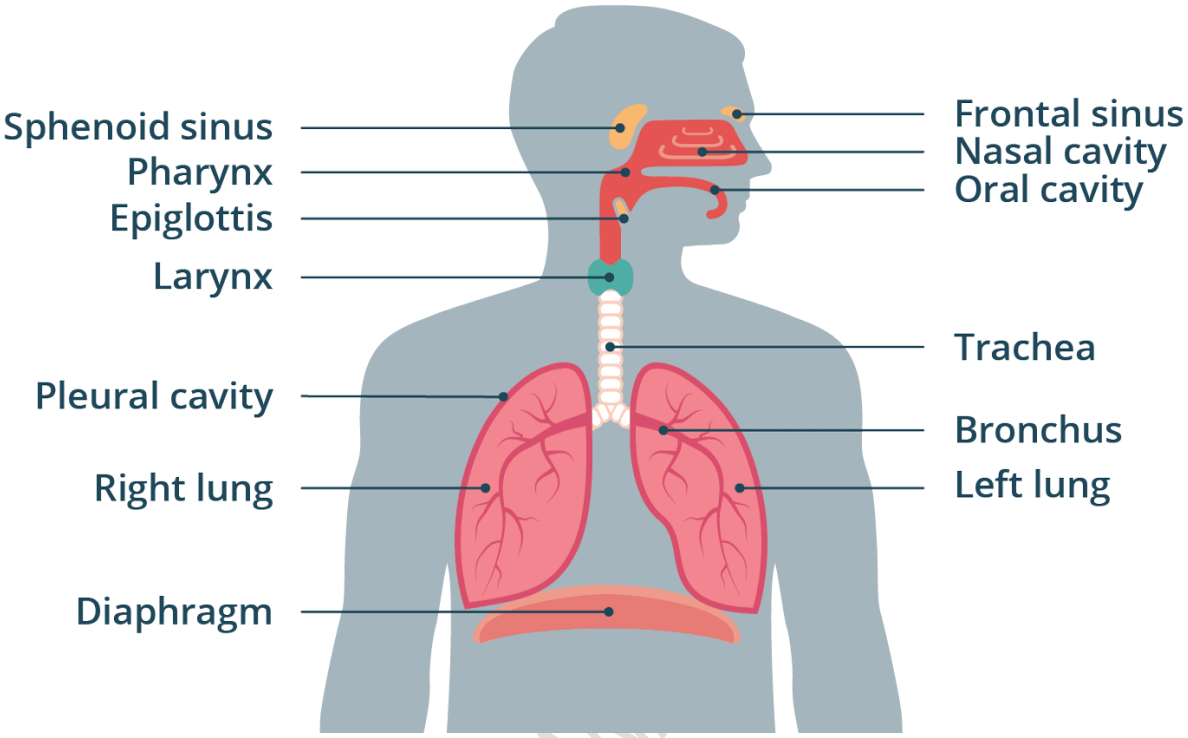
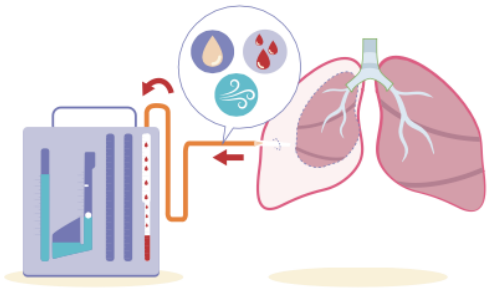
Respiratory System



Common tubes (Chest tubes, Endotracheal tube, Tracheostomy)

Chest tubes:

Inserted into the chest cavity to drain fluid or air of a client with a collapsed lung.

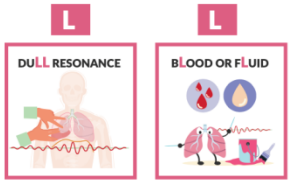
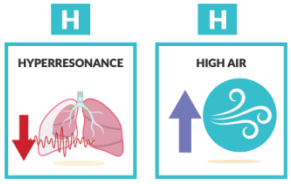
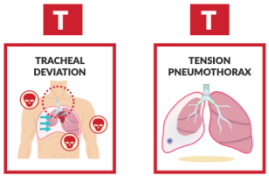


HESI

Interventions for client with chest tube for pneumothorax

- Keep drainage below patient's chest level

Why do we need chest tube?

Hemothorax		
Pneumothorax		
Tension Pneumothorax		

Three chambers of a chest tube:

1. **suction control:** Gentle continuous bubbling is expected
2. **Water seal chamber**: Moves up and down with breathing. (Intermittent)
3. **Drainage collection chamber:** Collects blood or fluid

Notify HCP

- **If bright red blood over 100ml/hr+ (After 1 hour of placement)**
- **If dark bloody drainage- Normal (Document and monitor)**
- **Continuous bubbling in water seal chamber.**

Empyema: Empyema, also known as pyothorax or purulent pleuritis, is a life threatening condition that occurs when Pus builds up in the pleural space, the cavity between the lung and chest wall. It's usually caused by a lung infection that spreads directly to the pleural space.

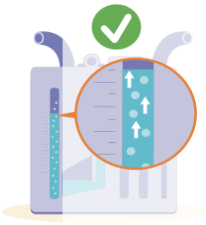
May also develop after thoracic surgery or thoracic trauma.

Treatment: Antibiotics (Amoxicillin-clavulanate, Piperacillin-tazobactum, carbapenems, Penicillin or Metronidazole, Chest drain

Chest Tube Chambers:

1 SUCTION CONTROL CHAMBER

"gentle, steady or **continuous bubbling**"

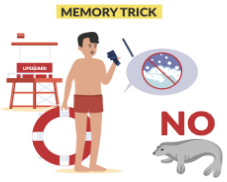


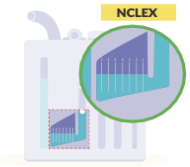
Memory trick
Think of a child sucking down a milkshake, we want gentle bubbling NOT vigorous.

2 WATER SEAL CHAMBER & AIR LEAK MONITOR

- Tidaling (rise & fall) = **Good**
- "**continuous** bubbling" = **BAD**

Air leak monitor **NCLEX TIP**





Memory trick
Just think of a seal in the ocean for a water seal.
seals float up & down with the TIDE of waves & every time it takes a breath. THIS is good Tidaling, rising & falling with the TIDE

Location of the chest tube

- **Apical:** For Air
- **Basilar:** For blood and fluid

Interventions:

If the fluctuation stops in water-seal chamber:

- Tube is obstructed
- Presence of dependent loop
- Suction is not working properly
- Lung has re-expended

If there is continuous bubbling in water seal chamber:

- Air leak in the system (Notify the HCP)

If the collection bottle is kicked over:

- Nothing to worry about, Set it up again.

