

Nur-641E Week 1 Discussions

Summary of Current Course Content Knowledge

Jul 18-18, 2024

Academic engagement through active participation in instructional activities related to the course objectives is paramount to your success in this course and future courses. Through interaction with your instructor and classmates, you will explore the course material and be provided with the best opportunity for objective and competency mastery. To begin this class, review the course objectives for each Topic, and then answer the following questions as this will help guide your instructor for course instruction.

1. Which weekly objectives do you have prior knowledge of and to what extent?

I have a small understanding of each of the objectives. It has been an exceptionally long time since my initial classes with these subjects.

2. Which weekly objectives do you have no prior knowledge of?

-Identify ethnic, cultural, and genetic differences in patients that may affect the safety or efficacy of medications. I do not think that I have had very much information on this topic and not much experience working with these meds and patients of diverse cultures.

3. What course-related topics would you like to discuss with your instructor and classmates? What questions or concerns do you have about this course?

I think discussing all the topics in a little more detail will help understand the topics and objectives better. I look forward to learning more about each of the objectives so that I can use it during my future work.

Topic 1 DQ 1

Jul 18-20, 2024

Part 1

What are the differences between primary and secondary lines of defense in the immune system? What factors interfere with these mechanisms? How are these levels of immunity affected in a child, an elderly person, or a person with a chronic disease? Discuss both active and passive immunity, as well as innate and acquired immunity.

The primary line of defense, known as innate immunity, is the skin and mucous membranes. They are sometimes called the “first line of defense” because they are frequently the initial sites of microbial invasion (Banasik, 2022). The skin is considered the first line of defense because

this is where the initial site of microbial invasion is. The intact skin provides mechanical and chemical barriers to prevent any microorganisms from getting into the system. Trauma to the skin such as cuts, burns, or lacerations can cause protection to be decreased.

Secondary defense, known as adaptative immunity, kicks in when pathogens or organisms get past the first line. The second line is “macrophages and dendritic cells are often the first immune system cells to encounter a pathogen or foreign antigen after it has entered the body” (Banasik, 2022).

The level of immunity is affected differently in children, the elderly, or people with chronic diseases. Children’s immune system does not have a fully developed immune system which makes them more susceptible to infections. The elderly have aged immune systems, which is referred to as immunosenescence. The elderly tend to have less response to protection in both primary and secondary lines. People with chronic diseases can affect their immune system (Banasik, 2022).

Active immunity occurs when a person receives exposure to a pathogen or vaccination. This allows the body to produce antibodies and memory cells which would allow for lasting protection.

Passive immunity occurs when antibodies are transferred from an individual, such as mom passing to her baby during pregnancy or when it is transferred during immunoglobulin treatment. This would only provide limited immunity and protection.

Part 2

Choose an inflammatory or infectious process and explain the pathophysiological changes that may occur. What patient education would need to be included relating to this disorder? Make sure that you select a different medical condition than your peers. Include the name of the medical condition (bolded) above your answer so that the medical condition can easily be identified. Cite your references in APA style.

Type 1 Diabetes

Type 1 diabetes, often referred to as juvenile diabetes or insulin dependent diabetes, is a chronic condition that occurs when “your immune system mistakenly attacks and destroys cells in your pancreas that make insulin” (“Type 1 diabetes: Causes, symptoms, complications & treatment,” 2024). The result of this attack on a person's cells can happen over in a short or long time that will eventually result in total lack of insulin (“Type 1 diabetes: Causes, symptoms, complications & treatment,” 2024).

Patients should understand that Type 1 Diabetes is a genetic disease and the risk of developing it is 0.4%. There is no cure for Type 1 Diabetes. “Scientists believe that certain factors, such as a

virus or environmental toxins, can trigger your immune system to attack cells in your pancreas if you have a genetic predisposition for developing Type 1 diabetes” (“Type 1 diabetes: Causes, symptoms, complications & treatment,” 2024).

References

Banasik, J. L. (2022). *Pathophysiology - E-book* (7th ed.). Elsevier Health Sciences.

Type 1 diabetes: Causes, symptoms, complications & treatment. (2024). Cleveland Clinic. <https://my.clevelandclinic.org/health/diseases/21500-type-1-diabetes>

Topic 1 DQ 2

Jul 18-22, 2024

Select a medication used in evidence-based treatment guidelines for the condition you chose in the first discussion question. Share the mechanism of action of this medication and hints for monitoring, side effects, and drug interactions of which one should be aware. Make sure that you select a different medication than your peers. Include the name of the medical condition and medication (bolded) above your answer so that the medical condition and medication can easily be identified. Cite your references in APA style.

Type 1 Diabetes (Juvenile Diabetes)

Medication: Insulin

Insulin is used to control diabetes in children or adults who have diabetes. Type 1 diabetes requires a person to take insulin because their body no longer produces this hormone. There are several types, strengths, and routes of insulin that can be prescribed. “Short-, intermediate-, and long-acting insulins are available. Short-acting and rapid-acting insulins are the only types that can be administered intravenously (IV). Human insulin currently is the only species of insulin available in the United States; it is less antigenic than the previously used animal-derived varieties” (Khardori MD PhD, FACP, & Griffing, MD, 2024).

Mechanism of Action:

“Insulin reduces blood glucose levels by allowing glucose to enter muscle cells and by stimulating the conversion of glucose to glycogen (glycogenesis) as a carbohydrate store” (Khardori MD PhD, FACP, & Griffing, MD, 2024).

Monitoring, Side Effects, and Drug Interactions:

These patients require insulin for life. Patients must ensure they monitor their blood glucose multiple times a day. Lifestyle changes can change the effects of how the insulin reacts with their body. Monitoring of the inject site should be completed. Redness, itching, and swelling could be noted at the injection site.

Side effects of insulin can be low blood sugar (hypoglycemia), confusion, hunger, sweating, tachycardia, dizziness, weakness, blurred vision, abdominal cramps, rash or itching all over the body, muscle cramps, increase of weight gain in a brief period, weight gain, and numbness or tingling in extremities ("Human insulin injection: MedlinePlus drug information," 2024).

Drug Interactions:

Insulin can interact with medications such as beta blockers, some antibiotics, other diabetes medications, some diuretics such as thiazide, atypical antipsychotics, and corticosteroids. Before taking any of these medications, be sure to inform your physician as they can increase your blood glucose levels (Rao, PharmD, APh, BCACP, 2022).

References

7 *Insulin Interactions You Should Know About*. (n.d.). goodrx.com.

<https://www.goodrx.com/classes/insulins/interactions>

Human insulin injection: MedlinePlus drug information. (2024). MedlinePlus - Health Information from the National Library of Medicine.

<https://medlineplus.gov/druginfo/meds/a682611.html>
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Khardori, MD, PhD, FACP, R., & Griffing, MD, G. T. (2024, January 25). *Type 1 diabetes mellitus medication: Antidiabetics, insulins, Antidiabetics, Amylinomimetics, hypoglycemia antidotes, monoclonal antibodies, Allogeneic islet cells*. Diseases & Conditions - Medscape Reference. <https://emedicine.medscape.com/article/117739-medication?form=fpf>

Rao, PharmD, APh, BCACP, H. (2022, November 28). *Access to this page has been denied*. Access to this page has been denied.

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