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| **Maryland Next Gen NCLEX Test Bank Project****September 1. 2022** |
| **Case Study Topic**: (& Stand-alone trend) | Urinary tract infection in older adult | **Author:** | Mary DiBartolo, PhD, RN-BC, CNE, FGSA, FAANSalisbury University |

**Case Summary**

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| A 82-year-old female client is admitted to medical-surgical unit with dehydration and new onset of incontinence (pink-tinged urine) and mild confusion. Learner must recognize signs and symptoms of a UTI, plan client care, and evaluate the effectiveness of interventions. |

**Objectives**

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| 1. Identify physical and laboratory findings which indicate urinary tract infection, including atypical presentation in an older adult client2. Recognize signs and symptoms of complications related to dehydration and urinary tract infection3. Implement measures to manage the client’s condition, prevent complications and promote recovery4. Plan care and use precautions to prevent injury and complications of UTI in the older client5. Delineate key educational points to be addressed with the client and family upon discharge6. Evaluate and document client responses to interventions |

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| **Case Study Link** | **Case Study QR Code** |
| <https://umaryland.az1.qualtrics.com/jfe/form/SV_6htqQMQXhOoTquO> |  |
| **Trend QR Code** | **Trend Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_emoC2IR3Ax8PNJQ> |

**Case References**

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| 1. Ignatavicius et al. (2021). *Medical-Surgical Nursing: Concepts for Interprofessional Collaborative Care*
2. Halter, M. J. (2022). *Varcarolis’ Foundations of Psychiatric-Mental Health Nursing: A Clinical Approach*
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**Case Study Question 1 of 6**

The nurse is caring for a 82-year-old female admitted to the medical unit with dehydration and new onset of urinary incontinence and mild confusion.

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| **Nurses’ Notes** |
| 0930: Admitted from the emergency room with dehydration and new onset of incontinence and mild confusion. Recently widowed and now living with daughter and son-in-law. Daughter reports declining PO fluid intake in past week and now client has foul-smelling, pink-tinged urine with incontinence and low-grade fever; no reports of pain or burning but noted to be restless with new onset of mild confusion. Upon admission to medical unit, alert and oriented to person only but pleasant and cooperative. Temperature 101.8 F (38.7 C), other vital signs stable. Skin dry with poor turgor; neck veins flat. Offered bedpan frequently and voiding small amounts of urine—concentrated, pinkish and foul-smelling; does not report burning or pain. Urine and blood cultures obtained; results pending. Daughter reports Sulfa allergy.  |
| **Vital Signs**  |
| Time | 1000 |
| Temp (F/C) | 101.8/F 38.7 C |
| P  | 96 |
| RR | 18 |
| B/P | 105/52 |
| Pulse oximeter  | 97 (room air) |
| **Laboratory Report** |
| Lab | Results | Reference range  |
| BUN | 27 | 10-20 mg/dL |
| Creatinine (serum) | 1.3  | 0.9 to 1.4 mg/dL |
| WBC | 11.1 | 4.5 – 10.5 x 103 cells/mm3 |
| Potassium (serum) | 3.6  | 3.5 to 5 mEq/L |
| Sodium (serum) | 143 | 135 to 145 mEq/L |
| Urine analysis |  4+ bacteriuria  WBC >10,  + hematuria  | Bacteriuria* 1. /HPF WBC

 - Hematuria |
|  Lactate | 1.2 | .6 – 2.2 mmol/L |

* Drag the 4 findings that need **immediate f**ollow-up to the box on the right.

|  |  |
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| **Client Findings** | **Top 4 Findings** |
| Oxygen saturation  |  |
| Skin turgor\* |  |
| Temperature\* |  |
| Incontinence  |  |
|  Foul smelling urine\* |  |
| Serum sodium |  |
| Creatinine |  |
| WBC\* |  |
| Serum potassium |  |
| Serum lactate  |  |

**Scoring Rule: 0/1**

**Rationale**: The poor skin turgor is indicative of hypovolemia/dehydration (poor PO fluid intake in past week per daughter) . The temperature and slightly elevated WBC along with new incontinence of concentrated, pink-tinged urine and new onset of mild confusion indicate urinary tract infection. Client does not report pain/burning with urination but these overall findings are consistent with atypical presentation of UTI in older adults.

**Case Study Question 2 of 6**

The nurse is caring for a 82-year-old female admitted to the medical unit with dehydration and new onset of urinary incontinence and mild confusion.

