



Jean Kelly, 82 years old

## Urinary Tract Infection/Urosepsis

Primary Concept
Infection
Interrelated Concepts (In order of emphasis)
1. Perfusion
2. Fluid and Electrolyte Balance
3. Thermoregulation
4. Clinical Judgment
5. Patient Education
6. Communication

## Sepsis History

### of Present Problem:

Jean Kelly is an 82-year-old woman who has been feeling more fatigued the last three days and has had a fever the last twenty-four hours. She reports a painful, burning sensation when she urinates as well as frequency of urination the last week. Her daughter became concerned and brought her to the emergency department (ED) when she did not know what day it was. She is mentally alert with no history of confusion. While taking her bath today, she was weak and unable to get out of the tub and used her personal life alert button to call for medical assistance.

### Personal/Social History:

Jean lives independently in a senior apartment retirement community. She is widowed and has two daughters who are active and involved in her life.

*What data from the histories are important and RELEVANT and have clinical significance for the nurse?*

RELEVANT Data from Present Problem:	Clinical Significance:
<ul style="list-style-type: none"> <li>- Painful, burning sensation upon urination</li> <li>- Weakness after bath</li> <li>- Unaware of what day it is</li> </ul>	<p><i>Patient is experiencing symptoms of urinary tract infection.</i></p>
RELEVANT Data from Social History:	Clinical Significance:
<ul style="list-style-type: none"> <li>- Patient lives alone</li> </ul>	<p><i>Patient is 82-years-old and has to take care of herself independently.</i></p>

*What is the RELATIONSHIP of your patient's past medical history (PMH) and current meds?*

*(Which medications treat which conditions? Draw lines to connect)*

PMH:	Home Meds:	Pharm. Classification:	Expected Outcome:
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Diabetes type 2 Hyperlipidemia Hypertension (HTN) Gout	<ol style="list-style-type: none"> <li>Allopurinol 100 mg PO bid (<b>Gout</b>)</li> <li>ASA 81 mg PO daily (<b>HTN</b>)</li> <li>Pioglitazone 15 mg PO daily (<b>DM</b>)</li> <li>Simvastatin 20 mg PO daily (<b>hyperlipidemia</b>)</li> <li>Metoprolol 25 mg PO bid (<b>DM</b>)</li> <li>Lisinopril 10 mg PO daily (<b>HTN</b>)</li> <li>Furosemide 20 mg PO daily (<b>HTN</b>)</li> <li>Potassium chloride 20 mEq PO daily (<b>GOUT</b>)</li> </ol>	<ol style="list-style-type: none"> <li>Antigout agent</li> <li>Antiplatelet agent</li> <li>Antidiabetic</li> <li>Lipid-lowering agents</li> <li>Beta-blocker</li> <li>ACE inhibitors</li> <li>Loop diuretic</li> <li>Electrolyte supplement</li> </ol>	To control the patient's DM type 2, hyperlipidemia, hypertension, and gout.
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One disease process often influences the development of other illnesses. Based on your knowledge of pathophysiology, (if applicable), which disease likely developed **FIRST** that then initiated a “domino effect” in their life?

- Circle what PMH problem started **FIRST**
- Underline what PMH problem(s) **FOLLOWED** as dominoes

### Patient Care Begins:

Current VS:	P-Q-R-S-T Pain Assessment (5th VS):	
<b>T:</b> 101.8 F/38.8 C (oral)	<b>Provoking/Palliative:</b>	Nothing/Nothing
<b>P:</b> 110 (regular)	<b>Quality:</b>	Ache
<b>R:</b> 24 (regular)	<b>Region/Radiation:</b>	Right flank
<b>BP:</b> 102/50	<b>Severity:</b>	5/10
<b>O2 sat:</b> 98% room air	<b>Timing:</b>	Continuous

*The nurse recognizes the need to validate his/her concern of fluid volume deficit and performs a set of orthostatic VS and obtains the following:*

Position:	HR:	BP:
Supine	110	102/50
Standing	132	92/42

*What VS data are RELEVANT and must be recognized as clinically significant by the nurse?*

RELEVANT VS Data:	Clinical Significance:
<ul style="list-style-type: none"> <li>- High HR</li> <li>- Fever present</li> <li>- Hypotension</li> <li>- Orthostatic hypotension</li> </ul>	Infection is present

