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

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ATI Scenario: ATI Real-life scenario 2: Cystic Fibrosis

## To Be Completed Before the Simulation

*****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

The upper respiratory tract consists of the nose, the nasal cavity, the pharynx, larynx.

Lower respiratory tract: trachea, bronchioles, bronchi, alveoli. The alveoli are the main site of gas exchange.

Mucociliary clearance: goblet cells in the airway secrete thin, watery mucous that traps inhaled particles, and cilia move mucous upward for swallowing.

Ventilation: movement of air in and out of the lungs by contraction/relaxation of the diaphragm and intercostal muscles.

Diffusion: oxygen diffuses from alveoli into pulmonary capillaries, while carbon dioxide diffuses from blood into alveoli.

Perfusion: Blood flows through the pulmonary circulation to pick up oxygen and release CO2.

Defense mechanisms: Coughing, alveolar macrophages, and immune defenses.

**Digestive system:**

Pancreas: produces digestive enzymes like amylase, lipase, and protease, which are released into the small intestine via the pancreatic ducts.

Small intestine: Main site of digestion and nutrient absorption

**NCLEX IV *(7)*: Reduction of Risk**

Pathophysiology of Disease

Genetic autosomal recessive disorder caused by a mutation in the CFTR gene on chromosome 7. This gene is a part of the epithelial cells on the various organs of the body.

The CFTR protein regulates chloride and sodium transport across the epithelial cells and in cystic fibrosis the protein is defective leading to decreased chloride, increased sodium absorption, and increase water into the epithelial cells. This dehydrates the mucous secretions and makes it thick, sticky, and difficult to clear from airways and tracts.

Respiratory system effects: The thick mucus blocks the bronchi and bronchioles allowing bacteria to grow which can lead to various infections. The continuous infection leads to bronchial wall destruction, air trapping, and permanent airway dilation. Over time, this can lead to respiratory failure and is seen as hypoxemia, pulmonary vasoconstriction and hypertension, and right-sided heart failure due to the lung diseases.

GI effects: The mucous blocks the pancreatic ducts, preventing the digestive enzymes from reaching the small intestine. Leading to malabsorption, fatty stools, poor weight gain, and the pancreas can develop fibrosis and cyst formation, leading to decreased insulin production.

Sweat glands: Excessive sodium and chloride are excreted in sweat, leading to salty skin.

Reproductive system: Males- Bilateral absence

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| Large intestine: Absorbs water and electrolytes and forms stool<br><br>Pancreatic enzymes mix with food, breaking down nutrients into absorbable molecules<br><br>Bile from the liver works with fat to enhance absorption<br><br>Villi absorb nutrients into the bloodstream to distribute to the rest of the body.<br><br>Reproductive System:<br><br>Male- Vas deferens transports sperm from the testes to the urethra for ejaculation, and mucous in the male reproductive tract allows for sperm transport.<br><br>Female- Cervical mucous allows sperm to go through the cervix into the uterus and fallopian tubes for fertilization. | | of the vas deferens = infertility<br>Females – Thick cervical mucus leads to reduced fertility due to the blocked sperm entry. |

**To Be Completed Before the Simulation**

Anticipated Patient Problem: Ineffective airway clearance

Goal 1: Will maintain clear breath sounds and O2 saturation greater than or equal to 95% on room air during my time of care.

| **Relevant Assessments**<br><br>(Prework) What assessments pertain to your patient's problem? Include timeframes | **Multidisciplinary Team Intervention**<br><br>(Prework) What will you do if your assessment is abnormal? |
|---|---|
| Assess lung sounds Q2 hours (crackles, wheezes, rhonchi, diminished lung sounds) | Administer bronchodilators as prescribed to open airways |
| RR and WOB Q2 hours (tachypnea, accessory muscles, nasal flaring, abdominal breathing, retractions) | Elevate head of bed to promote lung perfusion PRN and teach deep breathing techniques. |
| Cough and sputum characteristics Q2 hours (amount, color, consistency) | Encourage oral intake of fluids and educate on how this can thin secretions Q2 |
| Signs and symptoms of hypoxia (restless, decreased o2, change in LOC) every time I interact with the patient | Apply supplemental oxygen and Notify nurse/instructor and teach deep breathing techniques PRN |
| Use of airway clearance techniques like cough and deep breathing Q4 | Encourage cough and deep breathing techniques every Q2 hours and educate on importance of this to clear secretions. |
| Vital signs like temperature, HR, BP, RR Q4 | Notify and work with respiratory for chest physiotherapy or nebulizer treatments PRN |

Goal 2: Will demonstrate coughing and deep breathing exercises to clear secretions during my time of care.

