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National Council of State Boards of Nursing

Improving Nursing Care through Better Clinical Judgement: Education and Assessment among Entry- Level Practitioners



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Enhancing Quality of care and Client Safety: The Role of Nursing Clinical-Judgement in Public Safety

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NCLEX Examination Committee
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Background

- U.S.: rapid changes in health care landscape
 - Telehealth
 - Multi-state licensure
 - Health care reforms
- 4.5 M Nurses in the U.S. are integral and face many challenges with present changes
- Institute of Medicine (IOM) recommends that nurses at all levels practice within full scope of training
- Aspects of Professional Nursing:
 - Competent decision making
 - Sound clinical judgement

Background

- Factors that increase a heightened clinical demand among **all** nurses:
 - changing landscape of health care across the U.S.
 - increasing client acuity
 - aging population
 - new government regulations
- Expectations of entry-level nurse:
 - exercise good clinical judgement just as their more experienced colleagues do

Background

- Studies shown lack of clinical judgement among new grad nurses (Kavanaugh & Szweda, 2017)
- **Clinical judgement** is critical but hard to define (Muntean,2015)
- **Academic nursing education** must better support the development of clinical judgement before graduation
- To ensure **public safety**, an effective system of evaluation across education and practice spectrum is the charge of regulatory bodies (i.e., Boards of Nursing and NCSBN)

NCLEX

- The primary licensure examination used by boards of nursing:
 - covers 50 states, District of Columbia, four U.S. Territories and Canada
- NCLEX is an important instrument in nursing regulation and public protection.
- To ensure that the NCLEX assesses all relevant aspect of entry-level nursing practice, NCSBN is conducting research on clinical judgement and its possible inclusion on the future NCLEX.
- There is a gap of knowledge in the aspect of:

How can the clinical judgement model be incorporated effectively as an academic approach in nursing education? How can it be utilized as a viable method to ensure public protection/client safety and enhanced quality of care?

Clinical Judgement

- Higher-order cognitive construct
- Outcome of critical thinking in nursing practice
- Clinical judgement begins with an end in mind

- Judgement involves:
 - evidence
 - meaning
 - outcomes achieved

(Pesut, 2015)

Clinical Judgement

- Clinical Judgement also means decisions about clients:
 - needs
 - concerns
 - health problems
 - decision to take or not to take
 - use or modify standard approaches
 - improve standard approaches

(Tanner, 2006)

Clinical Judgement

- Three established and accepted paradigms for nursing clinical judgement:
 - The Intuitive Humanistic Model (Benner, 1982, Tanner, 2006)
 - The Cognitive Continuum Theory (Harbison, 2001)
 - The Information Processing Model (Oppenheimer & Kelso, 2016)

NCSBN has developed a framework for assessing clinical judgement that encompasses the leading theoretical frameworks and can be utilized by nurse educators when teaching clinical judgment in pre-licensure and continuing education programs.

Clinical Judgement

- Context of clinical judgement in nursing education and practice:
 - Case based
 - Contextually bound
 - Interpretative reasoning
 - Deep understanding of client's experience, preference and values
 - Ethical standard of the discipline (nursing as a profession)

(Billings, Halstead, 2012)

Clinical Judgement

- Importance of nursing clinical judgement to promote congruence between educational and licensure evaluations as it enhances fidelity and validity in:
 - Classroom
 - Clinical practice
 - Regulatory assessment

Innovation in Academic Nursing Education

- Application of nursing clinical judgement in academic nursing education (theory and clinical practice):
 - Case-based Teaching
 - Simulation technology (realistic clinical situation)
 - Flip classroom
 - Adult Learning Model
 - Adaptation of active learning theory in teaching style
 - Dedicated education unit in clinical practice (realistic clinical situation)
 - Adaptive Learning Scenario
 - Online game scenario
 - Problem Solving-based Teaching Principles
 - Poster, Project, Capstone

Regulation of Nursing Practice and Public Protection / Public Safety

- Standard of nursing practice as reflected in the Nurse Practice Act in each jurisdiction
 - Nursing program statutes
 - Standards and curricula, survey and accreditation initial
 - On going and periodic assessment and accreditation of nursing education
 - Clinical placement standard
 - Alternate clinical placement requirements
 - Simulation (limited hospital clinical placements such as in rural areas)
 - Innovative educational programs

Examples in Nursing Regulation

- Nevada State Board of Nursing

NRS 632.470 Schools of professional nursing: Periodic survey of approved schools; acceptance of survey from nationally recognized association; reports and recommendations; notice of deficiencies; effect of failure to remedy deficiencies.

PROGRAMS FOR EDUCATION OF NURSES (NAC) NEW SECTION ADDED – A program of nursing that has obtained full approval may apply to the Board to implement innovative educational approaches enhancing nursing clinical judgement which prepare students to practice nursing safely, competently and technically. The Board may establish guidelines for the application process for the consideration of such innovative education approach before implementing such an approach.

THANK YOU



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National Council of State Boards of Nursing

Assessing Clinical Judgement Skills among Entry-level Nurses: A Cognitive Processing Approach

Joseph Betts, PhD, NCSP

Manager, Psychometric & Research Services

Pearson VUE

Research Background: Importance of Clinical Judgement (CJ)

- NCSBN & American Institutes of Research (AIR) collaboration
 - Identify the core RN requirements
 - Gather updated list of job duties and tasks
 - Document examples of tools and equipment as supporting evidence for the ability requirements
- Methods:
 - Functional Job Analysis
 - Strategic Job Analysis
 - Health care facility site visits
 - Job analysis survey
 - Linkage workshop
 - Rate cross-tab of knowledge and tasks by job duty



Areas of Observation & Documentation

| Job Requirement | Definition | Job Requirement | Definition |
|------------------|---|--|--|
| Duties | Collections of work activities that have a common objective. | Abilities | Traits workers possess that give them the capacity to carry out physical and mental acts required by a job's tasks. |
| Tasks | Specific work activities performed for a specific purpose. | Other Personal Characteristics | Any other personal attributes (e.g., personality traits, attitudes, work styles, values) that are required to perform the job. |
| Knowledge | Body of factual, technical, or procedural information a worker uses to perform a job. | Tools and Equipment | Objects used by workers to complete job tasks. |
| Skills | The capacity, developed through training or practice, to perform job tasks. | Key Judgments & Consequences of Error | Decisions workers make to complete job tasks; consequences of making a decision error. |

Linkage Example: 50 RN Experts Rated

| | | RN Tasks for Duty E | | | |
|--|------------------------------|---|---|---|--|
| | | E1 | E2 | E3 | E4 |
| <p><i>To what extent is the knowledge required in order to accomplish the task?</i></p> <p>0 – Not Relevant for Performing the Task 1 – Helpful for Performing the Task 2 – Essential for Performing the Task DK – Don't Know</p> | | <p>Discuss reproductive or sexual issues with client, such as family planning, menopause, erectile dysfunction, or gender identity.</p> | <p>Identify client immunization needs.</p> | <p>Perform routine, comprehensive health assessment.</p> | <p>Perform a targeted screening assessments, such as scoliosis, hearing, or vision.</p> |
| Knowledge Statements | | Knowledge Topics | | | |
| 1 | Case Management | <ul style="list-style-type: none"> • Role of case manager • Documentation to support reimbursement (e.g., saline flushes, skin assessment) | | | |
| 2 | Client Prioritization | <ul style="list-style-type: none"> • Severity of common medical conditions • Time sensitivity of procedures, treatments, and medication administrations | | | |
| 3 | Conflict Resolution | <ul style="list-style-type: none"> • Process • Techniques (e.g., combatting lateral violence) | | | |

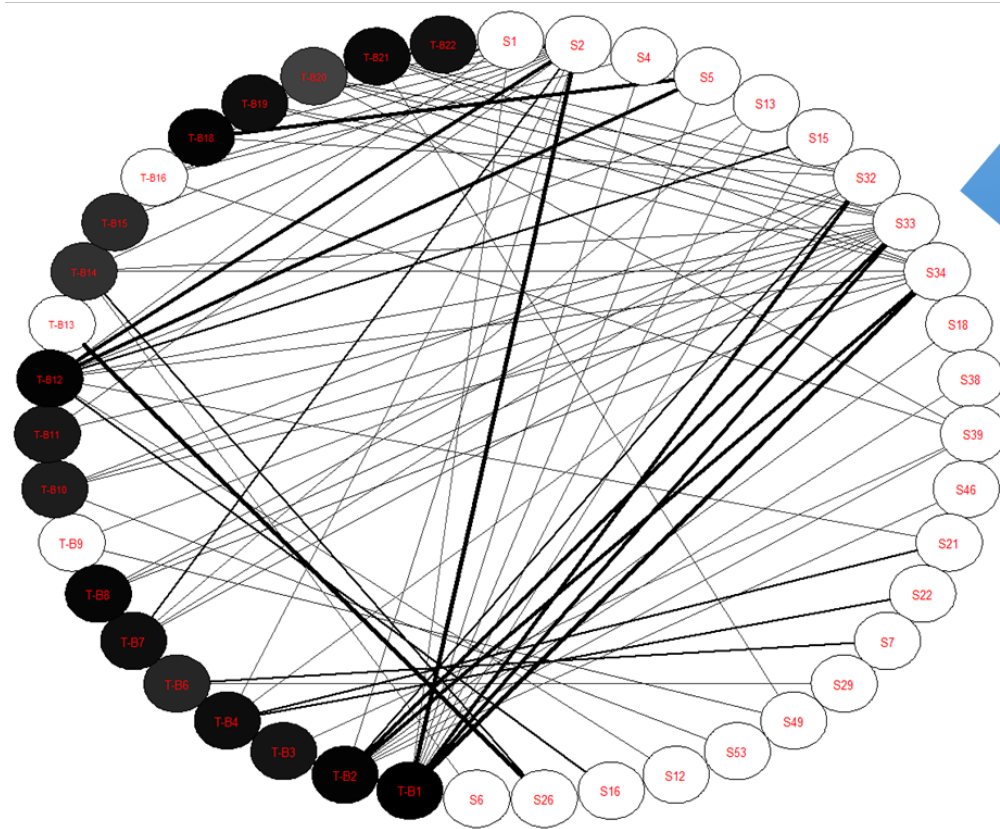
Summary of Research

| Representation Across Data Collection Efforts | Functional Job Analysis (RNs) | Strategic Job Analysis (RNs) |
|---|-----------------------------------|------------------------------|
| Total N of Job Experts | 2,522 SMEs | 90 SMEs |
| Number of Practice Care Settings | 24 Practice Care Settings | 20 Practice Care Settings |
| Number of Geographic Regions | All 4 Geographic Regions | All 4 Geographic Regions |
| Number of States | 55 States and/or U.S. Territories | 33 States |
| Range of Tenure | 0 months - 45 years | 2 years - 45 years |

