

 THE UNIVERSITY OF IOWA

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COLLEGE OF NURSING

*Inspiring Excellence, Exceeding Expectations*



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

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# Where is Iowa?

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- In the middle of the US- called the heartland



# Iowa

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- 3 million people
- Rural
- 4 seasons



Iowa  
The Hawkeye State

# College of Nursing

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- **Located on a bluff overlooking the Iowa River**
- **80 faculty members**
- **700 students**
- **Programs:**
  - **BSN**
  - **RNBSN**
  - **CNL**
  - **DNP**
  - **PhD**



# **Center for Classification & Clinical Effectiveness**

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- **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

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# **Focus on outcomes of nursing care**

**Measuring the impact of what  
nurses do for individuals, families  
and communities!**



# The Long Search for Nursing Data

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**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

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- **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**

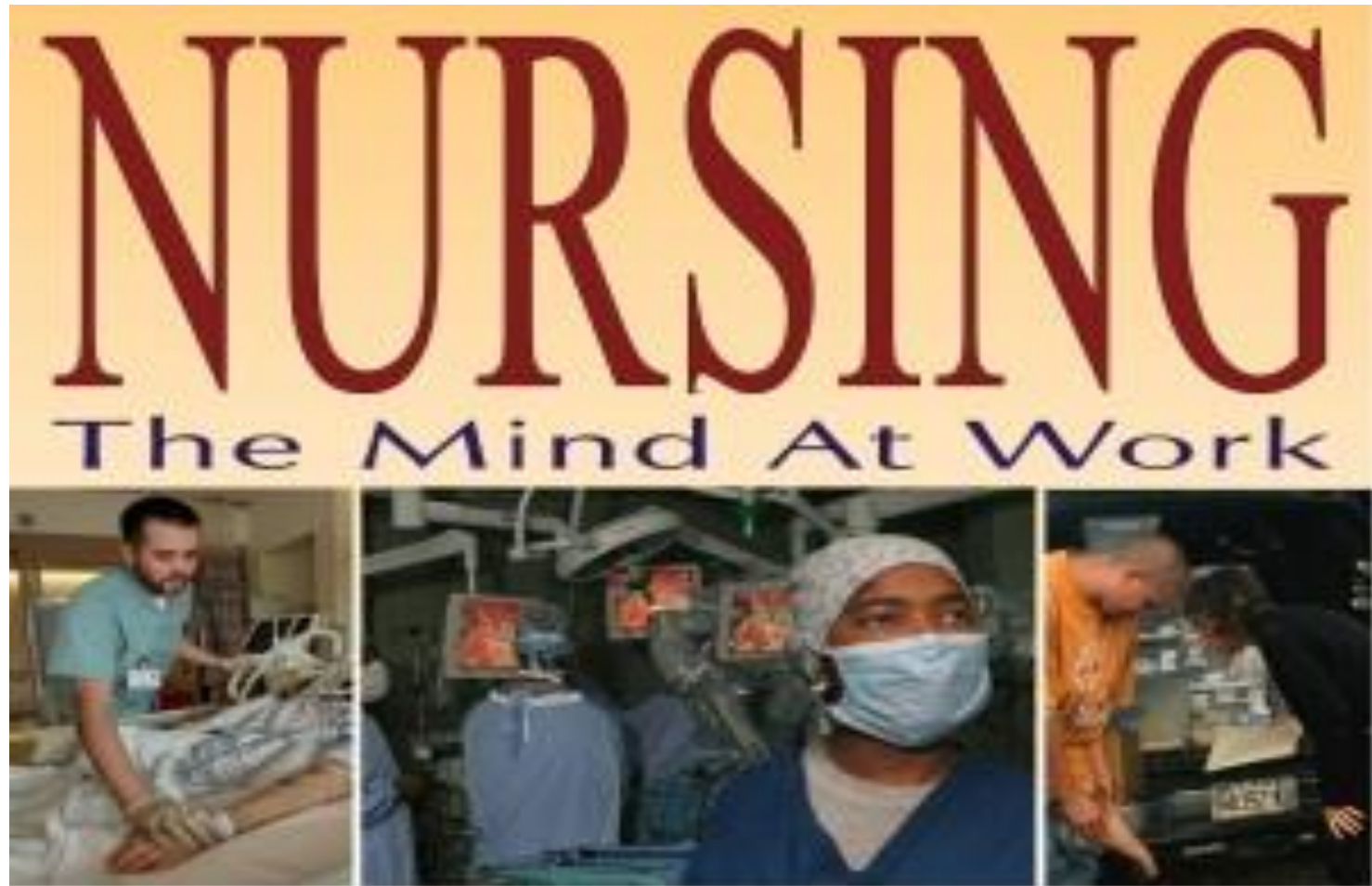
**If we cannot name it,  
we cannot control it,  
practice it, teach it,  
finance it, or put it into  
public policy**



