ATI Real Life Student Packet
N201 Nursing Care of Special Populations
2025

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ATI Scenario: **Cystic Fibrosis**

To Be Completed Before the Simulation 0

*****Blue boxes should be completed using textbook information. What do you expect to find? This information should be collected before you start the ATI simulation*

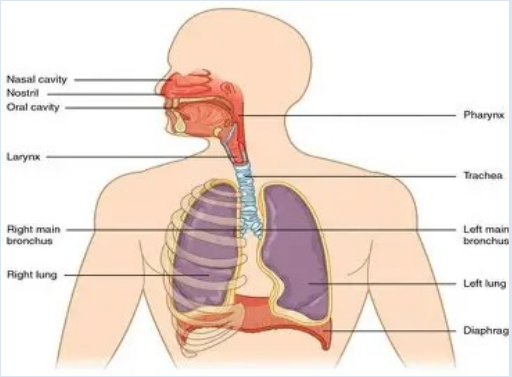
Medical Diagnosis: Cystic Fibrosis

NCLEX IV *(8)*: Physiological Integrity/Physiological Adaptation

Anatomy and Physiology
Normal Structures

Anatomy:
Upper Respiratory Tract: nose, mouth, pharynx, epiglottis, larynx, trachea
Lower Respiratory Tract: lungs, bronchi, bronchioles, alveolar ducts, alveoli (all found in the lung except the right and left mainstem bronchi)
Chest Wall: shaped, supported, and protected by 24 ribs, protects the lungs from injury. The mediastinum is the space in the middle of the cavity and separates the right and left lungs into compartments.
• lined with parietal pleura
• lungs lined with visceral pleura
• interpleural space between the pleural layers, contains 10-20 mL of fluid to provide lubrication for the pleural layers during breathing and promotes expansion in the lungs during inspiration

Physiology:
Gas exchange: the transfer of oxygen and carbon dioxide between the atmosphere and the blood, oxygenation, ventilation, compliance and resistance, respiratory defense mechanisms



NCLEX IV *(7)*: Reduction of Risk

Pathophysiology of Disease

Cystic Fibrosis (CF) is an autosomal recessive disorder. It is caused by a genetic mutation that prevents exocrine glands from working properly and efficiently. This specifically impacts the respiratory and digestive system. It is characterized by lung congestion/infection and malabsorption of nutrients by the pancreas. Normally, exocrine glands produce and transfer secretions through ducts that include mucus, tears, sweat, and enzymes. In CF, the secretions increase in viscosity and becomes thick, hard to clear, and sticky, which can lead to lung infections, digestive problems, infertility and decreased insulin production. This causes resistance to ciliary action and slows the rate of mucus movement throughout the body. There is also increased electrolytes found in sweat, including sodium and chloride. There are changes in saliva that causes a dry mouth and changes found in the autonomic nervous system function.

- **Nose**: divided into 2 nares by the nasal septum, the inside is shaped into passages by projections (turbinate) that increase the surface area of the nasal mucosa, which warms and moistens the air as it goes into the nose
- **Pharynx** - throat, connects with the nasal cavity and serves as a tubular passageway, separated into 3 parts: nasopharynx, oropharynx, laryngopharynx
- **Epiglottis** - small flap behind the tongue that closes over the larynx during swallowing to prevent food from entering the lungs
- **Larynx**: vocal cords, air passes through the glottis (opening between vocal cords) to the trachea
- **Trachea**: cylindrical tube that has u-shape cartilages to keep it open and allow the esophagus to expand for swallowing, divides into the left and right mainstream bronchi
- **Lungs** : the right lung is divided into 3 lobes and the left lung is divided into 2 lobes, 2 different types of circulation - pulmonary: provides lungs with blood that takes part in gas exchange
  - bronchial: provides oxygen to the bronchi and other lung tissues
- **Bronchi**: right one is shorter, wider, and straighter than the left one, which is why aspiration is more likely to occur in the right lung compared to the left, divides into lobar, segmental, and subsegmental bronchi
- **Bronchioles**: encircled by smooth muscles that constrict and dilate in response to stimuli (bronchoconstriction and bronchodilation)
- **Alveoli**: small sacs that serve as the primary site of gas exchange, occurs across the alveolar-capillary membrane where the alveoli is connected to the pulmonary capillaries, secrete surfactant to lower the surface tension and reduces the amount of pressure needed to inflate to prevent them from collapsing

Physiology:

Oxygenation: process of obtaining oxygen from the atmospheric air and making it available to the organs and tissues of the body. Oxygen is carried into the bloodstream through dissolved oxygen and hemoglobin-bound oxygen. PaO2 represents the amount of oxygen dissolved in the plasma and the SaO2 is the amount of oxygen bound to hemoglobin in comparison with the amount of oxygen the hemoglobin can carry. O2 and CO2 move across the alveolar-capillary membrane by diffusion. Oxygen moves from alveolar gas into the arterial blood and the carbon dioxide moves from the arterial blood into the alveolar gas (atmospheric air).

Ventilation: inspiration and expiration. As the air moves in and out of the lungs, the intrathoracic pressure is changing in relation to the pressure at the airway opening. During expiration, elastic recoil occurs to allow the lungs to return to its original size due to the elastic fibers around the alveolar walls and surrounding the bronchioles/capillaries.