Result: Highest Rated Skills Needed

| Skill | Skill Definition |
|-----------------------------------|--|
| Clinical Judgment | Skill in recognizing cues about a clinical situation, generating and weighing hypotheses, taking action, and evaluating outcomes for the purpose of arriving at a satisfactory clinical outcome. Clinical judgment is the observed outcome of two unobserved underlying mental processes, critical thinking and decision making. |
| Professional Communication | Skill in communicating in a clear, concise, and effective manner, and adapting one's own communication style to meet the needs of the health care team, clients, family, and/or caregivers, and situation. |
| Active Listening | Skill in giving full attention to what is said, taking time to understand the points made, asking questions as appropriate, and asking clarifying questions and repeating back what the client, family, caregiver, and/or health care team member said. |

Importance of Clinical Judgement

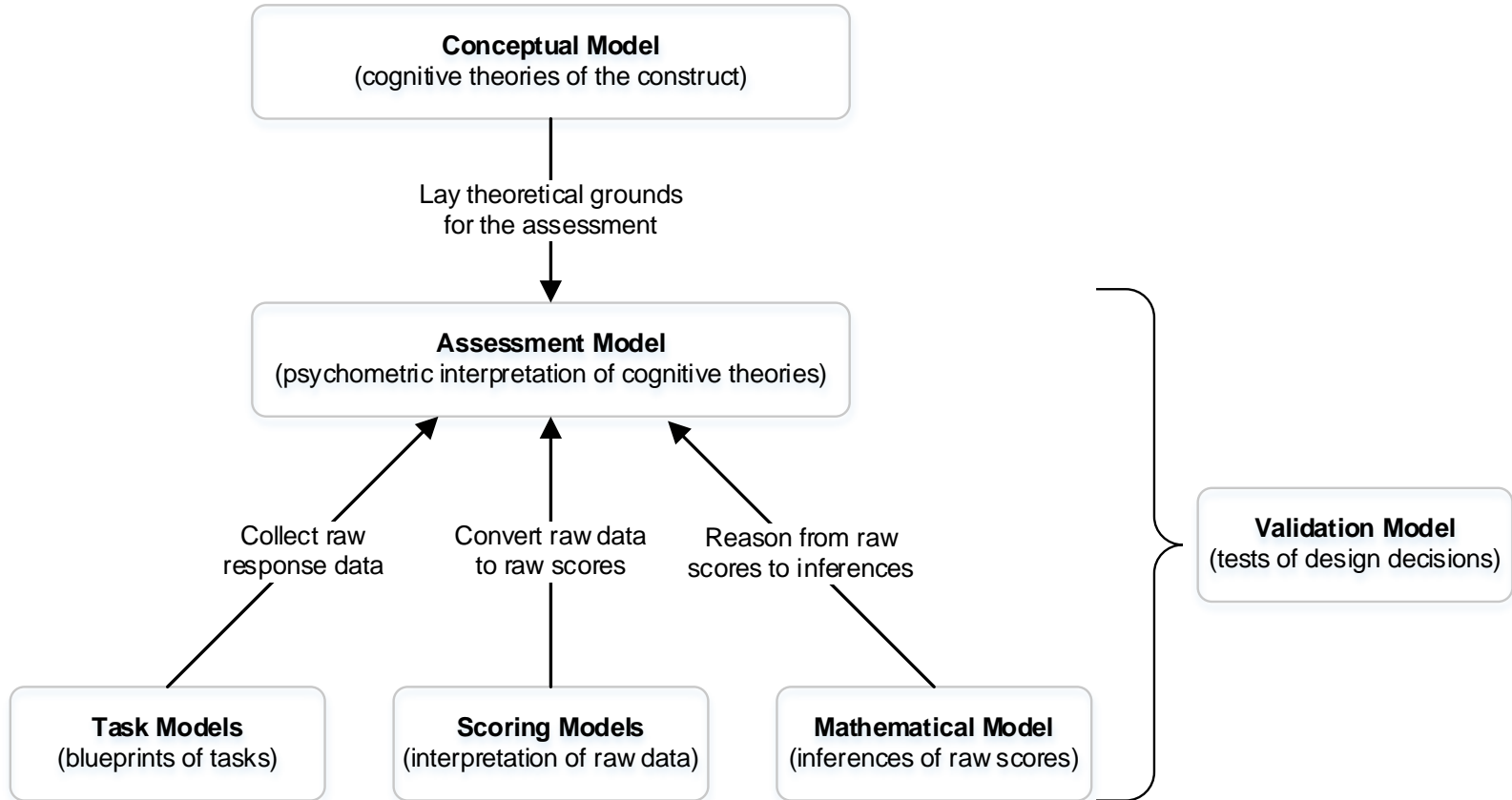


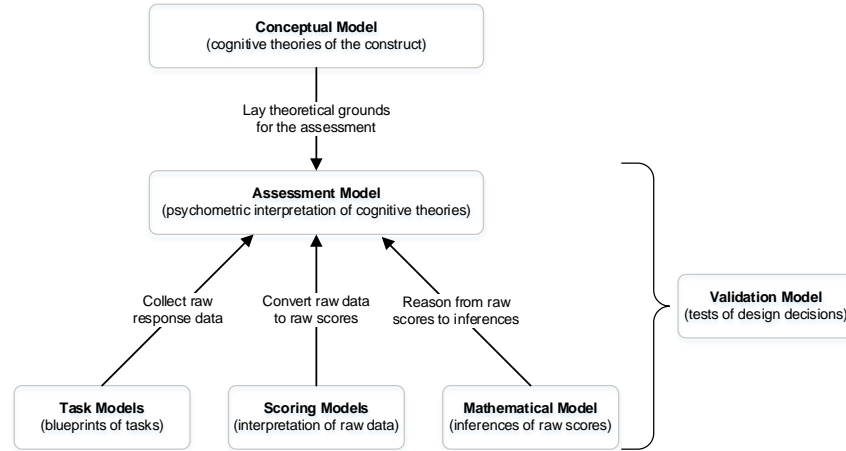
S32 Critical
Thinking
S33 Clinical
Judgement
S34 Problem
Solving

Turning results into actionable test development

MOVING FORWARD

Defining and Measuring the Clinical Judgement Construct





Defining the Construct

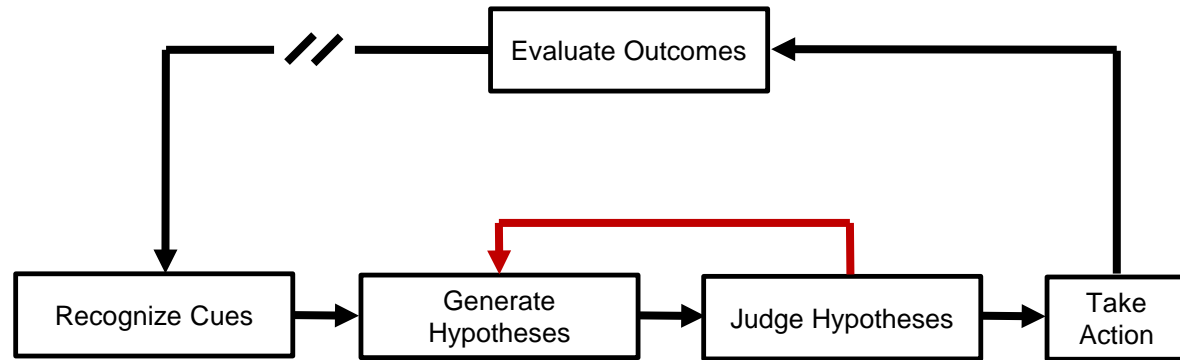
CONCEPTUAL MODEL

Operational Definition of Clinical Judgement

Clinical judgement is defined as the observed outcome of critical thinking and decision-making. It is an iterative process that uses nursing knowledge to observe and assess presenting situations, identify a prioritized client concern and generate the best possible evidence-based solutions in order to deliver safe client care.

Cognitive Theory of the Construct Clinical Judgement

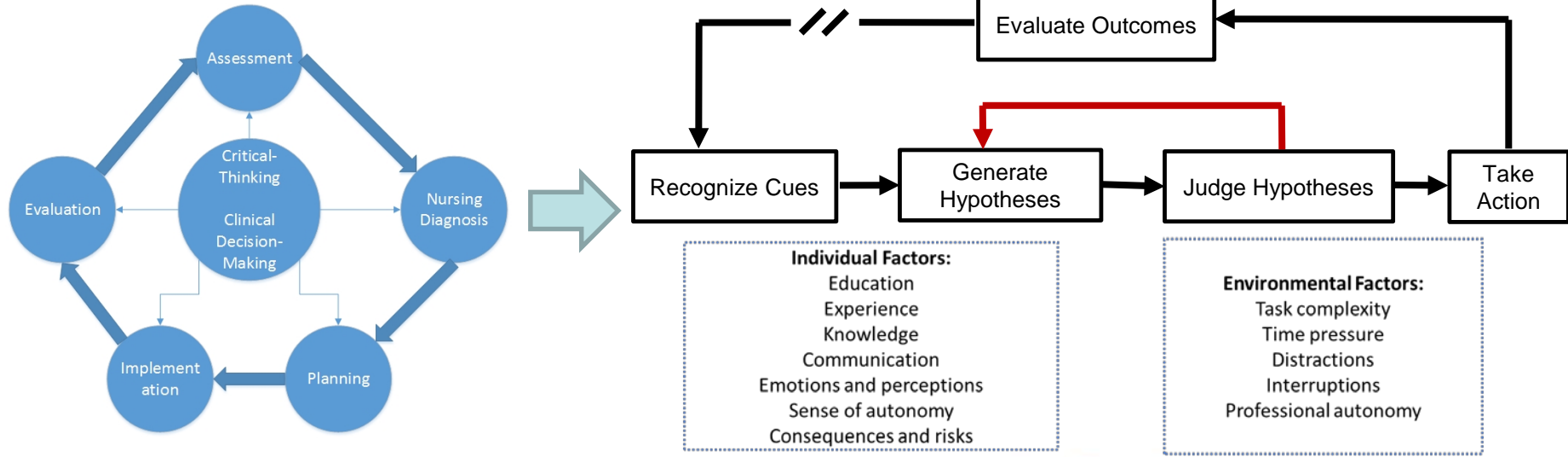
- Skills Acquisition/Humanistic-Intuitive
 - Novice → Expert; Slow thinking → Fluid Problem solver
- Information Processing