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| **Nurses’ Notes** |
| 0930: Admitted from the emergency room with dehydration and new onset of incontinence and mild confusion. Recently widowed and now living with daughter and son-in-law. Daughter reports declining PO fluid intake in past week and now client has foul-smelling, pink-tinged urine with incontinence and low-grade fever; no reports of pain or burning but noted to be restless with new onset of mild confusion. Upon admission to medical unit, alert and oriented to person only but pleasant and cooperative. Temperature 101.8 F (38.7 C), other vital signs stable. Skin dry with poor turgor; neck veins flat. Offered bedpan frequently and voiding small amounts of urine—concentrated, pinkish and foul-smelling; does not report burning or pain. Urine and blood cultures obtained; results pending. Daughter reports Sulfa allergy.  |
| **Vital Signs**  |
| Time | 1000 |
| Temp (F/C) | 101.8/F 38.7 C |
| P  | 96 |
| RR | 18 |
| B/P | 105/52 |
| Pulse oximeter  | 97 (room air) |
| **Laboratory Report** |
| Lab | Results | Reference range  |
| BUN | 27 | 10-20 mg/dL |
| Creatinine (serum) | 1.3  | 0.9 to 1.4 mg/dL |
| WBC | 11.1 | 4.5 – 10.5 x 103 cells/mm3 |
| Potassium (serum) | 3.6  | 3.5 to 5 mEq/L |
| Sodium (serum) | 143 | 135 to 145 mEq/L |
| Urine analysis |  4+ bacteriuria  WBC >10,  + hematuria  | Bacteriuria* 1. /HPF WBC

 - Hematuria |
|  Lactate | 1.2 | .6 – 2.2 mmol/L |

* For each finding, click to indicate if the finding is consistent with the conditions of dehydration or urinary tract infection. Each finding may support more than one condition.

|  |  |  |
| --- | --- | --- |
| Factor/findings | Dehydration  | Urinary Tract Infection  |
| Increased WBC |  | * \*
 |
| Flat neck veins | * \*
 |  |
| Recent poor PO intake | * \*
 | * \*
 |
| Elevated BUN | * \*
 |  |
| New onset incontinence |  | * \*
 |
| New onset mild confusion |  | * \*
 |
| Concentrated urine | * \*
 | * \*
 |

Note: Each column must have at least 1 response option selected.

**Scoring Rule: +/-**

**Rationale:** This older adult client is experiencing many symptoms of dehydration and urinary tract infection; some risk factors/findings are linked to the development of both conditions while other factors/findings are indicative of one or the other. New onset of mild confusion and incontinence are examples of atypical presentation in lieu of other typical signs of pain/burning on urination.

**Case Study Question 3 of 6**

The nurse is caring for a 82-year-old female admitted to the medical unit with dehydration and new onset of urinary incontinence and mild confusion.

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| **Nurses’ Notes** |
| 0930: Admitted from the emergency room with dehydration and new onset of incontinence and mild confusion. Recently widowed and now living with daughter and son-in-law. Daughter reports declining PO fluid intake in past week and now client has foul-smelling, pink-tinged urine with incontinence and low-grade fever; no reports of pain or burning but noted to be restless with new onset of mild confusion. Upon admission to medical unit, alert and oriented to person only but pleasant and cooperative. Temperature 101.8 F (38.7 C), other vital signs stable. Skin dry with poor turgor; neck veins flat. Offered bedpan frequently and voiding small amounts of urine—concentrated, pinkish and foul-smelling; does not report burning or pain. Urine and blood cultures obtained; results pending. Daughter reports Sulfa allergy.  |
| **Vital Signs**  |
| Time | 1000 |
| Temp (F/C) | 101.8/F 38.7 C |
| P  | 96 |
| RR | 18 |
| B/P | 105/52 |
| Pulse oximeter  | 97 (room air) |
| **Laboratory Report** |
| Lab | Results | Reference range  |
| BUN | 27 | 10-20 mg/dL |
| Creatinine (serum) | 1.3  | 0.9 to 1.4 mg/dL |
| WBC | 11.1 | 4.5 – 10.5 x 103 cells/mm3 |
| Potassium (serum) | 3.6  | 3.5 to 5 mEq/L |
| Sodium (serum) | 143 | 135 to 145 mEq/L |
| Urine analysis |  4+ bacteriuria  WBC >10,  + hematuria  | Bacteriuria* 1. /HPF WBC

