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Urinary Tract Infection/Urosepsis

Primary Concept
Infection
Interrelated Concepts (In order of emphasis)

Jean Kelly, 82 years old

UNFOLDING Reasoning Case Study: STUDENT

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:
fatigue lasting 3 days fever has been present for 24 hours pain develops with urination not aware of the day but not confused	*no other fever symptoms, fever suggests inflammatory response* *all symptoms are classic UTI related*
RELEVANT Data from Social History:	**Clinical Significance:**
lives alone and a widow **unable to get out of the bath on her own** **has a supportive family**	*ensure safety at hospital* *consult social services for concerns* *family will ensure she has autonomy*

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:
Diabetes type 2 (started first) Hyperlipidemia-- next to follow Hypertension (HTN) --- after hyperlip Gout -- developed last	1. Allopurinol 100 mg PO bid -gout 2. ASA 81 mg PO daily- htn 3. Pioglitazone 15 mg PO daily - diabetes 4. Simvastatin 20 mg PO daily - lipid 5. Metoprolol 25 mg PO bid -bp 6. Lisinopril 10 mg PO daily - htm7. Furosemide 20 mg PO daily - htn 8. Potassium chloride 20 mEq PO daily -potassium loss	anti gout antiplatelet antidiabetic anti hyperlipidema beta blocker ACE inhib loop diuretic electrolyte	relief of gout prevent acute coronary syn control glucose control hdl control sbp control sbp increase urine output potassium supplement

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):	
T: 101.8 F/38.8 C (oral)	**P**rovoking/Palliative:	Nothing/Nothing
P: 110 (regular)	**Q**uality:	Ache
R: 24 (regular)	**R**egion/Radiation:	Right flank
BP: 102/50	**S**everity:	5/10
O2 sat: 98% room air	**T**iming:	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:
T: 101.8 F/38.8 C (oral) P: 110 reg. R: 24 BP : 102/50 MAP : 67 *Right flank pain, continuous, 5/10*	**sepsis involves hr above 90 and temp above 100.4** **high band percent indicates inflammatory** **bp is on the lower side**

Current Assessment:	
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?

RELEVANT Assessment Data:	Clinical Significance:

sepsis is present is is common to have a almost normal physical she doesnt appear sick	*alert x2* *sepsis in elder pts is a red flag* *dizziness when getting up reflects ortho hypo* *tenderness is correlated with inflammation* *dry lips indicate dehydration*

Radiology Reports: Chest x-ray

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

RELEVANT Results:	Clinical Significance:
No infiltrates or other abnormalities. No changes from last previous	*none*

Lab Results:

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

Complete Blood Count (CBC):	Current:	High/Low/WNL?	Previous:
WBC (4.5-11.0 mm 3)	13.2	high	8.8
Hgb (12-16 g/dL)	14.4	wdl	14.6
Platelets (150-450x 103/µl)	246	wdl	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?

RELEVANT Lab(s):	Clinical Significance:	TREND: Improve/Worsening/Stable:
wbs 13.2 *neutro 93%* *band 2* *bun 35* *creatinine 1.5*	**all progressively worsening except band**	*up and worsening* *up and worsening* *stable.. wdl*

Basic Metabolic Panel (BMP):	Current:	High/Low/WNL?	Previous:
Sodium (135-145 mEq/L)	140	wdl	138

Potassium (3.5-5.0 mEq/L)	3.8	wdl	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	

RELEVANT Lab(s):	Clinical Significance:	TREND: Improve/Worsening/Stable:
notice increase in creatine can be related to bun count no hx of renal disease kidneys will be effected glucose is 184	*monitor kidneys*	**trend up** **trend up** **both worsen**

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

RELEVANT Lab(s):	Clinical Significance:	TREND: Improve/Worsening/Stable:
mag potassium lactate	*cardiac conduction* *potassium can change HR* *lactate trends suggest sepsis*	*all worsening trend up*

Urine Analysis (UA):	Current:	ABNL/WNL?	Previous:
Color (yellow)	Yellow	wdl	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	wdl	Neg
Ketones (neg)	Neg	wdl	Neg
Bilirubin (neg)	Neg	wdl	Neg
Blood (neg)	Neg	wdl	Neg
Nitrite (neg)	Pos	abnl	Pos
LET (Leukocyte Esterase) (neg)	Pos	abnl	Pos
MICRO:			
RBC's (<5)	1	wdl	0
WBC's (<5)	>100	abnml	3
Bacteria (neg)	LARGE	abnl	Few
Epithelial (neg)	Few	wdl	Few

RELEVANT Lab(s):	Clinical Significance:	TREND: Improve/Worsening/Stable:
cloudiness	*cloudy- infection* *elevated is volume depletion*	**all trend up and get worse**

specific gravity *protein* *wbc* *nitrates* *LET* *bacteria*	*protein elevated means glomeruli damage* *wbc infection* *nitrates are gram neg bacteria*	