- Cognitive Continuum

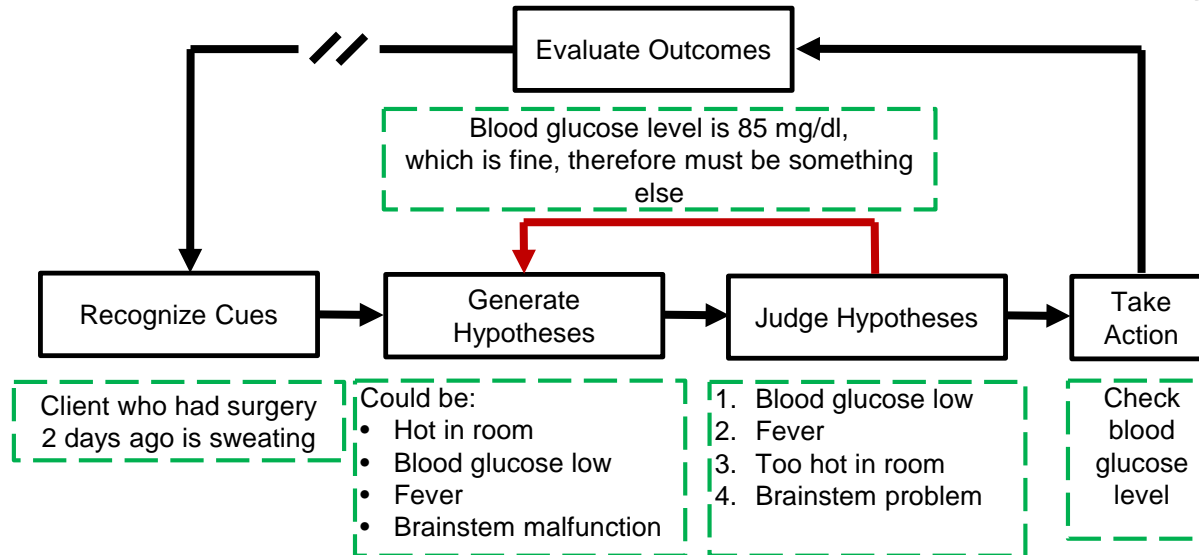
Identifying a Cognitive Model of the Clinical Judgement Construct:

- Translating the Nursing Process Model into a Decision-making Model

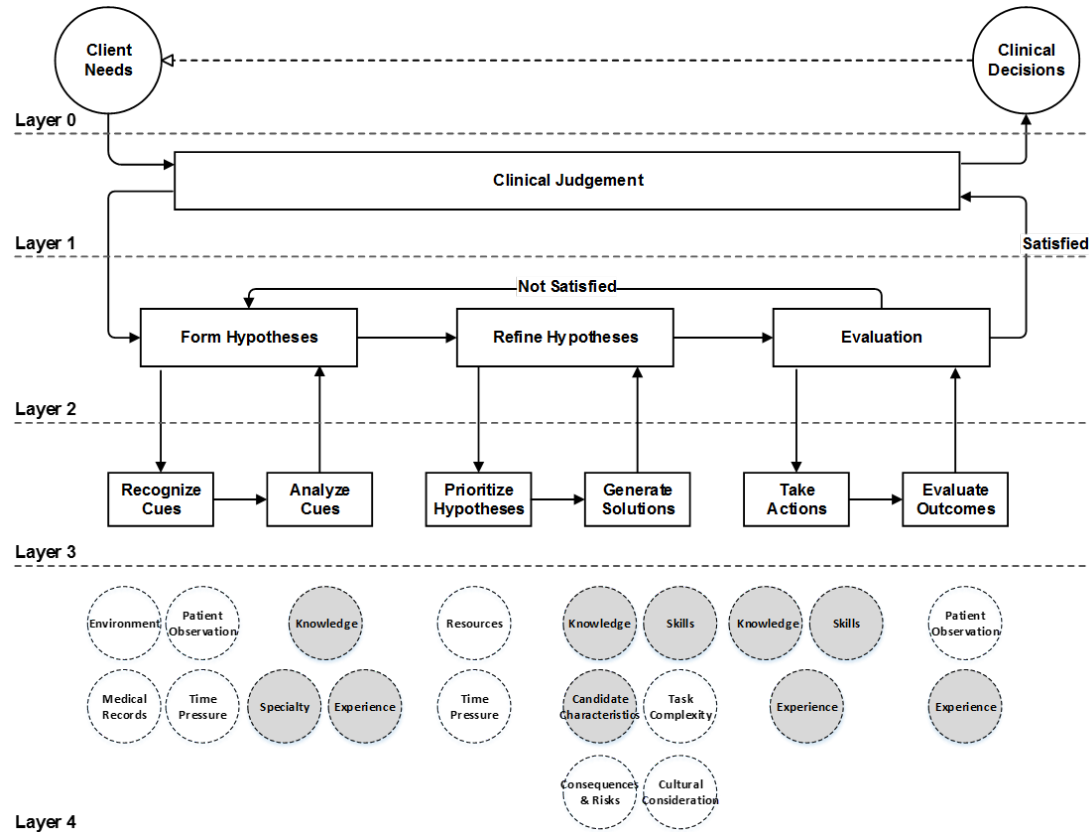


Initial Scenario Development: Example

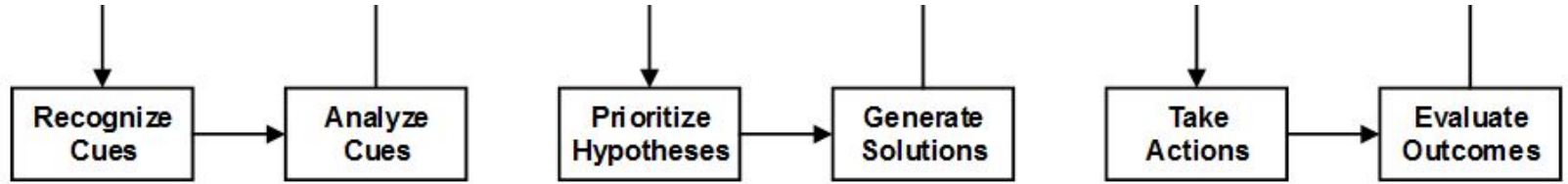
- Develop Scenario Narrative & Abstract Decision-making Elements



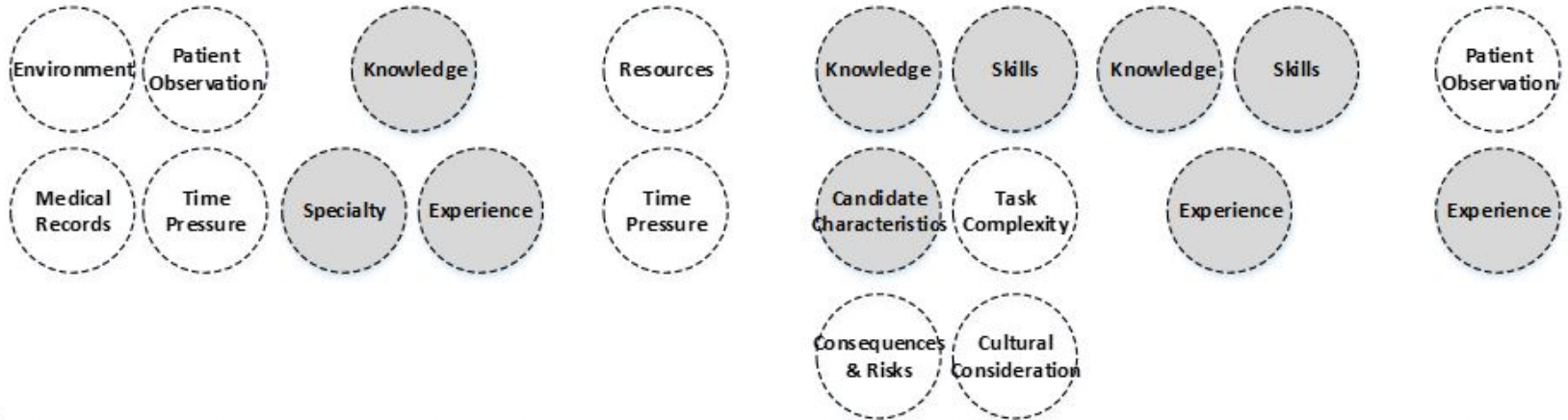
Current Clinical Judgement Conceptual Model



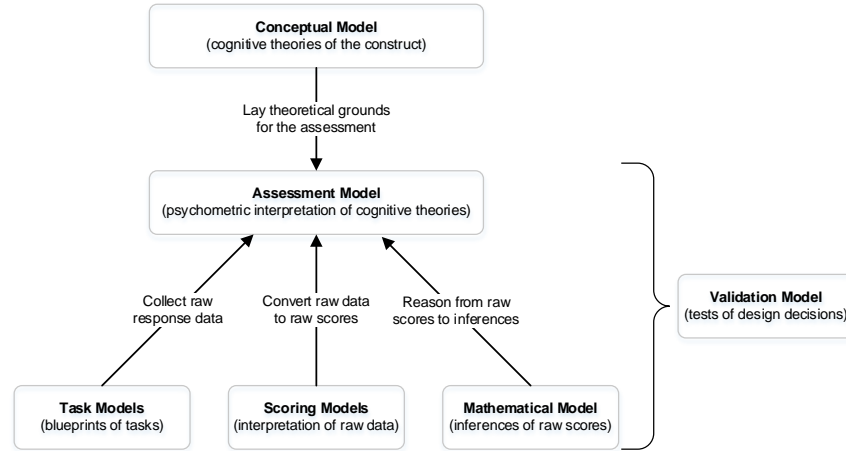
Focus for Item Development



Layer 3



Layer 4



Building Items/Tasks

TASK MODEL

Designing New Items & Response Types

- Job task analysis produced numerous CJ task statements
- SMEs provide authentic scenarios
- SMEs identified possible response types to measure CJ elements
 - Worked with an application developer to render different item types
 - Iterative approach:
 - Create → Render → Evaluate → Refactor → Evaluate
- Goals:
 - Develop item/response types that assess the CJ elements
 - Provide initial proof of concept – Initial evaluation of validity
 - Utilized a continual, on-going learning method
 - Provide continual feedback on item designs, content issues and item coding clarification

