2022 Virtual NCLEX® Conference
Thursday, Sept. 22, 2022
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Next Generation
NCLEX® (NGN): Item Types and Scoring

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NCSBN
Objectives

At the end of the session, participants will be able to:
• Discuss the Next Generation NCLEX® (NGN) scoring rules;
• Understand how the scoring rules are applied to NGN item types.
Research Framework

Conceptual Model
(cognitive theories of the construct)

Assessment Model
(psychometric interpretation of cognitive theories)

Lay theoretical grounds for the assessment

Task Models
(blueprints of tasks)

Scoring Models
(interpretation of raw data)

Mathematical Model
(inferences of raw scores)

Validation Model
(tests of design decisions)

Collect raw response data
Convert raw data to raw scores
Reason from raw scores to inferences
Scoring Research

- Collected data on nearly 3,000 NGN Items
- Collected over 10 million responses
- Over 800k examinees responded to NGN items
  - Nearly 90% of examinees interact and respond to NGN items
- Nearly 500k examinees completed the entire NGN Special Research Section
- Identified three core rules that categorize the new NGN items
  - Theory driven
  - Empirically supported
Scoring Model Goals

• Map candidate responses into measurable score points
• Allow for making inferences on candidate knowledge, skills and abilities
Item Response Types

- Multiple Choice
- Matrix Multiple Choice
- Multiple Response Select N
- Drop-Down Cloze
- Drag-and-Drop Cloze
- Drop-Down Table
- Bow-tie

- Multiple Response Select All That Apply
- Highlight Text
- Highlight Table
- Matrix Multiple Response
- Multiple Response Grouping
- Drop-Down Rationale
- Drag-and-drop Rationale
0/1 Scoring Rule

- Classic approach to scoring exam questions
- 1 point for a correct response
- 0 points for incorrect responses
- Multi-point items
  - Total score = sum of all correct responses
- Used when candidates are instructed to choose a specific number of responses
0/1 Scoring Rule: Multiple Choice

- Classic approach to scoring exam questions
- 1 point for a correct response
- 0 points for incorrect responses
- Multi-point items
  - Total score = sum of all correct responses

Example:

- Which of the following actions should the nurse take?
  - Prepare the client for a chest x-ray.
  - Administer intravenous fluids to the client.
  - Request a prescription for acetaminophen.
  - Place a nasal cannula on the client for oxygen administration.

- Which of the following actions should the nurse take?
  - Prepare the client for a chest x-ray.
  - Administer intravenous fluids to the client.
  - Request a prescription for acetaminophen.
  - Place a nasal cannula on the client for oxygen administration.
### 0/1 Scoring Rule: Matrix Multiple Choice

- Treat each row as an independent multiple-choice question
- 1 point for the correct response
- 0 points for the incorrect response
- Sum the score over the rows to get the total score of the item
- Max score = Number of rows

#### Example:

<table>
<thead>
<tr>
<th>Assessment Findings</th>
<th>Improved</th>
<th>Not Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>✔️</td>
<td>✕</td>
</tr>
<tr>
<td>BP</td>
<td>✕</td>
<td>✔️</td>
</tr>
<tr>
<td>nausea</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>pain rating</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>urine output</td>
<td>✔️</td>
<td></td>
</tr>
</tbody>
</table>

- Row 1: correct
- Row 2: incorrect
- Row 3: correct
- Row 4: correct
- Row 5: correct

---

4 total points
0/1 Scoring Rule: MR Select N

- Candidates instructed to select N number of options
- The number of selections are based on the number of keys
- The candidate can select less than the stated number of keys, but they must select at least one

Select the 3 complications the client is at risk for developing.

- 1. anemia
- 2. peritonitis
- 3. septic shock
- 4. hypovolemia
- 5. dysrhythmias
- 6. cardiac arrest
0/1 Scoring Rule: MR Select N

- **0/1 Scoring Rule**

  1pt Option 2: correct
  1pt Option 3: correct
  + 0pt Option 5: incorrect

  2 total points

Select the 3 complications the client is at risk for developing.

