ATI Real Life Student Packet
N201 Nursing Care of Special Populations
2024

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ATI Scenario: Cystic Fibrosis Real Life

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 respiratory system is divided into 2 parts: the upper and lower respiratory tracts. The upper respiratory tract includes the nose, mouth, pharynx, epiglottis, larynx, and trachea. Air enters the respiratory tract through the nose. Inside the nose, turbinate's can be found, they increase surface area of the nasal mucosa warming and moistening air as it enters the nose. The nasal cavity connects with the pharynx which is subdivided into 3 parts: nasopharynx, oropharynx, and laryngopharynx. Air moves through the oropharynx to laryngopharynx. It then travels to the epiglottis to the larynx before moving into the trachea. The trachea is a cylindrical tube 5 inches ling and 1 inch in diameter. The trachea divides into the right and left mainstem bronchi at a point called carina. The carina is located at the angle of louis which is at the level of t4 and t5 vertebrae. Stimulation to the carina during suctioning causes vigorous coughing. Once the air passes the carina, it is in the lower respiratory tract consisting of the bronchi, bronchioles, alveolar ducts, and alveoli. The right lung is divided into 3 lobes and the left lung is divided into 2 lobes. The mainstem bronchi, pulmonary vessels, and nerves enter the lungs through the hilus. the bronchi subdivide to form the bronchioles. The most distant bronchioles are the respiratory bronchioles. The bronchioles are encircled by smooth muscles that constrict and dilate in response to stimuli. Bronchoconstriction and bronchodilation refers to contraction and relaxation of these muscles. The trachea and bronchi act as a pathway to conduct gases to and from the alveoli. The volume of air in the trachea and bronchi is called

NCLEX IV *(7)*: Reduction of Risk

Pathophysiology of Disease

Cystic fibrosis is an inherited, autosomal recessive genetic disorder, that is characterized by altered transport of sodium and chloride ions in and out of epithelial cells. CF can affect both the upper and lower respiratory tracts. CF progresses from being a disease of small airways involving the larger airways with destruction of lung tissue. Mucous lining the airways becomes dehydrated and tenacious due to defects in chloride secretion and sodium absorption. Cilia become overwhelmed with thick secretions, and as a result cilia motility is decreased allowing mucus to adhere to the airways. The bronchioles also become obstructed with thick mucus, leading to scarring of the airways, air trapping, and hyperinflation of the lungs. With CF there is a persistent, chronic airway infection that cannot be cured. Pseudomonas is the most common organism in adults. Abx resistance can develop after much use. It can narrow airways and cause a decrease in lung function. An increase in inflammatory mediators contribute to disease progression. Over a long period, pulmonary vascular remodeling occurs because of local hypoxia and arteriolar vasoconstriction. Enlarged pulmonary arteries, pulmonary hypertension, and cor pulmonale occur in later phases of the disease. Blebs and large cysts are severe manifestations of lung destruction. Pneumothorax may occur. Proliferation of capillaries occur in response to chronic infection. During exacerbations, there may be erosion of these capillaries and hemoptysis can occur. Hemoptysis may range from scant streaking to major bleeding, which can be fatal. Mucous plugging of pancreatic exocrine ducts causes pancreatic insufficiency. This results in atrophy