<b>Current Assessment:</b>	
GENERAL APPEARANCE:	Resting comfortably, appears in no acute distress
RESP:	Breath sounds clear with equal aeration bilaterally, nonlabored respiratory effort
CARDIAC:	Pink, warm and dry, no edema, heart sounds regular-S1S2, pulses strong, equal with palpation at radial/pedal/post-tibial landmarks
NEURO:	Alert and oriented x2-is not consistently oriented to date and place, c/o dizziness when she sits up
GI:	Abdomen soft/nontender, bowel sounds audible per auscultation in all four quadrants
GU:	Dysuria and frequency of urination persists, right flank tenderness to gentle palpation
SKIN:	Skin integrity intact, lips dry, oral mucosa tacky dry

***What assessment data are RELEVANT and must be recognized as clinically significant by the nurse?***

<b>RELEVANT Assessment Data:</b>	<b>Clinical Significance:</b>
<ul style="list-style-type: none"> <li>- Not consistently oriented</li> <li>- Dizziness upon standing</li> <li>- Dysuria</li> <li>- Urinary frequency</li> <li>- Right flank tenderness</li> <li>- Oral mucosa/lips dry</li> </ul>	<p><i>Patient is dehydrated and shows findings of a urinary tract infection as evidence by dysuria, urinary frequency, and right flank tenderness.</i></p>

**Radiology Reports: Chest x-ray**

***What diagnostic results are RELEVANT and must be recognized as clinically significant by the nurse?***

<b>RELEVANT Results:</b>	<b>Clinical Significance:</b>
No infiltrates or other abnormalities. No changes from last previous	<i>No damage to lungs or heart during this infection.</i>

**Lab Results:**

***What lab results are RELEVANT and must be recognized as clinically significant by the nurse?***

<b>Complete Blood Count (CBC):</b>	<b>Current:</b>	<b>High/Low/WNL?</b>	<b>Previous:</b>
WBC (4.5-11.0 mm <sup>3</sup> )	13.2	High	8.8
Hgb (12-16 g/dL)	14.4	WNL	14.6
Platelets (150-450x 10 <sup>3</sup> /μl)	246	WNL	140

Neutrophil % (42-72)	93	High	68
Band forms (3-5%)	2	Low	1

***What lab results are RELEVANT and must be recognized as clinically significant by the nurse?***

<b>RELEVANT Lab(s):</b>	<b>Clinical Significance:</b>	<b>TREND: Improve/Worsening/Stable:</b>
<ol style="list-style-type: none"> <li>1. <i>WBC</i></li> <li>2. <i>Neutrophil</i></li> <li>3. <i>Bands</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Infection present</li> <li>2. Infection present</li> <li>3. Infection present</li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Worsening</i></li> <li>2. <i>Worsening</i></li> <li>3. <i>Worsening</i></li> </ol>

<b>Basic Metabolic Panel (BMP):</b>	<b>Current:</b>	<b>High/Low/WNL?</b>	<b>Previous:</b>
Sodium (135-145 mEq/L)	140	WNL	138
Potassium (3.5-5.0 mEq/L)	3.8	WNL	3.9
Glucose (70-110 mg/dL)	184	High	128
BUN (7 - 25 mg/dl)	35	High	14
Creatinine (0.6-1.2 mg/dL)	1.5	High	1.1

<b>RELEVANT Lab(s):</b>	<b>Clinical Significance:</b>	<b>TREND: Improve/Worsening/Stable:</b>
<ol style="list-style-type: none"> <li>1. Glucose</li> <li>2. BUN</li> <li>3. Creatinine</li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Increased, presenting an issue</i></li> <li>2. <i>Increased due to dehydration</i></li> <li>3. <i>Increased due to dehydration</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Worsening</li> <li>2. Worsening</li> <li>3. Worsening</li> </ol>

<b>Misc. Labs:</b>	<b>Current:</b>	<b>High/Low/WNL?</b>	<b>Previous:</b>
Magnesium (1.6-2.0 mEq/L)	1.8	WNL	1.9
Lactate (0.5-2.2 mmol/L)	3.2	High	n/a