**To Be Completed Before the Simulation**

Anticipated Patient Problem: Imbalanced nutrition less than body requirements

Goal 1: Will have adequate nutritional intake by eating more than 75% of meals during my time of care and showing signs of an appetite like expressing hunger.

| **Relevant Assessments**<br><br>(Prework) What assessments pertain to your patient's problem? Include timeframes | **Multidisciplinary Team Intervention**<br><br>(Prework) What will you do if your assessment is abnormal? |
|---|---|
| Daily weight during the beginning of my time of care | Notify dietician of need for input to increase oral intake and weight management PRN |
| Percentage of meals, snacks, and fluids Q4 along with appetite | Provide with snacks, food they prefer that are high calorie/high protein PRN |
| Stool characteristics including frequency, consistency, color, and odor Q2 (steatorrhea?) | Administer vitamins like A, D, E once a day and pancreatic enzymes with every meal/snack. |
| Abdomen characteristics (bowel sounds, distention, discomfort?) Q4 | Encourage small, frequent, meals and educate on how this is better than 3 large meals every time they eat. |
| Hydration status (mucous membranes, skin turgor, I & O) Q4 | Encourage oral intake by providing fresh water and making it within reach PRN |
| Signs of fatigue or increased wob when eating meals (tachypnea, pause in eating, decreased PO intake) with every meal | Provide rest periods during eating and educate on importance of rest and that it is okay to do so PRN and also consult respiratory. |

Goal 2: Will demonstrate improved GI intake by formed stools, and no signs or symptoms of steatorrhea during my time of care.

**To Be Completed During the Simulation:**

Actual Patient Problem #1: Ineffective airway clearance
Goal:Will maintain an o2 saturation of greater than or equal to 95% on room air with no increased WOB during my time of care. Met: ☐ Unmet:☐
Goal: Lung sounds will remain free from wheezes after interventions during my time of care including respiratory therapy Met: ☐ Unmet:☐

Actual Patient Problem #2: Imblanced nutrition in relation to less than 10th percentile on body mass index chart, weight less than requirement for heigh at 95lbs, less than where he should be on the stature and weight chart
Goal: Will tolerate enteral feedings with no abdominal distention, nausea, pain, steatorrhea during my time of care. Met: ☐ Unmet:☐
Goal: Will not lose any further weight during my time of care and will intake prescribed amount of pancreatic enzymes Met: ☐ Unmet:☐

Additional Patient Problems:
#3: Ineffective healthcare management/ coping
#4 Risk for infection (pneumonia)
#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 |
|---|---|---|---|---|---|---|
| Ineffective airway clearance | 0700 | In report given diagnosis of Burkholderia cepacia and order for contact precautions | 0730 | RN Susan Wearing gloves and gown when doing admissions assessment implementing contact precautions | 0730 | No signs of worsening respiratory status like increased WOB, decreased spo2, increased RR. |
| Ineffective airway clearance | 0800 | Coughing during conversation of health history, temperature of 101. 2, rr 26, BP 106/67, spo2 95% | 0800 | RN Susan Assessed his respiratory status first | 0800 | Wheezes bilaterally upon respiratory assessment along with productive cough, no SOB. |
| Ineffective coping with medical condition | 0810 | Gary stated he had not been completing treatments at home. | 0815 | RN discussed importance of airway clearance and coordination with RT. | 0815 | Verbalized understanding, needs continued teaching. |
| Ineffective airway clearance | 0830 | Wheezing, chest x ray shows hilar shadowing and bilateral peri | 0830 | RN Susan Contacted respiratory therapy to implement | 0830 | Persistent cough, chest x ray with shadowing and bilaterial bronchial |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | bronchial thickening | | nebulizer and chest physiotherapy | | thickening, RR 26, Spo2 95% |
| Ineffective airway clearance | 0930 | Coughing, wheezing, contact precautions intact, chest x ray shows suggestion of R lower lobe pneumonia, chronic inflammatory lung disease, (hx of cystic fibrosis). | 0935 | Administered Tobramycin and Gentamycin at 220 mL/hr and respiratory therapy at bedside, performed chest physiotherapy | 1000 | Improved movement of mucus, decreased wheezing. |
| Ineffective coping with medical condition / Risk for infection | 1100 | Infection of pneumonia, exacerbation of lung infection, wheezing, coughing, alerted respiratory that he has not been doing treatment and frustrated, mom anxious at bedside | 1100 | Respiratory educated him on importance of doing treatments as prescribed to keep lungs clear of infection. | 1145 | Improved cooperation of care and engaged with treatment. |
| Imbalanced nutrition | 1200 | Poor PO intake according to mother, ordered enteral feeding 100mL/hr, < than 10$^{th}$ percentile body weight. | 1200 | Administered enteral pancrelipase 10 min prior to enteral feeding. | 1300 | No abdominal distention, complains of pain, no nausea or steatorrhea, tolerated feed well |
| Imbalanced nutrition | 1335 | Call bell rung, no apetite, enteral feeding complete, less than body requirements for height | 1335 | Dietician consulted to discuss food options for Gary in order to increase his intake, gave him his dinner along with pancrelipase | 1335 | Ate 75% of meal and tolerated pancrelipase enzymes |
| Ineffective coping with health care condition | 1600 | Mother at bedside, Gary upset that RN Susan is leaving for the night | 1605 | Provided comfort measures for mother to stay at bedside to help with night at the hospital | 1700 | Gary smiled and improved mood with mother at bedside. |