anatomic dead space. This air does not take part in gas exchange. The alveoli is the final part of the respiratory tract. Alveoli are small sacs in the lungs that are the primary site of gas exchange of O2 and CO2. The alveoli are interconnected by pore of Kohn. They allow movement of air from alveolus to alveolus. Deep breathing promotes air movement through the pores and move mucus out of the bronchioles. Gases exchanged across the alveolar-capillary membrane, where alveoli meet pulmonary capillaries. The GI tract is a tube that consists of 4 layers: the mucosa lining, submucosa connective tissue (these contain glands, blood vessels, and lymph nodes), muscle, and serosa. There are 3 layers of smooth muscle: the oblique (inner), circular (middle), and longitudinal (outer). The parasympathetic and sympathetic NS innervate the GI tract. The PNS is for excitatory functions and the SNS is for inhibitory functions. The PNS increases peristalsis while the SNS decreases it. The GI tract has its own nervous system: the enteric nervous system. The ENS regulates motility and secretion along the entire GI tract. The ENS is composed of 2 networks: the Meissner plexus in the submucosa and the Auerbach (myenteric) plexus between the muscle layers. The submucosal plexus controls secretion: the myenteric plexus is the major nerve supply to the GI tract and controls GI movement. In the GI tract, venous blood drains into the GI tract organs that is emptied into the portal vein and perfused to the liver. The liver cleans the blood of bacteria and toxins from the GI tract. The organs that make up the lower GI tract are the stomach, small intestine, large intestine, rectum, and lastly the anus. The stomach is responsible for digestion and the small intestine oversees absorption. Elimination takes place through the large intestine through the rectum and anus. The large intestine is composed of the ascending colon, the cecum, the appendix, the transverse colon, the descending colon, and the sigmoid colon. The most important function of the large intestine are water and electrolyte absorption. The large intestine also forms feces and serves as a reservoir for fecal mass until defecation occurs.		and progressive fibrotic cyst formation. Because of this the pancreas does not make enough pancreatic enzymes, such as lipase, amylase, and protease, to allow for absorption of nutrients. Malabsorption of fat, protein, and fat-soluble vitamins occurs. Fat malabsorption results in steatorrhea. Protein absorption results in failure to grow and gain weight. GF-related diabetes may occur d/t underdeveloped islet cells in utero and destruction of cells over lifetime. Other GI problems they may face including GERD, gallstones, and cirrhosis.

To Be Completed Before the Simulation

Anticipated Patient Problem: Imbalanced nutrition: less than body requirements

Goal 1: Pt will verbalize appropriate needs/requirements during my time of care

Goal 2: Pt will consume at least 50% of all meals, along with enteral supplementation 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 weight and growth, compare on growth charts each time pt is weighed	Provide protein supplementation and snacks between mealtimes; provide enteral feedings as ordered
Assess pre-albumin levels and other nutritional status supporting labs when resulted	Protein supplemental and snacks between mealtimes, encourage 3 meals and 2 snacks per day
Assess oral intake with each mealtime	Recommend dietician consult/referral; educate on importance of high-calorie, high-protein diet
Monitor LFTs assess when resulted	Administer lipase supplement 30 mins before each mealtime
Assess preferred foods at each shift	Incorporate favorite foods into each meal to encourage intake
Assess oral care/hygiene each shift	Encourage oral hygiene as it can promote desire for oral intake

To Be Completed Before the Simulation

Anticipated Patient Problem: Impaired gas exchange

Goal 1: Pt will maintain RR 12-20, unlabored, with clear breath sounds during my time of care

Goal 2: Pt will maintain Spo2 >95% 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 oxygen saturation continuously	Apply O2 PRN, as order
Assess RR, rate, and effort- each encounter, per unit VS policy, and PRN	Raise HOB to semi-fowler position
Assess lung sound Q4 hrs and PRN	Perform chest PT, encourage cough and deep breathing
Assess sputum when expectorated	Administer Abx as prescribed, encourage cough and deep breathing to expectorate mucus secretions
Assess knowledge and technique of cough and deep breathing	Educate on proper technique, collaborate with RT for education
Review CXR impressions when resulted	Administer Abx as ordered

To Be Completed During the Simulation:

Actual Patient Problem #1: Impaired Gas Exchange
Goal: Pt will maintain RR 12-20, unlabored, with clear breath sounds during my time of care Met: ☐ Unmet:☐

Goal: Pt will maintain Spo2 >/= 95% during my time of care Met: ☐ Unmet:☐

Actual Patient Problem #2: Imbalanced Nutrition: Less than Body Requirements
Goal: : Pt will consume at least 50% of all meals, along with enteral supplementation during my time of care Met: ☐ Unmet:☐
Goal: : Pt will verbalize appropriate needs/requirements during my time of care Met: ☐ Unmet:☐