If water seals breaks:

- Clamp for less than 15sec (In Routine, NEVER CLAMP)
- Cut the tube
- Place it in sterile water bottle
- Unclamp the chest tube.

If chest tube comes out:

- Cover with the gloved hand
- Apply occlusive dressing (Vaseline gauze)
- Cover the dressing with overlapping tape
- Call the HCP

Sucking stab wound: non-occlusive dressing, tape it from 3 sides for air to escape.

Additional Interventions:

- Keep the drainage system below the level of chest and tubes free of kinks.
- Ensure secure connections
- Don't strip or milk the chest tube unless specified.
- Encourage deep breathing and coughing.

Exam Tested question: Things to keep at the bedside :

- A clamp
- Sterile Occlusive dressing
- Sterile water bottle

Hazards of clamping the chest tube:

- Tension Pneumothorax (Life threatening)

If the chest tube is pulled out of the chest accidentally, pinch the skin opening together, apply an occlusive sterile dressing, cover the dressing with overlapping pieces of 2-inch tape, and call the HCP immediately.

Endotracheal Tube (ET tube)

To maintain patent airway. It is indicated when the client needs mechanical ventilation. If the client requires an artificial airway for longer than 10 to 14 days, a tracheostomy may be created to avoid mucosal and vocal cord damage that can be caused by the endotracheal tube.

- Used with a ventilator for short term. (10-14 days)

Must be readily available:

- Bag-valve mask (BVM) or Ambu bag
- O2 attachment,
- Suctioning equipment,
- IV access

Premedication: depends upon the level of consciousness

- Sedative hypnotic –Amnesic: Midazolam etomidate.
- Rapid onset Opioid fentanyl
- Paralytic drug: Succinylcholine

Parts of ET tube

- Cuff: when inflated, seals the airway, prevents aspiration of gastric and oral secretions.
- Pilot balloon: Attached to the outside of the tube, tells the presence of air in the cuff
- Universal adaptor: To attach the tube to mechanical ventilation tubing or oxygen delivery systems.

Types of ET tubes:

- Orotrachael
- Nasotrachael

Interventions:

- Placement is confirmed by Chest X-ray. (Tube should be 1-2cm above the carina, 23 cm for men , 21 cm for women.)
- Manual assessment with ambu bag: both sides of the chest should inflate, if only one side inflates, tube is too deep and needs to be pulled back.
- Secure the tube immediately after intubation.
- Monitor skin and mucous membranes.
- Suction only when needed.
- Hyper-oxygenate before suctioning, insert the catheter without suction, apply suction intermittently while rotating and withdrawing the catheter, no more than 10 sec.
- **ET cuff inflation pressure**: 20-30cm of H20, check pressure every 8 hours in case of continuous inflated ET.
- **ET cuff deflation**: Done as per physician's orders, depends on client's condition.
  a) **Unconscious client**: Suction secretions above ET beforehand
  b) **Conscious client**: Encouraging coughing to expectorate build-up secretions then deflate
- **Liquefying the secretions**: Don't INSTILL NS into the ET tube.
- Provide oral care and maintain skin integrity.
- Extubation: Hyper-oxygenate, Place the client in semi-fowlers position, deflate the cuff, have the client inhale, at peak inspiration, remove the tube, suctioning the airway through the tube while pulling it out.
- After removal, instruct the client to cough and deep breathe to assist in removing accumulated secretions in the throat.
- Apply oxygen therapy as prescribed.

Tracheostomy

A tracheostomy is an opening made surgically directly into the trachea to establish an airway.

- Tracheostomy tube is inserted and is attached to the ventilator or any oxygen delivery device
- Can be temporary or permanent

Interventions:

- Clean gloves to clean area around tracheostomy.
- Sterile gloves to suction

Things to keep bedside:

- Ambu bag
- Obturator
- Clamps
- Spare trach

If the tracheostomy tube dislodges:

- Extend neck and open the tissues of the stoma by pulling the retention sutures to spread the opening, or
- Use a dilator to hold the stoma open
- Resuscitate with Ambu bag

Cleaning around a tracheostomy

- Use half strength hydrogen peroxide and normal saline
- Wear clean gloves
- Clean around site and apply new dressing
- Put new ties on first, then cut old ties.

Complications of a Tracheostomy

Tracheoesophageal fistula (TEF): Excessive cough pressure causes erosion of the posterior wall of the trachea.

Fenestrated tube: Allows patients to breathe spontaneously through larynx, speak, and cough up secretions with tracheostomy tube in place. The patient's ability to swallow without aspiration is determined before using.

Ventilators

Modes of Ventilators:

Non-invasive positive pressure ventilation or BiPAP

It is a form of noninvasive ventilation that providers might use if you can

breathe on your own but are not getting enough oxygen or cannot get rid of C02.

A resuscitation bag should be available at the bed side for all clients receiving BiPAP ventilation.

Synchronized intermittent mandatory ventilation (SIMV)

The tidal volume and ventilator rate are preset on the ventilator.

Patient controls breathing mainly, but machine assists.

For the client receiving mechanical ventilation, always access the client first and then assess the ventilator.

CPAP: Providing a positive pressure of air through the mask and into the airway, which helps to keep the airway open.

