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| **Maryland Next Gen NCLEX Test Bank Project**  **September 1, 2022** | | | |
| **Case Study Topic**:  (& stand-alone trend) | Tuberculosis | **Author:** | Elizabeth Mackessy-Lloyd, DNP, RN, CNE  Hood University |

**Case Summary**

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| The nurse performs contact tracing on a client identified as a close contact of a patient with tuberculosis, and finds they are symptomatic. The nurse must develop a plan of care and teach the client about managing tuberculosis. |

**Objectives**

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| 1.  Identify s/s and incubation periods of tuberculosis 2.  Apply principles of infection control as related to tuberculosis 3.  Implement interventions to manage recovery from tuberculosis 4.  Educate client about managing tuberculosis |

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| **Case Study Link** | **Case Study QR Code** |
| <https://umaryland.az1.qualtrics.com/jfe/form/SV_d0yOoFfa5nvjBZk> |  |
| **Trend QR Code** | **Trend Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_0DSrwqlb366JHx4> |

**Case References**

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| 1. Potter Patricia, Perry Anne, Stockert Patricia, H. Fundamentals of Nursing. Available from: VitalSource Bookshelf, (10th Edition). Elsevier Health Sciences (US) |
| 1. Workman, D.I.M. L. (2021) Medical-Surgical Nursing (10th Edition). Elsevier Health Sciences (US). <https://online.vitalsource.com/books/9780323654050> |

**Case Study Question 1 of 6**

A 48-year-old female presents to the out-patient clinic in response to contact tracing for possible tuberculosis exposure.

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| **Nurses’ Notes** |
| 1000 –Reports recent extended travel to Asia with a tour group. History of coughing, mild fatigue, and loss of appetite since return, 3 weeks ago. Complains of pain in chest of 4/10 on coughing. Reports taking an over-the-counter cough medication with limited results.  VS- B/P 120/76 sitting, 118/ 72 standing, HR 78 beats per minute and regular, T 100 F (37.8 C) orally, RR 20, pulse oximeter 95% on room air. Lung sounds are diminished bilaterally with mild crackles noted in the bases. Weight 210lbs/95kg, BMI 30. | |
| **Home Medications** |
| Hydrochlorothiazide 50 mg once daily for hypertension  Atorvastatin 40 mg once daily for hyperlipidemia  Almotriptan 12.5 mg as needed for migraine headache | |

* Which 3 assessment findings are **most** concerning at this time.
* Blood pressure
* Lung sounds\*
* Temperature\*
* Heart rate
* Pain in chest\*
* Respirations
* Pulse oximeter

**Scoring Rule: 0/1**

**Rationale:** Lung sounds, elevated temperature, and complaint of chest pain are all indicative of respiratory alterations consistent with tuberculosis.

**Case Study Question 2 of 6**

A 48-year-old female presents to the out-patient clinic in response to contact tracing for possible tuberculosis exposure.

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| **Nurses’ Notes** |
| 1000 –Reports recent extended travel to Asia with a tour group. History of coughing, mild fatigue, and loss of appetite since return, 3 weeks ago. Complains of pain in chest of 4/10 on coughing. Reports taking an over-the-counter cough medication with limited results.  VS- B/P 120/76 sitting, 118/ 72 standing, HR 78 beats per minute and regular, T 100 F (37.8 C) orally, RR 20, pulse oximeter 95% on room air. Lung sounds are diminished bilaterally with mild crackles noted in the bases. Weight 210lbs/ 95kg, BMI 30. | |
| **Home Medications** |
| Hydrochlorothiazide 50 mg once daily for hypertension  Atorvastatin 40 mg once daily for hyperlipidemia  Almotriptan 12.5 mg as needed for migraine headache | |

* For each assessment finding click to specify if the finding is a risk factor or is not a risk factor for tuberculosis infection.

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| Assessment | Risk factor | Not risk factor |
| Client is overweight |  | * **\*** |
| Medication list |  | * **\*** |
| Recent travel to Asia | * **\*** |  |
| Extended travel with a group | * **\*** |  |
| Temperature | * **\*** |  |
| Blood pressure |  | * **\*** |
| Cough | * \* |  |
| Pain characteristics | * **\*** |  |

**Scoring Rule: 0/1**

**Rationale:** Asia is a high-risk area for tuberculosis, living in close quarters with others is a risk factor, as is the elevated temperature, cough, and complaints of chest pain.

**Case Study Question 3 of 6**

A 48-year-old female presents to the out-patient clinic in response to contact tracing for possible tuberculosis exposure.