 - Hematuria |
|  Lactate | 1.2 | .6 – 2.2 mmol/L |

* Which problem should the nurse address first?
* Confusion
* Dehydration
* Urinary tract infection\*
* Incontinence

**Scoring Rule: +/-**

Rationale: The client is experiencing a urinary tract infection as evidenced by elevated temperature, increased WBC and bacteriuria with foul-smelling, blood-tinged urine. New onset of incontinence and restlessness/acute confusion can be atypical symptoms and should subside once UTI addressed. Dehydration, while a contributing factor, is slightly lower priority. The infection must be addressed aggressively as older clients, due to atypical presentation/delay in diagnosis, are at high risk to develop sepsis/septic shock (urosepsis).

**Case Study Question 4 of 6**

The nurse is caring for a 82-year-old female admitted to medical unit with dehydration and new onset of urinary incontinence and mild confusion.

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| **Nurses’ Notes** |
| 0930: Admitted from the emergency room with dehydration and new onset of incontinence and mild confusion. Recently widowed and now living with daughter and son-in-law. Daughter reports declining PO fluid intake in past week and now client has foul-smelling, pink-tinged urine with incontinence and low-grade fever; no reports of pain or burning but noted to be restless with new onset of mild confusion. Upon admission to medical unit, alert and oriented to person only but pleasant and cooperative. Temperature 101.8 F (38.7 C), other vital signs stable. Skin dry with poor turgor; neck veins flat. Offered bedpan frequently and voiding small amounts of urine—concentrated, pinkish and foul-smelling; does not report burning or pain. Urine and blood cultures obtained; results pending. Daughter reports Sulfa allergy.  |
| **Vital Signs**  |
| Time | 1000 |
| Temp (F/C) | 101.8/F 38.7 C |
| P  | 96 |
| RR | 18 |
| B/P | 105/52 |
| Pulse oximeter  | 97 (room air) |
| **Laboratory Report** |
| Lab | Results | Reference range  |
| BUN | 27 | 10-20 mg/dL |
| Creatinine (serum) | 1.3  | 0.9 to 1.4 mg/dL |
| WBC | 11.1 | 4.5 – 10.5 x 103 cells/mm3 |
| Potassium (serum) | 3.6  | 3.5 to 5 mEq/L |
| Sodium (serum) | 143 | 135 to 145 mEq/L |
| Urine analysis |  4+ bacteriuria  WBC >10,  + hematuria  | Bacteriuria* 1. /HPF WBC

 - Hematuria |
|  Lactate | 1.2 | .6 – 2.2 mmol/L |

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| **Orders** |
| Administer 500 mls normal saline IV now then normal saline at 75 ml/hourAdminister ciprofloxacin 200 mg IV now and every 12 hoursAdminister acetaminophen very 4 hours prn for temperature greater than 101 F /38.3 C |

The nurse reviews the provider’s orders and assessment data.

* Which of the following interventions should the nurse also include in the plan of care? Select all that apply.
* Strict bedrest
* Encourage PO fluids\*
* Document intake & output\*
* Monitor urinary color, character and odor\*
* Request order for Foley catheter if incontinent
* Apply prn oxygen at 2 L/min per nasal cannula

**Scoring Rule: +/-**

**Rationale:** Given the client’s main problems are dehydration and UTI, the normal saline fluid challenge, antibiotic, acetaminophen are appropriate orders. The nurse would also monitor urine color/character for improvement As Foley catheters can be a source/risk for UTI, this would also be contraindicated in this case. Pulse oximetry is greater than 95 on room air, therefore no prn oxygen is needed.

**Case Study Question 5 of 6**

The nurse is caring for a 82-year-old female admitted to medical unit with dehydration and new onset of urinary incontinence and mild confusion.