Compliance and Resistance:

- compliance - the ability for the lungs to expand, increased fluid in the lungs can causes them to be less elastic or distensible
- resistance - any obstacle that prevents airflow during oxygenation and ventilation including the diameter of the airway, presence of secretions

Respiratory Defense Mechanisms: protect lungs from inhaled particles, microorganisms, and toxic gases

- air filtration: nasal hairs filter inspired air
- mucociliary clearance system: promotes the movement of mucus (blanket that contains the impacted particles and debris from distal lung areas, cilia covers the airway from the trachea to bronchioles to move the mucus towards the mouth, removes secretions upwards below the subsegmental level
- cough reflex - clears the airway by a high-pressure, high-velocity flow of air, removes secretions above the subsegmental level
- reflex bronchoconstriction - inhalation of large amount of irritating substances can cause the bronchi to constrict and prevent entry
- alveolar macrophages: rapidly phagocytize inhaled foreign particles (bacteria), particles not removed can cause inflammatory responses

To Be Completed Before the Simulation

Anticipated Patient Problem: ineffective airway clearance

Goal 1: O2 levels will remain 93% or above during my time of care

Relevant Assessments (Prework) What assessments pertain to your patient's problem? Include timeframes	**Multidisciplinary Team Intervention** (Prework) What will you do if your assessment is abnormal?
Assess O2 saturation levels and RR Q4hrs/PRN	Assist in chest physiotherapy and postural drainage techniques before meals
Assess breath sounds Q4hrs/PRN	Notify the respiratory therapist to encourage a nebulizer treatment during my time of care
Assess breathing patterns (WOB, nasal flaring) Q 4hrs/PRN	Educate on proper breathing techniques (forced huffing) during my time of care
Assess cough and sputum characteristics (presence of thick and sticky mucus) Q2hrs/PRN	Educate on the use of a flutter mucus clearing device during my time of care
Assess hydration status (mucous membranes, capillary refill, skin turgor) Q4hrs/PRN	Encourage PO fluids throughout the shift to help with the mucus consistency
Assess for signs of fatigue Q2hrs/PRN	Administer antibiotics as ordered

Goal 2: RR will remain WNL (12-20bpm) during my time of care

To Be Completed Before the Simulation

Anticipated Patient Problem: impaired nutrition: less than body requirements

Goal 1: will have a normal bowel movement (not bulky, greasy, or have a four odor) by the end of my shift

Relevant Assessments (Prework) What assessments pertain to your patient's problem? Include timeframes	**Multidisciplinary Team Intervention** (Prework) What will you do if your assessment is abnormal?
Assess stool characteristics Q4hrs/PRN	Provide synthetic pancreatic enzymes Q meal
Assess dietary intake patterns Q shift	Collaborate with the dietician and educate the importance of a high caloric, high protein, and moderate amount of fat diet during my time of care
Assess appetite and meal tolerance Q meal	Encourage small and frequent meals throughout the shift to maximize caloric intake
Assess daily weight Q shift	Provide a low-stimuli and quiet environment to reduce distractions during mealtimes
Assess bowel sounds Q4hrs/PRN	Provide stool softeners as ordered/PRN for constipation
Assess lab values (vitamins, albumin, electrolytes, glucose)	Administer fat-soluble vitamins as ordered

Goal 2: will be able to eat at least 2 meals with 1 snack during my time of care

To Be Completed During the Simulation:

Actual Patient Problem #1:
Goal: Met: ☐ Unmet:☐
Goal: Met: ☐ Unmet:☐

Actual Patient Problem #2:
Goal: Met: ☐ Unmet:☐
Goal: Met: ☐ Unmet:☐

Additional Patient Problems:
#3
#4
#5
#6

Below will be your notes, add more lines as needed. **Relevant Assessments:** Indicate pertinent assessment findings. **Multidisciplinary Team Intervention:** What interventions were done in response to your abnormal assessments? **Reassessment/Evaluation:** What was your patient's response to the intervention?

Patient Problem (#)	Time	Relevant Assessments	Time	Multidisciplinary Team Intervention	Time	Reassessment/ Evaluation

To Be Completed After the Simulation

The orange boxes should be filled out with your simulation patient's actual results, assessments, medications, and recommendations

NCLEX IV *(7)*: Reduction of Risk

Actual Labs/ Diagnostics

NCLEX II *(3)*: Health Promotion and Maintenance

Signs and Symptoms

NCLEX II *(3)*: Health Promotion and Maintenance

Contributing Risk Factors

Therapeutic Procedures

Non-surgical

Surgical

NCLEX IV *(7)*: Reduction of Risk

Prevention of Complications

(Any complications associated with the client's disease process? If not what are some complications you anticipate)

NCLEX IV *(6)*: Pharmacological and Parenteral Therapies

Medication Management

NCLEX IV *(5)*: Basic Care and Comfort

Non-Pharmacologic Care Measures

NCLEX III *(4)*: Psychosocial/Holistic Care Needs

Stressors the client experienced?

Client/Family Education

Document 3 teaching topics specific for this client.

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NCLEX I *(1)*: Safe and Effective Care Environment

Multidisciplinary Team Involvement

(Which other disciplines were involved in caring for this client?)

Patient Resources

Reflection Questions

Directions: Write reflection including the following:

1. What was your biggest “take away” from participating in the care of this client?

2. What was something that surprised you in the care of this patient?

3. What is something you would do differently with the care of this client?

4. How will this simulation experience impact your nursing practice?

5. Discuss norms or deviations of growth and development that was experienced during the simulation, including developmental stage.