Extended Multiple Response: Evaluating treatment for a client

- Rationale:
 - Specify whether new findings indicate an improvement, a worsening condition, or are unrelated
- CJ element: Analyze Cues
- Other uses:
 - Prioritizing (actions to take, pick most and least important)
 - Generating solutions (actions to take, buttons for Important to do, OK to do, Should not do)

The nurse is caring for a client who has pneumonia. Findings upon admission:

| | |
|-----------------------------|---|
| Medical history | Chronic obstructive pulmonary disease |
| Vital signs | Blood pressure 122/84 Pulse 118 Respirations 28 Oral temperature 101.9° F Oxygen saturation 94% on oxygen at 2 L/min via nasal cannula |
| Physical examination | Respiratory: frequent, nonproductive cough; thick, purulent sputum obtained by suction; wheezes bilaterally on inspiration and expiration, crackles bilaterally in posterior bases; shortness of breath with exertion |
| Labs | ABG: pH 7.38, PaCO ₂ 50, HCO ₃ 23, PaO ₂ 78 Sputum culture pending |

The nurse is assessing the client 24 hours after admission and initiation of treatment. Specify how the nurse should interpret each finding by clicking the button for Unrelated to diagnosis, Sign of potential improvement, or Sign of potentially worsening condition.

| Finding | Unrelated to diagnosis | Sign of potential improvement | Sign of potentially worsening condition |
|--|-------------------------------|--------------------------------------|--|
| Digital clubbing | ⊗ | ○ | ○ |
| Oxygen saturation 93% on room air | ○ | ⊕ | ○ |
| ABG pH 7.31 | ○ | ○ | ○ |
| Frequent, productive cough | ○ | ○ | ○ |
| Shortness of breath at rest | ○ | ○ | ○ |
| Increased anteroposterior chest diameter | ○ | ○ | ○ |

Expanded Drag-n-Drop: Rank Risk Factors

- Rationale:
 - Review information about clients to determine which is at the highest risk for different types of cancer
- CJ Element: Prioritize Hypotheses
- Other uses:
 - Analyze cues
 - Generate hypotheses
 - Evaluate outcomes

The nurse is screening female clients at an outpatient clinic. Specify which of the clients is at highest risk of developing cervical cancer, which is at highest risk of developing ovarian cancer, and which is at highest risk of developing breast cancer by dragging the client description to the appropriate box on the right.

Clients:

- 59-year-old client who
 - had first sexual activity at 15 years of age
 - has had approximately 11 sexual partners
 - has had 3 full-term pregnancies, first at age 18
 - smokes cigarettes
 - has a sister with breast cancer
- 58-year-old client who
 - has a sister with ovarian cancer
 - has had approximately 6 sexual partners
 - experienced menopause at 56 years of age
 - has had no pregnancies
- 62-year-old client who
 - had ovarian cancer and is in remission
 - had menarche at 11 years of age
 - had one full-term pregnancy at 35 years of age
 - has a body mass index of 32
- 60-year-old client who
 - has had 4 full-term pregnancies, first at 21 years of age
 - breast-fed her children for the first 8-10 months
 - used oral contraceptives for 8 years
 - smokes cigarettes

Drag and drop

Client at highest risk for cervical cancer:

Client at highest risk for breast cancer:

Client at highest risk for ovarian cancer:

Evaluating Trends

The nurse is caring for a client with chronic obstructive pulmonary disease who was admitted 4 days ago for treatment for bacterial pneumonia. The nurse has received a prescription to discharge the client, who is to continue antibiotic therapy at home and have a follow-up office visit in 4 days. The nurse reviews the following information for the client:

| Client Information | | | | | |
|-------------------------------|--|--|--|--|--|
| | Office visit 2 months ago | Upon admission 4 days ago | 2 days ago | Yesterday | Today |
| Oxygen saturation | 88% on room air, 91% on 2 L/min by nasal cannula | 80% on 2 L/min by nasal cannula, 92% on 6 L/min by face mask | 93% on 2 L/min by nasal cannula | 93% on 2 L/min by nasal cannula | 87% on room air, 92% on 2 L/min by nasal cannula |
| Arterial blood gases: | | | | | |
| PaO₂ | 80 | 65 | 70 | 75 | 80 |
| PaCO₂ | 44 | 53 | 50 | 49 | 45 |
| HCO₃ | 29 | 36 | 34 | 29 | 27 |
| pH | 7.35 | 7.28 | 7.30 | 7.33 | 7.36 |
| White blood cell count | | 14,300/mm ³ (14.3 x 10 ⁹) | 13,920/mm ³ (13.9 x 10 ⁹) | 13,100/mm ³ (13.1 x 10 ⁹) | 12,600/mm ³ (12.6 x 10 ⁹) |
| Hemoglobin | | 18.8 g/dL (188 g/L) | 18.7 g/dL (187 g/L) | 18.8 g/dL (18.8 g/L) | 18.8 g/dL (188 g/L) |

- Considering only these findings, is it safe for the nurse to discharge the client?
 - Yes, the nurse should continue to plan for discharge.
 - No, the nurse should discuss the findings with the client's primary health care provider and ask to postpone discharge.

- Click to highlight the three findings that provide the strongest support for your decision.

Scenario: Static

Case Study Screen 1 of 4

The nurse is assessing a client who has a Clostridium Difficile infection.

The nurse finds the following:

Physical Exam

| | Findings |
|-------------------------|--|
| Gastrointestinal | <ul style="list-style-type: none">• abdomen soft and nontender• bowel sounds active x 4 |
| Cardiovascular | <ul style="list-style-type: none">• weak, irregular pulse |
| Respiratory | <ul style="list-style-type: none">• crackles in middle and lower lobes of lungs |
| Integumentary | <ul style="list-style-type: none">• skin elastic with normal turgor• moist mucous membranes• nonpitting bilateral pedal edema |
| Musculoskeletal | <ul style="list-style-type: none">• report of fatigue• report of leg cramps• difficulty rising to go to the bathroom, saying "my legs feel weak" |
| Neurologic | <ul style="list-style-type: none">• oriented to person, place and time• lethargic• pupils equal and reactive to light• weak patellar reflex |

➤ Complete the following sentence:

The nurse should recognize that this combination of findings is indicative of

➤ Highlight the finding(s) at left that support the choice you made above.

Case Study Screen 2 of 4

The nurse is assessing a client who has a Clostridium Difficile infection.

The nurse reviews the following Medical History information in the client's medical record:

**Physical
Exam**

**Medical
History**

- 66 years old
- Male
- Allergic to penicillin
- Hyperlipidemia diagnosed approximately 8 years ago, managed with gemfibrozil
- Hypertension diagnosed approximately 6 years ago, managed with lisinopril
- Heart failure diagnosed 4 years ago, managed with hydrochlorothiazide
- Osteoarthritis of bilateral knees and wrists, pain managed with acetaminophen
- Clostridium difficile infection diagnosed 2 days ago, frequent diarrheal stools for past 4 days

➤ Click to highlight the factor(s) in the client's medical history that increase the client's risk for developing the potential problem you identified based on the physical exam.

Case Study Screen 3 of 4

The nurse is assessing a client who has a Clostridium Difficile infection.

The nurse receives and reviews the following following laboratory test results:

| Physical Exam | Medical History | Laboratory Test Results | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|-------------------------|---|-----------------|--------|-----------------|--------------|------------------------|--------------------------------|-----------------|------------------------|--------------------------------|---------------|-------------------------|-----------------------------------|-----------------|-------------------------|----------------------------------|---------------------|-----------------------|------------------------------|------------------|-------------------------|-------------------------------|------------------------|-------|-------------|
| | | <table border="1"> <thead> <tr> <th>Laboratory Test</th> <th>Result</th> <th>Reference Range</th> </tr> </thead> <tbody> <tr> <td>serum sodium</td> <td>142 mEq/L (142 mmol/L)</td> <td>136-145 mEq/L (136-145 mmol/L)</td> </tr> <tr> <td>serum potassium</td> <td>3.1 mEq/L (3.1 mmol/L)</td> <td>3.5-5.0 mEq/L (3.5-5.0 mmol/L)</td> </tr> <tr> <td>serum calcium</td> <td>10.0 mg/dL (2.5 mmol/L)</td> <td>9.0-10.5 mg/dL (2.25-2.62 mmol/L)</td> </tr> <tr> <td>serum magnesium</td> <td>1.7 mEq/L (0.85 mmol/L)</td> <td>1.3-2.1 mEq/L (0.65-1.05 mmol/L)</td> </tr> <tr> <td>blood urea nitrogen</td> <td>15 mg/dL (5.4 mmol/L)</td> <td>10-20 mg/dL (3.6-7.1 mmol/L)</td> </tr> <tr> <td>serum creatinine</td> <td>0.9 mg/dL (79.6 µmol/L)</td> <td>0.6-1.2 mg/dL (53-106 µmol/L)</td> </tr> <tr> <td>urine specific gravity</td> <td>1.020</td> <td>1.005-1.030</td> </tr> </tbody> </table> | Laboratory Test | Result | Reference Range | serum sodium | 142 mEq/L (142 mmol/L) | 136-145 mEq/L (136-145 mmol/L) | serum potassium | 3.1 mEq/L (3.1 mmol/L) | 3.5-5.0 mEq/L (3.5-5.0 mmol/L) | serum calcium | 10.0 mg/dL (2.5 mmol/L) | 9.0-10.5 mg/dL (2.25-2.62 mmol/L) | serum magnesium | 1.7 mEq/L (0.85 mmol/L) | 1.3-2.1 mEq/L (0.65-1.05 mmol/L) | blood urea nitrogen | 15 mg/dL (5.4 mmol/L) | 10-20 mg/dL (3.6-7.1 mmol/L) | serum creatinine | 0.9 mg/dL (79.6 µmol/L) | 0.6-1.2 mg/dL (53-106 µmol/L) | urine specific gravity | 1.020 | 1.005-1.030 |
| Laboratory Test | Result | Reference Range | | | | | | | | | | | | | | | | | | | | | | | | |
| serum sodium | 142 mEq/L (142 mmol/L) | 136-145 mEq/L (136-145 mmol/L) | | | | | | | | | | | | | | | | | | | | | | | | |
| serum potassium | 3.1 mEq/L (3.1 mmol/L) | 3.5-5.0 mEq/L (3.5-5.0 mmol/L) | | | | | | | | | | | | | | | | | | | | | | | | |
| serum calcium | 10.0 mg/dL (2.5 mmol/L) | 9.0-10.5 mg/dL (2.25-2.62 mmol/L) | | | | | | | | | | | | | | | | | | | | | | | | |
| serum magnesium | 1.7 mEq/L (0.85 mmol/L) | 1.3-2.1 mEq/L (0.65-1.05 mmol/L) | | | | | | | | | | | | | | | | | | | | | | | | |
| blood urea nitrogen | 15 mg/dL (5.4 mmol/L) | 10-20 mg/dL (3.6-7.1 mmol/L) | | | | | | | | | | | | | | | | | | | | | | | | |
| serum creatinine | 0.9 mg/dL (79.6 µmol/L) | 0.6-1.2 mg/dL (53-106 µmol/L) | | | | | | | | | | | | | | | | | | | | | | | | |
| urine specific gravity | 1.020 | 1.005-1.030 | | | | | | | | | | | | | | | | | | | | | | | | |