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| **Nurses’ Notes** |
| 0930: Admitted from the emergency room with dehydration and new onset of incontinence and mild confusion. Recently widowed and now living with daughter and son-in-law. Daughter reports declining PO fluid intake in past week and now client has foul-smelling, pink-tinged urine with incontinence and low-grade fever; no reports of pain or burning but noted to be restless with new onset of mild confusion. Upon admission to medical unit, alert and oriented to person only but pleasant and cooperative. Temperature 101.8 F (38.7 C), other vital signs stable. Skin dry with poor turgor; neck veins flat. Offered bedpan frequently and voiding small amounts of urine—concentrated, pinkish and foul-smelling; does not report burning or pain. Urine and blood cultures obtained; results pending. Daughter reports Sulfa allergy.  |
| **Vital Signs**  |
| Time | 1000 |
| Temp (F/C) | 101.8/F 38.7 C |
| P  | 96 |
| RR | 18 |
| B/P | 105/52 |
| Pulse oximeter  | 97 (room air) |
| **Laboratory Report** |
| Lab | Results | Reference range  |
| BUN | 27 | 10-20 mg/dL |
| Creatinine (serum) | 1.3  | 0.9 to 1.4 mg/dL |
| WBC | 11.1 | 4.5 – 10.5 x 103 cells/mm3 |
| Potassium (serum) | 3.6  | 3.5 to 5 mEq/L |
| Sodium (serum) | 143 | 135 to 145 mEq/L |
| Urine analysis |  4+ bacteriuria  WBC >10,  + hematuria  | Bacteriuria* 1. /HPF WBC

 - Hematuria |
|  Lactate | 1.2 | .6 – 2.2 mmol/L |

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| **Orders** |
| Administer 500 mls normal saline IV now then normal saline at 75 ml/hourAdminister ciprofloxacin 200 mg IV now and every 12 hoursAdminister acetaminophen very 4 hours prn for temperature greater than 101 F /38.3 C |

* What action should the nurse take before administering the prescribed antibiotic?

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| * Document BP after sitting and standing
 |
| * Check pulse oximetry
 |
| * Review medication allergies\*
 |
| * Monitor hourly urine output
 |

**Scoring Rule: 0/1**

**Rationale:** Before administering the prescribed antibiotic, the nurse should check for any medication allergies.The daughter has noted sulfa allergy and the nurse should also rule out any allergies to penicillin or other antibiotics ordered to treat UTI.

**Case Study Question 6 of 6**

The nurse is caring for a 82-year-old female admitted to medical unit with dehydration and new onset of urinary incontinence and mild confusion.

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| **Nurses’ Notes** |
| 0930: Admitted from the emergency room with dehydration and new onset of incontinence and mild confusion. Recently widowed and now living with daughter and son-in-law. Daughter reports declining PO fluid intake in past week and now client has foul-smelling, pink-tinged urine with incontinence and low-grade fever; no reports of pain or burning but noted to be restless with new onset of mild confusion. Upon admission to medical unit, alert and oriented to person only but pleasant and cooperative. Temperature 101.8 F (38.7 C), other vital signs stable. Skin dry with poor turgor; neck veins flat. Offered bedpan frequently and voiding small amounts of urine—concentrated, pinkish and foul-smelling; does not report burning or pain. Urine and blood cultures obtained; results pending. Daughter reports Sulfa allergy. 1000: 1st dose of IV ciprofloxacin and IV normal saline bolus given. Acetaminophen 650 mg PO administered for fever.1400: Vital signs stable, temperature down. IV NS at 75 cc/hr to left peripheral line. Resting quietly. Fluids encouraged and offered bedpan frequently and voiding slightly more dilute yellow cloudy urine, 450 mls since fluid bolus. **DAY 2** 0800: Vital signs stable; afebrile. Alert andoriented to person/place/situation. Ate 50% of breakfast; refusing most PO fluids. IV normal saline infusing at 75 mls/hr. Continent and voiding clear yellow urine. Family with client since last evening.  |
| **Vital Signs**  |
| Time | 1000 | 1400 | 1800 | 2200 | DAY 2 0800 |
| Temp (F/C) | 101.8/F 38.7 C | 100.2 / 37.8 | 99.8 / 37.6 | 98.8 / 37.1 | 98.4 /36.8 |
| P  | 96 | 85 | 84 | 82 | 74 |
| RR | 18 | 16 | 20 | 18 | 16 |
| B/P | 105/52 | 134/64 | 138/68 | 136/64 | 134/66 |
| Pulse oximeter  | 97 (room air) | 97 (room air) | 96 (room air) | 97 (room air)  | 97 (room air) |
| **Laboratory Report** |
| Lab | Results Day 1 | Day 2 | Reference range  |
| BUN | 27 | 19 | 10-20 mg/dL |
| Creatinine (serum) | 1.3  | 1.3 | 0.9 to 1.4 mg/dL |
| WBC | 11.1 | 9.5 | 4.5 – 10.5 x 103 cells/mm3 |
| Potassium (serum) | 3.6  | 3.7 | 3.5 to 5 mEq/L |
| Sodium (serum) | 143 | 140 | 135 to 145 mEq/L |
| Urine analysis |  4+ bacteriuria; WBC >10, + hematuria  |  | - Bacteriuria* 1. /HPF WBC

