Clinical Reasoning Case Studies Across the Curriculum for NCLEX Success

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Educating Nurses (2010)

- Effective in forming professional identity
- Clinical laboratory promotes learning
- Not as effective in the classroom
  - Additive vs. removing
  - PPT driven-get through the content
  - False assumption…Abstract knowledge leads to application

Nursing Ed: Transformation Needed!

- Teach for salience-situated cognition
  - Contextualize Content
  - CONCEPTS
  - Must translate content to the bedside
  - What clinical data is RELEVANT
  - Emphasize APPLICATION of knowledge

Nursing Ed: Transformation Needed!

- Integrate classroom & clinical teaching
  - CONNECT classroom & clinical
    - Make classroom rich, ACTIVE learning
  - Decrease current fragmentation
    - BRIDGE current clinical/theory divide

- Emphasize clinical reasoning
  - Grasp the "essence" of clinical situation
  - Recognize present priorities
  - Capture trends
  - Reason as situation changes
  - THINK in action

Benner: Novice to Expert (1982)

- Novice
  - Concrete learners
  - No experience-no prior context
  - ALL clinical data relevant

- Advanced beginner
  - Sees exceptions to concrete textbook data
  - Clinical experience allows to see prior patterns of relevant recognition
  - Identifies CERTAIN clinical data as relevant
  - Unable to readily recognize priorities

Think Like a Nurse:

Before Clinical: Clinical Reasoning?

1. What is primary problem/pathophysiology?
2. RELEVANT clinically significant data from chart to trend?
3. What is your nursing PRIORITY?
4. Nursing interventions/desired outcomes?
5. Body system(s) to most thoroughly assess?
6. Worst possible/most likely complication(s) to anticipate?
7. What nursing assessments needed to identify this complication?
Think Like a Nurse: 

During Clinical: Clinical Reasoning?

1. **RELEVANT** clinically significant data from patient to TREND?
2. Rationale/expected outcomes physician plan of care?
3. Educational **PRIORITIES**?

NANDA vs. Clinical Reasoning

- Does not reflect how nurses think in practice
- Unable to capture essence of changing status
  - No NANDA statement to identify status change
  - May contribute to failure to rescue
- Reflects “nurse thinking”
- Concisely captures problem/priority
- Interventions readily follow
- Rescue of pt. facilitated

What We Can Learn from our History

“Only by constant repetition can you become really familiar with the work. Only by doing a thing well again and again can you obtain confidence, accuracy and precision. It is this constant, intelligent practice that constitutes the difference between the skilled trained professional woman and the amateur.”

“Despite the common use of the term, the “born nurse” does not exist…it will always be necessary to take hold of each task and do it over and over again, being guided by an intelligent, trained mind.”

Isabel Hampton Robb  
Nursing Ethics, 1900

Clinical Reasoning Case Studies & NCLEX Success

Principles of the NCLEX

- Context is the bedside
  - Application /Analysis
- Assesses ability to make safe judgments based on clinical reasoning
  - No NANDA
  - PRIORITY setting
  - RATIONALE
  - EXPECTED OUTCOME
  - RELEVANT data
    - Labs, VS, assessment

NCLEX Client Need Categories

<table>
<thead>
<tr>
<th>Fundamental/RR (62% NCLEX)</th>
<th>Unfolding Studies (75% NCLEX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of care:</td>
<td>Management of care:</td>
</tr>
<tr>
<td>17-23%</td>
<td>17-23%</td>
</tr>
<tr>
<td>Medications/IV therapies:</td>
<td>Medications/IV therapies:</td>
</tr>
<tr>
<td>12-18%</td>
<td>12-18%</td>
</tr>
<tr>
<td>Reduction of risk:</td>
<td>Reduction of risk:</td>
</tr>
<tr>
<td>9-15%</td>
<td>9-15%</td>
</tr>
<tr>
<td>Physiologic adaptation:</td>
<td>Physiologic adaptation:</td>
</tr>
<tr>
<td>11-17%</td>
<td>11-17%</td>
</tr>
<tr>
<td>Health promotion/maintenance:</td>
<td>Health promotion/maintenance:</td>
</tr>
<tr>
<td>6-12%</td>
<td>6-12%</td>
</tr>
</tbody>
</table>
### Passive vs. Active Learning