<b>RELEVANT Lab(s):</b>	<b>Clinical Significance:</b>	<b>TREND: Improve/Worsening/Stable:</b>
<ol style="list-style-type: none"> <li>1. Lactate</li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Indicating severe infection or sepsis</i></li> </ol>	<ol style="list-style-type: none"> <li>1. <i>N/A</i></li> </ol>

<b>Urine Analysis (UA):</b>	<b>Current:</b>	<b>ABNL/WNL?</b>	<b>Previous:</b>
Color (yellow)	Yellow	WNL	Yellow
Clarity (clear)	Cloudy	ABNL	Clear
Specific Gravity (1.015-1.030)	1.032	ABNL	1.010
Protein (neg)	2+	ABNL	1+

Glucose (neg)	Neg	NML	Neg
Ketones (neg)	Neg	NML	Neg
Bilirubin (neg)	Neg	NML	Neg
Blood (neg)	Neg	NML	Neg
Nitrite (neg)	Pos	ABNL	Pos
LET (Leukocyte Esterase) (neg)	Pos	ABNL	Pos
<b>MICRO:</b>			
RBC's (<5)	1	NML	0
WBC's (<5)	>100	NML	3
Bacteria (neg)	LARGE	ABNL	Few
Epithelial (neg)	Few	ABNL	Few

<b>RELEVANT Lab(s):</b>	<b>Clinical Significance:</b>	<b>TREND: Improve/Worsening/Stable:</b>
<ol style="list-style-type: none"> <li>1. Clarity</li> <li>2. Specific gravity</li> <li>3. Protein</li> <li>4. Nitrite</li> <li>5. Leukocyte esterase</li> <li>6. Bacteria</li> <li>7. Epithelial</li> </ol>	<ol style="list-style-type: none"> <li>1. Indicating abnormal substances in urine</li> <li>2. Indicating infection</li> <li>3. Indication infection</li> <li>4. Presence of infection</li> <li>5. Presence of infection</li> <li>6. Bacteria in the body caused the infection</li> <li>7. Presence of infection</li> </ol>	<ol style="list-style-type: none"> <li>1. Worsening</li> <li>2. Worsening</li> <li>3. Worsening</li> <li>4. Worsening</li> <li>5. Worsening</li> <li>6. Worsening</li> <li>7. Worsening</li> </ol>

### Lab Planning: Creating a Plan of Care with a PRIORITY Lab:

<b>Lab:</b>	<b>Normal Value:</b>	<b>Clinical Significance:</b>	<b>Nursing Assessments/Interventions Required:</b>
<b>Lactate</b>  Value: <b>3.2</b>	<b>0.5-1.0</b>  Critical Value: Yes, more than <b>2.0</b>	Sign of infection or sepsis	IV Fluids, antibiotics

<b>Lab:</b>	<b>Normal Value:</b>	<b>Clinical Significance:</b>	<b>Nursing Assessments/Interventions Required:</b>
<b>Creatinine</b>  Value: <b>1.5</b>	<b>0.6-1.2</b>  Critical Value: Yes, more than <b>1.3</b>	Sign of severe dehydration	IV Fluids

## Clinical Reasoning Begins...

1. *What is the primary problem that your patient is most likely presenting?*

Urosepsis

2. *What is the underlying cause/pathophysiology of this primary problem?*

Urinary tract infection

## Collaborative Care: Medical Management

Care Provider Orders:	Rationale:	Expected Outcome:
Establish peripheral IV 0.9% NS 1000 mL IV bolus  Acetaminophen 650 mg  Ceftriaxone 1g IVPB...after blood/urine cultures obtained  Morphine 2 mg IV push every 2 hours prn-pain	<i>Essential to start the patient on fluids to treat the dehydration. Morphine and acetaminophen to treat her pain scale of 5 and flank tenderness. Ceftriaxone to treat infection.</i>	Patient's pain scale rating decreases and she responds well to the fluid bolus and antibiotic IV piggyback.