Additional Patient Problems:
#3: Deficient Knowledge
#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
3	1330	Mom states, "He has been so sick the past few weeks," Gary has B. cepacia	1335	Educated Gary about polices of hospital Educated on isolation precautions that will be implemented, educated Gary that he cannot go to the game room on precautions	1335	Gary states, "I'm going to be so bored in this room"
1	1400	Lung sounds: wheezing throughout T: 37.9, RR: 26, Spo2: 95%	1405	Called RT to see when Tx starts	1405	Gary coughing frequently, producing sputum
1	1500	CXR confirmed placement of PICC, present with end in SVC Increase hilar shadowing compared to 6 months ago; bilateral bronchial thickening w/ mild	1500	Administered IV tobramycin 90 mg IV bolus Q8hr, IV gentamycin 220 mL/hr Q6hr RT completed chest PT	1530	Coughing and wheezing reduced post-chest PT

		RLL opacity suggesting PNA				
2	1600	Physician ordered enteral nutrition bolus	1630	Aspirated stomach contents, administered pancrelipase 3 capsules PO Initiated enteral feeding via gastrostomy tube	1730	Enteral feeding complete 300mL over 1 hr administered
1	1630	Cx of sputum ordered by provider States, “My sputum is kind of green this time” RR: 24, T: 37.9, Spo2: 95%	1630	Obtains sputum Cx Educated to perform oral hygiene, take deep breaths, expectorate into container, offer mouth wash, label specimen container	1635	Demonstrates understanding by expectorating Cx as educated
2	1700	States, “I want some real food”	1730	Provided dinner tray consisting of chicken breast, pork and beans, chocolate whole milk, candy bar; educated on need for high-calorie, high-protein diet Administers 10 mg Prolipase	1730	States, “Thank you;” perks up when pt see’s candy bar
3	1745	Gary’s mom asks nurse for information on having another child and risks of CF; states, “My husband and I are thinking about having a baby, what are the chances of the baby having CF?”	1750	Educated Gary’s mom that both parents need to have autosomal recessive genetic disorder for child to have CF Provided information and pamphlets with CF information	1750	Patricia states, “Thank you”

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
Sputum Cx, CBC, CXR, BMP

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

Signs and Symptoms
Wheezing lung sounds throughout, coughing, sputum production, increase RR

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

Contributing Risk Factors
N/A

Therapeutic Procedures
Non-surgical
Chest PT, PICC line placement

Surgical
Gastrostomy tube

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)
PNA, burkholdreia cepacia

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

Medication Management
Tobramycin, Gentamycin, Prolipase

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

Non-Pharmacologic Care Measures
Chest PT

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

Stressors the client experienced?
Isolated to hospital room-bored
Repeated hospital stays

Client/Family Education

Document 3 teaching topics specific for this client.
- Educated on Prolipase administration
- Educated on purpose of PPE
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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?)
RN, Doctor, dietician, RT, Pharmacist

Patient Resources
CF resources to Gary's mom r/t wanting to have another child and risks of baby having CF

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 is that this disease can cause feelings of isolation, especially in Gary's case. He was in isolation and was not allowed in the play area like the other kids are able to.

2. What was something that surprised you in the care of this patient?
   Something that surprised me was that CF patients have GI dysfunction and require enteral supplementation. Before the sim/research I thought that CF only affected the lungs and respiratory system.

3. What is something you would do differently with the care of this client?
   I would prioritize care a little bit differently. Chest PT is important, however, administering Gary's enteral feeding is just as important if not more. The feeding was postponed for the RT visit. As the nurse I would've asked RT to come back at a later time as his nutrition is important.

4. How will this simulation experience impact your nursing practice?
   This simulation experience will impact my nursing care because I will remember how lonely Gary possibly felt. I also have a better understanding of how to care for a CF pt and what their disease process looks like.

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

   Norms for this growth and development is voice changes r/t to puberty with the adolescent stage. Also, conflicts over independence and control occur. You could see this to be true with Gary and his parents'. Gary was refusing to adhere to his Tx at home. A deviation that Gary exhibits is rapid growth and development. He is under growth requirements r/t his condition that affects absorption of nutrients.