**Clark, J., & Lang, N. (1992). Nursing's next advance: An internal classification for nursing practice. *International Nursing Review*, 39(4), 109-111,128.**

# Nursing is more than tasks

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# Our World is Structured by Many Classifications

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- 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

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Music





# Examples of Classifications and Taxonomies

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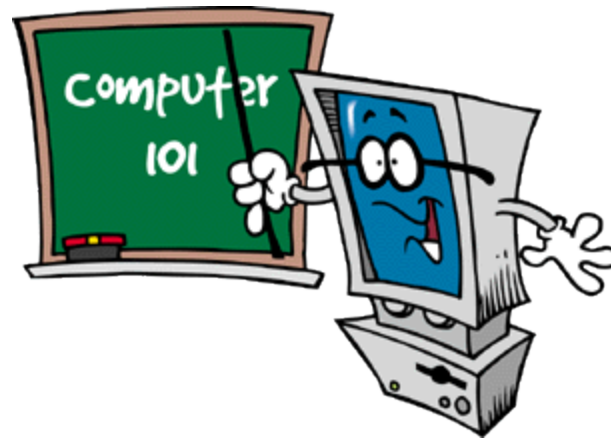
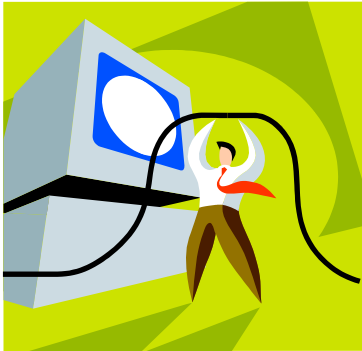
## Dog Breeds



# Examples of Classifications and Taxonomies

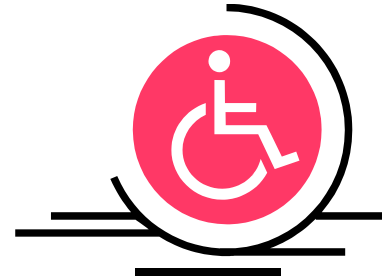
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## Computer Science