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| **Nurses’ Notes** |
| 1000 –Reports recent extended travel to Asia with a tour group. History of coughing, mild fatigue, and loss of appetite since return, 3 weeks ago. Complains of pain in chest of 4/10 on coughing. Reports taking an over-the-counter cough medication with limited results.  VS- B/P 120/76 sitting, 118/ 72 standing, HR 78 beats per minute and regular, T 100 F (37.8 C) orally, RR 20, pulse oximeter 95% on room air. Lung sounds are diminished bilaterally with mild crackles noted in the bases. Weight 210lbs/ 95kg, BMI 30.  1100 –Chest Xray and bloodwork done. | |
| **Home Medications** |
| Hydrochlorothiazide 50 mg once daily for hypertension  Atorvastatin 40 mg once daily for hyperlipidemia  Almotriptan 12.5 mg as needed for migraine headache | |
| **Labs and Diagnostic studies** |
| |  |  |  | | --- | --- | --- | | **Lab Test** | **Client Result** | **Normal Range** | | WBC | 12,000 /mL | 5,000-10,000/mL | | platelets | 358,000/mL | 150,000 - 400,000/mL | | Hemoglobin | 10.8 g/dL | 11.5 - 15.5 g/dL | | Hematocrit | 35% | 36 - 48% | | A1C | 6% | < 5.7% | | Total cholesterol | 220 mg/dL | < 200 mg/dL | | AST | 30 u/L | 9-32 u/L | | ALT | 21 u/L | 19-25 u/L | | Sputum culture | pending | negative | | Chest x-ray | Moderate bilateral pleural effusion | negative | | |

The nurse reviews the labs and diagnostic reports.

* Drag the most appropriate word from the list of options to complete the following sentence.

The nurse should recognize that the client’s priority problem to address at this time is

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| **Word choices** |
| Ineffective airway clearance |
| Impaired gas exchange |
| Alteration in tissue perfusion |
| Risk for spreading infection\* |
| Pain secondary to coughing |

**Scoring Rule: 0/1**

**Rationale:** In prioritizing client needs, airway clearance is not the issue, and there is no evidence of decreased tissue perfusion. There is evidence of mildly altered gas exchange, by the borderline low pulse oximeter and auscultated lung congestion, the risk of spread of infection to others is the priority concern at this time.

**Case Study Question 4 of 6**

A 48-year-old female presents to the out-patient clinic in response to contact tracing for possible tuberculosis exposure.

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| **Nurses’ Notes** |
| 1000 –Reports recent extended travel to Asia with a tour group. History of coughing, mild fatigue, and loss of appetite since return, 3 weeks ago. Complains of pain in chest of 4/10 on coughing. Reports taking an over-the-counter cough medication with limited results.  VS- B/P 120/76 sitting, 118/ 72 standing, HR 78 beats per minute and regular, T 100 F (37.8 C) orally, RR 20, pulse oximeter 95% on room air. Lung sounds are diminished bilaterally with mild crackles noted in the bases. Weight 210lbs/ 95kg, BMI 30.  1100 –Chest X-ray and bloodwork done. | |
| **Home Medications** |
| Hydrochlorothiazide 50 mg once daily for hypertension  Atorvastatin 40 mg once daily for hyperlipidemia  Almotriptan 12.5 mg as needed for migraine headache | |
| **Labs and Diagnostic studies** |
| |  |  |  | | --- | --- | --- | | **Lab Test** | **Client Result** | **Normal Range** | | WBC | 12,000 /mL | 5,000-10,000/mL | | platelets | 358,000/mL | 150,000 - 400,000/mL | | Hemoglobin | 10.8 g/dL | 11.5 - 15.5 g/dL | | Hematocrit | 35% | 36 - 48% | | A1C | 6% | < 5.7% | | Total cholesterol | 220 mg/dL | < 200 mg/dL | | AST | 30 u/L | 9-32 u/L | | ALT | 21 u/L | 19-25 u/L | | Sputum culture | pending | negative | | Chest x-ray | Moderate bilateral pleural effusion | negative | | |
| **Orders** |
| Rifapentine 1200mg PO daily  Moxifloxacin 400mg PO daily  Isoniazid 1000mg PO daily  Pyrazinamide 2000 mg PO daily | |

The client is diagnosed with a tuberculosis infection and orders for new medications are received.

* For each potential nursing intervention, click to specify whether the intervention is appropriate or not appropriate to include in the plan of care.

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| **Potential Nursing Intervention** | **appropriate** | **not appropriate** |
| Implement a fluid restriction while taking tuberculosis medication |  | * **\*** |
| Initiate a 24-hour urine collection |  | * \* |
| Instruct client to wear a mask when around others for the next 3 weeks | * \* |  |
| Teach coughing and deep breathing techniques | * \* |  |
| Alert client’s family that she has tuberculosis |  | * \* |
| Encourage a high carbohydrate diet |  | * \* |
| Withhold opioid pain medication |  | * \* |
| Apply an N95 face mask | * \* |  |

**Scoring Rule: 0/1**

**Rationale**: An N95 face mask will protect the nurse from airborne and droplet transmission of tuberculosis, coughing and deep breathing is an important nursing intervention for this client, client should be encouraged to wear a face mask for at least the first 3 weeks of treatment. While contact tracing would be done for close contacts, the nurse would not reveal the client’s identity. Other interventions are not appropriate to this client.