- ✓ **Prevent breathing difficulties**
- ✓ **Increase the level of O2 in lungs.**
- ✓ **Remove unwanted Co2 out of the lungs.**

HOLD: "High Obstruction, Low Disconnection"

Cause of High- Pressure alarm:

- Obstruction like increased secretions, wheezing
- Water collection in the tube
- Kink in the tube
- Client coughs, gags or bites on the ET tube
- Client anxious or flights the ventilator

Cause of Low-Pressure alarm:

- Disconnections
- Air leak
- Client stops breathing
- O2 sensor disconnected

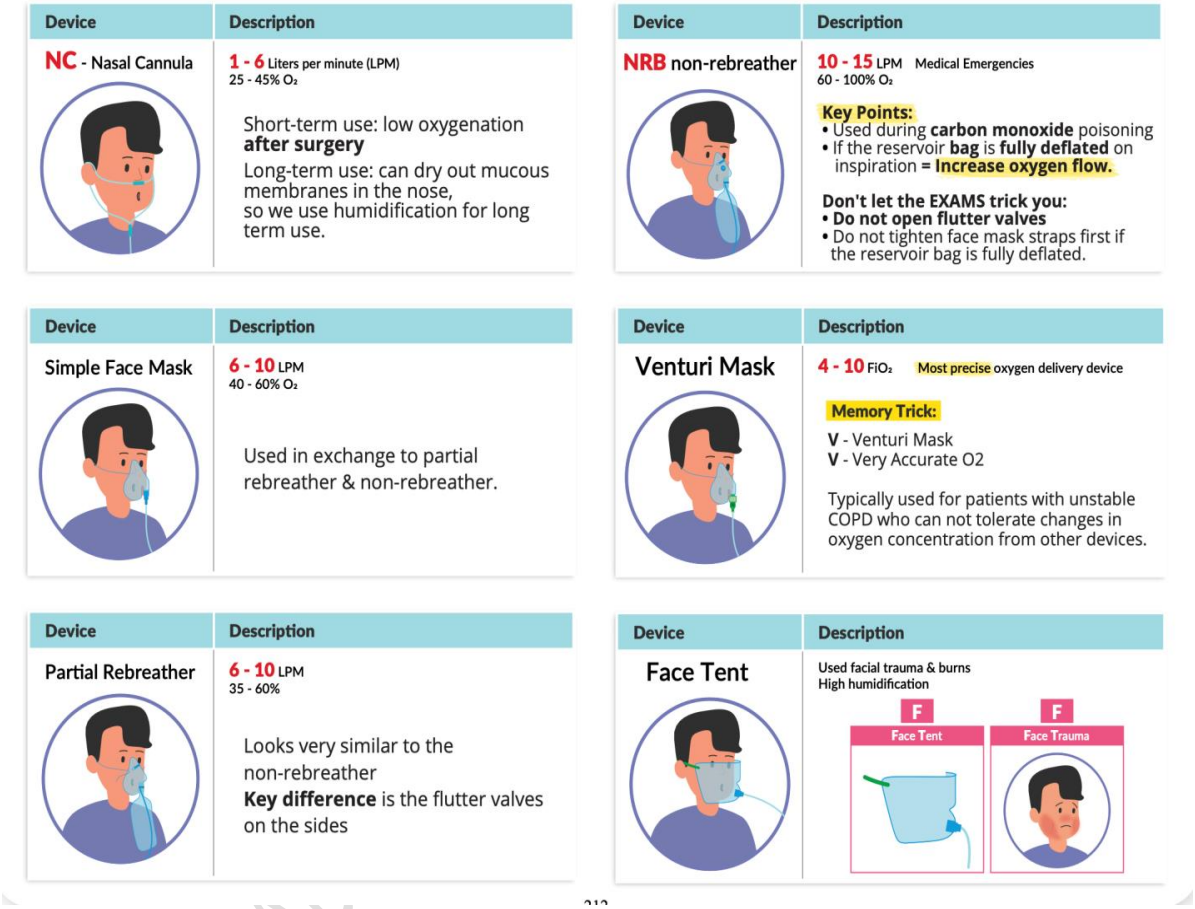
Interventions:

- Always assess the client first and ventilator later.
- Monitor vital signs esp. Breathing rate (Client must never breathe at a lower than the set rate on the ventilator).
- Monitor ABGs
- Ensure alarms are set
- Change the position of the client every 2 hours.

To maintain optimal level of oxygenation at lowest effective level of FiO2

Nasal cannula one to six liters

- Drying effect with higher rates so add humidification
- Long term use for chronic illness.



Face mask: 5 to 8 liters per minute (FiO2 40% to 60%)

- Minimum flow rate of 5 liters per minute required to flush CO2 from mask
- Short term oxygen for emergency use

Venturi mask 4 to 10 liters per minute 24% to 55% FiO2

- Keep air entrapment board of adaptor open and uncovered to ensure adequate oxygen
- Acute respiratory failure

Partial rebreather: 6 to 5 liters per minute (FiO2 70% to 90%)

- Rebreathes 1/3 of exiled tidal volume which is high in oxygen
- Adjust flow rate to keep reservoir bag two third full during inspiration

Non breather mask: 60% to 100% FiO2

- Add a flow rate that maintains bag two third full
- Deteriorating respiratory status requires intubation

Pulmonary Embolism

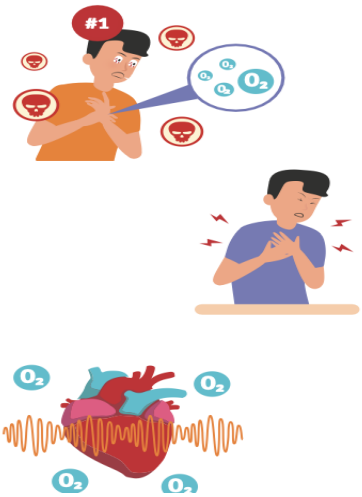
- **Priority medical emergency.**
- **PE is a blood clot that obstructs a pulmonary vessel, typically the pulmonary artery.**
- **This blockage prevent blood flow to the alveoli where gas exchange is suppose to happen, eventually leading to deadly hypoxemia**

Risk Factors: Smoking, Obesity and Immobility.

.

Signs & Symptoms:

- #1 Sign = **Hypoxemia**
  1. Restless
  2. Agitation
  3. Mental status change
- **Chest pain**
- **Dyspnea** & SOB
- **Tachy**pnea
- **Tachy**cardia
- **Anxiety**



Treatment

- **Anticoagulants**
- **Thrombolytics**
- **Embolectomy**

Exam tested question

Indication for Pulmonary embolism include
Positive D-Dimer (Normal range 68-494ng/dl)