# Examples of Standards for Safety

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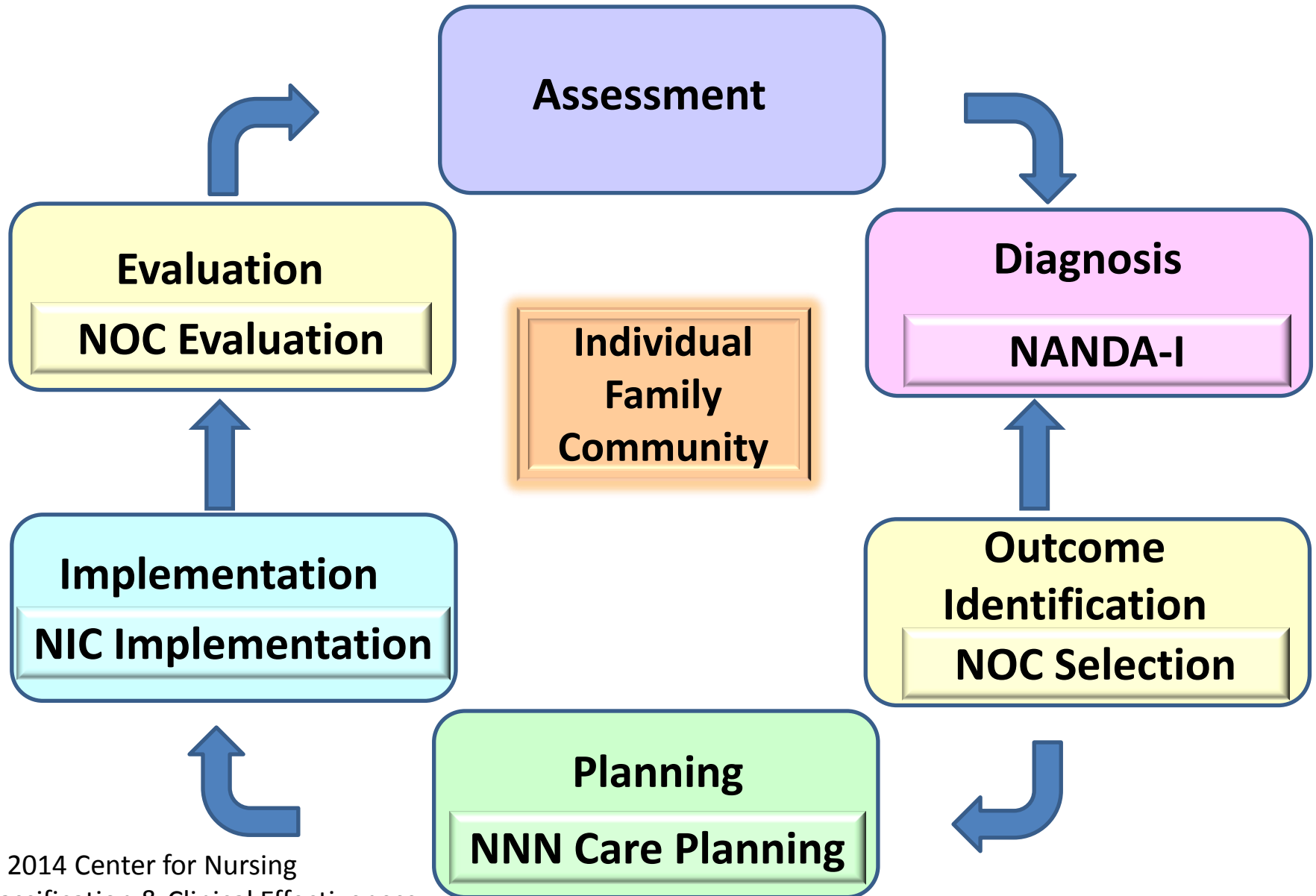