**Case Study Question 5 of 6**

A 48-year-old female presents in response to contact tracing for possible tuberculosis exposure and finds she is symptomatic.

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| **Nurses’ Notes** |
| 1000 –Reports recent extended travel to Asia with a tour group. History of coughing, mild fatigue, and loss of appetite since return, 3 weeks ago. Complains of pain in chest of 4/10 on coughing. Reports taking an over-the-counter cough medication with limited results.  VS- B/P 120/76 sitting, 118/ 72 standing, HR 78 beats per minute and regular, T 100 F (37.8 C) orally, RR 20, pulse oximeter 95% on room air. Lung sounds are diminished bilaterally with mild crackles noted in the bases. Weight 210lbs/ 95kg, BMI 30  1100 –Chest X-ray and bloodwork done. | |
| **Home Medications** |
| Hydrochlorothiazide 50 mg once daily for hypertension  Atorvastatin 40 mg once daily for hyperlipidemia  Almotriptan 12.5 mg as needed for migraine headache | |
| **Labs and Diagnostic studies** |
| |  |  |  | | --- | --- | --- | | **Lab Test** | **Client Result** | **Normal Range** | | WBC | 12,000 /mL | 5,000-10,000/mL | | platelets | 358,000/mL | 150,000 - 400,000/mL | | Hemoglobin | 10.8 g/dL | 11.5 - 15.5 g/dL | | Hematocrit | 35% | 36 - 48% | | A1C | 6% | < 5.7% | | Total cholesterol | 220 mg/dL | < 200 mg/dL | | AST | 30 u/L | 9-32 u/L | | ALT | 21 u/L | 19-25 u/L | | Sputum culture | pending | negative | | Chest x-ray | Moderate bilateral pleural effusion | negative | | |
| **Orders** |
| Rifapentine 1200mg PO daily  Moxifloxacin 400mg PO daily  Isoniazid 1000mg PO daily  Pyrazinamide 2000 mg PO daily | |

* For each client teaching point, click to specify whether the information needs to be provided immediately, at the time of client follow-up, or is not indicated for this client.

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| **Client Teaching Point** | **Immediately** | **On return visit** | **Not indicated** |
| “Your cholesterol is high, and we need to discuss your diet” |  | * \* |  |
| “You will need to take the medications every day for at least 4 months” | * \* |  |  |
| “If you continue to cough at home, please save all of your sputum” |  |  | * \* |
| “You will need to have regular labs to check the effects of this medication on your liver” | * \* |  |  |
| “Try to pace your activities to preserve your energy” | * \* |  |  |
| “Tuberculosis is not spread by germs on dishes or linens” | * \* |  |  |
| “Your A1C is high and you may have diabetes” |  | * \* |  |

**Scoring Rule: 0/1**

**Rationale**: Cholesterol is high and the A1C is elevated but is in the “pre-diabetes” range. This should be addressed on the follow-up visit, when the client may be more able to receive information unrelated to presenting problem, there is no need to collect sputum at home since the antibiotic has already been started.

**Case Study Question 6 of 6**

A 48-year-old female with tuberculosis is seen in the clinic at a 4-week follow-up appointment.

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| **Nurses’ Notes** |
| 1000 –Reports recent extended travel to Asia with a tour group. History of coughing, mild fatigue, and loss of appetite since return, 3 weeks ago. Complains of pain in chest of 4/10 on coughing. Reports taking an over-the-counter cough medication with limited results.  VS- B/P 120/76 sitting, 118/ 72 standing, HR 78 beats per minute and regular, T 100 F (37.8 C) orally, RR 20, pulse oximeter 95% on room air. Lung sounds are diminished bilaterally with mild crackles noted in the bases. Weight 210lbs/ 95kg, BMI 30.  1100 –Chest X-ray and bloodwork done. | |
| **Home Medications** |
| Hydrochlorothiazide 50 mg once daily for hypertension  Atorvastatin 40 mg once daily for hyperlipidemia  Almotriptan 12.5 mg as needed for migraine headache | |
| **Labs and Diagnostic studies** |
| |  |  |  | | --- | --- | --- | | **Lab Test** | **Client Result** | **Normal Range** | | WBC | 12,000 /mL | 5,000-10,000/mL | | platelets | 358,000/mL | 150,000 - 400,000/mL | | Hemoglobin | 10.8 g/dL | 11.5 - 15.5 g/dL | | Hematocrit | 35% | 36 - 48% | | A1C | 6% | < 5.7% | | Total cholesterol | 220 mg/dL | < 200 mg/dL | | AST | 30 u/L | 9-32 u/L | | ALT | 21 u/L | 19-25 u/L | | Sputum culture | pending | negative | | Chest x-ray | Moderate bilateral pleural effusion | negative | | |
| **Orders** |
| Rifapentine 1200mg PO daily  Moxifloxacin 400mg PO daily  Isoniazid 1000mg PO daily  Pyrazinamide 2000 mg PO daily | |
| **Progress Notes** |
| Client returns for a follow-up appointment 4 weeks after being diagnosed with a tuberculosis infection. Reports missing several doses of medication. Continues to have a productive cough and is tired most days. Lung sounds clear with few scattered crackles. Rates pain with the cough at 3 of 10. VS T 98.8F (37.1C), P 80, RR 22, B/P 144 /88, pulse oximeter 95% on room air. Repeat WBC 9,000. Chest x-ray shows mild pleural effusion in the right base. | |