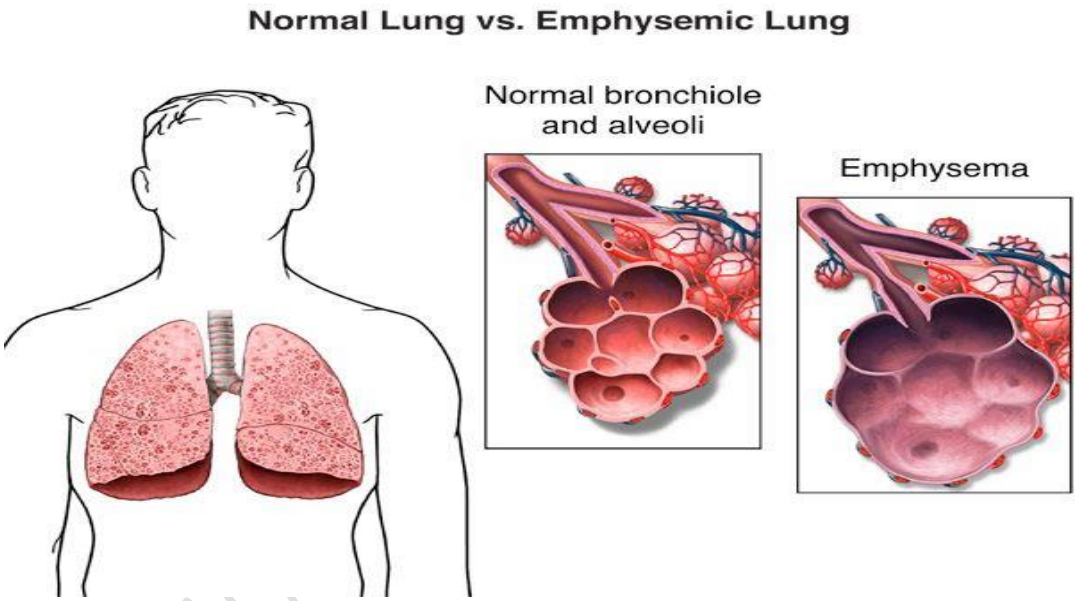
COPD: Chronic Obstructive Pulmonary Disease.

- **Chronic destruction of the lungs resulting in decrease gas exchange.**
- **Air trapping.**
- **High Co2 in the body.**

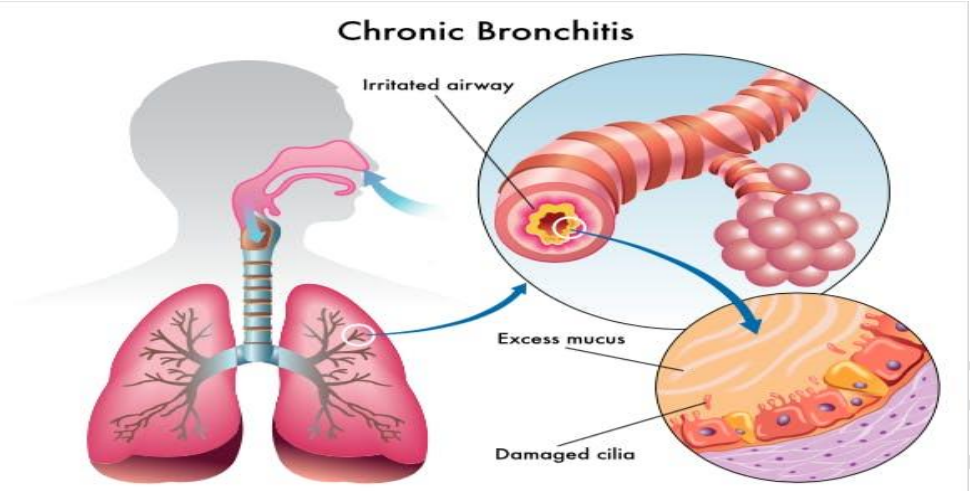
Clinical Manifestations.

COPD: Two or more problems to go exist.

- **Emphysema**
- **Chronic Bronchitis**

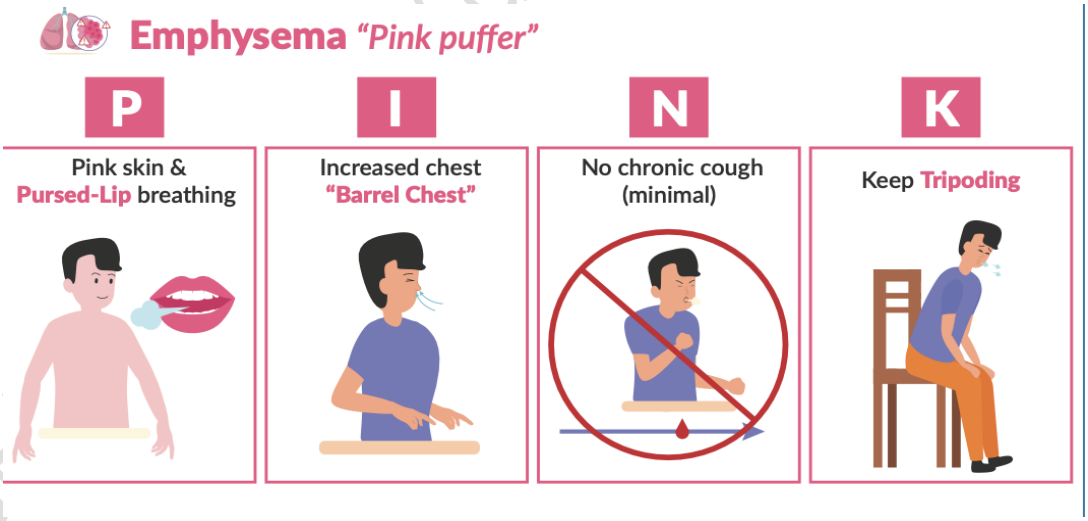


Chronic Bronchitis



Emphysema

- **Cough is not common.**
- **Sensation of air hunger.**
- **Use of accessory muscles of respiration: Wheezes.**
- **Anorexia with weight loss, barrel chest.**
- Late sign: Core pulmonale, ABG Changes
- ✓ **Position: Tripod position.**