- [x] 1. anemia
- [x] 2. peritonitis
- [ ] 3. septic shock
- [ ] 4. hypovolemia
- [x] 5. dysrhythmias
- [ ] 6. cardiac arrest
0/1 Scoring Rule: MR Select N

- 0/1 Scoring Rule

  1pt Option 2: correct
+ 0pt Option 5: incorrect

------------------------------------
1 total points

Select the 3 complications the client is at risk for developing.

- 1. anemia
- 2. peritonitis
- 3. septic shock
- 4. hypovolemia
- 5. dysrhythmias
- 6. cardiac arrest
0/1 Scoring Rule: **Drop-Down Cloze**

- Complete a passage by selecting from 1 or more drop-down options from which to complete the paragraph.
- There can be 3-5 options in each drop-down.

The nurse has reviewed the Nurses' Notes from 1230, 1245, 1400, and 1415 and the Diagnostic Results from 1230 and 1445.

Complete the following sentences by choosing from the lists of options.

The nurse should insert \[Select\] .

It would be a **priority** for the nurse to request a prescription for an \[Select\] .

The nurse should prepare the client for surgery within \[Select\] .
0/1 Scoring Rule: Drop-Down Cloze

The nurse has reviewed the Nurses' Notes from 1230, 1245, 1400, and 1415 and the Diagnostic Results from 1230 and 1445.

Complete the following sentences by choosing from the lists of options.

The nurse should insert Select... □

It would be a priority for the nurse to request a prescription for an □

The nurse should prepare the client for surgery within Select... □

• 0/1 Scoring
• Sum across all drop-downs
• Max score = Number of drop-downs

1pt DD 1: correct
0pt DD 2: incorrect
+ 1pt DD 3: correct

------------------------------------

2 total points
0/1 Scoring Rule: Drag-and-drop Cloze

- 0/1 Scoring
- Sum across all targets
- Max score = Number of targets

1pt Target 1: correct
0pt Target 2: incorrect
+ 0pt Target 3: incorrect

------------------------------------
1 total points
0/1 Scoring Rule: Drop-Down Table

- 0/1 Scoring
- Sum across all drop-downs
- Max score = Number of drop-downs

1pt DD 1: correct
0pt DD 2: incorrect
+ 1pt DD 3: correct

-------------------------------
2 total points
0/1 Scoring Rule: **Bow-Tie Items**

- Bow-tie items address all six steps of the NCJMM in one item
- Responses fall into three unique categories
- All targets must be utilized for the candidate to move forward
0/1 Scoring Rule: Bow-Tie Items

2pts correct actions
1pt correct condition
1pt correct parameter
+ 0pt incorrect parameter

4 total points
 +/- Scoring Rule

- Derived from Signal Detection Theory
- Used when candidate is instructed to choose an unspecified number of responses
  - Example: ‘Select all that apply’
  - Allows candidates to over- or under-respond

- Scoring:
  - Earn points (+1) for selecting correct information
  - Lose points (-1) for selecting incorrect information

- Identifying more pertinent information results in higher scores
- Max points = number of correct options
- Min points = 0
  - No negative scores
MR Select All That Apply

• 3 total Keys
• Example 1:
  • Select 3 keys
  • Select 1 distractor

3pt correct response
- 1pt incorrect response

-----------------------------
2 total points
+- Scoring Rule: MR Select All That Apply

- **3 total Keys**
- Example 1:
  - Select 2 keys
  - Select 0 distractors

  2pt correct response
  - 0pt incorrect response

  2 total points
+/- Scoring Rule: MR Select All That Apply

- 3 total Keys
- Example 1:
  - Select 2 keys
  - Select 3 distractors

2pt correct response
- 3pt incorrect response

0 total points
(No negative points)
- Candidate select tokenized text options
- There can be a maximum of 10 options
- Candidate can select and unselect options