➤ For each potential action listed below, click to specify whether the action is

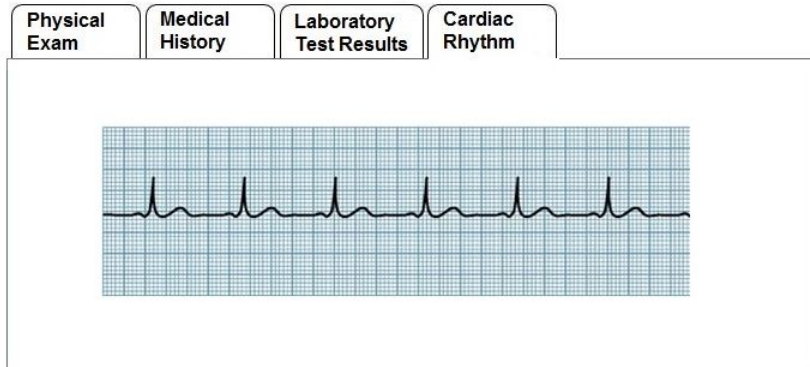
- indicated for the client given the findings,
- non-essential but not harmful to the client, or
- contraindicated for the client.

| Potential action | Indicated | Non-essential | Contraindicated |
|---|-----------------------|-----------------------|-----------------------|
| Monitor the client for circumoral paresthesia. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Initiate seizure precautions. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Withhold the next dose of lisinopril. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Withhold the next dose of hydrochlorothiazide. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Request a prescription to apply a cardiac monitor. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Request a prescription to administer an intravenous bolus of potassium. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Encourage the client to eat oranges, potatoes, and low-fat yogurt. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Case Study Screen 4 of 4

The nurse is assessing a client who has a Clostridium Difficile infection.

The nurse has applied a continuous cardiac monitor and observes the following cardiac rhythm:



➤ The electrocardiogram strip at left demonstrates which of the following cardiac rhythms?

- normal sinus rhythm with premature ventricular contractions
- normal sinus rhythm
- atrial flutter
- tachycardia

➤ The nurse should continue to monitor the client's cardiac rhythm because the client is at increased risk for developing which of the following?

- prolonged PR interval
- tall, tented T wave
- presence of a U wave
- ST segment elevation

➤ Complete the two sentences below by dragging from the Causes box.

The manifestation of decreased cardiac output is caused by

The manifestation of muscle weakness and leg cramps is caused by

Causes

a shift of water from extracellular fluid into intracellular space

increased neuromuscular irritability

decreased contractility of cardiac muscle

decreased resting membrane potential of skeletal muscle cells

Scenario: Evolving

Case Study Screen 1 of 3

The healthcare team is caring for a 64-year-old male client who has been receiving chemotherapy for lung cancer. The client's last chemotherapy administration was 7 days ago.

Office visit, at 0900

The client visits the oncology clinic for routine follow-up care. While assessing the client, the nurse notes the following:

- Vital signs: blood pressure 104/80, heart rate 110, temperature 101.8° F (38.8° C), respiratory rate 22, oxygen saturation 98% on room air
- Lung sounds diminished on right posterior middle lobe, which is consistent with lung lesions
- Periodic dry cough
- Client report of chills, nausea, weakness, and a feeling of malaise
- Redness and tenderness at peripherally inserted central catheter (PICC) site

The nurse takes the following actions:

- Assesses the client's mental status
- Notifies the primary health care provider of the findings
- Requests an order for a complete blood cell count

➤ Were the nurse's actions appropriate?

- All of the nurse's actions were appropriate.
- Some of the nurse's actions were not appropriate.

Case Study Screen 2 of 3

The healthcare team is caring for a 64-year-old male client who has been receiving chemotherapy for lung cancer. The client's last chemotherapy administration was 7 days ago.

Office visit, at 0900

Hospital admission,
at 1030

The client is admitted to an inpatient oncology unit for further evaluation and treatment. The admitting nurse notes the following:

- Vital signs: blood pressure 100/78, heart rate 114, temperature 101.7° F (38.7° C), respiratory rate 22, oxygen saturation 97% on room air
- Pulse thready
- Respirations deep, lung sounds diminished on right posterior middle lobe, periodic dry cough
- Hypoactive bowel sounds
- Skin pale, warm and dry
- Mental status: alert and oriented x 3

➤ The nurse should anticipate receiving orders for which of the following? Select all that apply.

- Serum lactate
- Clear liquid diet
- Intravenous fluids
- Intravenous antibiotics
- Continuous cardiac monitoring
- Blood culture from the PICC line
- Blood culture from a peripheral venipuncture
- Complete blood cell count with differential
- Assignment to a room with positive air pressure

Case Study Screen 3 of 3

The healthcare team is caring for a 64-year-old male client who has been receiving chemotherapy for lung cancer. The client's last chemotherapy administration was 7 days ago.

Office visit, at 0900

Hospital admission,
at 1030

6 hours later, at 1630

Six hours after admission, the laboratory test results are as follows:

Complete blood cell count:

Hemoglobin 16.1 g/dL (161 g/L)

Hematocrit 42% (0.42)

Total white blood cell count 13,200/mm³ ($13.2 \times 10^9/L$)

Platelet count 155,000/mm³ ($155 \times 10^9/L$)

Blood cultures x 2: results pending

The client's PICC line has been removed. The nurse has inserted a 14-gauge peripheral venous access device. The client's primary health care provider ordered imipenem/cilastatin, and the client received the first dose 5 hours ago.

The nurse is assessing the client and notes the following:

- Vital signs: blood pressure 98/74, heart rate 120, temperature 101.7° F (38.7° C), respiratory rate 24, oxygen saturation 97% on room air
- Deep respirations, moist crackles in lung bases
- Pulse thready, capillary refill 1 second
- Skin pale and cool
- Urine output 26 ml/hr
- Client restless, alert to person and place but not to time
- T-wave inversion in cardiac rhythm

➤ Which of the following actions should the nurse take? Select all that apply.

- Administer supplemental oxygen.
- Place the client in a Fowler's position.
- Anticipate orders to administer intravenous crystalloids.
- Call for the facility's emergency response team.
- Bring the unit's crash cart into the client's room.
- Monitor the client's vital signs a minimum of every 30 minutes.

Scenario: Evolving

Case Study Screen 4 of 5

The nurse is caring for an 8-year-old client who experienced a cervical spinal cord injury four days ago and is receiving mechanical ventilation.

Progress Notes

- 1410** The client received a nebulized bronchodilator treatment followed by chest physiotherapy and suctioning 15 minutes ago.
- 1420** The high pressure alarm on the ventilator has begun to sound. The client is agitated and appears to be trying to cough.
- 1440** Clear thick yellow secretions were suctioned from the client's endotracheal tube. The client's oxygen saturation is 88% even though the client is being hyperventilated with 100% oxygen. The high pressure alarm continues to sound and the client remains agitated. Breath sounds are decreased in the right lower lobe. The endotracheal tube is appropriately positioned and securely taped. The client's lips are moist and the skin is warm. Both radial and pedal pulses are palpable. The client's hand grasps are strong.

- Click to highlight the findings at 1440 that would be important for the nurse to follow up.

