

# Human Immunodeficiency Virus

## UNFOLDING Reasoning



**Michelle Johnson, 36-years old**

<b>Primary Concept</b>		
Immunity		
<b>Interrelated Concepts (In order of emphasis)</b>		
<ul style="list-style-type: none"> <li>• Gas Exchange</li> <li>• Infection</li> <li>• Stress</li> <li>• Coping</li> <li>• Clinical Judgment</li> <li>• Patient Education</li> <li>• Communication</li> <li>• Collaboration</li> </ul>		
<b>NCLEX Client Need Categories</b>	<b>Percentage of Items from Each Category/Subcategory</b>	<b>Covered in Case Study</b>
Safe and Effective Care Environment		
• Management of Care	17-23%	✓
• Safety and Infection Control	9-15%	✓
Health Promotion and Maintenance	6-12%	✓
Psychosocial Integrity	6-12%	✓
Physiological Integrity		

• Basic Care and Comfort	6-12%	✓
• Pharmacological and Parenteral Therapies	12-18%	✓
• Reduction of Risk Potential	9-15%	✓
• Physiological Adaptation	11-17%	✓

© 2018 Keith Rischer/www.KeithRN.com

UNFOLDING Clinical Reasoning Case Study:

### History of Present Problem:

Michelle Johnson is a 36-year-old African American female with no prior medical history who presents to the emergency department complaining of extreme fatigue for the past several months and experiencing occasional night sweats. During the past week, she has developed a sore throat, dry, nonproductive cough, fever at night with increasing shortness of breath. Michelle embarrassingly admits that she has had a vaginal yeast infection that she has tried to treat with over the counter medications with no success. Michelle states to the triage nurse, "I came in today because I am worried something is wrong with me, I hope it's nothing serious!"

### Personal/Social History:

Michelle has been divorced for five years and has two daughters (ages 14 and 16) who works full time as a legal secretary. She has recently been working longer hours, skipping meals, and stressed over the possibility of not being able to provide for her two daughters. She has been involved in only one relationship since her divorce. She is engaged to Ken, who has hemophilia and plan to get married next year.

*What data from the histories are RELEVANT and must be interpreted as clinically significant by the nurse?*

<b>RELEVANT Data from Present Problem:</b>	<b>Clinical Significance:</b>
<ul style="list-style-type: none"> <li>- Extreme fatigue for the past several months and occasional night sweats</li> <li>- Development of a sore throat, dry cough, fever, and increasing shortness of breath</li> <li>- Vaginal yeast, untreated by OTC medications</li> </ul>	<ul style="list-style-type: none"> <li>- All of these signs and symptoms are caused by exposure to viruses and can be the first indications of an acute HIV infection</li> <li>- Shortness of breath and a dry cough are among the first signs of a respiratory infection, all the other signs are all clinical manifestations seen with patients who are HIV+</li> <li>- A vaginal infection unable to be treated by treatment is a bad sign</li> </ul>
<b>RELEVANT Data from Social History:</b>	<b>Clinical Significance:</b>
<ul style="list-style-type: none"> <li>- Working long hours, skipping meals, and stressed over not being any to provide for her daughters</li> </ul>	<ul style="list-style-type: none"> <li>- She's the sole provider of her daughters, along with her significant other having a chronic illness . She is working long hours and not taking care of her mental health</li> </ul>

### Patient Care Begins:

<b>Current VS:</b>	<b>P-Q-R-S-T Pain Assessment:</b>	
<b>T:</b> 99.6 F/37.6 C (oral)	<b>Provoking/Palliative:</b>	Denies
<b>P:</b> 108 (regular)	<b>Quality:</b>	

<b>R:</b> 24 (regular)	<b>Region/Radiation:</b>	
<b>BP:</b> 110/75	<b>Severity:</b>	
<b>O2 sat:</b> 91% RA	<b>Timing:</b>	

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

<b>RELEVANT VS Data:</b>	<b>Clinical Significance:</b>
<ul style="list-style-type: none"> <li>- T: 99.6</li> <li>- P:108</li> <li>- RR:24</li> <li>- BP:110/75</li> <li>- O2: 91% RA</li> </ul>	<ul style="list-style-type: none"> <li>- Low-grade fever can be due to an infectious process</li> <li>- Tachycardia is likely due to fever and infection which increased the metabolism demand in the body</li> <li>- Tachypnea is very alerting and can be due to a respiratory infection or respiratory distress</li> <li>- Monitor the blood pressure to monitor for sepsis developing</li> <li>- The oxygen saturation is too low</li> </ul>