Progress Notes

Client is post-op day #3 after a splenectomy and is able to ambulate in the corridor 3 to 4 times daily with minimal assistance. The client has clear breath sounds with a left chest tube in place attached to a closed-chest drainage system. Tidal lung sounds with deep inspiration. The client is refusing to use the incentive spirometer, stating it causes left-sided chest pain. The client is utilizing prescribed patient-controlled analgesia (PCA) device maximally every hour and continues to have intermittent nausea with some vomiting. Adequate urine output. Abdominal surgical incision site with dressing is clean, dry, and intact with no erythema, edema or drainage noted to site.
**Scoring Rule: Highlight Text**

- +/- Scoring rule
- +1pt for correct response
- -1pt for incorrect response
- No negative total scores
- Max points = N Keys

**Progress Notes**

Client is post-op day #3 after a splenectomy and is able to ambulate in the corridor 3 to 4 times daily with minimal assistance. The client has clear breath sounds with a left chest tube in place attached to a closed-chest drainage system. Tidaling of the water chamber noted with deep inspiration. The client is refusing to use the incentive spirometer, stating it causes left-sided chest pain. The client is utilizing prescribed patient-controlled analgesia (PCA) device maximally every hour and continues to have intermittent nausea with some vomiting. Adequate urine output. Abdominal surgical incision site with dressing is clean, dry, and intact with no erythema, edema or drainage noted to site.

4pt  correct response
2pt  incorrect response

2 Total Points
+/- Scoring Rule: **Highlight Table**

- Candidate selects tokenized text options within a table.
- There can be a maximum of 10 options.
- Candidate can select and unselect options.
**+- Scoring Rule: Highlight Table**

- **+- Scoring rule**
- +1pt for correct response
- -1pt for incorrect response

- No negative total scores
- Max points = N Keys
  
  - 2pt  correct response
  - -1pt  incorrect response

1 Total Points
+/- Scoring Rule: Matrix Multiple Response

- Each response column could have multiple correct responses.
- Each column must have at least 1 response option selected.
- Candidates can select as many options as applies for each column.

The nurse is reviewing the client's assessment data.

For each assessment finding below, click to specify if the finding is consistent with the disease process of bowel obstruction, appendicitis, or ruptured spleen. Each finding may support more than one disease process.

<table>
<thead>
<tr>
<th>Assessment Finding</th>
<th>Bowel Obstruction</th>
<th>Appendicitis</th>
<th>Ruptured Spleen</th>
</tr>
</thead>
<tbody>
<tr>
<td>appetite</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pain level</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>bowel pattern</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>gastrointestinal symptoms</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Note: Each column must have at least 1 response option selected.
Matrix Multiple Response

- A series of MR SATA
  - One MR SATA per **Column** (e.g., disease process)
- +/- Scoring for column
- No negative score per column
- Sum of thePts per column is the item’s total score
- Max score = N keys
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</thead>
<tbody>
<tr>
<td>appetite</td>
<td>✗</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>pain level</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>bowel pattern</td>
<td></td>
<td></td>
<td></td>
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<td>✓</td>
<td>✗</td>
<td></td>
</tr>
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<td></td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>gastrointestinal symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Each column must have at least 1 response option selected.

1pt correct response
- 1pt incorrect response

0 points
Matrix Multiple Response

1pt  correct response
- 1pt  incorrect response
------------------------------------
0 points

1pt  correct response
- 2pt  incorrect response
------------------------------------
(No Negatives) 0 points

The nurse is reviewing the client’s assessment data.
For each assessment finding below, click to specify if the finding is consistent with the disease process of bowel obstruction, appendicitis, or ruptured spleen. Each finding may support more than one disease process.