## PRIORITY Setting: Which Orders Do You Implement First and Why?

Care Provider Orders:	Order of Priority:	Rationale:
<ul style="list-style-type: none"> <li>• Establish peripheral IV</li> <li>• 0.9% NS 1000 mL IV bolus</li> <li>• Acetaminophen 650 mg</li> <li>• Ceftriaxone 1g IVPB...after blood/urine cultures obtained</li> <li>• Morphine 2 mg IV push every 2 hours prn-pain</li> </ul>	<ol style="list-style-type: none"> <li>1. Establish IV</li> <li>2. IV bolus</li> <li>3. Acetaminophen administration</li> <li>4. Morphine administration</li> <li>5. Ceftriaxone administration</li> </ol>	<i>Important to help the patient with her pain and then start the antibiotics.</i>

## Medication Dosage Calculation:

Medication/Dose:	Mechanism of Action:	Volume/time frame to Safely Administer:	Nursing Assessment/Considerations:
<b>Ceftriaxone 1g IVPB</b>	Selectively inhibits bacterial cells by binding to transpeptidase and forming a bacterial cell wall.	<b>50 ml</b>  Hourly rate IVPB:	<i>May cause diarrhea</i> <i>Assess IV site</i>

### Collaborative Care: Nursing

3. *What nursing priority will guide your plan of care? (if more than one-list in order of PRIORITY)*

Manage dehydration, stop the spread of infection

4. *What interventions will you initiate based on this priority?*

Nursing Interventions:	Rationale:	Expected Outcome:
IV Fluid bolus Strict I&O Antibiotic treatment	Hydrate patient and kil infection	Patient's creatinine and lactate decrease to normal levels.

5. *What body system(s) will you most thoroughly assess based on the primary/priority concern?*

*Urinary, neurological, integumentary*

6. *What is the worst possible/most likely complication to anticipate?*

*Spread of infection*

7. *What nursing assessment(s) will you need to initiate to identify this complication EARLY if it develops?*

LOC assessment, CBC assessment

**8. What nursing interventions will you initiate if this complication develops?**

Assess lab values, follow the facilities sepsis protocol

**9. What psychosocial needs will this patient and/or family likely have that will need to be addressed?**

Keep patient and family updated all the time on reports/what is going on

**10. How can the nurse address these psychosocial needs?**

By obtaining a trusting and professional nurse-client/family relationship

## Evaluation:

Evaluate the response of your patient to nursing and medical interventions during your shift. All physician orders have been implemented that are listed under medical management.

### Two Hours Later...

Current VS:	Most Recent:
<b>T:</b> 101.4 F/38.6 C (oral)	<b>T:</b> 101.8 F/38.8 C (oral)
<b>P:</b> 116 (regular)	<b>P:</b> 110 (regular)
<b>R:</b> 22 (regular)	<b>R:</b> 24 (regular)
<b>BP:</b> 98/50	<b>BP:</b> 102/50
<b>O2 sat:</b> 98% room air	<b>O2 sat:</b> 98% room air
Current Assessment:	
GENERAL APPEARANCE:	Resting comfortably, appears in no acute distress
RESP:	Breath sounds clear with equal aeration bilaterally, nonlabored respiratory effort
CARDIAC:	Color flushed. Skin is warm and dry centrally, but upper/lower extremities are mottled in appearance and cool to touch, heart sounds regular-S1S2, pulses strong, equal with palpation at radial/pedal/post-tibial landmarks
NEURO:	Alert and oriented x2-is not consistently oriented to date and place
GI:	Abdomen soft/nontender, bowel sounds audible per auscultation in all four quadrants
GU:	No urine output the past two hours.
SKIN:	Skin integrity intact

**1. What clinical data are RELEVANT and must be recognized as clinically significant?**

RELEVANT VS Data:	Clinical Significance:
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Fever still present	<i>Increasing temperature indicates infection is still very active</i>
<b>RELEVANT Assessment Data:</b>	<b>Clinical Significance:</b>
No urine output for two hours Confused	<i>Why has she not had any urine output for two hours?</i>

1. *Has the status improved or not as expected to this point?*

*Not as expected*

2. *Does your nursing priority or plan of care need to be modified in any way after this evaluation assessment?*

Yes, reducing the fever is more of a priority.

