

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

Student Name: **Ayanna Williams**

ATI Scenario: **Cystic Fibrosis Inpatient**

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

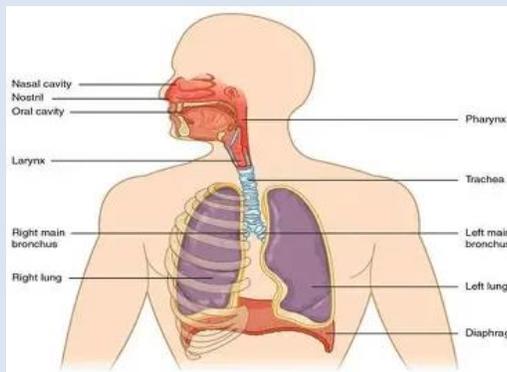
Lower Respiratory Tract: lungs, bronchi, bronchioles, alveolar ducts, alveoli (all found in the lung except the right and left mainstem bronchi)

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 become 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 SimulationAnticipated Patient Problem: **ineffective airway clearance**

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

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

Relevant Assessments (Prewrite) What assessments pertain to your patient's problem? Include timeframes	Multidisciplinary Team Intervention (Prewrite) 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) Q4hrs/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

To Be Completed Before the SimulationAnticipated Patient Problem: **imbalanced 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

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

Relevant Assessments	Multidisciplinary Team Intervention
(Prewrite) What assessments pertain to your patient's problem? Include timeframes	(Prewrite) 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

To Be Completed During the Simulation:

Actual Patient Problem #1: **infection**
 Goal: WBC will remain WNL: (4-10) during my time of care Met: Unmet:
 Goal: Temperature will remain WNL (36.5-37.5 C) during my time of care Met: Unmet:

Actual Patient Problem #2: **imbalanced nutrition: less than body requirements**
 Goal: will be able to eat at least 1 high calorie/protein meal during my time of care Met: Unmet:
 Goal: will maintain a weight >10% during my time of care Met: Unmet:

Additional Patient Problems:
 #3 deficient knowledge
 #4 ineffective airway clearance
 #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
Infection	0800 (in the clinic)	WBC: 19, Temp: 38.3 C in the clinic	0805	Clinic RN administered 650mg acetaminophen PO	0830 (transferred to the hospital)	Temp: 37.9 C, RR: 24
Infection	0830	Positive culture for <i>Burkholderia cepacia</i> , readmitted to the hospital, harsh cough present, right lower lobe pneumonia found on the CXR	0835	Educated on the importance of isolation precautions (contact) and the use of wearing a gown and gloves	0840	Healthcare providers continued to maintain isolation precautions
Ineffective airway clearance	0900	Wheezes heard in all lobes during the respiratory assessment	0901	Called the respiratory therapist to confirm when the treatments start	1030	RT entered the room
Infection	0910	PICC placement reviewed through the radiology report	0915	Administered IV tobramycin 90mg bolus; monitored auditory function and I&O for any adverse effects	0935	Infused over 20 minutes
Infection	0935	Gentamycin ordered, WBC: 19, Temp: 37.9 C, PICC line in place	0940	Administered 130mg/110mL gentamycin IV bolus	1010	Infused over 30 minutes

Ineffective airway clearance/deficient knowledge	1030	Respiratory therapist enters the room, skips a lot of treatments at home	1031	RT performed chest physiotherapy (percussion and postural drainage) prior to Gary's enteral feeding; educated the importance of performing treatments on a regular basis	1050	Mucus plugs moved, cough not effective, not as much wheezing auscultated after treatment, SpO2: 95% RA
Imbalanced nutrition: less than body requirements	1050	Enteral-feeding bolus ordered, gastrostomy tube placed, 95lbs, IV D5 0.45 NS with 20mEq potassium continuously infusing	1052	Aspirated residual stomach contents to prevent overfeeding, administered Pancreaze 3 capsules with supplements to assist with absorption of nutrients and calories. administered enteral feeding bolus	1059	Mom states, "Gary has not been eating well; with his infection he needs the extra calories"
Infection	1105	Green sputum found; culture ordered	1106	Collected sputum specimen to be transported to the laboratory	1220	Sputum culture results have not been reviewed at this time
Imbalanced nutrition: less than body requirements	1130	Decreased enzymes to digest fats, proteins, and carbohydrates, <5% weight, "I want some real food"	1140	Provided fried chicken breast, pork and beans, corn on the cob, chocolate whole milk, and a candy bar for a meal; administered 6 Pancreaze capsules with meals	1200	Appreciative of the meal, able to eat without any complications present
Deficient knowledge	1200	Mom concerned about having future children with cystic fibrosis	1201	Educated on how cystic fibrosis is an autosomal recessive genetic disorder meaning that both parents need to have the gene in order for the child to acquire the disorder	1210	Mom received handouts that discusses genetics related to cystic fibrosis