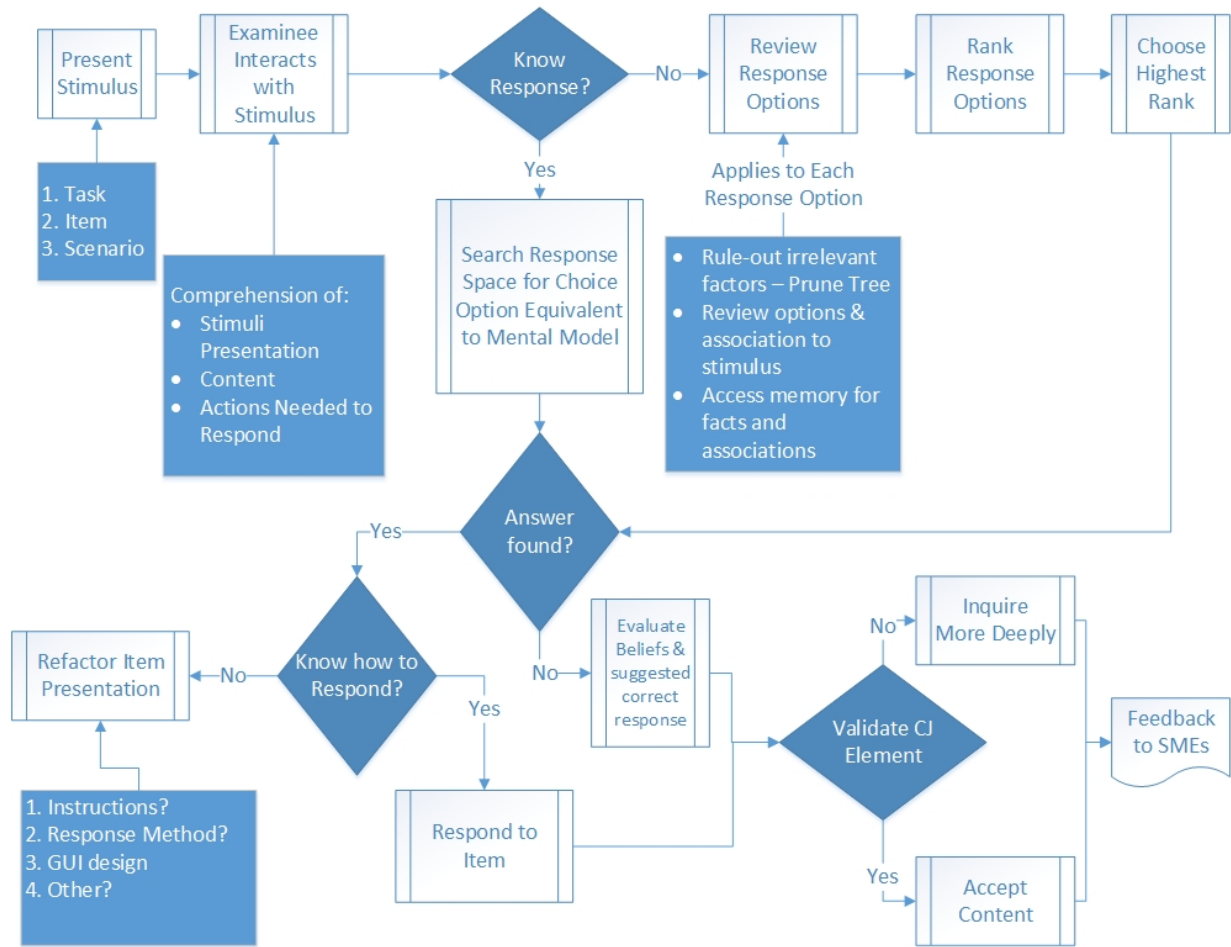
Research Endeavors to Validate Content related to Clinical
Judgement and Item Design

VALIDATION & USABILITY

On-going Learning – Cognitive Labs

- Some Goals:
 - Provide evidence that:
 - New items measure the intended CJ construct
 - Design is easily understood & easy to use (intuitive use)
 - Identify any construct irrelevant features for re-factoring
 - Look for correspondence between SME intention and participant responses
 - Strategies employed to evaluate items
 - Thought process when engaging item
 - Does the participant express rationales for the item that correspond to the intended CJ element(s)
 - Evaluate the information search of participants with respect to CJ content stems and then evaluate the extent to which the response set matches their initial conceptualization
 - E.g., ask the stem without any expected responses, does participant expectation of what the item is suggesting match the SME expected response
- Think aloud protocols
 - Concurrent: used during real-time interaction
 - Retrospective: after interaction to provide reflective feedback

Validity Design Framework



Example: Concurrent Questions

1. *Tell me what you did to get your answer to this question.*

Probe as needed with: What in the question made you do that?

Exploring coding strategy (mark as many as apply):

- Used steps in Layer 2 of Clinical Judgement model (formed hypothesis, refined hypothesis, evaluated outcomes)
- Performed steps in Layer 3 of Forming Hypotheses (recognized cues, analyzed cues)
- Performed steps in Layer 3 of Refining Hypotheses (prioritize hypotheses, generate solutions)
- Performed steps in Layer 3 of Evaluation (take actions, evaluate outcomes)
- Discussed the following underlying clinical judgement concepts:

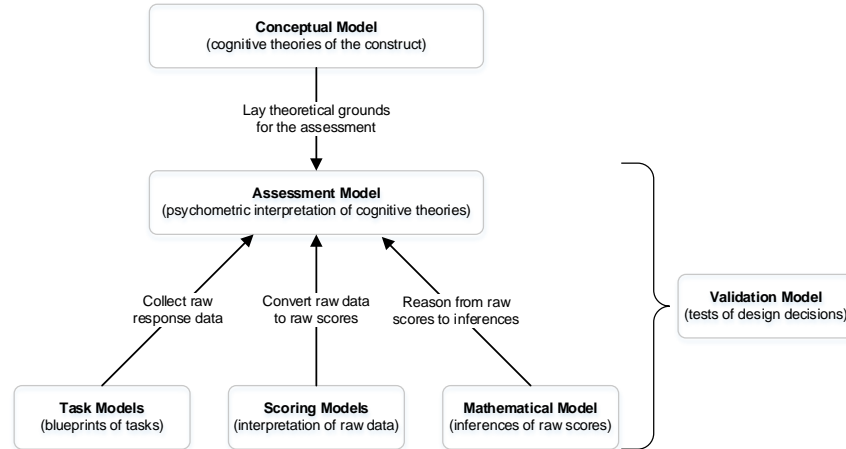
- Discussed the limitation of cues, hypotheses or evaluation
- Made an explicit reference to one or more of the related factors from Layer 4 (environment, medical records, patient observation, experience, specialty, cultural considerations, consequences and risks)
- Recalled prior knowledge. Describe: _____
- Relied on previous question [indicated item dependence]
- Other, describe: _____

Usability Studies

- Common elements:
 - Built in memorability design:
 - Evaluated immediate, intermediate, and long-term recall at each round
 - Same item format with different scenario, same scenario with different item format, and totally new items
 - All items viewed by at least 5 participants
 - All sessions videotaped for archive and review
- Wave 1:
 - 30 1st round participants reviewed items for design and cognitive features
 - 15 returned for a 2nd round & 8 returned for 3rd round
 - 70 items studied
- Wave 2:
 - 23 1st round participants reviewed items for design and cognitive features
 - 12 were returners from Wave 1 (used for long-term recall)
 - 15 returned for a 2nd round and 7 returned for 3rd round
 - 24 new items studied & 12 wave 1 items (both memorability and validate design)

Usability Studies Continued

- Some general findings:
 - Results support early design decisions
 - Feel the items are difficult, but navigable
 - Instruction sets were validated
 - Highlighting items have been tokenized: really like this functionality
 - Single- and multi-column layouts is implicitly read time as moving from left to right
 - Response types highly memorable & items only memorable for vague aspects of the content



Current & Up-coming Research on Scoring & Measurement

SCORING & MEASUREMENT

Special Research Section: Currently Field Testing

- Some research questions:
 1. Are CJ and nursing knowledge separate dimensions?
 2. What are the possible/optimal scoring rules for each item type?
 3. Which scaling methods are most appropriate?
 4. How to evaluate drift/fit with potentially new scaling method?
 5. Do variations in response types show differences in the measurement of CJ elements?
 6. Are the individual CJ elements substantially different?
 7. How to provide feedback to SMEs about statistical results?

THANK YOU



NCSBN

National Council of State Boards of Nursing

An Evidence-Based Cognitive Approach for Teaching Nursing Clinical Judgement Skills to Entry Level Practitioners

Janice I. Hooper, PhD, RN, FRE, CNE, FAAN, ANEF
Education Consultant
Texas Board of Nursing

Learning Objectives:

1. The learner will be able to classify the cognitive components involved in nursing clinical judgement.
2. The learner will be able to develop clinical judgement curriculum and corresponding decision-making scenarios for the education of entry-level nurses.

Clinical Judgement and the Role of the Nurse

- Clinical Judgement (CJ) is:
 - A key differentiating factor among roles
 - Essential due to the growing complexity of the nurse's role
 - A marker for nursing competency

The Case for Clinical Judgement in Nursing Education

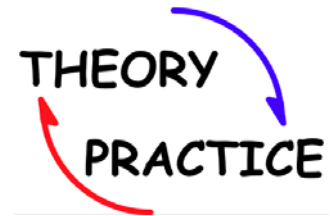
- Goal of Nursing Education: to prepare graduates who will be safe, competent nurses
- The NCLEX measures entry level practice readiness
- A focus on CJ will prepare nurses who pass the NCLEX

The Need for More Rigor in Nursing Education

- Errors of novice nurses indicate a lack of critical thinking ability
- The “gap” between education and practice
- Global concerns about the issue
- Concern of Medicine about diagnostic errors

Recent Findings in a Texas Pilot Program

- Taxonomy of Error Root Cause Analysis of Practice (TERCAP) Pilot Program
- Analysis of practice breakdown incidents
- 260 Participants
- Most significant practice breakdown related to failures in clinical reasoning
- Correlation between clinical judgement and SAFETY



Critical Thinking

- Critical thinking is involved in assessment as the nurse is analyzing behaviors and findings – that may lead to further assessment.
- Terms: clinical reasoning, critical reflection, deep thinking, recognition of implications
- Failure to think critically may lead to erroneous conclusion and inadequate care.