3. *Based on your current evaluation, what are your nursing priorities and plan of care?*

Assess labs and VS frequently, comfort the patient as she is in pain and has a fever (cold cloths, etc)

Because you have not seen the level of improvement you were expecting in the medical interventions, you decide to update the physician and give the following SBAR:

**Situation:**

*Hi Dr., this is Nurse Delaney and I have a patient who is an 82 year old female presenting with a urinary tract infection that is worsening despite the interventions.*

**Background:**

*She was presented to the ED by her granddaughter because she cannot state what day it is. She has had symptoms of dysuria and urinary frequency.*

**Assessment:**

*Fever is worsening, HR is increasing and blood pressure is decreasing  
Lactate is still critically elevated  
No urinary output for 2 hours*

**Recommendation:**

*Foley catheter, more IV fluids*

The physician agrees with your concerns and decides to repeat the 0.9% NS bolus of 1000 mL and insertion of Foley catheter. After one hour this has completed and you obtain the following set of VS:

<b>Current VS:</b>	<b>Most Recent:</b>
<b>T:</b> 100.6 F/38.1 C (oral)	<b>T:</b> 101.4 F/38.6 C (oral)
<b>P:</b> 92 (regular)	<b>P:</b> 116 (regular)
<b>R:</b> 20 (regular)	<b>R:</b> 22 (regular)
<b>BP:</b> 114/64 MAP: 81	<b>BP:</b> 94/48 MAP: 63
<b>O2 sat:</b> 98% room air	<b>O2 sat:</b> 98% room air

<b>Current Assessment:</b>	
GU:	200 mL cloudy urine in bag

**1. Has the status of the patient improved or not as expected to this point?**

*Not as expected*

**2. What data supports this evaluation assessment?**

*Increase in temperature and heart rate, decrease in blood pressure, urine still cloudy*

Your patient, who is still in the emergency department, is now being transferred to the intensive care unit (ICU) for close monitoring and assessment. Effective and concise handoffs are essential to excellent care and if not done well can adversely impact the care of this patient. You have done an excellent job to this point, now finish strong and give the following SBAR report to the nurse who will be caring for this patient:

<b>S</b> ituation:
<b>Name/age:</b> Jean Kelly, 82 year old
<b>BRIEF summary of primary problem:</b> UTI is present with no response to interventions. Fever continues to worsen with an increase in heart rate and a decrease in blood pressure.
<b>Day of admission/post-op #:</b> N/A
<b>B</b> ackground:
<b>Primary problem/diagnosis:</b> Urosepsis
<b>RELEVANT past medical history:</b> DM, hypertension, hyperlipidemia
<b>RELEVANT background data:</b> Urinary tract infection
<b>A</b> ssessment:
<b>Most recent vital signs:</b> Temp - 101.4 F, HR- 116, RR-22, BP- 98/48 02- 98%
<b>RELEVANT body system nursing assessment data:</b> Dry oral mucosa, dry lips, flank tenderness, urine cloudy, pain of 5
<b>RELEVANT lab values:</b> Creatinine of 1.5, lactate of 3.5, positive for leukocyte esterase
<b>How have you advanced the plan of care?</b> Additional IV fluid bolus, foley catheter inserted
<b>Patient response:</b> HR and fever worsened, fever increased, cloudy urine
<b>INTERPRETATION of current clinical status (stable/unstable/worsening):</b> Worsening

<b>R</b> ecommendation:
<b>S</b> uggestions to advance plan of care: <i>Stabilize the patient</i>

## Education Priorities/Discharge Planning

1. *What will be the most important discharge/education priorities you will reinforce with Jean's medical condition to prevent future readmission with the same problem?*

- *Proper cleaning of peri area*
- *Proper intake of fluids*
- *Supplements (cranberry)*

2. *What are some practical ways you as the nurse can assess the effectiveness of your teaching with this patient?*

*The patient can show understanding of how to clean herself and demonstrates knowledge about the importance of fluid intake.*

## Caring and the "Art" of Nursing

1. *What is the patient likely experiencing/feeling right now in this situation?*

*Frightened, anxious, irritable*

2. *What can you do to engage yourself with this patient's experience, and show that he/she matters to you as a person?*

*Checking in on her and her mental state, talking about small things to help brighten her mood, keep her family involved*

## **Use Reflection to THINK Like a Nurse**

Reflection-IN-action (Tanner, 2006) is the nurse's ability to accurately interpret the patient's response to an intervention in the moment as the events are unfolding to make a correct clinical judgment.

**1. *What did I learn from this scenario?***

*Lactate indicated severe infection*

**2. *How can I use what has been learned from this scenario to improve patient care in the future?***

*Apply this case study when I encounter patients with urinary tract infection symptoms that are worsening even after interventions.*