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| **Maryland Next Gen NCLEX Test Bank Project****September 1, 2022** |
| **Case Study Topic**: (& Stand alone trend) | HIV with an opportunistic infection | **Author:** Denyce Watties-Daniels, DNP RN Coppin State University |

**Case Summary**

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| A 25-year-old male who has been HIV positive for three years develops a dry cough, respiratory distress, and a fever of 101.0o (F) 38.3o (C). He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. He is admitted to the medical-surgical unit for diagnosis and treatment of an opportunistic infection.  |

**Objectives**

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| 1. Recognize the complications of HIV.
2. Analyze cues to determine appropriate interventions.
3. Teach client health maintenance behaviors to manage HIV.
4. Evaluate the effectiveness of health teaching.
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| **Case Study Link** | **Case Study QR Code** |
| <https://umaryland.az1.qualtrics.com/jfe/form/SV_865ezrxA7PfP1e6> |  |
| **Trens QR Code** | **Trend Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_b2YBl9uUvQ1F5kO> |

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| **Case References**  |
| Ignatavicius, D. D. & Workman, M. L. (2021). Medical-surgical nursing: Patient-centered collaborative care. (10th Edition). St. Louis: Elsevier. |
| Capriotti, T. (2020). *Pathophysiology: Introductory concepts and clinical perspectives, 2nd ed*. Pennsylvania: F. A. Davis  |

**Case Study 1 of 6**

The nurse cares for a 25-year-old male with a history of HIV admitted the the medical surgical unit with respiratory distress.

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| **Nurses' Note** |
| **1100**: A 25-year-old male who has been HIV positive for 3 years is admitted for a dry cough and fever of 101.0oF/ 38.3oC. The client has fatigue, shortness of breath, a respiratory rate of 28, and pulse oximeter of 90% on room air. Breathing is slightly labored and he has a tight feeling in the chest when taking a deep breath. He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. His symptoms did not improve with over-the-counter medications after 3 days. IV started in 0.9% normal saline infusing in the right arm at 75 ml/hr. Labs drawn. Bronchoalveolar lavage test completed. The cytology report is pending.  |
| **Laboratory Report** |
| BUN | 22 mg/dL | 10-20 mg/dL |
| Creatinine (Serum) | 1.5 mg/dL | 0.9 to 1.4 mg/dL |
| Hematocrit | 48 % | Males: 42-52%;Females: 35-47% |
| Hemoglobin | 15g/dL | Males: 13-18 g/dL; Females:12-16 g/dL |
| WBC | 15.2 mm3 | 4.5 – 10.5 x 103 cells/mm3 |
| Platelets | 300,000 mm3 | 140,000 to 450,000/ mm3 |
| PT | 10 seconds | 9.5-12 seconds |
| PTT & APTT | 25 seconds | 20-39 seconds |
| Potassium(serum) | 4.5 mEq/L | 3.5 to 5 mEq/L |
| Sodium (serum) | 148 mEq/L | 135 to 145 mEq/L |
| CD4 T Cells | 178 mm3 | > 500 to 1,600 mm-3 |

The nurse reviews the client's laboratory report.

* Which lab findings are concerning? Select all that apply
* Hematocrit
* Platelets
* Sodium
* CD4-T cells \*
* Potassium
* WBC \*

**Scoring Rule: +/-**

**Rationale:** As the HIV virus replicates, the CD 4 count declines due to the virus's destruction of T cells. Normal range of CD4 cells is 800-1200 cells/ mm3. When the CD4 cell count goes below 500, the person is subseptable to opportunistic infections. When the CD4 count falls below < 200/ mm3,  this indicates the viral load is high, and an HIV+ client has seroconverted to having AIDS. Elevated WBCs indicates the client is experiencing an infection

**Case Study 2 of 6**

The nurse cares for a 25-year-old male with a history of HIV admitted the the medical surgical unit with respiratory distress.

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| **Nurses' Note** |
| **1100**: A 25-year-old male who has been HIV positive for 3 years is admitted for a dry cough and fever of 101.0oF/ 38.3oC. The client has fatigue, shortness of breath, a respiratory rate of 28, and pulse oximeter of 90% on room air. Breathing is slightly labored and he has a tight feeling in the chest when taking a deep breath. He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. His symptoms did not improve with over-the-counter medications after 3 days. IV started in 0.9% normal saline IV infusing in the right arm at 75 ml/hr. Labs drawn. Bronchoalveolar lavage test completed. The cytology report is pending.  |
| **Laboratory Report** |
| BUN | 22 mg/dL | 10-20 mg/dL |
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| Hemoglobin | 15g/dL | Males: 13-18 g/dL; Females:12-16 g/dL |
| WBC | 15.2 mm3 | 4.5 – 10.5 x 103 cells/mm3 |
| Platelets | 300,000 mm3 | 140,000 to 450,000/ mm3 |
| PT | 10 seconds | 9.5-12 seconds |
| PTT & APTT | 25 seconds | 20-39 seconds |
| Potassium(serum) | 4.5 mEq/L | 3.5 to 5 mEq/L |
| Sodium (serum) | 148 mEq/L | 135 to 145 mEq/L |
| CD4 T Cells | 178 mm3 | > 500 to 1,600 mm-3 |

