Measuring Outcomes of Nursing Care using the Nursing Outcomes Classification (NOC)

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Iowa City, Iowa USA
Where is Iowa?

- In the middle of the US - called the heartland
Iowa

- 3 million people
- Rural
- 4 seasons
College of Nursing

• Located on a bluff overlooking the Iowa River
• 80 faculty members
• 700 students
• Programs:
  – BSN
  – RNBSN
  – CNL
  – DNP
  – PhD
Center for Classification & Clinical Effectiveness

• Located in the College of Nursing at the University of Iowa

• Center established in 1995 by the Iowa Board of Regents

• Purpose: To facilitate the ongoing upkeep of Nursing Interventions Classification (NIC) & Nursing Outcomes Classification (NOC)
Executive Board

Sue Moorhead, RN, PhD, FAAN Chairperson
Gloria Bulechek, RN, PhD, FAAN
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Marion Johnson, RN, PhD
Meridean Maas, RN, PhD, FAAN
Elizabeth Swanson, RN, PhD
Cheryl Wagner, RN, PhD
Focus on outcomes of nursing care

Measuring the impact of what nurses do for individuals, families and communities!
The Long Search for Nursing Data

In attempting to arrive at the truth, I have applied everywhere for information, but in scarcely an instance have I been able to obtain hospital records fit for any purpose of comparison.

*Notes on Hospitals, 1863, p. 175*
Benefits of Comparable Data

- Save life and suffering
- Identify unnecessary deaths
- Improve the treatment and management of the sick
- Determine the effectiveness of particular operations and treatments
- Determine the influence of the hospital upon outcomes
If we cannot name it, we cannot control it, practice it, teach it, finance it, or put it into public policy

Nursing is more than tasks

NURSING
The Mind At Work
Our World is Structured by Many Classifications

• We learn new views of the world through classifications
• Many of these are international
• Add to our understanding of the world
Examples of Classifications & Taxonomies

Music
Examples of Classifications and Taxonomies

Dog Breeds
Examples of Classifications and Taxonomies

Computer Science
Examples of Standards for Safety
Standardized Languages help Nurses

• Describe the phenomenon of interest
• Share observations & knowledge with other nurses and disciplines
• Make the work of the profession visible
• Bring order to the domain of practice
• Evaluate quality of care & conduct research
• Build evidence for expert practice
Six Phases of the Nursing Process

- Assessment
- Diagnosis
- Implementation
- Planning
- Evaluation
- Outcome Identification

- Individual
- Family
- Community

NANDA-I
NOC Selection
NOC Evaluation
NIC Implementation
NNN Care Planning

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Nursing Knowledge

Diagnoses Classification

Outcomes Classification

Interventions Classification

Clinical Decision-Making

Choice

Choice

Choice

Nursing Process Generations

- 1950-1970: Problems to process
- 1970-1990: Diagnosis and reasoning
- 1990-2010: Outcome specification & testing
- 2010-2025: Knowledge building
- 2025-2035: Models of care (archetypes)
- 2035-2050: Predictive care

Overview of Nursing Outcomes Classification (NOC)
Nursing Outcome Definition

- An individual, caregiver, family, or community state, behavior or perception that is measured along a continuum in response to a nursing intervention(s).
- Each outcome has an associated group of indicators that are used to determine current status in relation to the outcome.
<table>
<thead>
<tr>
<th>Edition</th>
<th>Year</th>
<th>NOC Outcomes</th>
<th>Domains</th>
<th>Classes</th>
</tr>
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<tbody>
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<td>190</td>
<td>-</td>
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</table>
NOC 5th Edition

490 outcomes

Structure

• Label name
• Definition
• Measurement scale(s)
• List of Indicators
• References
Features of NOC 5th Edition

- Taxonomic structure with 32 classes
- Coded labels and indicators
- 5 point measurement scale(s) featuring change score calculation over time
- Linkages of NOC to NANDA International diagnoses and Gordon’s Health Patterns
- Core outcomes by specialty
Evaluation of NOC Measures

CRITERION STANDARD

• Inter-rater Reliability \( \% \)
• Criterion Validity \( r > .60 \)
• Change \( t \text{-test} \)
• Practicality, Time, Cost, Ease of Use
NOC Domains in the Taxonomy

- Functional Health
- Physiological Health
- Psychological Health
- Health Knowledge Behavior
- Perceived Health
- Family Health
- Community Health
Taxonomy of Nursing Outcomes: Domains & Classes

Functional Health
- Energy Maintenance
- Growth & Development
- Mobility
- Self-Care

Physiologic Health
- Cardiopulmonary
- Elimination
- Fluid & Electrolytes
- Immune Response
- Metabolic Regulation
- Neurocognitive
- Digestion & Nutrition
- Therapeutic Response
- Tissue Integrity
- Sensory Function

Psychosocial Health
- Psychological Well-Being
- Psychosocial Adaptation
- Self-Control
- Social Interaction

Health Knowledge & Behavior
- Health Behavior
- Health Beliefs
- Health Knowledge
- Risk Control & Safety