<table>
<thead>
<tr>
<th>Passive (Lecture)</th>
<th>Active (case studies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ 80% forgotten in 24 hours</td>
<td>➢ Increased engagement</td>
</tr>
<tr>
<td>➢ After 20” begin to disengage</td>
<td>➢ Learning promoted</td>
</tr>
<tr>
<td>➢ Role of student:</td>
<td>➢ Promotes higher level thinking/learning</td>
</tr>
<tr>
<td>❑ Absorb knowledge</td>
<td>➢ Adult learning strategy</td>
</tr>
<tr>
<td>❑ Take notes</td>
<td>➢ Role of student:</td>
</tr>
<tr>
<td>❑ Passive “tape recorder”</td>
<td>❑ Participate</td>
</tr>
<tr>
<td>❑ Regurgitate content</td>
<td>❑ Experience</td>
</tr>
<tr>
<td></td>
<td>❑ Think &amp; discover</td>
</tr>
<tr>
<td></td>
<td>❑ Construct/apply knowledge</td>
</tr>
</tbody>
</table>

### Clinical Reasoning Case Studies

I. Fundamental Reasoning
II. Rapid Reasoning Study
III. Unfolding Clinical Reasoning

### Scenario Introduction

➢ Mandy White is an 18 year old woman who has struggled with bulimia since the age of 14.
➢ She presents to the ED this evening with c/o increasing weakness, lightheadedness and a brief syncopal episode this evening. She has been inducing vomiting after meals for the past 3 weeks. Is 5’ 5” and weighs 83lbs (BMI 13.8)

### Trending to Rescue…

➢ Lab values
   ❑ Creatinine
   ❑ K+
   ❑ Mg+
   ❑ Na+
   ❑ WBC
   ❑ Neutrophils %
   ❑ Hgb

➢ All VS

### Scenario Introduction

➢ Mandy White is an 18 year old woman who has struggled with bulimia since the age of 14. She was sexually abused by her step father who was convicted and sent to prison. She lives with her mother and has recently been engaging in self injurious behavior (SIB) of cutting both forearms with broken glass and razors causing numerous scars.
➢ She presents to the ED this evening with c/o increasing weakness, lightheadedness and a brief syncopal episode this evening. She has been inducing vomiting after meals for the past 3 weeks. Is 5’ 5” and weighs 83lbs (BMI 13.8) Mandy is brought in by her mother. She does not want to be treated. You hear her say to her mother, “I am so tired of living, I wish I were dead!”

### Identifying Clinical Relationships

➢ Relationship of what current medications are treating past medical problems?
➢ Relationship between any problem in their past medical history that contributed to the development of the current primary problem?
➢ Relationship between the primary problem and current chief complaint?
➢ Relationship between relevant clinical data and the primary problem?
➢ Relationship between newly ordered medications and the primary problem?
II. Rapid Reasoning

- Set the table:
  - CC
  - PMH
  - VS
  - Nursing assessment
  - Labs/diagnostic results
  - Nursing interventions (immediate)
  - Physician orders

Rapid/Clinical Reasoning ???