Operational Definition of Nursing Clinical Judgement

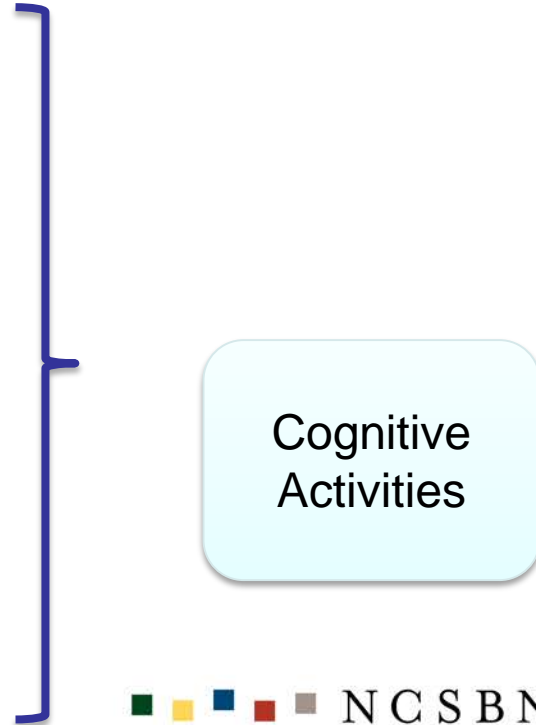
*Clinical judgement is defined as the **observed outcome** of **critical thinking and decision-making**. It is an iterative process that uses **nursing knowledge** to **observe** and assess presenting situations, **identify a prioritized client concern** and **generate** the best possible evidence-based solutions in order to deliver safe client care.*

Nursing Clinical Judgement

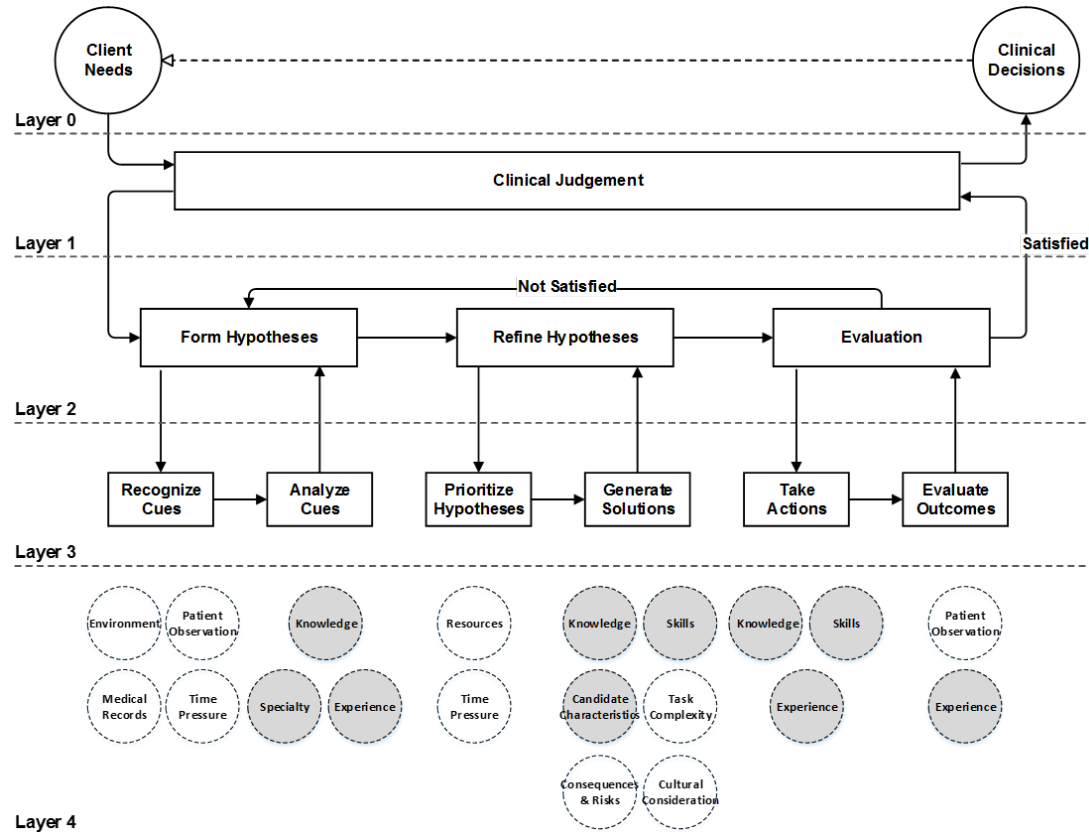
Nursing clinical judgement can be defined as a **systematic method of processing information**. A description of the various cognitive components and their subsets as well as the execution of each is offered to fully appreciate nursing clinical judgment as a whole.

Information Processing Model

- Cue recognition
- Cue interpretation
- Hypotheses generation
- Hypotheses evaluation
- Generate solutions
- Take action
- Evaluate outcomes

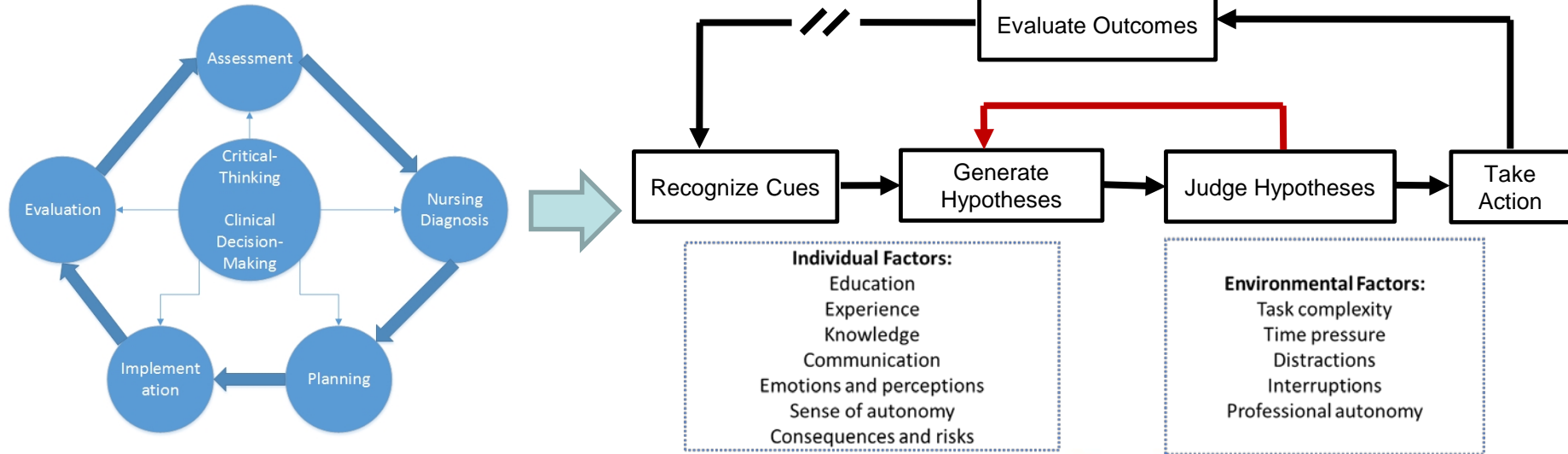


Current Clinical Judgement Conceptual Model

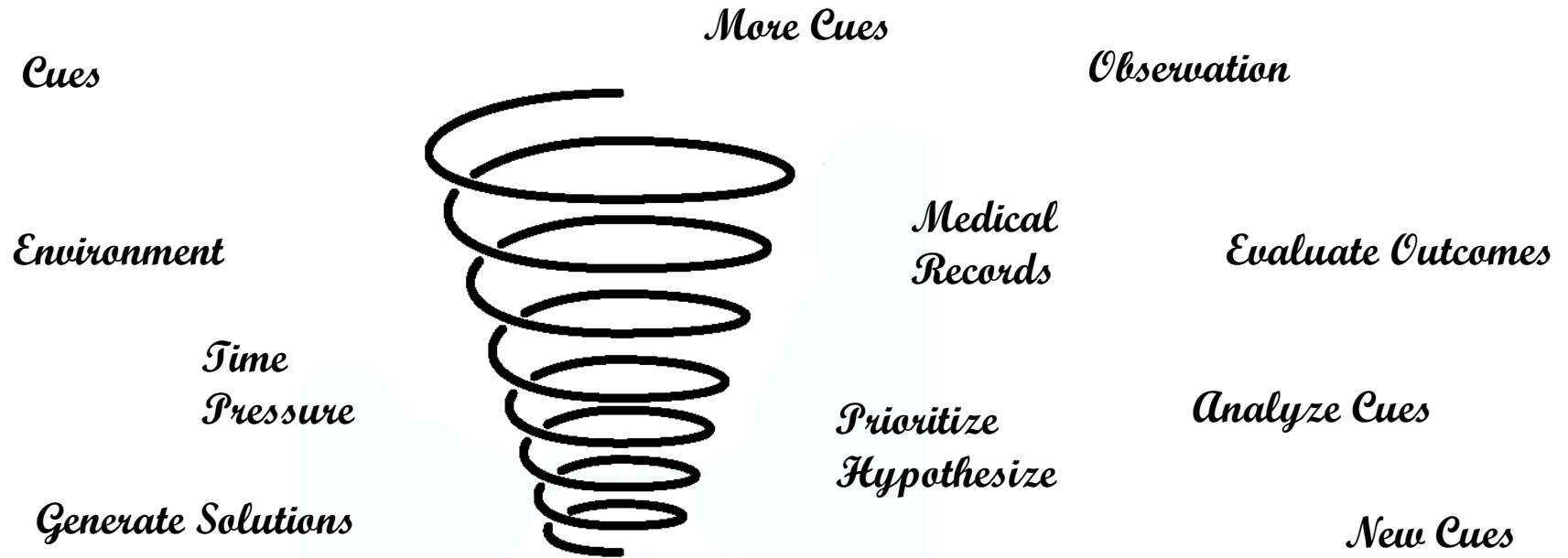


Identifying a Cognitive Model of the Clinical Judgement Construct:

- Translating the Nursing Process Model into a Decision-making Model



The Spiral of Clinical Judgement



Clinical Judgement Task Model

| Cognitive Activity | Factor Condition | Expected Response |
|---------------------------------|--|-------------------|
| Recognize Cues, Interpret Cues | <ul style="list-style-type: none"> ▪ Knowledge of XX ▪ Client observation cue <ul style="list-style-type: none"> ○ Show symptoms XX as observation cue ○ Imply being XX as observation cue ○ Show symptoms XX as medical record cue ○ Imply history of XX as medical record cue ○ Imply XX as medical record cue ▪ Environmental cue <ul style="list-style-type: none"> ○ Time constraint | ▪ |
| Generate Hypotheses | <ul style="list-style-type: none"> ▪ List probable client problems ▪ Require knowledge of XX ▪ Require knowledge of XX | ▪ |
| Evaluate Hypotheses | <ul style="list-style-type: none"> ▪ Available resources ▪ Consider consequence of decision | ▪ |
| Generate Solutions, Take Action | <ul style="list-style-type: none"> ▪ Require knowledge of action 1 ▪ Require knowledge of action 2, 3, etc. | ▪ |
| Evaluate Outcome | <ul style="list-style-type: none"> ▪ Show XX as client observation cue | ▪ |