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

- Temp: 100.2 F, HR: 96, RR: 26, BP: 106/67, SpO2: 95% RA
- WBC: 19
- Neutrophils: 76%
- Creatinine: 1.1
- Sodium: 135
- Chloride: 103
- Glucose: 106
- Potassium: 3.5
- Serum quantitative IgE: 97
- CXR: consistent with chronic inflammatory lung disease (hx of CF) and right lower lobe pneumonia; peripherally inserted central catheter in place
- Positive for *Burkholderia cepacia*

NCLEX II (3): Health Promotion and Maintenance

Signs and Symptoms

- recurrent episodes of a high fever
- harsh and dry non-productive cough
- wheezing and crackles in all lobes (posteriorly and anteriorly)
- secondary infection (pneumonia)
- malnutrition (<5th percentile on growth chart)
- inadequate weight maintenance (PEG tube placed)

NCLEX II (3): Health Promotion and Maintenance

Contributing Risk Factors

- family history
- FTT
- Multiple hospitalizations
- PEG tube placement

NCLEX IV (7): Reduction of Risk

Therapeutic Procedures

Non-surgical

- CPT
- Contact precautions
- Medications

Surgical

- PICC line was placed in the clinic for antibiotic therapy

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

- Medication noncompliance
- FTT
- Unable to perform enjoyable activities (not being able to go to the game room due to contact precautions)

NCLEX IV (6): Pharmacological and Parenteral Therapies

Medication Management

- IV antibiotics
- Enteral feedings
- Pancreaze to aid in nutritional absorption
- Nebulizers
- Acetaminophen for fever

NCLEX IV (5): Basic Care and Comfort

Non-Pharmacologic Care

Measures

- High calorie, high protein diet with 3 snacks daily
- Up ad lib
- CPT
- Supplemental feeding through the PEG tube

NCLEX III (4): Psychosocial/Holistic Care Needs

Stressors the client experienced?

- Multiple hospitalizations
- Malnutrition
- Exacerbations

Document 3 teaching topics specific for this client.

- CF is an autosomal recessive disorder
- importance of medication compliance
- food options for a high-caloric/high-protein diet

Multidisciplinary Team Involvement

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

- Nurse
- CNA
- Respiratory therapist
- Provider

Patient Resources

- Handout on the impacts of family history on cystic fibrosis

Reflection Questions

Directions: Write reflection including the following:

1. What was your biggest “take away” from participating in the care of this client?
The biggest take away that I gained from participating in the care of this client is that exacerbations of cystic fibrosis can be detrimental. I learned that it is essential for these clients to maintain their treatment regimens to control the rate of exacerbations of infections. This is a lifelong illness that needs to be taken seriously in order to prevent frequent hospitalizations like Gary has been experiencing.
2. What was something that surprised you in the care of this patient?
Something that surprised me in the care of this patient was how strict his nutritional regimen was. He was ordered to have 6 capsules of Pancrelipase (Pancreaze) with meals and 3 capsules with snacks or a supplement. This shows how essential nutrition is in a cystic fibrosis patient because they lack the enzymes that are needed to help aid in digestion.
3. What is something you would do differently with the care of this client?
Something that I would do different with the care of this client is assessing bowel patterns. I believe that this is an essential assessment to have because it helps determine if the Pancreaze is effective in aiding with the digestion of fats, proteins, and carbohydrates. If the stool pattern continued to be large, bulky, greasy, and with a foul odor, then that would be an indication that proper digestion is not occurring.
4. How will this simulation experience impact your nursing practice?
This simulation experience impacted my nursing practice because it shows how you have to take care of the entire family unit. Not only was Gary a priority focus in this simulation, but the parents were as well. It was important to keep them updated and informed during Gary’s care to ensure that they are knowledgeable of the care that Gary needs in a home setting.
5. Discuss norms or deviations of growth and development that was experienced during the simulation, including developmental stage.
Gary is a 15-year-old male, which puts him in the adolescent developmental stage. This time is a critical transition period between childhood and adulthood. This a time where teenagers start to gain their own sense of self, seek encouragement from their peers, pay attention to body image, and starting to separate from their parental decisions. If they are unable to form an identity at this stage, there will be a role confusion that trails into adulthood. Gary’s condition prohibited him from engaging in activities that he enjoyed such as going to the game room in the hospital. He is also isolated from his peers due to the increased number of hospitalizations. These inhibitions can cause him to feel a bit confused on how he fits into this world with the addition of his current disorder.