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

Lab:	Normal Value:	Clinical Significance:	Nursing Assessments/Interventions Required:
Lactate **Value:** **3.2**	**Critical Value:** **<2**	**indicates sepsis**	**monitor hypotension** **assess temp changes** **monitor bp/HR**

Lab:	Normal Value:	Clinical Significance:	Nursing Assessments/Interventions Required:
Creatinine **Value:** **1.5**	**Critical Value:** **.5-1.3**	*elevated when lack of perfusion*	**asses I/O** **assess fluid retention**

Clinical Reasoning Begins…

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

2. ***What is the underlying cause/pathophysiology of this primary problem?*** *bacteria in bloodstream, immune system meaning infection, inflammatory response meaning 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	*pt is dehydrated and needs fluids along with antibiotics to fight infection*	start IV acetaminophen ceftriaxone IV pb morphine fluids needed

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

Care Provider Orders:	Order of Priority:	Rationale:
• 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	IV NS ceftriaxone morphine acetaminophen	*pain needs monitored* *treat present problem* *IV will help give fluids for dehydration*

Medication Dosage Calculation:

Medication/Dose:	Mechanism of Action:	Volume/time frame to Safely Administer:	Nursing Assessment/Considerations:
Ceftriaxone 1g IVPB	**binds to bacteria mem wall**	**50 ml** **Hourly rate IVPB:** 100ml/hr	*obtain culture* *assess for anaphylaxis* *monitor bowels*

Collaborative Care: Nursing

3. *What nursing priority will guide your plan of care?* *(if more than one-list in order of PRIORITY)*
 ABC's   fluid volume depletion   ineffective tissue perfusion

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

Nursing Interventions:	Rationale:	Expected Outcome:
fluid volume deficit **check for fall risk**	**pt is weak** **make sure pt does not fall into septic shock**	**establish IV** **reassess vitals** **fluids restoration**

5. *What body system(s) will you most thoroughly assess based on the primary/priority concern?*
   cardiac for color pulse bp Hr etc
   renal monitor renal perfusion

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

   septic shock may lead to MODS

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

8. *What nursing interventions will you initiate if this complication develops?*
   obtain vitals
   start IV
   call primary care provider

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

   emotional support

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

   be present and use therapeutic communication

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:
T: 101.4 F/38.6 C (oral)	**T:** 101.8 F/38.8 C (oral)
P: 116 (regular)	**P:** 110 (regular)
R: 22 (regular)	**R:** 24 (regular)
BP: 98/50	**BP:** 102/50
O2 sat: 98% room air	**O2 sat:** 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:
temp R BP	*seems normal when pt is rested*

RELEVANT Assessment Data:	Clinical Significance:
breaths are clear *heart is regular* *no urine output past 2 hours* skin cool to touch	***cool skin is a red flag***

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

med compliance not met yet

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

initiate SBAR
asess vitals

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

check skin warmth
check vitals
use of a foley cath would be beneficial

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:
Jean Kelly is an 82-year-old woman positive UTI and probably urosepsis

Background:
physician already knows

Assessment:
IV NS has not helped

Recommendation:
insert foley and check vitals in one hour

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:

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

Current Assessment:	
GU:	200 mL cloudy urine in bag

1. ***Has the status of the patient improved or not as expected to this point?***
yes definetley improved with foley and the cloudy urine is still expected

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

 trending in the right way and temp is 100
pulse 92
R is 20

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:

Situation:
Name/age:
Jean Kelly, 82
BRIEF summary of primary problem:
fatigue and painful urination over previous 3 days, daughter present in life and helps, no confusion present but not aware of the day

Day of admission/post-op #:

Background:

Primary problem/diagnosis:
 urosepsis

RELEVANT past medical history:
 diabetes 2 and htn

RELEVANT background data: lives in a nursing home

Assessment:

Most recent vital signs:
 t is 100   p is 92   R is 20   bp 114/64

RELEVANT body system nursing assessment data:
 color flushed and skin warm

RELEVANT lab values:
 wbc 13.2   neut is 93%
creatine is 1.5
lactate 3.2

How have you advanced the plan of care?

 2 liters of NS
ceftriaxone 1 g
Patient response:
 bp dropped intially until 2nd NS IV was given then it rose

INTERPRETATION of current clinical status (stable/unstable/worsening):
 critical but appears stable

Recommendation:

Suggestions to advance plan of care: risk for sepsis but monitor vitals and I/O

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?*

   sepsis is not preventable
   explain diabetic precautions and how to manage
   rehab may be needed to get her back on her feet

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

have patient state back what you taught them

Caring and the "Art" of Nursing

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

anxiety but the patient is aware of the severity of the UTI

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

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?***
 I learned how to manage UTI in a clinical setting
 the importance of making a patient feel emotionally stable after a hospital stay

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