Perceived Health
- Health & Life Quality
- Symptom Status
- Satisfaction with Care

Family Health
- Family Caregiver Performance
- Family Member Health Status
- Family Well-Being
- Parenting

Community Health
- Community Well-Being
- Community Health Protection
NOC Classes in Taxonomy (32)

- Energy Maintenance
- Growth & Development
- Mobility
- Self-Care
- Cardiopulmonary
- Elimination
- Fluid & Electrolytes
- Immune Response
- Metabolic Regulation
- Neurocognitive
- Digestion & Nutrition
- Therapeutic Response
- Tissue Integrity
- Sensory Function
- Psychological Well-Being
- Psychosocial Adaptation
NOC Classes in Taxonomy

- Self-Control
- Social Interaction
- Health Behavior
- Health Beliefs
- Health Knowledge
- Risk Control & Safety
- Health & Life Quality
- Symptom Status
- Satisfaction with Care
- Family Caregiver Performance
- Family Member Health Status
- Family Well-Being
- Parenting
- Community Well-Being
- Community Health Protection
- Health Management
NOC Levels of Outcomes

• Individual & Family Caregiver
• Family
• Community

Focus of measurement changes across these levels
NOC Outcomes for Individuals

• Activity Tolerance
• Aspiration Prevention
• Body Image
• Gastrointestinal Function
• Kidney Function
• Knowledge: Depression Management
• Pain Control
NOC Outcomes for Families

• Family Coping
• Family Functioning
• Family Health Status
• Family Participation in Professional Care
• Family Resiliency
• Family Social Climate
• Family Support During Treatment
NOC Outcomes for Communities

• Community Competence
• Community Grief Response
• Community Health Status
• Community Immune Status
• Community Resiliency
• Community Risk Control: Chronic Disease
• Community Risk Control: Lead Exposure
• Community Risk Control: Obesity
A five-point Likert type scale that quantifies a patient outcome or indicator status on a continuum from least to most desirable and provides a rating at a point in time

1 = Least Desirable State

5 = Most Desirable State
NOC Measurement Scales

- Severely to Not Compromised
- Severe to No Deviation from Normal Range
- Not Adequate to Totally Adequate
- 10 and over to None
- None to Extensive
- Never Positive to Consistently Positive
NOC Measurement Scales

- Very weak to Very strong
- Never to Consistently Demonstrated
- Severe to None
- Poor to Excellent
- Not at all to Completely Satisfied
- Consistently to Never Demonstrated
- No Knowledge to Extensive Knowledge
Who measures NOC outcomes?

• Nurse
  – Physiological status

• Nurse & Patient
  – Knowledge
  – Self-management

• Patient
  – Satisfaction with care
  – Severity of symptoms such as pain or nausea

• Other disciplines
Format of outcomes

- Coded label name (concept)
- Definition
- Outcome target rating
- Measurement scale(s)
- Overall rating scale
- Indicators
- Story line- domain, class, publication by edition
- References
### Gait--0222

**Definition:** Ability to walk with correct body alignment, with smooth gait cycle, and at a steady pace.

**Outcome Target Rating:**
- Maintain at____
- Increase to____

**Outcome Overall Rating**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>022204 Walks in straight line</td>
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<td>022205 Length of stride</td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>022206 Step symmetry</td>
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<td>4</td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>022208 Base of support</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td>022209 Arm swing</td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>022211 Range of left knee flexion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>022212 Range of right hip flexion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
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<tr>
<td>022213 Range of left hip flexion</td>
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<td>2</td>
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<td>4</td>
<td>5</td>
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</table>

<table>
<thead>
<tr>
<th>Severity: Severe</th>
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<th>Moderate</th>
<th>Mild</th>
<th>None</th>
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<td>022215 Limping</td>
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<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022216 Shuffling gait</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022217 Weaving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022218 Stumbling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022219 Hopping</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022220 Leaning from side to side</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022221 Twisting hips</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022222 Lifting of knees as in marching</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022223 Stiff-legged walk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>022224 Forward stooped posture</td>
<td>1</td>
<td>2</td>
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</tbody>
</table>

**Domain-Functional Health**

**Class-Mobility**

5th edition 2013

**Outcome Content References:**
Select Outcomes Based on Several Factors

- Problem/Diagnoses
- Patient Preferences
- Patient Characteristics
- Nursing Treatments
- Nurse Competency
Compare to Reference Person

• Healthy individual
• Same gender
• Same age
• Implies that all patients do not have the potential to be a “5”
Comparison

• Dependent on expertise of nurse
• Experience builds range of cases by age group or condition
• Need to identify differences in health status among patients
• Provide cases that match 1 to 5 ratings on an outcome
Times To Measure Outcomes

Measure the outcome when:

• Outcome is selected
• Patient is transferred to another unit
• Patient status changes
• Patient is discharged from care episode
• Other times as determined by policy

Always consider the outcome characteristics
Target Outcome Rating

Allows for setting goal for patient related to a NOC outcome score using 2 options:

• Maintain at ______

• Increase to ______
Rate Patient Status

• Select indicators
• Evaluate patient on selected indicators
• Determine overall outcome rating
• Set target rating-goal
• Determine focus of each discipline involved in care
• Determine timing of outcome ratings
The difference between a baseline rating and the post intervention rating(s) of the outcome. This change score can be:

- Positive,
- Negative,
- No change
NOC Change Score

The change in rating score represents the outcome achieved following a health care intervention or set of interventions.