1. RELEVANT CC/VS/assessment data
   - Management of Care/Reduction of Risk Potential

2. RELEVANT labs/diagnostic tests
   - Management of Care/Reduction of Risk Potential

3. Primary problem?
   - Management of Care /Physiologic Adaptation

4. Cause/pathophysiology of primary problem?
   - Physiologic Adaptation

5. Nursing priority(s)?
   - Management of Care

6. Nursing interventions based on nursing priority w/rationale & expected outcomes?
   - Physiologic Adaptation

7. Rationale for physician orders/meds & expected outcomes?
   - Pharmacological & Parenteral Therapies

8. Body system to focus on based on primary/priority concern?
   - Physiologic Adaptation

9. Worst possible complication to anticipate?
   (start with A-B-C priorities)
   - Reduction of Risk Potential

10. What nursing assessment(s) needed to identify and respond to quickly if develops?
    - Physiologic Adaptation

Caring & the “Art” of Nursing

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

12. What can you do to engage yourself with this patient’s experience, and show that they matter to you as a person?

Structural Components

Unfolding Clinical Reasoning Study:

- Set the table:
  - CC
  - VS
  - Nursing assessment
  - Labs/diagnostic results
  - PMH
  - Current meds

Structural Components

II. Unfolding Clinical Reasoning Study:

- Pharmacology…pharm. class/indications
- F&E/Lab Values Application
- Dosage calculation

- Change in status

- Evaluation?
  - Has patient improved or not as expected?
  - What data supports evaluation assessment?
  - Nursing priorities and current plan of care?
  - Education/DC planning

- QSEN
- National Patient Safety Goals
“Jason” is still out there…

Most Common “Jascons”…

1. Chest pain
2. Increased resp distress/O2 sats <90%
3. Hypotension
4. Change in LOC or neuro status
5. Patient fall

No Student will RISE to LOW Expectations

Practical Application in Classroom

- Come to class PREPARED
  - Read textbook
  - APPLY reading
    - Work through clinical reasoning study BEFORE theory

- CONCEPTS not content
  - Cut PPT content in half!
  - Limit to 20-25” for each 50” lecture block

- Group DIALOGUE of case study
  - Faculty facilitates/directs/emphasizes salient points

Sepsis/Septic Shock Rapid Reasoning Activity

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Sepsis Overview

- 1,000,000 cases annually of sepsis
- 500 deaths a day
  - Similar to out of hospital MI deaths
- Expected to increase as population ages
- Mortality rate 23-50% based on severity
Who’s at Risk?

- Extremes of age
  - <1 yr & >65 yrs
- Chronic illness
  - DM
  - CRF
- Malnourishment
  - ETOH
- Invasive/surgical procedures
- Immunosuppression

Sepsis Patho

- Precipitating event
  - Activation of inflammatory response
  - Vasodilation
  - Maldistribution of volume
  - Decreased venous return
  - Decreased CO
  - Decreased tissue perfusion

Shock Defined

- Perfusion to the cells is inadequate to deliver O2 & nutrients to support vital organs & cellular function

- Hypovolemic
- Cardiogenic
- Distributive
  - Neurogenic
  - Anaphylactic
  - Septic-SIRS
  - Multiple Organ Dysfunction Syndrome (MODS)

Shock Patho: Common Themes

- Hypoperfusion of tissues
- Activation of inflammatory response
- SNS stimulation

Stages of Shock

- Compensatory
  - BP WNL
  - Tachycardia
  - SNS stimulation
- Progressive
  - Hypotensive
    - SBP <90 or decrease >40mm baseline
- Irreversible
  - Hypotensive despite fluids/vasopressors
  - Acidosis/MODS

Essential Labs to Trend

- CBC
  - WBC
  - Neutrophils
  - Bands
- BMP
  - K+
  - Creatinine
  - CO2 (Bicarb.)
- LFT
  - ALT/AST
- Lactate
Importance of Lactate

- Lactate production associated with insufficient O2 delivery
- Clear association with lactic acidosis and mortality
- Mortality rates:
  - Norm.<2.0 = 4.3%
  - 2-4 mmol/L = 9%
  - > 4 mmol/L = 28.4%

UA Interpretation

- UA
  - Color
  - Clarity
  - Sp. Gravity
  - Protein
  - Glucose
  - Ketones
  - Blood
  - Nitrate
  - Leukocyte esterase
- Micro
  - RBC
  - WBC
  - Bacteria
  - Epithelial