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<td>✓</td>
<td>✗</td>
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<tr>
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<td>✓</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>bowel pattern</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
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<td>✗</td>
<td>✗</td>
<td></td>
</tr>
</tbody>
</table>

Note: Each column must have at least 1 response option selected.
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</tr>
</thead>
<tbody>
<tr>
<td>appetite</td>
<td>☒</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>pain level</td>
<td>☑</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>bowel pattern</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>gastrointestinal symptoms</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Note: Each column must have at least 1 response option selected.
+/- Scoring Rule: Matrix Multiple Response

1pt  correct response
- 1pt  incorrect response
-------------------------------
0 points

1pt  correct response
- 2pt  incorrect response
-------------------------------
(No Negatives) 0 points

1pt  correct response
- 0pt  incorrect response
-------------------------------
1 points

1 Total Item Points
+/ Scoring Rule:  
Multiple Response Grouping

- A table with several groupings
  - Min: 2 groupings
  - Max: 5 groupings
- Candidate must select at least 1 option from each grouping
- Candidates can select as many options as applies for each grouping
Scoring Rule:

**Multiple Response Grouping**

- A series of MR SATA per grouping
  - One MR SATA per group (e.g., Body System)
  - +/- Scoring for each group
  - No negative score per group
- Sum of the grouping Pts is the item’s total score
- Max score = N keys
**+- Scoring Rule:**

**Multiple Response Grouping**

For each body system below, click to specify the potential nursing intervention that would be appropriate for the care of the client. Each body system may support more than 1 potential nursing intervention.

<table>
<thead>
<tr>
<th>Body System</th>
<th>Potential Nursing Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurologic</td>
<td>□ neurologic check every 2 hours</td>
</tr>
<tr>
<td></td>
<td>□ computed tomography (CT) scan</td>
</tr>
<tr>
<td></td>
<td>□ morphine 1 mg, IV, every hour p.r.n. pain</td>
</tr>
<tr>
<td></td>
<td>□ electroencephalogram (EEG)</td>
</tr>
<tr>
<td>Respiratory</td>
<td>□ chest x-ray every morning</td>
</tr>
<tr>
<td></td>
<td>□ oxygen at 2 L/min via nasal cannula</td>
</tr>
<tr>
<td></td>
<td>□ arterial blood gas (ABG) every 4 hours</td>
</tr>
<tr>
<td></td>
<td>□ incentive spirometry every 1 hour</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>□ aspirin 81 mg, p.o., every morning</td>
</tr>
<tr>
<td></td>
<td>□ echocardiogram</td>
</tr>
<tr>
<td></td>
<td>□ continuous telemetry</td>
</tr>
<tr>
<td></td>
<td>□ defibrillator at bedside</td>
</tr>
</tbody>
</table>

NOTE: Each category must have at least 1 response option selected.
 +/- Scoring Rule:
Multiple Response Grouping

2pt  correct response
- 0pt  incorrect response

2 points
+/- Scoring Rule:
Multiple Response Grouping

- 2pt correct response
- 0pt incorrect response

------------------------------------
2 points

- 1pt correct response
- 1pt incorrect response

------------------------------------
0 points
 +/- Scoring Rule:
Multiple Response Grouping

2pt correct response
- 0pt incorrect response
------------------------------------
2 points

1pt correct response
- 1pt incorrect response
------------------------------------
0 points

2pt correct response
- 1pt incorrect response
------------------------------------
1 points

For each body system below, click to specify the potential nursing intervention that would be appropriate for the care of the client. Each body system may support more than 1 potential nursing intervention.

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</table>
| Neurologic  | ✓ neurologic check every 2 hours
|             | ✓ computed tomography (CT) scan
|             | ✓ morphine 1 mg, IV, every hour p.r.n. pain
|             | ✓ electroencephalogram (EEG) |
| Respiratory | ✓ chest x-ray every morning
|             | ✗ oxygen at 2 L/min via nasal cannula
|             | ✓ arterial blood gas (ABG) every 4 hours
|             | ✓ incentive spirometry every 1 hour |
| Cardiovascular | ✓ aspirin 81 mg, p.o., every morning
|               | ✗ echocardiogram
|               | ✓ continuous telemetry
|               | ✓ defibrillator at bedside |

NOTE: Each category must have at least 1 response option selected.
 +/- Scoring Rule: Multiple Response Grouping

2pt correct response
- 0pt incorrect response

------

2 points

1pt correct response
- 1pt incorrect response

------

0 points

2pt correct response
- 1pt incorrect response

------

1 points

3 Total Item Points

---

For each body system below, click to specify the potential nursing intervention that would be appropriate for the care of the client. Each body system may support more than 1 potential nursing intervention.