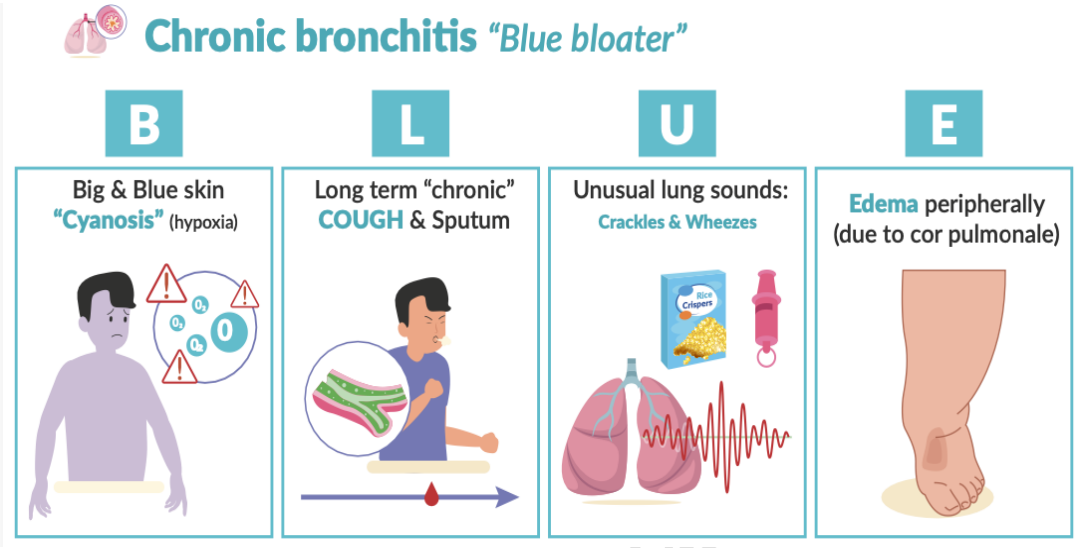


Chronic Bronchitis

- **Excessive chronic sputum production (Not discolored unless infection is present)**
- **Impaired ventilation: Decreased O2 (Hypoxia)**

- Increased Co2 (Narcosis)

- Productive cough, exercise intolerance, Wheezing and shortness of breath.
- Dependent edema
- Generally normal weight or overweight.
- Cardiac enlargement with core pulmonale.



Risk Factors

- Cigarette Smoking.
- Occupational chemicals and dust
- Infections: Recurring respiratory tract infections
- Aging.

Treatment

- Prevent infections
- Bronchodilators……
- Mucolytics and Expectorants……
- Chest Physiotherapy
- Exercise (walking)
- Steroids……
- Anticholinergics……..

Most tested exam question????

What is the best strategy to take bronchodilators and steroids??

Exam Question Drug: Roflumilast……

Teaching

- **Diet: High calories and protein**
- **Avoid eating high amount of carbohydrates (Kaplan)**
- **Avoid exercise 1 hour before meal. Why??**
- **Avoid Gassy foods/carbonated drinks/high fiber foods (Broccoli, Beans)**
- **Increase fluid intake.**
- **Report infection in sputum.**
- **Vaccines: Pneumococcal every 5 years/ Flu vaccine yearly/ Flumax/ Pneumovax.**
- **Encourage: Pursed lip breathing/ Huff coughing.**

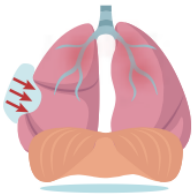
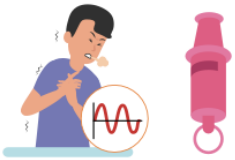
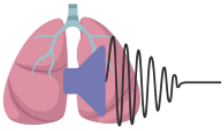
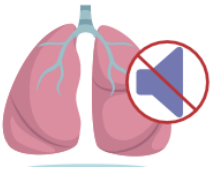
Exam Question : Normal Spo2 in COPD Patient??

What are COPD exacerbation???

Asthma

- ✓ **Chronic inflammatory disorder.**
- ✓ **Acute attack that come and go.**

Signs and Symptoms

A	**Accessory muscle use** **Critical Sign:** Paradoxical Breathing	
S	**SOB & dyspnea** **Critical Sign:** Single word dyspnea	
T	**Tight CHEST & Tachypnea**	
H	**High-pitched wheezing**	
M	**Minimal "diminished breath sounds"**	
A	**3 As** **A**bsent Breath Sounds (Silent Chest) **PRIORITY** **A**cidosis (CO_2 retention) **A**ir trapping - **Prolonged exhalation**	

When a wheezer stops wheezing, it could mean he is….?

Complication: Status Asthmaticus

Treatment:

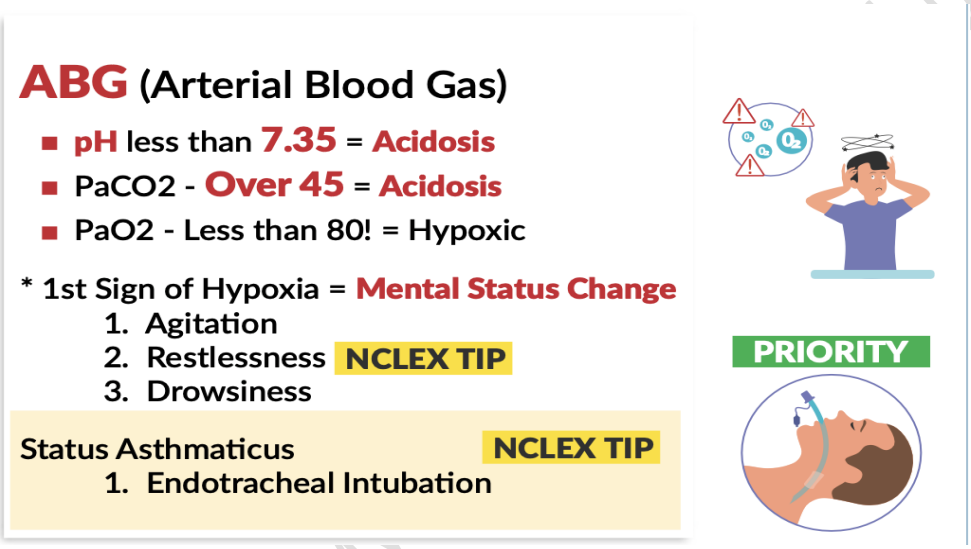
- **O2**
- **IV fluids for hydration (May require Intubation and ventilation).**

Teaching Triggers

- A: Allergens, dust, pollen (Elevated Eosinophils)
- S: Smoking, stress

Drugs to avoid

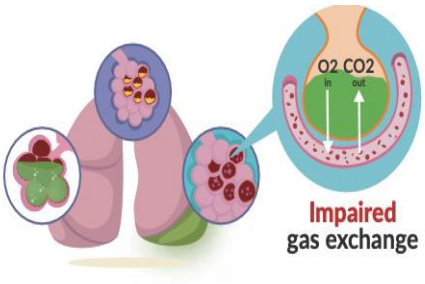
- NSAIDS (Naproxen, Aspirin, Ibuprofen, Indomethacin and Ketorolac)
- Beta blockers (Propranolol, Atenolol)
- Therapeutic range of Theophylline: 10-20mg/dl



Drug: Albuterol

PNEUMONIA

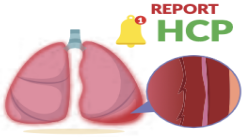
Infection that cause severe inflammation in the lungs which makes the alveoli to fill with mucus, fluid and debris leading to impaired gas exchange where Co2 cannot get out and O2 cannot get in, resulting in hypoxia.