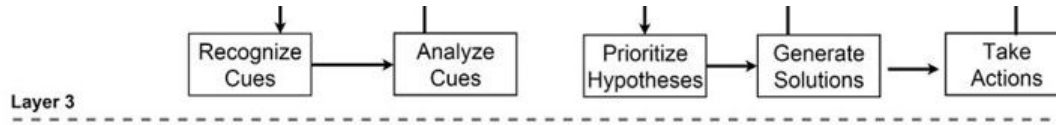
Clinical Judgement Task Model

| Cognitive Activity | Factor Condition | Expected Response |
|--------------------------------|--|---|
| Recognize Cues, Interpret Cues | <ul style="list-style-type: none"> ▪ Knowledge of potential problems: diabetes, dehydration, malnutrition, etc. ▪ Client observation cue <ul style="list-style-type: none"> ○ Show symptoms of dizziness, headache, dry mucous membranes, cool extremities and capillary refill as observation cue ○ Show symptoms vital signs and reporting symptoms over the last two days as medical record cue ○ Imply history of diabetes as medical record cue ▪ Environmental cue <ul style="list-style-type: none"> ○ Time constraint implied based on lethargy and onset of client symptoms two days ago | <ul style="list-style-type: none"> ▪ Recognize abnormal findings ▪ Identify history of diabetes |
| Generate Hypotheses | <ul style="list-style-type: none"> ▪ List probable client problems ▪ Require knowledge of client alterations related to changes in mentation and fluid volume. | <ul style="list-style-type: none"> ▪ Identify priority as dehydration ▪ Hypothesize diabetes |

Clinical Judgement Task Model

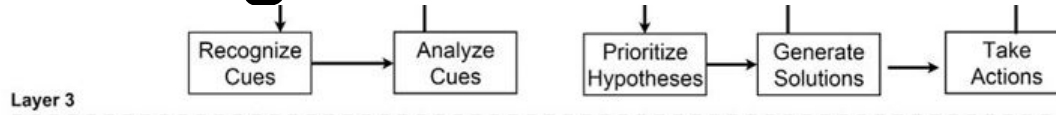
| Cognitive Activity | Factor Condition | Expected Response |
|---------------------------------|--|--|
| Evaluate Hypotheses | <ul style="list-style-type: none"> ▪ Available resources ▪ Consider consequence of decision to take action or do nothing. | <ul style="list-style-type: none"> ▪ Rate potential problems and select one with highest priority |
| Generate Solutions, Take Action | <ul style="list-style-type: none"> ▪ No action required ▪ Require knowledge of nursing interventions for <ul style="list-style-type: none"> ○ Mental status changes ○ Fluid volume deficit ○ Alteration in blood glucose level | <ul style="list-style-type: none"> ▪ Rate potential actions and select one best suited for the specific case |
| Evaluate Outcome | <ul style="list-style-type: none"> ▪ Show increased client responsiveness as client observation cue ▪ Show abnormally low blood glucose and dry mucous membranes as client observation cue | <ul style="list-style-type: none"> ▪ Next action based on nurse satisfaction, client response, desired outcome achieved |

Clinical Judgement Element Descriptors



- **Recognize Cues:** The candidate extracts information from the scenario. The information may come from different sources (e.g., the environment, the client, the guardian, another nurse, computerized record, memory, etc.) in different formats (e.g., visual observation, audio perception, lab results, text description, etc.).
- **Analyze Cues:** The candidate interprets cues from their existing knowledge base and nursing perspective, evaluate cues in terms of relevancy, importance and interrelationship among other cues, organize cues in the mental representation of the scenario (e.g., organize cues in clusters), and then develops a group of probable client needs/concerns and problems.

Clinical Judgement Element Descriptors



- **Prioritize Hypotheses:** The candidate evaluates the hypotheses generated previously in various dimensions (e.g., urgency, likelihood, risk/difficulty/time/cost of providing care to that hypothesis, etc.), and organize them into an ordered list where the priority hypotheses (i.e., client needs/concerns/problems) are on the top.
- **Generate Solutions:** The candidate develops a list of actions to address the priority hypothesis. The candidate then selects the appropriate action from the list and carries out the action.
- **Take Actions:** The candidate sorts the hypotheses (probable client needs, concerns, problems) in order (based on their evaluation in various dimensions), and carries out the action(s) to address the hypothesis/hypotheses with highest priority.
- **Evaluate outcomes:** The candidate compares the outcomes against what was expected (disease progression, unique client response) and decides whether additional clinical decisions are needed for this scenario.

Scenario

An 8-year-old client with a history of diabetes presents to the emergency room with his mother, who reports that the child has not been feeling well for the last two days. She states he has a low-grade temperature, diarrhea and a poor appetite. Today, the child reports he is feeling dizzy and that his head hurts. The mother also reports that he is refusing to eat or drink anything. Client vital signs upon arrival are pulse – 162 beats/minute, respirations – 26 breaths/minute, blood pressure – 78/42 mmHg, temperature – 100.3° F orally and blood serum glucose - 75mg/dL. The client is admitted to the hospital, and an intravenous line is placed with 0.9% normal saline infusing at 50mL/hr. The nurse notes that the child is responsive to questions but appears lethargic. The mucous membranes appear dry, extremities are cool, and capillary refill is 3 - 4 seconds.

Hypothetical Task Model: Pediatrics

| Cognitive Operation | Factor Conditioning | Expected Behavior |
|-----------------------|---|---|
| Recognize Cues | <p>Environmental Cues:</p> <ul style="list-style-type: none"> ▪ Set <i>location</i> to <i>emergency room</i> ▪ Show <i>the presence of parent</i> <p>Client Observation Cues:</p> <ul style="list-style-type: none"> ▪ Show <i>age</i> to <i>8-10</i> ▪ Show <i>dehydration symptoms</i> (e.g., dry mucous membranes appear, cool extremities, cap refill 3-4 seconds) ▪ Show/Imply <i>lethargy</i> <p>Medical Record Cues:</p> <ul style="list-style-type: none"> ▪ Show <i>dehydration symptoms</i> (e.g., a lower-grade temperature, diarrhea, a poor appetite) ▪ Show/Imply <i>history of diabetes</i> ▪ Show/Imply <i>vital signs</i> <p>Time Pressure Cue:</p> <ul style="list-style-type: none"> ▪ Set <i>time pressure</i> to <i>varying with onset of symptoms and current lethargy</i> | <ul style="list-style-type: none"> ▪ Recognize <i>abnormal vital signs</i> ▪ Recognize <i>symptoms of dehydration</i> ▪ Identify <i>the history of diabetes</i> ▪ Hypothesize <i>dehydration</i> ▪ Hypothesize <i>diabetes</i> |
| Analyze Cues | <ul style="list-style-type: none"> ▪ Require <i>knowledge</i> of <i>dehydration symptoms</i> ▪ Require <i>knowledge</i> of <i>diabetes symptoms</i> | |
| Prioritize Hypotheses | <ul style="list-style-type: none"> ▪ Give <i>vital sign monitors</i> as <i>resources</i> ▪ Set <i>time pressure</i> to <i>vary with vital signs</i> | <ul style="list-style-type: none"> ▪ Prioritize <i>dehydration</i> ▪ Address <i>dehydration</i> ▪ Avoid <i>glucose</i> |
| Generate Solutions | <ul style="list-style-type: none"> ▪ Require <i>knowledge</i> of <i>dehydration treatment and intervention</i> ▪ Require <i>knowledge</i> of <i>diabetes treatment and intervention</i> | |
| Evaluate Outcomes | <p>Experience:</p> <ul style="list-style-type: none"> ▪ Require <i>experience</i> of <i>administering isotonic fluid</i> <p>Client Observation Cue:</p> <ul style="list-style-type: none"> ▪ Show <i>client awaking and talking</i> ▪ Imply <Set <i>vital signs</i> to <i>varying with action</i>> | <ul style="list-style-type: none"> ▪ Check <i>vital signs</i> ▪ Check <i>lethargy</i> |

The Clinical Judgement Model as a Clinical Evaluation Tool

(Evaluating student's information processing and decision making)

Sample Objective: The student demonstrates comprehensive cue recognition in areas of and analysis resulting in effective clinical judgement. (Objectives may be applicable to many clinical settings.)

The faculty should write their own analysis of cues as a benchmark (modeling).

Dr. Betts mentioned that the highest rated skills needed are: clinical judgement, professional communication, and active listening. These skills can be taught in clinical learning experiences.

Basic Clinical Evaluation Tool (student)

| Cue Recognition | Cue Analysis | Hypothesis | Judge Hypothesis | Take action | Evaluate action |
|---|--------------|------------|------------------|-------------|-----------------|
| Environment Patient Records Family Etc. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Basic Clinical Evaluation Tool (faculty)

(Student Feedback – written comments)

| Cue Recognition | Cue Analysis | Hypothesis | Judge Hypothesis | Take action | Evaluate action |
|---|---------------------|-------------------|-------------------------|--------------------|------------------------|
| Environment Patient Records Family Etc. | | | | | |
| | | | | | |
| Student Attributes Knowledge Skills Characteristics Awareness Affective | | | | | |
| | | | | | |

A Clinical Evaluation Tool Based on CJ

- Fosters Evaluation of Behavior in 3 domains: cognitive, affective, and psychomotor
- Documents students progression across the program
- Recommends areas for improvement

The Clinical Judgement Model as a Curriculum Guide

(Teaching clinical decision making)

Using the CJ Model in clinical learning experiences may result in changes to the curriculum.

Course objectives may also need to reflect information processing and clinical decision making.

The curriculum should follow the needs in the practice setting.

Teaching Clinical Decision-Making: Familiar Strategies

- Coaching
- Debriefing
- Modeling
- Thinking out loud
- Case studies
- Unfolding case studies
- Simulation
- Concept maps

QUESTIONS?

THANK YOU!