© 2018 Keith Rischer/www.KeithRN.com

<b>Current Assessment:</b>	
<b>GENERAL APPEARANCE:</b>	Average built female with a worried expression on her face. Appears pale and tired. Calm, body relaxed, no grimacing, appears to be resting comfortably
<b>ORAL &amp; NECK:</b>	Oral mucous moist and intact. Cervical lymph nodes enlarged bilaterally
<b>RESP:</b>	Slight SOB with exertion and crackles heard bilaterally in lower lobes posteriorly
<b>CARDIAC:</b>	Tachycardia, pink, warm & dry, no edema, heart sounds regular with no abnormal beats, pulses strong, equal to palpation at radial/pedal/post-tibial landmarks, brisk cap refill
<b>NEURO:</b>	Alert & oriented to person, place, time, and situation (x4)
<b>GI:</b>	Abdomen flat, soft/nontender, bowel sounds audible per auscultation in all four quadrants
<b>GU:</b>	Voiding without difficulty, urine clear/yellow
<b>SKIN:</b>	Skin integrity intact, skin turgor elastic, no tenting present

**What assessment data is RELEVANT and must be interpreted as clinically significant by the nurse?**

<b>RELEVANT Assessment Data:</b>	<b>Clinical Significance:</b>
<ul style="list-style-type: none"> <li>- Appears pale and tired</li> <li>- Cervical lymph nodes enlarged bilaterally</li> <li>- Slight SOB with exertion and crackles heard bilaterally in the lower lobes posteriorly</li> </ul>	<ul style="list-style-type: none"> <li>- Pale color could be due to lack of RBC, immune suppression, and infection</li> <li>- Enlarged lymph nodes indicate an infection in her body that may be systemic</li> <li>- Crackles are due to fluid in the alveoli and likely due to pneumonia or atelectasis</li> </ul>

<b>Cardiac Telemetry Strip:</b>

<b>Interpretation:</b>
Sinus tachycardia- 110
<b>Clinical Significance:</b>
Tachycardia indicates increased metabolism due to increased temperatures and infection but could also signify sepsis or dehydration. Tachycardia is usually signifying a more significant problem.

*The care provider orders the following based on the clinical data that the nurse has collected:*

**Collaborative Care: Medical Management**

<b>Care Provider Orders:</b>	<b>Rationale:</b>
Complete blood count (CBC)	- Will show signs of infection and the difference in WBC, neutrophil, and lymphocyte count
Basic metabolic panel (BMP)	- Determine sodium and potassium which will show us kidney function and fluid balance
Rapid HIV	- Determine if HIV is the primary source of infection
Chest x-ray	- Determine if there are other underlying diagnoses such as pneumonia or other respiratory infections

© 2018 Keith Rischer/www.KeithRN.com

**Radiology Reports: Chest x-ray**

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

<b>RELEVANT Results:</b>	<b>Clinical Significance:</b>
Diffuse ground-glass opacity present bilaterally	- Represents the accumulation of intra-alveolar fibrin, debris, and organisms as a result consistent with pneumonia

## Lab Results:

<b>Complete Blood Count (CBC):</b>	<b>Current:</b>	<b>High/Low/WNL?</b>	<b>Most Recent:</b>
WBC (4.5–11.0 mm <sup>3</sup> )	3.0	Low	8.5
Neutrophil % (42–72)	88	High	70
Lymphocyte % (2-10)	6	WNL	4
Hgb (12–16 g/dL)	9.8	Low	10.5
Platelets (150-450 x10 <sup>3</sup> /μl)	208	WNL	225

*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>
<ul style="list-style-type: none"> <li>- WBC: 3.0</li> <li>- Neutrophil: 88%</li> <li>- Hgb: 9.8</li> </ul>	<ul style="list-style-type: none"> <li>- Relevant due to presence of inflammation or infection</li> <li>- Serious infections can cause leukopenia and the patient should be protected from anything that can interrupt the skin integrity making them more likely to get an infection because of low WBC count</li> <li>- Neutrophils are first response to a bacterial infection</li> <li>- Hemoglobin can determine anemia or acute/chronic blood loss especially because it is on the lower side</li> </ul>	<ul style="list-style-type: none"> <li>- Improving</li> <li>- Improving</li> <li>- Improving</li> </ul>

<b>Basic Metabolic Panel (BMP):</b>	<b>Current:</b>	<b>High/Low/WNL?</b>	<b>Most Recent:</b>
Sodium (135–145 mEq/L)	148	High	142
Potassium (3.5–5.0 mEq/L)	3.5	WNL	3.8
Glucose (70–110 mg/dL)	90	WNL	101
Creatinine (0.6–1.2 mg/dL)	0.8	WNL	0.9

