatments

- **Rescue:** albuterol (quick relief)
- **Controller:** inhaled steroid as directed
- **MDI + spacer:** slow deep breath, hold ~10 sec
- **Nebulizer:** medicated mist
- **Oxygen:** by order; no flames; tanks upright
- **Incentive spirometer:** prevents atelectasis

9 Word Parts

Part	Meaning	Part	Meaning
pneum/o, pulmon/o	Lung, air	**-pnea**	Breathing
rhin/o, nas/o	Nose	**-ptysis**	Spitting
pharyng/o	Throat	**spir/o**	Breathe
laryng/o	Voice box	**ox/o**	Oxygen
trache/o	Windpipe	**thorac/o**	Chest
bronch/o	Bronchus	**pleur/o**	Pleura

10 MA Skills

Count respirations without telling the patient · Offer masks and tissues to coughing patients · N95 for suspected TB · Report stridor, cyanosis, or severe shortness of breath right away · Coach peak flow and spirometry · Teach inhaler technique as ordered

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