## Which clients findings are risks for for an opportunistic infection? Select all that apply.

* Three year use of antiretroviral medications
* History of HIV\*
* Being 25 years old
* Use of over-the-counter medications
* Stopped taking his medication \*
* Low CD4 T cell counts\*

**Scoring Rule: +/-**

**Rationale:** Discontinuation of HIV medications allows the client’s viral load to increase. As the viral load increases, the CD4 T cell count decreases making the client vulnerable to opportunistic infections. Clients are typically given the diagnosis of AIDS when the CD4 count falls below 200mm3

**Case Study 3 of 6**

The nurse cares for a 25-year-old male with a history of HIV admitted the the medical surgical unit with respiratory distress.

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| **Nurses' Note** |
| **1100**: A 25-year-old male who has been HIV positive for 3 years is admitted for a dry cough and fever of 101.0oF/ 38.3oC. The client has fatigue, shortness of breath, a respiratory rate of 28, and pulse oximeter of 90% on room air. Breathing is slightly labored and he has a tight feeling in the chest when taking a deep breath. He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. His symptoms did not improve with over-the-counter medications after 3 days. IV started in 0.9% normal saline IV infusing in the right arm at 75 ml/hr. Labs drawn. Bronchoalveolar lavage test completed. The cytology report is pending.  |
| **Laboratory Report** |
| BUN | 22 mg/dL | 10-20 mg/dL |
| Creatinine (Serum) | 1.5 mg/dL | 0.9 to 1.4 mg/dL |
| Hematocrit | 48 % | Males: 42-52%;Females: 35-47% |
| Hemoglobin | 15g/dL | Males: 13-18 g/dL; Females:12-16 g/dL |
| WBC | 15.2 mm3 | 4.5 – 10.5 x 103 cells/mm3 |
| Platelets | 300,000 mm3 | 140,000 to 450,000/ mm3 |
| PT | 10 seconds | 9.5-12 seconds |
| PTT & APTT | 25 seconds | 20-39 seconds |
| Potassium(serum) | 4.5 mEq/L | 3.5 to 5 mEq/L |
| Sodium (serum) | 148 mEq/L | 135 to 145 mEq/L |
| CD4 T Cells | 178 mm3 | > 500 to 1,600 mm-3 |

The nurse reviews the client's chart.

* Complete the sentence from the list of word choices.

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| The nurse should first address the client’s | FeverImmunityInfectionOxygenation\* |
| Next the nurse should address the client’s  | FeverImmunityInfection\*Oxygenation |

**Scoring Rule: 0/1**

**Rationale**: The priority is to address the client’s oxygenation. Oxygen should be immediately be started on oxygen. Clients with HIV infections and CD4 counts < 200/mm3  are subseptable to opportunistic infections.The next priority is to treat the infection. The client will need to resume antiretroviral therapy to improve their immune system, but this improvement will occur more slowly. The fever will need to be treated, but treating the infection is most important to recovery.

**Case Study 4 of 6**

The nurse cares for a 25-year-old male with a history of HIV admitted the the medical surgical unit with respiratory distress.

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| **Nurses' Note** |
| **1100**: A 25-year-old male who has been HIV positive for 3 years is admitted for a dry cough and fever of 101.0oF/ 38.3oC. The client has fatigue, shortness of breath, a respiratory rate of 28, and pulse oximeter of 90% on room air. Breathing is slightly labored and he has a tight feeling in the chest when taking a deep breath. He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. His symptoms did not improve with over-the-counter medications after 3 days. IV started in 0.9% normal saline infusing in the right arm at 75 ml/hr. Labs drawn. Bronchoalveolar lavage test completed. The cytology report is pending.  |
| **Laboratory Report** |
| BUN | 22 mg/dL | 10-20 mg/dL |
| Creatinine (Serum) | 1.5 mg/dL | 0.9 to 1.4 mg/dL |
| Hematocrit | 48 % | Males: 42-52%;Females: 35-47% |
| Hemoglobin | 15g/dL | Males: 13-18 g/dL; Females:12-16 g/dL |
| WBC | 15.2 mm3 | 4.5 – 10.5 x 103 cells/mm3 |
| Platelets | 300,000 mm3 | 140,000 to 450,000/ mm3 |
| PT | 10 seconds | 9.5-12 seconds |
| PTT & APTT | 25 seconds | 20-39 seconds |
| Potassium(serum) | 4.5 mEq/L | 3.5 to 5 mEq/L |
| Sodium (serum) | 148 mEq/L | 135 to 145 mEq/L |
| CD4 T Cells | 178 mm3 | > 500 to 1,600 mm-3 |
| **Diagnostic Report**  |
| Bronchoalveolar lavage specimen shows Pneumocystis jirovecii.  |

The client is diagnosed with pneumocystis **pneumonia (PCP).**

* For each potential order click to specify if it is anticipated or not anticipated to include in the plan of care?

