



19BMT401 - VIRTUAL REALITY IN MEDICINE

Puzzle 1: Virtual Diagnosis

Scenario: A hospital uses a VR system to train medical students. The system presents them with a virtual patient displaying various symptoms. The students must diagnose the patient using virtual tools, tests, and consultations.

Puzzle: The virtual patient has symptoms that include a persistent cough, weight loss, night sweats, and fatigue. The students have access to virtual tests such as a chest X-ray, blood test, and a sputum test. What should the students do to diagnose the patient, and what is the most likely diagnosis?

Answer: The students should first conduct a chest X-ray, which might show signs of a lung infection or tumors. The sputum test could reveal the presence of bacteria causing tuberculosis. The most likely diagnosis is tuberculosis.

Puzzle 2: Virtual Surgery Dilemma

Scenario: A surgeon is using VR to perform a remote surgery on a patient with a complex brain tumor. The VR system simulates the surgery environment and provides real-time data. However, the system starts showing a delay in response due to network issues.

Puzzle: If the delay in response continues, what should the surgeon do? Should they continue with the surgery or halt it? What are the potential risks involved?

Answer: The surgeon should halt the surgery immediately. Continuing with a delayed response in VR could lead to mistakes, as precise timing is crucial in brain surgery. The risks include damaging healthy brain tissue, leading to serious complications or even the patient's death.

Puzzle 3: Virtual Rehabilitation

Scenario: A patient is undergoing rehabilitation after a stroke using a VR system that helps them regain motor skills. The VR exercises require the patient to move their limbs to interact with virtual objects. However, the patient is struggling to complete the exercises.

Puzzle: What modifications can be made to the VR system to better assist the patient in their rehabilitation?

Answer: The VR system can be modified to include more gradual difficulty levels, starting with simpler tasks. It could also provide real-time feedback and encouragement to keep the patient motivated. Additionally, incorporating biofeedback to adjust the exercises based on the patient's physical abilities could help.

Puzzle 4: Ethical Dilemma in VR Therapy

Scenario: A VR therapy program is designed to help patients with PTSD by immersing them in controlled environments that simulate their traumatic experiences. The goal is to desensitize them to these triggers.

Puzzle: A patient begins to show signs of distress during a session. The therapist is unsure whether to continue the exposure therapy or stop it. What should the therapist do, and what factors should they consider in making this decision?

Answer: The therapist should stop the session immediately to prevent further distress. They should consider the patient's mental state, the severity of their PTSD, and the potential risks of continuing the therapy. A reassessment of the patient's progress and adjustment of the therapy plan might be necessary.