RED FLAGS for Sepsis

- SIRS Criteria
  - Temp >100.4 or <96.8
  - HR >90
  - RR >20
  - WBC >12,000 or <4000
  - Bands >10%
- Clinical Sx
  - Hypotension SBP<90
  - Narrow pulse pressure
  - u/o <30 mL/hr
  - Decr. cap refill
  - Gluc. >120
  - Change in LOC
  - Creatinine incr.
    - >2.0 men
    - >1.4 women

Medical Management Priorities

- Early Identification!!
- Trend temp/HR/BP
- New confusion/LOC
- Trend labs…WBC/neuts/Lactate/creatinine
- Fluid replacement... early/aggressive
- Crystalloid: 20 mL/kg bolus over 30”
- MAP >65 or SBP >90
- IV Abx
- Vasopressors/treatment to ICU

Alice Kelly: Chief Complaint

- Alice Kelly is an 82 year old woman who is widowed and lives alone in assisted living who has been feeling more fatigued for the last 3 days and has had a fever the last 24 hours.
- She reports painful, burning sensation when she urinates as well as frequency of urination the last week.
- Her daughter became concerned and brought her to the ED when she did not know what day it was and unable to get off the couch. She is mentally alert with no history of confusion.

12 Hours later...

- Admitted to med/surg unit 12 hours ago with a diagnosis of urosepsis.
- Received a total of 2 liters of 0.9% NS and Ceftriaxone 1 g IVPB.
- Remains confused to date and place.
- 100 mL u/o the last 8 hours
- Assessment is otherwise WNL.

Last VS 4 hours ago...

- T: 101.8 (o)
- P: 110 reg.
- R: 20
- BP: 128/82
- O2 sats: 98% RA
What data from CC is RELEVANT that must be recognized as clinically significant?
(NCLEX Client Need Category: Management of Care/Reduction of Risk Potential)

<table>
<thead>
<tr>
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<th>Rationale:</th>
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</table>

Your Nursing Assessment...

**Last VS 4 hours ago...**
- T: 101.6 (o)
- P: 98 reg.
- R: 20
- BP: 130/88
- O2 sats: 98% RA

**Current VS...**
- T: 102.8 (o)
- P: 122 reg.
- R: 28
- BP: 88/50
- O2 sats: 90% RA

1. What data from VS & assessment is RELEVANT that must be recognized as clinically significant?
(NCLEX Client Need Category: Management of Care/Reduction of Risk Potential)

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SBAR:Nurse to MD
(QSEN-Teamwork & Collaboration/Safety)
(NCLEX Client Need Category: Management of Care)

**Situation:**

**Background:**

**Assessment:**

**Recommendation:**

Priority Nursing Interventions

- O2 to maintain sats >92%
- Establish second large bore IV

Physician Orders:

- 0.9% NS 1000 mL
- Blood cultures x2 sites
- Stat CBC, BMP, Lactate
- Vancomycin 1 g IVPB (after bl. cx. drawn)
- Start Norepinephrine (Levophed) IV gtt if SBP<90 after NS bolus
- Transfer to ICU
Lab Results

<table>
<thead>
<tr>
<th>CBC</th>
<th>Current</th>
<th>Most Recent</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC (4.5-11.0)</td>
<td>18.8</td>
<td>13.2</td>
</tr>
<tr>
<td>Neuts. % (42-72)</td>
<td>96</td>
<td>90</td>
</tr>
<tr>
<td>Bands (&lt;10%)</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Hgb</td>
<td>11.2</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Basic Metabolic Panel

<table>
<thead>
<tr>
<th>Sodium (135-145)</th>
<th>Current</th>
<th>Most Recent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium (3.5-5.1)</td>
<td>5.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Lactate (&lt;2.0)</td>
<td>4.5</td>
<td>2.2</td>
</tr>
<tr>
<td>Creatinine (0.5-1.3)</td>
<td>2.8</td>
<td>1.5</td>
</tr>
</tbody>
</table>

2. What lab/diagnostic results are RELEVANT that must be recognized as clinically significant?

(Relevant Diagnostic results:
WBC: 18.8
Neuts: 96%
Bands: 12%
K+: 5.9
Creatinine: 2.8
Lactate: 4.5

Relationship to primary problem:

Think Like a Nurse:
Clinical Reasoning ???

