V/Q Mismatch

Respiratory

DISEASE / PATHOLOGY

- Ventilation/perfusion mismatch means air movement and blood flow are not matched for gas exchange.
- Low V/Q: perfusion without enough ventilation; high V/Q: ventilation without enough perfusion.

RISK FACTORS

- Low V/Q: pneumonia, atelectasis, asthma/COPD, pulmonary edema, mucus plugging.
- High V/Q: pulmonary embolism, shock, low cardiac output, overdistended alveoli.

SIGNS AND SYMPTOMS

- Hypoxemia, dyspnea, tachypnea, anxiety, low SpO2, crackles/wheezes depending on cause.
- PE red flags: sudden dyspnea, pleuritic chest pain, tachycardia, hemoptysis, syncope.

DIAGNOSTIC TESTING

- SpO2, ABG, CXR, CT angiography/VQ scan if PE suspected, D-dimer per protocol.
- Assess breath sounds, work of breathing, risk factors, perfusion, and response to oxygen.

TREATMENT

- Treat cause: oxygen, bronchodilators, airway clearance, antibiotics, diuretics, anticoagulation for PE as ordered.
- Position upright; turn/cough/deep breathe; mobilize as tolerated; monitor for respiratory fatigue.

PATIENT EDUCATION

- Teach incentive spirometry, early mobility, smoking cessation, inhaler use, and DVT prevention.
- Seek emergency care for sudden shortness of breath, chest pain, coughing blood, or fainting.

ADDITIONAL NOTES:

- NCLEX: oxygen may help low V/Q but may not fully fix shunt or major perfusion problems.
- Think: airway/alveoli problem vs blood-flow problem; interventions depend on which side is impaired.