Signs & Symptoms

1. Altered Mental Status
   Restlessness, Agitation, Confusion
2. **Fever** (Over 100.4 F/ 38°C)
3. Productive cough **"Yellow Sputum"**
4. Fine or Coarse **Crackles**
5. **Dyspnea** "Shortness of Breath"
6. Pleuritic Chest pain
   (Pleural friction rub) Report to HCP
   "Sharp chest pain upon inspiration or coughing"

Big Sign



Special Consideration

First sign: In older patient (Confusion or Stupor)

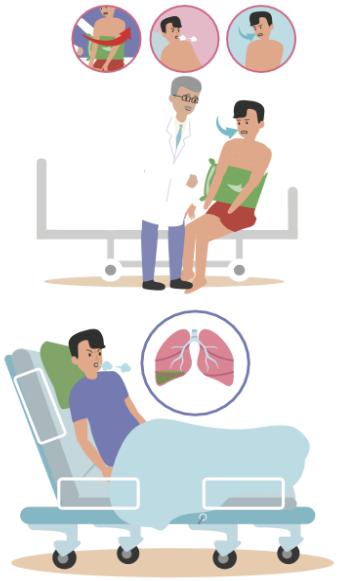
Treatment…..???

Nursing Care

Patient care

Mobilize secretions & Expand Lungs

- Chest physiotherapy
- TCDB - turn cough & deep breath!
  - Huff coughing technique NCLEX TIP
  - AVOID cough suppressants
- Fluid 2 - 3 L per day
- Positioning
  - HOB UP! High Fowler's
  - Hypoxia in Unilateral Pneumonia? = Good Lung Down NCLEX TIP



TUBERCULOSIS

Bacterial infection in lungs caused by the bacteria M.Tuberculosis.

What type of precaution is needed???

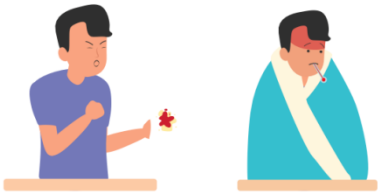
Risk factors

- Homeless
- Living in large groups.
- Immunocompromised.
- IV drug users
- Low income

Signs & Symptoms:

KEY POINTS

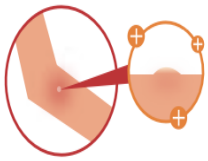
- Night Sweats
- Anorexia: **Weight loss**
- Cough + Hemoptysis
  "Blood tinged sputum" NCLEX TIP
- Dyspnea & SOB
- **Fever** & chills



Diagnostics:

✓ **Intradermal injection (Mantoux test)**

Over **15 mm** induration
= **positive TST**



Patient has a
TB infection

✓ **Chest x-ray and sputum culture test.**

Key point

Sputum Culture Diagnosis

- **Early morning** sterile sputum specimen
  3 consecutive days

Medical Treatment for TB.

5 TB Tips

5 NCLEX TIPS

1. Meds Last **6 - 12 months**
2. N-95 mask worn all the time
3. Family tested for TB
4. Sputum samples every 2 - 4 Weeks
5. **3 Negative** cultures on **3 different days** = NO Longer infectious

Memory Trick

ALL are **LIVER TOXIC!!!!**

So some instructors just use the acronym:

R I P E

R — RIFAMPIN / RED-FAMPIN

KEY Points:

1. **NORMAL**
   - Red, Orange: Tears, Urine, Sweat

   Teach:
   - Wear glasses instead of contacts due to discoloration of tears **NCLEX TIP**
2. Oral contraceptives ineffective

   "Use non-hormonal Back-up birth control"
3. Monitor for Jaundice

I — INH / ISONIAZID — #1 TESTED TB DRUG

I - Interferes with absorbtion of B6 (pyridoxinde)
- Low **Vitamin B6** = Peripheral **Neuropathy**
- Take **Vitamin B6** 25 - 50mg/day

N - Neuropathy

REPORT:
- New Numbness
- Tingling extremities
- Ataxia

H - Hepatotoxicity

REPORT Immediately!!!
- Jaundice (yellow) **Skin / Sclera**
- Dark urine **NCLEX TIP**
- Fatigue
- Elevated liver enzymes (AST/ALT)

  HOLD the Med
- Teach: NO ETOH!!

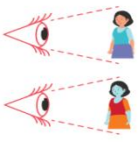
P — PYRAZINAMIDE

Did not come up once in 10,000 questions.
it's a nice to know but NOT A NEED TO KNOW

E — ETHAMBUTOL - Eye

KEY POINT:
REPORT!

- Blurred vision
- Color changes



This information has come up in multiple sections!
TEACH to have baseline eye exams and routine EYE appointments! For EEEEthambutol

Patient Education

- **Med: 6-12 months**
- **After 2-3 weeks of med (unlikely to infect anyone)**
- **High calories/ rich in Vita. C food**
- **When results of 3 sputum cultures are negative: Client is no longer infectious and can return to work).**

Exam question: Does family needs isolation?

- Question women regarding pregnancy or the possibility of pregnancy before performing radiography studies (X-rays).

- Ensure that an informed consent was obtained for any invasive procedure.

- Base line vitals are measured before the procedure and monitored post procedure to detect signs of complications.

- Avoid suctioning that client before drawing an ABG sample, because the suctioning procedure will deplete the client's oxygen, resulting in inaccurate ABG results.

SKIN TEST PROCEDURE

- Determine hypersensitivity or previous reactions to skin tests.
- Use a skin site that is free of excessive body hair, dermatitis, and blemishes.
- Apply the injection at the upper third of the inner surface of the left arm.
- Circle and mark the injection test site.
- Document the date, time, and test site.
- Advise the site not to scratch the test site to prevent infection and possible abscess formation.
- Instruct the client to avoid washing the test site.
- Assess the reaction at the injection site 24 to 72 hours after administration of the test antigen.
- Assess the test site for the amount of induration (hard swelling) in millimeters and for the presence of erythema and vesiculation (small blister-like elevations).

Clients with a respiratory disorder should be positioned with the head of the bed elevated.

Teach clients that using proper hand-washing techniques, despising of respiratory secretions properly, and receiving vaccines will assist in preventing the spread of infection.