Possible Range -4 to +4

Examples:
+3  -2  0  +1  -3
Describe the Impact of Measuring Patient Outcomes
### NOC Change Scores

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N</th>
<th>Average Baseline</th>
<th>Average Follow-up</th>
<th>Average Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Orientation</td>
<td>19</td>
<td>3.89</td>
<td>4.05</td>
<td>0.16</td>
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<tr>
<td>Health Orientation</td>
<td>21</td>
<td>3.52</td>
<td>3.76</td>
<td>0.24</td>
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<tr>
<td>Social Involvement</td>
<td>21</td>
<td>3.43</td>
<td>3.48</td>
<td>0.05</td>
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</table>
## NOC Change Scores

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N</th>
<th>Average Baseline</th>
<th>Average Follow-up</th>
<th>Average Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Mutiliation Restraint</td>
<td>06</td>
<td>2.17</td>
<td>4.33</td>
<td>2.17</td>
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<tr>
<td>Respiratory Status:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Gas Exchange</td>
<td>31</td>
<td>2.94</td>
<td>4.13</td>
<td>1.19</td>
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<tr>
<td>Mobility Level</td>
<td>53</td>
<td>2.47</td>
<td>3.62</td>
<td>1.15</td>
</tr>
</tbody>
</table>
Example: Patient with Hypertension

- Worldwide health challenge with associated risks for comorbid diseases - cardiovascular and kidney disease
- Estimates of 1.56 billion incidence by 2025 (Kearney, 2005)
- Research indicates that offering patients a choice in selecting behaviors to change increases self-monitoring compliance and self-reported behavior change (Olson, 2011)
NOCs for Patients with Hypertension

- Knowledge: Hypertension
- Compliance Behavior: Prescribed Diet
- Knowledge: Diet
- Knowledge: Medication
- Knowledge: Weight Management
- Medication Response
- Smoking Cessation Behavior
- Stress Level
- Weight Loss Behavior
- Self Management: Hypertension
- Hypertension Severity
Linking Knowledge to Behavior

• The patient’s knowledge level on an outcome may be an intermediate outcome.
• Many times the real outcome nurses hope for with patients is focused on behavior change over time.
• Consider following both a knowledge outcome and a related behavioral outcome.
## NOC Performance Outcomes Related to NOC Knowledge Outcomes

<table>
<thead>
<tr>
<th>Knowledge Outcome</th>
<th>Primary Behavioral Outcomes</th>
<th>Secondary Behavioral Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge: Fall Prevention (1828)</td>
<td>Fall Prevention Behavior (1909)</td>
<td>Ambulation (0200)</td>
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<tr>
<td></td>
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<td>Ambulation: Wheelchair (0201)</td>
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<tr>
<td></td>
<td></td>
<td>Heedfulness of Affected Side (0918)</td>
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<td></td>
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<td>Safe Home Environment (1910)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transfer Performance (0210)</td>
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</table>
# NOC Performance Outcomes Related to NOC Knowledge Outcomes

<table>
<thead>
<tr>
<th>Knowledge Outcome</th>
<th>Primary Behavioral Outcomes</th>
<th>Secondary Behavioral Outcome</th>
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</thead>
<tbody>
<tr>
<td>Knowledge: Labor &amp; Delivery (1817)</td>
<td>Maternal Status: Intrapartum (2510)</td>
<td>Coping (1302)</td>
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<td></td>
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<td>Energy Conservation (0002)</td>
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<td></td>
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<td>Family Participation in Professional Care (2605)</td>
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<tr>
<td></td>
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<td>Pain Control (1605)</td>
</tr>
</tbody>
</table>
Implementation- NOC

- Ability to determine outcomes of care using rating scales
- Ability to set target rating
- Uses reference person for comparison
- Define parameters for discharge
- Evaluate care for a group of patients over time
- Build evidence over time
Benefits of Using NOC Outcomes

• Makes evaluation of care possible over time & across settings
• Identifies need for referrals and additional care post discharge
• Identifies where change in status, perceptions, and behavior is possible
• Provides data to determine what interventions work for specific populations
Benefits of Using NOC Outcomes

- Allows for a focus on maintaining current patient status as long as possible in terminally ill patients or elderly
- Identifies outcomes of specialty practice
- Can be used in interdisciplinary settings
- Captures change in patient status for even short hospital stays
- Builds the knowledge base for expert practice & evidence-based care
Translations: NOC

Chinese (simplified and traditional)
Dutch
French
German
Italian
Japanese
Korean
Norwegian
Portuguese
Spanish
Coming soon - NOC 6th Edition

540 outcomes

Release date February 2018

Structure

• Label name
• Definition
• Measurement scale(s)
• List of Indicators
• References
NOC is Celebrating 20 Years
1997 - 2016
Contact Information

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