*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>

Sodium: 148	- There is a fluid volume deficit due to dehydration and sodium is elevated because it is concentrated and contains less water	- Improving
-------------	--	-------------

© 2018 Keith Rischer/www.KeithRN.com

Misc. Labs:	Current:	High/Low/WNL?
CD 4 count (>500 cells)	189	Low
HIV RNA level, (40-75 copies/mL)	60,000	High

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

RELEVANT Lab(s):	Clinical Significance:
<ul style="list-style-type: none"> <li>- CD4: 189</li> <li>- HIV RNA level: 60,000</li> </ul>	<ul style="list-style-type: none"> <li>- &lt;200 is dangerously low and indicates AIDS has developed, the immune system is being destroyed and the CD4 cells are being taken over</li> <li>- This blood test measures the number of HIV particles in a milliliter of your blood</li> </ul>

## Clinical Reasoning Begins...

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

- Newly diagnosis of HIV which developed into AIDS
- The patient also developed pneumonia as a secondary diagnosis

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

- AIDS is a life-threatening illness caused by the human immunodeficiency virus. AIDS is an acquired disease that suppresses the immune system. HIV targets CD4 cells which makes the patient more susceptible to infection because of the inability to produce lymphocytes that produce antibodies. This leaves the patient more susceptible to respiratory infections as well such as pneumonia, which she has already developed. AIDS is the advanced stage of HIV and it is a continuum of infection.
- Pneumonia is an infection of the lungs and is often caused by a fungal organism. The organism attaches to the alveoli of the lungs which decrease oxygenation. Most times it can be treated with an antibiotic. Activated alveolar macrophages without CD4 cells are removed the organisms which increased the bacteria to spread faster and more easily.

## Collaborative Care: Medical Management

Care Provider Orders:	Rationale:	Expected Outcome:
Establish peripheral IV 0.9% Normal Saline at 100 mL/hour  trimethoprim/ sulfamethoxazole (Bactrim) 1 gram IVPB every 8 hours  Fluconazole 200 mg PO  BID Prednisone 40 mg PO  daily  Titrate oxygen to keep O <sub>2</sub> sat >92%  Truvada (tenofovir and emtricitabine) 1 tablet PO daily  Reyataz (atazanavir) 300 mg PO daily  Norvir (ritonavir) 100 mg PO daily  Admit to med/surg unit with telemetry monitoring	<ul style="list-style-type: none"> <li>- Will require IV access for hydration and antibiotics</li> <li>- Rehydration is needed</li> <li>- Treatment for pneumonia</li> <li>- Treatment for pneumonia</li> <li>- Corticosteroid which will reduce inflammation of the airways</li> <li>- Initial O<sub>2</sub> sat was low due to pneumonia, so we need to ensure adequate oxygenation</li> <li>- Generates bad nucleoside building blocks</li> <li>- Inhibits the action of HIV protease, preventing maturation of virions</li> <li>- ; increase CD4 cells and decrease viral load which will slow the progression of HIV</li> <li>- Inhibits the action of HIV protease and prevents the cleavage of viral polyproteins; increase CD4 cells and decrease viral load which will slow the progression of HIV</li> </ul>	<ul style="list-style-type: none"> <li>- IV access obtained</li> <li>- HR decreased</li> <li>- Improvement of oxygenation</li> <li>- Improvement of oxygenation</li> <li>- Improvement of oxygenation</li> <li>- Os sat &gt;92%</li> <li>- Slow progression of HIV</li> <li>- Increase CD4 cells and decrease viral load which will slow the progression of HIV</li> <li>- Increase CD4 cells and decrease viral load which will slow the progression of HIV</li> </ul>

© 2018 Keith Rischer/www.KeithRN.com

### 3. What additional treatment should you anticipate for Ms. Johnson by her HIV test results and CD4 results?

- Pulmonary function test
- Sputum culture
- Screening for any other STI
- Pap smear

## 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% Normal Saline at 100 mL/hour</li> <li>• trimethoprim/sulfamethoxazole (Bactrim) 1 gram IVPB every 8 hours</li> <li>• Fluconazole 200 mg PO</li> </ul>	<ol style="list-style-type: none"> <li>1. Keep O<sub>2</sub> &gt;92%</li> <li>2. Establish IV access</li> <li>3. NS at 100mL/hr</li> <li>4. Trimethoprim/sulfamethoxazole 1-gram IVPB every 8 hours</li> </ol>	<ol style="list-style-type: none"> <li>1. Always start with ABC's</li> <li>2. Need Iv before can give IV fluids</li> <li>3. Circulation</li> <li>4. Start IV antibiotics, it will have immediate onset</li> <li>5. The specific order is not indicated for PO meds so these can be given together</li> <li>6. Po meds can be given together, there is no</li> </ol>