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| **Orders** | **Anticipated** | **Not anticipated** |
| Tritrate oxygen to keep pulse oximeter > 95%  | **X** |  |
| Administer ibuprofen prn for fever | **X** |  |
| Administer trimethoprim/sulfamethoxazole | **X** |  |
| Administer vancomycin |  | **X** |
| Garglewith lidocaine solution  |  | **X** |
| Schedule a stress test in the morning  |  | **X** |
| Refer to social work  | **X** |  |

**Scoring Rule: 0/1**

**Rationale:**  Clinical manifestations of pneumocystis pneumonia (PCP) include fever, chills, and flu-like symptoms. Ibuprofen is ordered to reduce fever and oxygen is needed to support respiratory compromise due to lung infection. Trimethoprim/sulfamethoxazole are medications effective against PCP. Vancomycin is not effective against fungal infections. Clinical manifestations of PCP do not include sore throa, so gargling with lidocaine solution is not indicated. The client has no history of cardiovascular illness; therefore, the stress test is not indicated. A social work consult is needed because the client is out of work, without insurance, and is experiencing a long-term illness.

**Case Study 5 of 6**

The nurse cares for a 25-year-old male with a history of HIV admitted the the medical surgical unit with respiratory distress.

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| **Nurses' Note** |
| **1100**: A 25-year-old male who has been HIV positive for 3 years is admitted for a dry cough and fever of 101.0oF/ 38.3oC. The client has fatigue, shortness of breath, a respiratory rate of 28, and pulse oximeter of 90% on room air. Breathing is slightly labored and he has a tight feeling in the chest when taking a deep breath. He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. His symptoms did not improve with over-the-counter medications after 3 days. IV started in 0.9% normal saline IV infusing in the right arm at 75 ml/hr. Labs drawn. Bronchoalveolar lavage test completed. The cytology report is pending.  |
| **Laboratory Report** |
| BUN | 22 mg/dL | 10-20 mg/dL |
| Creatinine (Serum) | 1.5 mg/dL | 0.9 to 1.4 mg/dL |
| Hematocrit | 48 % | Males: 42-52%;Females: 35-47% |
| Hemoglobin | 15g/dL | Males: 13-18 g/dL; Females:12-16 g/dL |
| WBC | 15.2 mm3 | 4.5 – 10.5 x 103 cells/mm3 |
| Platelets | 300,000 mm3 | 140,000 to 450,000/ mm3 |
| PT | 10 seconds | 9.5-12 seconds |
| PTT & APTT | 25 seconds | 20-39 seconds |
| Potassium(serum) | 4.5 mEq/L | 3.5 to 5 mEq/L |
| Sodium (serum) | 148 mEq/L | 135 to 145 mEq/L |
| CD4 T Cells | 178 mm3 | > 500 to 1,600 mm-3 |
| **Diagnostic Report**  |
| Bronchoalveolar lavage specimen shows Pneumocystis jirovecii.  |

The nurse teaches the client about how to reduce the risks of opportunistic infections.

* What should the nurse teach the client about preventing opportunistic infections? Select all that apply.
* Use frequent hand washing \*
* Get tested for tuberculosis \*
* Get an HIV test every 4 months
* Get tested for an sexually transmitted infections \*
* Get a yearly influenza vaccine \*
* Don’t drink untreated water\*
* Have a monthly complete blood count
* Have viral load testing every 4 to 6 months \*
* Take antiviral medications as ordered \*

**Scoring Rule: +/-**

**Rationale:** Hand washing is a major strategy to prevent of infection. Drinking untreated water puts cleints at risk for waterbourne diseases. HIV+ clients should be routinely tested for tubercoluosis and sexually transmitted infections. Annual immunization for the flu is recommended for immunocompromised patients. HIV+ patients should submit to a frequent check of their viral loads to assess their ability to fight opportunistic infections. A daily regime of antiviral medications effectively preserves immune function and reduces complications related to HIV infections. An HIV test every 4 months is not needed once a diagnosis is made. Monthly CBC are not needed.

**Case Study 6 of 6**

The nurse cares for a 25-year-old male with a history of HIV admitted the the medical surgical unit with respiratory distress.