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</tr>
<tr>
<td></td>
<td>☑ defibrillator at bedside</td>
</tr>
</tbody>
</table>

NOTE: Each category must have at least 1 response option selected.
Rationale Scoring Rule

- Requires a full understanding of paired information
- Concepts require justification through a rationale
- Both X and Y must be correct to earn a point
- Max points: dyad 1pt; triad 2pts
- Dyad examples:
  - A nurse must do X because of Y
  - A client has X as evidenced by Y
- Triad examples:
  - A nurse must do X because of Y and Z
  - A client has X as evidenced by Y and Z
Rationale Scoring Rule: Drop-Down

Complete the following sentence by choosing from the lists of options.

The client is at highest risk for developing as evidenced by the client's

- Select...
- vital signs
- neurologic assessment
- respiratory assessment
- cardiovascular assessment

- Select...
- hypoxia
- stroke
- dysrhythmias
- a pulmonary embolism
### Rationale Scoring Rule: Drag-and-drop Rationale

Drag 1 condition and 1 client finding to fill in each blank in the following sentence:

*The client is at risk for developing [condition] due to [finding]*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Client Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>infection</td>
<td>bedrest</td>
</tr>
<tr>
<td>contractures</td>
<td>chest tube placement</td>
</tr>
<tr>
<td>dysrhythmias</td>
<td>wound approximation</td>
</tr>
<tr>
<td>pleural effusion</td>
<td>respiratory assessment findings</td>
</tr>
<tr>
<td>wound dehiscence</td>
<td>purulent drainage from incision site</td>
</tr>
</tbody>
</table>
Rationale Scoring Rule: **Dyads**

- **Full Credit (1pt):**

  - Complete the following sentence by choosing from the lists of options:
  - The client is at highest risk for developing **infection** as evidenced by the client's vital signs, neurologic assessment, respiratory assessment, cardiovascular assessment, and a pulmonary embolism.
  - The client is at risk for developing **bed sore** due to:
    - client's inactivity
    - limited mobility
    - increased pressure on skin
    - impaired sensation

Rationale Scoring Rule: Dyads

- Full Credit (1pt):
- No Credit (0pt):
Rationale Scoring Rule: Dyads

- Full Credit (1pt):

- No Credit (0pt):

- No Credit (Opt):
Rationale Scoring Rule: **Triads**

- Full Credit (2pt):

  ![Image of the scoring rule](image-url)

  Complete the following sentence by choosing from the lists of options.

  The client is at highest risk for developing [Select...](image-url) as evidenced by the client's [Select...](image-url) and [Select...](image-url)
Rationale Scoring Rule: Triads

- Full Credit (2pt):

- Partial Credit (1pt):
Rationale Scoring Rule: **Triads**

- **Full Credit (2pt):**

- **Partial Credit (1pt):**

- **Partial Credit (1pt):**
Rationale Scoring Rule: **Triads**

- No Credit (0pt):
- No Credit (0pt):
- No Credit (0pt):
Rationale Scoring Rule: **Triads**

- No Credit (0pt):
- No Credit (0pt):
- No Credit (0pt):
Rationale Scoring Rule: Triads

• No Credit (0pt):

• No Credit (0pt):

• No Credit (0pt):

• No Credit (0pt):
Summary

- Three scoring rules will be used on the upcoming Next Generation NCLEX® (NGN) Exam:
  - **0/1 Scoring** -> used when candidate is instructed to ‘Select N’
  - **+/- Scoring** -> used when candidate is instructed to ‘Select All’
  - **Rationale Scoring** -> used when ‘cause’ and ‘effect(s)’ are tightly coupled
Thank you!

For more information about NGN, visit:

https://www.ncsbn.org/ngn-resources.htm