

Week 9: Lecture Signature Assignment: Case Analysis

Start Assignment

- Due Sunday by 11:59pm
- Points 80
- Submitting a text entry box, a website url, a media recording, or a file upload

For your signature assignment, compose a 3- to 4-page case analysis (in addition to a title page, abstract, and reference list page) written in APA Style citing at least 3 references with one non-Internet reference. The following should be covered in the paper:

- **Title Page:** Case Title, Full Name, Section, Date, Instructor, and Campus
- **Abstract:** Summarize the case on one (1) non-indented paragraph on a separate page. This will be page 2.
- **Introduction:** The physiological importance of the liver, pancreas, and kidneys for the proper functioning of the human body.
- **Body:** Response to the prompts: Organize your analysis with headings that thoroughly answer the prompts (e.g., “Abnormal Glucose Levels” for question 1).
 - Explain each prompt in depth with physiological concepts and provide sufficient evidence from the literature for each prompt. Include normal physiological ranges (if it applies).
 - Maintain the order of questions when answering.
- **Conclusion:** Summarize the paper in a paragraph.

Support your opinions with evidence from your readings and research. Review the rubric for complete grading criteria.

Case: End-Stage Kidney Disease

Cynthia, a 53-year-old female presented to the emergency room due to feeling constantly tired, hungry, thirsty, and with frequent urination. Her past medical history is significant for cirrhosis and end-stage kidney disease. Physical examination had revealed yellowish discoloration to the skin, multiple bruises, bilateral edema, and weakness lasting more than three weeks. Laboratory tests were ordered (results provided below) after which she was prescribed metformin and informed to contact a doctor if she starts experiencing nausea, vomiting, fast breathing, and/or lethargy, as metformin has been known to cause metabolic acidosis.

Laboratory test results	
Complete Blood Count (CBC)	
Sodium	126 mEq/L
Glucose	220 mg/dl
Calcium	7.1 mg/dl
Red blood cell count	3.9 million cells/ul
Iron	40 mcg/dL
Albumin	2.5 g/dl
Vitals	
Blood pressure	86/56 mmHg
Hormone Panel	
Renin	Low
ADH	Elevated
Aldosterone	Low
Vitamins	
Vit D	Low
Vit K	Low
Vit E	Low
Vit A	Low
Urine and Stool Sample	
Stool color	Gray
Stool content	Increase fat content
Urine color	Clear
Glucose	Present

Answer the following questions regarding Cynthia's case:

1. What hormone is not functioning properly causing Cynthia's glucose levels to be abnormal? Furthermore, explain in depth how this hormone regulates blood glucose levels.
2. What other hormone(s) are responsible for maintaining normal glucose levels? Explain in depth how they work.
3. Explain why Cynthia is presenting with excessive thirst (polydipsia), tiredness and hunger (polyphagia), and frequent urination (polyuria).
4. Explain why Cynthia is experiencing hypotension. How does the body and its various organ systems bring the blood pressure back towards homeostasis?
5. What do you expect Cynthia's heart rate and end-diastolic volume (EDV) to be (elevated, normal, or low) and justify your expectation with cardiovascular formulas such as cardiac output (CO) and stroke volume (SV).
6. What is the importance of iron in the body and the consequence of it being 40 mcg/dL?
7. Explain in detail what gluconeogenesis is and where in the body it occurs? Knowing that gluconeogenesis helps maintain blood glucose level, what is the effect of metformin on the management of diabetes mellitus type 2?
8. Looking at Cynthia's albumin levels, what effect does it have on her (a) blood osmolarity (b) glomerular filtration rate (GFR) and (c) urine volume?
9. Explain how glucose is normally reabsorbed by the kidneys? What is happening in Cynthia's kidneys resulting in glucosuria and what effect does glucosuria have on her blood pressure?
10. If Cynthia ends up developing metabolic acidosis, what would the levels of her pH, CO_2 , and HCO_3 be in the blood? Furthermore, how would the body compensate and address both renal and respiratory compensation (optional: show the compensation via a flow chart)?

PHYS 261 Signature Assignment Rubric

Criteria	Ratings				Pts
	Information is scientifically sound, thorough, necessary, and sufficient.	details.Information is mostly scientifically sound, thorough, necessary, and sufficient.	scientifically sound, necessary, or sufficient.	scientifically sound, necessary, or sufficient.	
Content/Information Prompt #9	6.5 to >5.75 pts Addresses the entire prompt correctly with great depth and details. Information is scientifically sound, thorough, necessary and sufficient.	5.75 to >5.25 pts Addresses the entire prompt correctly without depth or any details.Information is mostly scientifically sound, thorough, necessary and sufficient.	5.25 to >4.5 pts Partially addresses the prompt correctly. Information is mostly insufficient and may not be scientifically sound.	4.5 to >0 pts Does not address any portion of the prompt correctly.Information is not scientifically sound, necessary or sufficient.	6.5 pts
Content/Information Prompt #10	6.5 to >5.75 pts Addresses the entire prompt correctly with great depth and details. Information is scientifically sound, thorough, necessary, and sufficient.	5.75 to >5.25 pts Addresses the entire prompt correctly without depth or any details.Information is mostly scientifically sound, thorough, necessary, and sufficient.	5.25 to >4.5 pts Partially addresses the prompt correctly. Information is mostly insufficient and may not be scientifically sound.	4.5 to >0 pts Does not address any portion of the prompt correctly.Information is not scientifically sound, necessary, or sufficient.	6.5 pts
Organization and Assignment Requirements	6.5 to >5.75 pts Demonstrates a sophisticated understanding of the topic(s) and issue(s). Introduction, abstract, and conclusion serve to bring cohesion and clarity to the assignment topic. Presents coherently and logically organized ideas that are thoughtful and in-depth. Meets all length requirements and addresses all aspects of the assignment. Meets the required number of resources, and all sources meet the assignment specifications.	5.75 to >5.25 pts Demonstrates an adequate understanding of the topic(s) and issue(s). Introduction, abstract, and conclusion generally serve to bring cohesion and clarity to the assignment topic, but there may be some redundancy or unnecessary information. Ideas are mostly coherent and organized. Meets all length requirements and addresses all aspects of the assignment. Meets the required number of resources, and all sources meet the assignment specifications.	5.25 to >4.5 pts Demonstrates a vague or incorrect understanding of the topic(s) and issue(s). Introduction, abstract, and conclusion do not add cohesion and clarity to the assignment topic. Several ideas are incoherent and disorganized. Meets some length requirements and addresses some aspects of the assignment. Meets the required number of resources, and some meet the assignment specifications.	4.5 to >0 pts Demonstrates little or no understanding of the topic(s) and issue(s). Introduction, abstract, and conclusion are missing or insufficient.Meets few, if any, assignment and reference criteria.	6.5 pts
APA and Mechanics	8.5 to >7.75 pts The assignment consistently follows current APA format and is free from errors in formatting, citation, and references. There are no grammatical, spelling, or punctuation errors. All sources are cited and referenced correctly.	7.75 to >6.75 pts The assignment consistently follows current APA format with only isolated and inconsistent mistakes and/or has a few grammatical, spelling, or punctuation errors. Most sources are cited and referenced correctly.	6.75 to >6.0 pts The assignment does not follow current APA format and/or has many grammatical, spelling, or punctuation errors. Many sources are cited and referenced incorrectly, or citations and references are missing where needed.	6 to >0 pts No attempt to follow APA format is indicated. Sources are not used and/or there is no reference page. Mechanical errors significantly interfere with the readability of the paper.	8.5 pts
Total Points: 80					