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| **Nurses' Note** |
| **1100**: A 25-year-old male who has been HIV positive for 3 years is admitted for a dry cough and fever of 101.0oF/ 38.3oC. The client has fatigue, shortness of breath, a respiratory rate of 28, and pulse oximeter of 90% on room air. Breathing is slightly labored and he has a tight feeling in the chest when taking a deep breath. He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. His symptoms did not improve with over-the-counter medications after 3 days. IV started in 0.9% normal saline IV infusing in the right arm at 75 ml/hr. Labs drawn. Bronchoalveolar lavage test completed. The cytology report is pending.  |
| **Laboratory Report** |
| BUN | 22 mg/dL | 10-20 mg/dL |
| Creatinine (Serum) | 1.5 mg/dL | 0.9 to 1.4 mg/dL |
| Hematocrit | 48 % | Males: 42-52%;Females: 35-47% |
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| WBC | 15.2 mm3 | 4.5 – 10.5 x 103 cells/mm3 |
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| CD4 T Cells | 178 mm3 | > 500 to 1,600 mm-3 |
| **Diagnostic Report**  |
| Bronchoalveolar lavage specimen shows Pneumocystis jirovecii.  |

The nurse assesses the client’s understanding of the teaching provided on reducing risk of opportunistic infections.

* For each potential client statement click to specify if the statement indicates understanding or no understanding of the teaching provided.

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| Potential Statement | Understanding | No Understanding |
| “My low CD4 count shows I am at higher risk for infection.” | X |  |
| “I should avoid crowds when possible.”  | X |  |
| “To is a good practice to keep hand sanitizer in my car and my pocket.” | X |  |
| “I can stop wearing a mask when I feel better.” |  | X |
| “Washing my hands frequently is one of the best ways to prevent infection.” | X |  |
| “I need to keep using safe sex practices.”  | X |  |
| “I will schedule a test for HIV test every six months.”  |  | X |
| “I will stay current with my vaccinations.”  | X |  |
| “Eating a balanced diet and mainitaining good nutrition will help improve my immune system. “  | X |  |
| “Not taking a full course of antibiotics could put me at risk for future drug resistant infections.” | X |  |

**Scoring Rule: 0/1**

**Rationale:** Goals of education include helping the client develop new skills and behaviors to adapt to their medical condition and develop strategies to improve their health status. The correct responses reflect understanding behaviors to control infection and maintain a healthy lifestyle for a client that has an HIV infection.

**Trend**

The nurse cares for a 25-year-old male with a history of HIV admitted the the medical surgical unit with respiratory distress.

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| **Flowsheet** |
| Time | **1100**  | **1500** | **Day 2-0800** |
| Temp | 101.0 (F) 38.3 (C) | 99.0 (F) 37.22 (C) | 98.8 (F) 37.11 (C) |
| P  | 102  | 98 | 88  |
| RR | 28 | 24 | 22 |
| B/P | 138/86 | 138/86 | 134/80 |
| Pulse oximeter | 90% rm air | 93% 2L/NC | 98% 3L/NC |
| Pain | 4/10 | 2/10 | 0/10 |
| **1100**: A 25-year-old male who has been HIV positive for 3 years is admitted for a dry cough and fever. The client has fatigue, shortness of breath, and tachypnea. Breathing is slightly labored and he has a tight feeling in the chest when taking a deep breath. He has been on antiretroviral medications since his diagnosis of HIV but recently stopped taking the medication when he was laid off from his job. Symptoms not improving with over-the-counter medications X 3 days. Oxygen and antibiotics started. **1500:** Client resting in bed, sleeping at intervals. Frequent dry cough. Skin warm and dry. 0.9% normal saline IV infusing in the right arm at 75 ml/hr. **Day 2- 0800:** Client is afebrile. Lungs are slightly congested. No shortness of breath. 0.9% normal saline infusing in the right arm at 75 ml/hour. Skin is warm and dry. Client is coughing less frequently. |

The nurse reassessed the client at Day 2.

For each client findings, click to indicate if the finding reflects that client's condition has improved or is unchanged.

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| **Finding** | **Improved**  | **Unchanged**  |
| Temperature | **X** |  |
| Cough | **X** |  |
| Pulse  | **X** |  |
| Dyspnea | **X** |  |
| B/P |  | **X** |
| Pulse oximeter | **X** |  |
| Pain | **X** |  |

**Scoring Rule: 0/1**

**Rationale:** The client’s temperature, pulse, respirations were elevated and abnormal on admission. The pulse oximeter was low. On day two, the client’s temperature, pulse, repirations and pulse oximeter % are within normal limits. Coughing has decreased and the client is not short of breath. The client’s blood pressure is consistently within normal limits.