* Complete the following sentence by choosing from the list of options.

The nurse determines the client’s status is improving\*

deteriorating

unchanged.

The nurse should now discharge the client home

review medication teaching\*

admit the client for observation

**Scoring Rule: 0/1**

**Rationale**: Symptoms are improving, for example improved chest-Xray, lung sounds improved, temperature normal, but client is not adhering strictly to the medication schedule. The client needs medication teaching before being sent home.

**Trend**

A 48-year-old female with tuberculosis is seen in the clinic at a 4-week follow-up appointment.

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| **Nurses’ Notes** |
| April 25  Reports recent extended travel to Asia with a tour group. History of coughing, mild fatigue, and loss of appetite since return, 3 weeks ago. Complains of pain in chest of 4/10 on coughing. Reports taking an over-the-counter cough medication with limited results. VS- B/P 120/76 sitting, 118/ 72 standing, HR 78 beats per minute and regular, T 100 F (37.8 C) orally, RR 20, pulse oximeter 95% on room air. Lung sounds are diminished bilaterally with mild crackles noted in the bases. Weight 210lbs/ 95kg, BMI 30. Labs and chest Xray obtained.  May 25  Client returns for a follow-up appointment 4 weeks after being diagnosed with a tuberculosis infection. Reports missing several does of medication. Continues to have a productive cough and is tired most days. Rates pain with the cough at 3 of 10, but now has new abdominal pain.  VS T 98.8F(37.1C), P 80, RR 22, B/P 144 /88, pulse oximeter 95% on room air. Repeat WBC 9,000. | |
| **Labs and Diagnostic studies** |
| |  |  |  | | --- | --- | --- | | **Date: April 25** | | | | **Lab Test** | **Client Result** | **Normal Range** | | WBC | 12,000 /mL | 5,000-10,000/mL | | Platelets | 358,000/mL | 150,000 - 400,000/mL | | Hemoglobin | 10.8 g/dL | 11.5 - 15.5 g/dL | | Hematocrit | 35% | 36 - 48% | | A1C | 6% | < 5.7% | | Total cholesterol | 220 mg/dL | < 200 mg/dL | | AST | 30 u/L | 9-32 u/L | | ALT | 21 u/L | 19-25 u/L | | Sputum culture | pending | negative | | Chest x-ray | Moderate bilateral pleural effusion | negative | | |
| **Orders** |
| April 25   * Rifapentine 1200mg PO daily * Moxifloxacin 400mg PO daily * Isoniazid 1000mg PO daily * Pyrazinamide 2000 mg PO daily | |

* For each finding, click to specify if the finding indicates the client’s status has improved, declined, or is unchanged.

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| **Finding** | **Improved** | **Declined** | **Unchanged** |
| Missing several doses of medication |  | * \* |  |
| Pulse oximeter |  |  | * \* |
| Productive cough |  |  | * \* |
| Blood pressure |  | * \* |  |
| Temperature | * \* |  |  |
| Fatigue |  |  | * \* |
| WBC | * \* |  |  |
| Pain characteristics |  | * \* |  |

**Scoring Rule: 0/1**

**Rationale:** Elevated blood pressure and missed doses of medication are cause for further assessment and patient education. Abdominal pain could be a sign of a medication side effect off liver involvement Pulse oximeter has increased on room air, temperature is normal, and WBC count is within normal limits. Productive cough and fatigue are unchanged from initial visit.

Rationales: As evidenced by most recent follow-up, the client’s priority problem is knowledge deficit. It will be important for the nurse to review teaching regarding medication action and the need to take each dose as prescribed. A daily log will be a visual reminder for client to take medication on schedule, and will help her assume accountability for self-care.