PRIOPRITY NURSING ACTIONS

- Suspected Pulmonary Embolism
- Notify the rapid response team and primary health care provider (PHCP).
- Reassure the client and elevate the head of the bed.
- Prepare to administer the oxygen.
- Obtain vital signs and check lung sounds.
- Prepare to obtain and arterial
- Blood gas.
- Document the event, interventions taken, and the client's response to treatment.
- An individual who has received a **BCG vaccine** will have a positive tuberculin skin test result and should be evaluated for tuberculosis with a chest X-ray.

Respiratory Drugs- Nclex-RN

CLASSIFICATION	NAME	INDICATION	MOA	ADVERSE EFFECTS	NURSING CONSIDERATION
Bronchodilators β- adrenergic blockers-**terol** Methylxanthines Phylline Anticholinergics pium	**Short-acting:** Albuterol (salbutamol) **Long-acting: Salmeterol formoterol** **Theophylline** **Aminophylline** **Ipratropium** **Tiootropium** **Aclidinium** **umeclidinium**	– COPD – ASTHMA – PNA – Bronchospasm – Reactive$ restrictive airways	Inhaler Nerbs PO/IV Inhaler Nerbs PO Subcut	Insomnia Restlessness Anorexia Heart stimulation Hyperglycemia Tremor Vascular headache	Take only as prescribed. Overdose may be life-threatening. Trach inhalation method 1-2 min between puff of the same med. 2-5 between two different meds to be inhaled.
Corticosteroids: sone	ne Mometasone Predisone	Anti-inflammatory	Inhaler Nerbs PO	Increase BS Cushing's syndrome	Rinse mouth after Take after Bronchodilators

	methylprednisolone		IV	Addisonian crisis	Notify HCP if weight gain of 1 kg or more in 24 hrs.
Antitussive	benzonatate	Cough suppressants			
mucolytics	acetylcysteine	Mucus breakdown			Antidote to acetaminophen
antiallergy	Diphenhydramine Loratadime Hydroxyzine Cetrizine Levocetrizine	Seasonal allergies		Anticholinergic S/E sedation	Safety precautions
Expectorant	guafenesion	Cough up mucus			Take with water
Antitubercular	Rifampin Isoniazid(INH) Pyrazinamide Ethambutol streptomycin	Tuberculosis		Red/orange urine neuropathy Eyes Ototoxic/Nephrotoxic hepatoxic(ALL)	Normal finding Take pyridoxine Get eye checkup Get LFTs done every month.

PRACTICE QUESTIONS

1. The emergency department nurse is assessing a client who has sustained a blunt injury to the chest wall. Which finding indicates the presence of a pneumothorax in this client?

1. A low respiratory rate
2. Diminished breath sounds
3. The presence of a barrel chest
4. A sucking sound at the site of injury

2. The nurse is caring for a client hospitalized with acute exacerbation of chronic obstructive pulmonary disease. Which finding would the nurse expect to note on assessment of this client? **Select all that apply.**

1. A low arterial PCo2 level
2. A hyper inflated chest noted on the chest X-ray
3. Decreased oxygen saturation with mild exercise
4. A widened diaphragm noted on the chest X-ray
5. Pulmonary function tests that demonstrate increased vital capacity

3. The nurse is preparing a list of home care instructions for a client who has been hospitalized and treated for tuberculosis. Which instructions should the nurse include on the list? **Select all that apply.**

1. Activities should be resumed gradually.
2. Avoid contact with other individuals, except family members, for at least 6 months.
3. A sputum culture is needed every 2 to 4 weeks once medication therapy is initiated.
4. Respiratory isolation is not necessary, because family members already have been exposed.
5. Cover the mouth and nose when coughing or sneezing and put used tissues in plastic bags.
6. When 1 sputum culture is negative, the client is no longer considered infectious and usually can return to former employment.

4. The nurse is caring for a client after a bronchoscopy and biopsy. Which finding, if noted in the client, should be reported **immediately** to the primary health care provider?

1. Dry cough
2. Hematuria
3. Bronchospasm
4. Blood-streaked sputum

5. The nurse is assessing the respiratory status of a client who has suffered a fractured rib. The nurse should except to note which finding?

1. Slow, deep respirations
2. Rapid, deep respirations

3. Paradoxical respirations
4. Pain, especially with inspiration

6. A client with a chest injury has suffered fail chest**.** The nurse assesses the client for which **most** distinctive sign of flail chest?

1. Cyanosis
2. Hypotension
3. Paradoxical chest movement
4. Dyspnea, especially on exhalation

7. The nurse is assessing a client with multiple trauma who is at risk for developing acute respiratory distress syndrome. The nurse should assess for which **earliest** sign of acute respiratory distress syndrome?

1. Bilateral wheezing
2. Inspiratory crackles
3. Intercostal retractions
4. Increased respiratory rate

8. The nurse has conducted discharge teaching with a client diagnosed with tuberculosis who has been receiving medication for 2 weeks. The nurse determines that the client has understood the information if the client makes which statement?

1. "I need to continue medication therapy for 1 month."
2. "I can't shop at the mall for the next 6 months."
3. "I can return to work if a sputum culture comes back negative."
4. "I should not be contagious after 2 to 3 weeks of medication therapy.**"**

9. The nurse is preparing to give a bed bath to an immobilized client with tuberculosis. The nurse should wear which items when performing this care?

1. Surgical mask and gloves
2. Particulate respirator, gown and gloves
3. Particulate respirator and protective eyewear
4. Surgical mask, gown, and protective eyewear

10. A client has experienced pulmonary embolism. The nurse should assess for which symptom, which is **most** commonly reported?

1. Hot, flushed feeling
2. Sudden chills and fever
3. Chest pain that occurs suddenly
4. Dyspnea when deep breaths are taken

11. A client who is human immunodeficiency virus (HIV)-positive has had a tuberculin skin test (TST). The nurse notes a 7-mm area of induration at the site of the skin test and interprets the result as which finding?