BID • Prednisone 40 mg PO daily • Titrate oxygen to keep O2 sat >92%	5. Fluconazole 200 mg PO BID 6. Prednisone 40 mg PO daily	specific order
--	--	----------------

## Collaborative Care: Nursing

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

- Maintain adequate oxygenation
- Risk for infection
- Emotional and social support
- Education about illnesses and guidance

### 5. What interventions will you initiate based on this priority?

Nursing Interventions:	Rationale:	Expected Outcome:
<ul style="list-style-type: none"> <li>- Assess patient respiratory status every 2 hours and note findings</li> <li>- Reposition patient every 2 hours to prevent stasis of lung fluids and resulting pneumonia</li> <li>- Have the patient participate in activities and periods of rest</li> <li>- Instruct patient to report changes in cough or shortness of breath</li> </ul>	<ul style="list-style-type: none"> <li>- Monitor for signs and symptoms of respiratory distress and worsening status</li> <li>- Improve oxygenation</li> <li>- Promoting rest will help the body to fight infection</li> <li>- Sign of worsening respiratory status</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain adequate oxygenation and perfusion to minimize dyspnea</li> <li>- Absent cyanosis or pallor and abnormal breath sounds</li> </ul>

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

- Respiratory
- Cardiovascular

### 7. What is the worst possible/most likely complication to anticipate?

- Respiratory failure
- Sepsis

### 8. What nursing assessments will identify this complication EARLY if it develops?

- **Respiratory failure**
- Increasing respiratory rate
- Increasing oxygen needs
- Decreasing O2 sat
- Change in breath sounds from baseline

- Becoming paler, new onset of diaphoresis as the SNS is activated
- **Sepsis**
- Temp >100.4
- HR >90
- RR >20
- WBC >12,000
- Bands >10%

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

- **Respiratory failure**
- Increase O2 to maintain >92%
- Sit upright
- Contact PCP
- **Sepsis**
- Once a concerning clinical trend has been identified, call PCP or rapid response team to emergently assess

© 2018 Keith Rischer/www.KeithRN.com

## **Education Priorities/Discharge Planning**

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

- Maintain physical health
- Manage disease and prevent transmission
- Prevent infectious complications

**2. Michelle Johnson asks why she has to take so many medications and is it alright if she misses any doses? How would you respond?**

- Multiple drugs are used together in combination with different classes of antiretroviral agents which will help reduce viral load, improve CD4+ and T-cells counts, and slowed the disease progression. Medication adherence is extremely important especially for HIV, skipped doses may develop strains of HIV that are resistant to the medication.

**3. Michelle Johnson asks, “Should I tell Ken about my positive HIV result?”**

- Michelle should talk to Ken about undergoing HIV testing because that Ken is not infected or is unaware he has HIV infection. It may seem hard to talk about HIV with your family but many patients who develop disclosure respond better to treatment than those who don't.

#### ***4. How can the nurse assess the effectiveness of patient and family teaching and discharge instructions?***

- Assess the effectiveness of teaching is to have the patient restate the important points of the teaching after it has been taught and then later in the shift to ensure retention. A patient demonstration may be needed if the patient is still unsure of the information.

## **Caring and the “Art” of Nursing**

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

- Emotional support
- Spiritual support
- Knowledge and education about what is taking place and care priorities will be in days ahead

### ***2. How can the nurse address these psychosocial needs?***

- Be present and available to allow the patient to talk about their concerns. It is good to ask open-ended questions and allow the patient to elaborate on concerns. Make sure to educate the patient on what is taking place and what the care priorities will be.

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

- Because there is no cure for HIV, it can be very devastating to patients to hear. Patients may feel rejecting and embarrassed by family and friends. These patients may also feel social isolation and issues of grief or fear of dying.

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

- Be comforting
- Performing competently/skillfully
- Be informative
- Explain the purpose of treatment and education the patient
- Preserving dignity

## **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 intervention at the moment as the events are unfolding to make a correct clinical judgment.

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

- What I learned from this scenario is how devastating becoming diagnosed with HIV/AIDS can be and how much it can impact the patient physically and mentally. It is important to be supportive of the patient and be their advocate. The patient will probably have many questions, so be informative and educate the patient on their disease.

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

- I can use this scenario to improve patient care in the future by being more knowledgeable about HIV and AIDS. I will know how to better care for them and know the many concerns they will have. I can use this to improve my therapeutic communication since many of these patients will feel defeated and alone.