## 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

Chest x ray- Hilar shadowing & bilateral bronchial thickening positive for chronic cystic fibrosis lung disease and right lower lobe pneumonia
Sputum culture: Positive for Burkholderia cepacia
Weight: < 10th percentile for age
Vitals: 02 sat: 95% room air, RR: 25, Temp 101.2

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

Signs and Symptoms

- Productive cough with thick sputum
- Wheezing on auscultation
- Low appetite & poor oral intake
- Decreased activity and interest in activities
- Parental stress/anxiety due to illness

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

Contributing Risk Factors

- Dx of cystic fibrosis making more susceptible to lung infections
- Poor weight gain and nutrition
- Inconsistent airway clearance and treatment at home
- Dx of Burkholderia cepacia

**NCLEX IV *(7)*: Reduction of Risk**

Therapeutic Procedures

Non-surgical

- Chest physiotherapy to mobilize secretions
- Nebulized bronchodilator treatments
- IV antibiotics (Gentamicin and tobramycin) for pneumonia and Burkolderia Cepacia
- Enteral tube feedings and pancreatic enzymes

Surgical
None

Prevention of Complications

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

Respiratory failure
Sepsis from pulmonary infection
Pneumothorax
Malnutrition

Prevention: Maintain airway clearance with chest therapy, monitor lung sounds and o2 continuously, administer pancreatic enzymes before every meal/snack, encourage oral hydration, educate patient and family on adherence to treatments, recognize early signs of infection.

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

Medication Management

- Tobramycin – Abx to treat Burkholderia
- Gentamycin for pneumonia
- Bronchodilator (albuterol) to open airways and reduce bronchospasm
- Pancrelipase to help absorption of enteral feeds

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

Non-Pharmacologic Care Measures

Chest physiotherapy
Encourage cough, deep breathing
High calorie, fat diet
Hydration
Rest to reduce fatigue

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

Stressors the client experienced?

Frustrated and non-compliant with treatments
Stressed when nurse was shift changing
Family at bedside stressed and needed advice from RN

**Client/Family Education**

Document 3 teaching topics specific for this client.

- Importance of participating in prescribed airway clearance techniques at home to maintain healthiness
- Importance of taking pancreatic enzymes before all meals/snacks to improve digestion
- Know s/s of worsening respiratory status like increased WOB, SOB, decreased appetite and when to seek medical care.

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

Multidisciplinary Team Involvement

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

Respiratory therapy
Dietician
Pharmacy
Nursing
Pulmonologist

Patient Resources

Cystic fibrosis support foundation
Support for families with a child with chronic illness
Outpatient CF clinics
Handouts to encourage compliance

**Reflection Questions**

Directions: Write reflection including the following:

1. What was your biggest "take away" from participating in the care of this client?
   My biggest takeaway was the impact that the diagnosis of cystic fibrosis has not only on the child but the family as well. A diagnosis of cystic fibrosis requires continuous emotional and physical support. I also learned how important it is for RNs to assess everyone's understanding not just the patient and to provide as much education as possible because without doing so it can be anxiety provoking for the family. Specifically, the impact it can make on further pregnancies and determining those risks. I can imagine how scary it would be to be in that situation and I'm glad the RN on duty was so helpful.
2. What was something that surprised you in the care of this patient?
   Something that surprised me was how much Gary wasn't participating in his care. I was probably more surprised that his mother wouldn't try to control that aspect and make him take his medications/treatments because she seemed to be very involved in the plan of care. This showed me that even though parents may seem to have it all together, it is still a struggle for them as well to deal with this chronic disease and they need help too.

3. What is something you would do differently with the care of this client?
   Something I would do differently would be doing more frequent respiratory assessments including lung sounds, work of breathing, o2, and sputum characteristics. I would do this because of how severe his lung issues were and how he had an infection on top of his chronic illness and by being on top of assessments it allows for earlier recognition of changes.

4. How will this simulation experience impact your nursing practice?
   This sim will help impact my nursing practice by making me more aware on the importance of taking care of the family just as well and being helpful in any questions they may have because as this is their child must be very difficult and scary. As a nurse it is crucial for me to be approachable, listen, allow questions, and provide reassurance and answers to provide comfort for the family.

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

He was in his identity vs role confusion stage along with formal operational aligning with the adolescent age group. He demonstrated age-appropriate cognitive abilities by answering questions the nurse asked and following directions. He also was appropriate socially as he would discuss his wants and needs. On the other hand he did show a physical growth delay by being small in the height and weight percentiles and having a poor nutritional status which aligns with a diagnosis of cystic fibrosis. Emotionally he was frustrated and discouraged about his illness which is expected in an adolescent as it can be hard to deal with.