1. Positive
2. Negative
3. Inconclusive
4. Need for repeat testing

12. A client which acquired immunodeficiency syndrome (AIDS) has histoplasmosis. The nurse should assess the client for which expected finding?
1. Dyspnea
2. Headache
3. Weight gain
4. Hypothermia

13. The nurse provides discharge instructions to a client which pulmonary sarcoidosis. The nurse concludes that the client understands the information if the client indicates to report which **early** sign of exacerbation?
1. Fever
2. Fatigue
3. Weight loss
4. Shortness of breath

14. The nurse is taking the history of a client with occupational lung disease (silicosis). The nurse should assess whether the client wears which items during periods of exposure to silica particles?
1. Mask
2. Gown
3. Gloves
4. Eye protection

15. The nurse is instructing a hospitalized client with a diagnosis of emphysema about measures that will enhance the effectiveness of breathing during dyspneic periods. Which position should the nurse instruct the client to assume?
1. Sitting up in bed
2. Side-lying in bed
3. Sitting in a recliner chair
4. Sitting up and leaning on an overbed table

16. The community health nurse is conducting an educational session with community members regarding the signs and symptoms associated with tuberculosis. The nurse informs the participants that tuberculosis is considered as a diagnosis if which signs and symptoms are present**? Select all that apply**.
1. Dyspnea
2. Headache
3. Night sweats

4. A bloody, productive cough
5. A cough with the expectoration of mucoid sputum

17. The nurse performs and admission assessment on a client with a diagnosis of tuberculosis. The nurse should check the results of which diagnostic test that will confirm this diagnosis?
1. Chest X-ray
2. Bronchoscopy
3. Sputum culture
4. Tuberculin skin test

18. A client has a prescription to take guaifenesin. The nurse determines that the client understands the proper administration of this medication if the client states that she or he will perform which action?
1. Take an extra dose if fever develops
2. Take the medication with meals only
3. Take the table with a full glass of water
4. Decrease the amount of daily fluid intake

19. The nurse is preparing to administer a dose of naloxone intravenously to a client with an opioid overdose . Which supportive medical equipment should the nurse plan to have at the client's bedside?
1. Nasogastric tube
2. Paracentesis tray
3. Resuscitation equipment
4. Central line insertion tray

20. The nurse teaches a client about the effects of diphenhydramine, which has been prescribed as a cough suppressant. The nurse determines that the client **needs further instruction** if the clients make which statement?
1. "I will take the medication on an empty stomach."
2. "I won't drink alcohol while taking this medication."
3. "I won't do activities that require mental alertness while taking this medication."
4. "I will use sugarless gum, candy, or oral rinses to decrease dryness in my mouth."
21. A cromolyn sodium inhaler is prescribed for a client with allergic asthma. The nurse provides instructions regarding the adverse effects of this medication and should tell the client that which undesirable effect is associated with this medication?
1. Insomnia
2. Constipation
3. Hypotension
4. Bronchospasm

22. Terbutaline is prescribed for a client with bronchitis. Which disorder in the client's medical history requires caution by the nurse?

1. Osteoarthritis
2. Hypothyroidism
3. Diabetes mellitus
4. Polycystic disease

23. Zafirlukast is prescribed for a client with bronchial asthma. Which laboratory test does the nurse expect to be prescribed before the administration of this medication?

1. Platelet count
2. Neutrophil count
3. Liver function tests
4. Complete blood count

24 A client has been taking isoniazid for 2 months. The client complains to the nurse about numbness, paresthesias, and tingling in the extremities. The nurse interprets that the client is experiencing which problem?

1. Hypercalcemia
2. Peripheral neuritis
3. Small blood vessel spasm
4. Impaired peripheral circulation

25. A client is to begin a 6-month course of therapy with isoniazid. The nurse should plan to teach the client to take which action?

1. Use alcohol in small amounts only.
2. Report yellow eyes or skin immediately.
3. Increase intake of Swiss or aged cheeses.
4. Avoid vitamin supplements during therapy.

26. A client has been started on long-term therapy with rifampin. The nurse should provide which information to the client about the medication?

1. Should always be taken with food or antacids
2. Should be double-dosed if 1 dose is forgotten
3. Causes orange discoloration of sweat, tears, urine and feces
4. May be discontinued independently if symptoms are gone in 3 months

27. The nurse has given a client taking ethambutol information about the medication. The nurse determines that the client understands the instructions if the client states that they will **immediately** report which finding?

1. Impaired sense of hearing
2. Gastrointestinal side effects
3. Orange-red discoloration of body secretions
4. Difficulty in discriminating the color red from green

28. A client with tuberculosis is starting antituberculosis therapy with isoniazid. Before giving the client the first dose, the nurse should ensure that which baseline study has been completed?

1. Electrolyte level
2. Coagulation times
3. Liver enzyme levels
4. Serum creatinine levels

29. The nurse has a prescription to give a client salmeterol, 2 puffs, and beclomethasone dipropionate, 2 puffs, by metered-dose inhaler. The nurse should administer the medication using which procedure?

1. Beclomethasone first and then the salmeterol
2. Salmeterol first and then the beclomethasone
3. Alternating a single puff of each, beginning with the salmeterol
4. Alternating the signal puff of each, beginning with the beclomethasone

30. Rifabutin is prescribed for a client with active Mycobacterium avium complex (MAC) disease and tuberculosis. The nurse should monitor for which side and adverse effects of rifabutin? **Select all that apply.**

1. Signs of hepatitis

- 2. Flu-like syndrome
- 3. Low neutrophil count
- 4. Vitamin B6 deficiency
- 5.Ocular pain or blurred vision
- 6. Tingling and numbness of the fingers

31. A client begins therapy with theophylline. The nurse plans to teach the client to limit the intake of which items while taking this medication?

1. Coffee, cola, and chocolate
2. Oysters, lobster, and shrimp
3. Melons, oranges, and pineapple
4. Cottage cheese, cream cheese, and dairy creamers

32. The nurse has just administered the first dose of omalizumab to a client. Which statement by the client alerts the nurse of a life-threatening effect?

a. "I have a severe headache.
b. "My feet are quite swollen.
c. "I am nauseated and may vomit.
d. "My lips and tongue are swollen."

33. The nurse is teaching a client who is beginning antiviral therapy for influenza. Which statement by the client indicates an understanding of the instructions?

a. "I must take the medication exactly as prescribed.
b. "Once I start the medication, I will no longer be contagious.
c. "I will not get any colds or infections while taking this medication."
d. "This medication has minimal side effects and I can return to normal activities.

34. The nurse is caring for a client receiving an albuterol/ipratropium nebulized breathing treatment. Which report from the client should the nurse note as an expected side effect of this combination medication?

1. "I feel like my heart is racing."
2. "I feel more bloated than usual."
3. "My eyes have been watering lately.
4. "I haven't had a bowel movement in 4 days."