3. What is the primary problem that your patient is most likely presenting with?
   - (NCLEX Client Need Category: Management of Care / Physiologic Adaptation)

4. What is the underlying cause/pathophysiology of this concern?
   - (NCLEX Client Need Category: Physiologic Adaptation)

5. What is your nursing priority(s)?
   - (NCLEX Client Need Category: Management of Care)

6. What interventions will you initiate based on this primary priority/rational/expected outcomes?
   - (NCLEX Client Need Category: Physiologic Adaptation)

7. What is the rationale & expected outcomes of nsg. interventions/physician orders?

Nsg. Interventions/MD orders:
- O2 to maintain sats >92%
- Establish 2nd large bore IV
- 0.9% NS 1000 mL
- Blood cultures x2 sites
- Vancomycin 1 g IVPB
- Stat CBC, BMP, Lactate
- Start Norepinephrine (Levophed) IV gtt if SBP<90 after NS bolus
- Transfer to ICU

Rationale: Expected Outcome:

Think Like a Nurse:
Clinical Reasoning ???

8. What body system will you most thoroughly assess based on the patient’s chief complaint and primary/priority concern?
   - (NCLEX Client Need Category: Physiologic Adaptation)

9. What is the most likely/worst possible complication to anticipate?
   - (NCLEX Client Need Category: Reduction of Risk Potential)

10. What nursing assessment(s) will you need to initiate to identify this complication if it develops?
    - (NCLEX Client Need Category: Physiologic Adaptation)

Caring & the “Art” of Nursing

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

12. What can you do to engage yourself with this patient’s experience, and show that they matter to you as a person?
One Student’s Perspective…

“I didn’t feel like I was memorizing for the test. I felt like I was able to apply the information. It helped put knowledge into practice and made it clear why it was relevant.”

Educator’s Perspective…

“This format helps students to apply information and look at the big picture. I had so much fun teaching in this way and didn’t see anyone nodding off in the back of the class!”

Janet Miller, Hibbing, MN

“I am seeing a difference in my students regarding their ability to identify relevant labs and understanding the disease process. I really think it is from the case studies.”

Karen Flatt, Pryor, OK

Strengths

- Bridges current theory & clinical divide
- Promotes “thinking like a nurse” in practice
  - Emphasizes clinical reasoning NOT content
  - Open ended vs. multiple choice
- Practice thinking (ruts) & common change of status
- Active learning strategy
  - Promotes student engagement…20” lecture MAX
- NCLEX principles reinforced
- Integrate QSEN and National Safety Goals

Barriers

- Change
- Faculty buy in
- Time commitment
- Clinical currency

Next Steps…

- Required Reading:
  - Educating Nurses: A Call for Radical Transformation
  - Clinical Wisdom & Interventions in Acute/Critical Care
  - Lisa Day: Using Unfolding Case Studies in a Subject-Centered Classroom
  - Dorothy del Bueno: A Crisis in Critical Thinking

- Collaborate as a team/department

- Take first steps with one clinical reasoning case study
  - Choose one lecture/key content area
  - Start next semester!

Transforming the Classroom

- Responsibility of nurse educators
- Educational best practice

Patient outcomes impacted
It's Time for a Transformation Revolution!

- Decrease content…emphasize CONCEPTS
- Contextualize content to the bedside
- Engage students w/active learning activities
- Embrace clinical reasoning as nurse thinking
- Allow other ways to prioritize than NANDA
- Expect students to identify RELEVANT clinical data and worst possible complication

My Journey…

“Don’t ask yourself what the world needs. Ask yourself what makes you come alive, and do that.
Because what the world needs is people who have come fully alive.”

The Choice is Yours…

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Bibliography