 - Hematuria |
|  Lactate | 1.2 |  | .6 – 2.2 mmol/L |

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| **Orders** |
| Administer 500 mls normal saline IV now then normal saline at 75 ml/hourAdminister ciprofloxacin 200 mg IV now and every 12 hoursAdminister acetaminophen very 4 hours prn for temperature greater than 101 F /38.3 C |

The nurse resassesses the client the next morning.

For each finding click to indicated if the finding indicates that the client’s condition has improved, declined or is unchanged.

|  |  |  |  |
| --- | --- | --- | --- |
| Finding | Improved | Declined | Unchanged |
| Urinary color/character | \* |  |  |
| Confusion | \* |  |  |
| PO fluid intake |  | \* |  |
| Pulse oximeter |  |  | \* |
| Fever | \* |  |  |
| WBC | \* |  |  |
| Continence | \* |  |  |
| BUN | \* |  |  |
| Creatinine |  |  | \* |

**Scoring Rule: 0/1**

**Rationale:** Indicators that are improved due to appropriate orders/interventions are urinary color/character, confusion, fever, WBC, continence and BUN. Creatinine was normal/unchanged as is pulse oximeter. PO fluid intake has declined (refusing most PO liquids) and fluid volume status maintained primarily with IV fluids.

**Trend**

The nurse is caring for a 82-year-old female admitted to medical unit with a urinary tract infection.

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| **Nurses’ Notes** |
| 0930: Admitted from the emergency room with dehydration and new onset of incontinence and mild confusion. Recently widowed and now living with daughter and son-in-law. Daughter reports declining PO fluid intake in past week and now client has foul-smelling, pink-tinged urine with incontinence and low-grade fever; no reports of pain or burning but noted to be restless with new onset of mild confusion. Upon admission to medical unit, alert and oriented to person only but pleasant and cooperative. T101.8/F 38.7 C, P 96, RR18, BP105/52. Pulse oximeter 97% on room air. Skin dry with poor turgor; neck veins flat. Offered bedpan frequently and voiding small amounts of urine—concentrated, pinkish and foul-smelling; does not report burning or pain. Urine and blood cultures obtained; results pending. Daughter reports Sulfa allergy. 1000: 1st dose of IV ciprofloxacin and IV normal saline bolus given. Acetaminophen 650 mg PO administered for fever. 1400: T 100.2 / 37.8, P 85, RR16, BP 134/64. Pulse oximeter 97% on room air. IV NS at 50 cc/hr to left peripheral line. Resting quietly. Fluids ecouraged and offered bedpan frequently and voiding slightly more dilute yellow cloudy urine, 450 mls since fluid bolus. 1800: Called to room by Unlicesensed Assistive Personnel. Client suddenly restless, disoriented with fluctuating level of consciousness. Pushing tray away and fidgeting with IV line and stated “I want to get out of here” and insisting on getting out of bed. Difficult to reorient to name/place/situation. T 99.8 / 37.6, P 80, RR20, BP 138/69. Pulse oximeter 97% on room air. |

* Drag 1 condition and 1 finding to fill in the blanks of the following sentence.

At 1800, the client is most likely displaying symptoms of

as evidenced by

|  |  |  |
| --- | --- | --- |
| Conditions |  | Client Findings |
| Hypovolemic shock |  | Heart rate decrease |
| Respiratory distress syndrome |  | Decrease in serum creatinine |
| Delirium\* |  | Urinary color/character |
| Chronic renal failure |  | Disorientation\*  |
| End-stage Alzheimer’s  |  | Respiratory status |

**Scoring Rule: Rationale**

**Rationale:** Since admission, receiving treatment for UTI and fluids for dehydration these conditions improving. However, given age, current infection, and unfamiliar hospital environment, client now displaying symptoms of acute confusion or delirium. This is characterized by sudden changes in neurologic status, including fluctuating level of consciousness, increased confusion, worsening disorientation and restlessness/agitation.