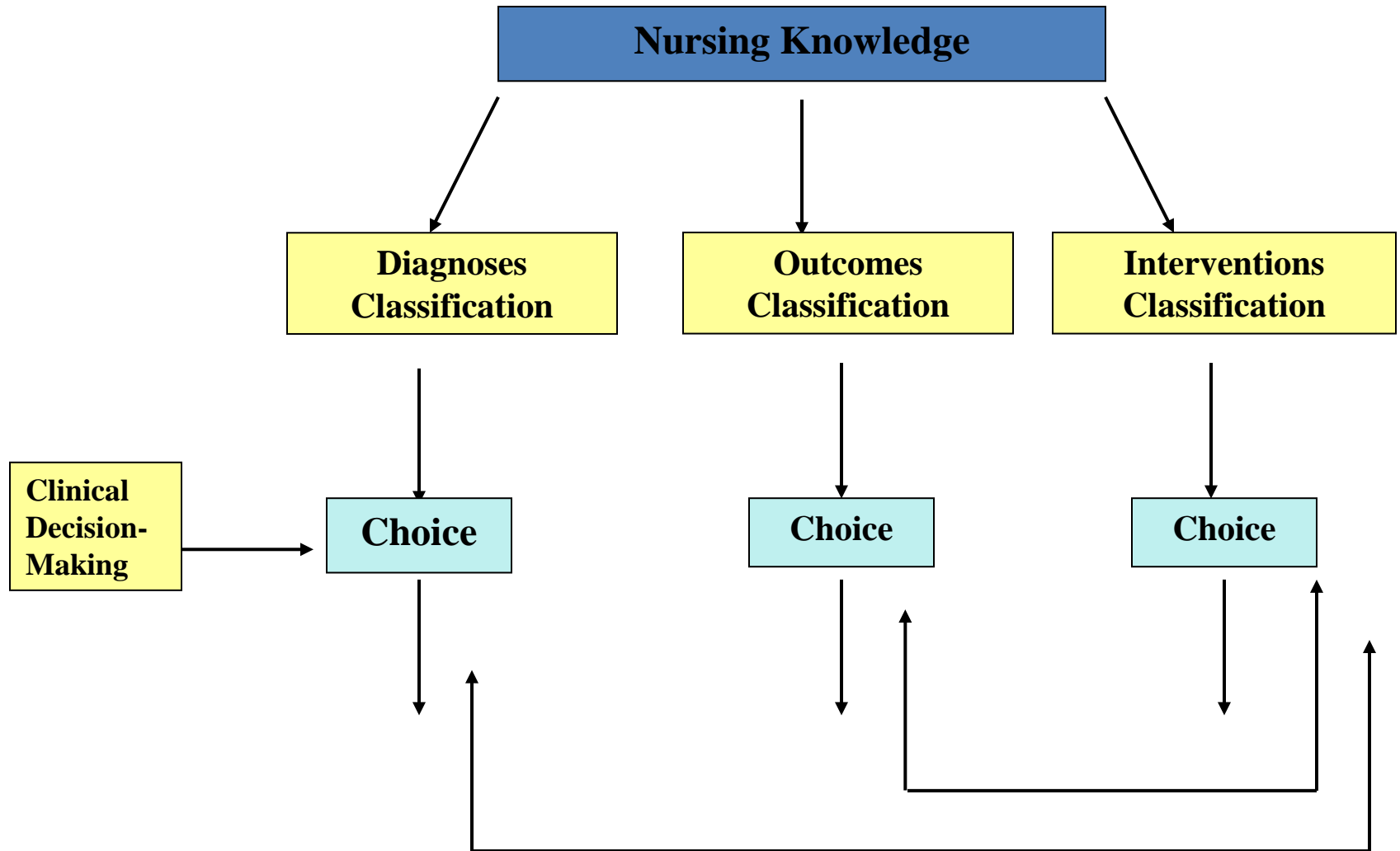
# **Standardized Languages help Nurses**

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- **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





Modified from Iowa Intervention Project. (1996). Nursing Interventions Classification (NIC) (2nd ed., p. 6). St. Louis: Mosby.



# Nursing Process Generations

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- **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**

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- **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.**

# NOC Book Editions

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Edition	Year	NOC Outcomes	Domains	Classes
1st	1997	190	-	-
2nd	2000	260	7	29
3rd	2004	330	7	31
4th	2008	385	7	31
5th	2013	490	7	32
6th	2018	540	7	34

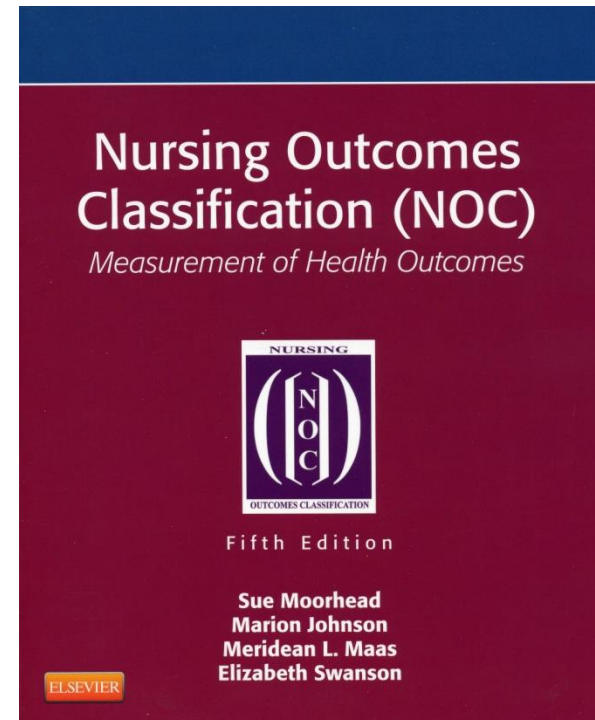
# NOC 5<sup>th</sup> Edition

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**490 outcomes**

## **Structure**

- **Label name**
- **Definition**
- **Measurement scale(s)**
- **List of Indicators**
- **References**



# Features of NOC 5<sup>th</sup> Edition

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- **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

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## CRITERION STANDARD

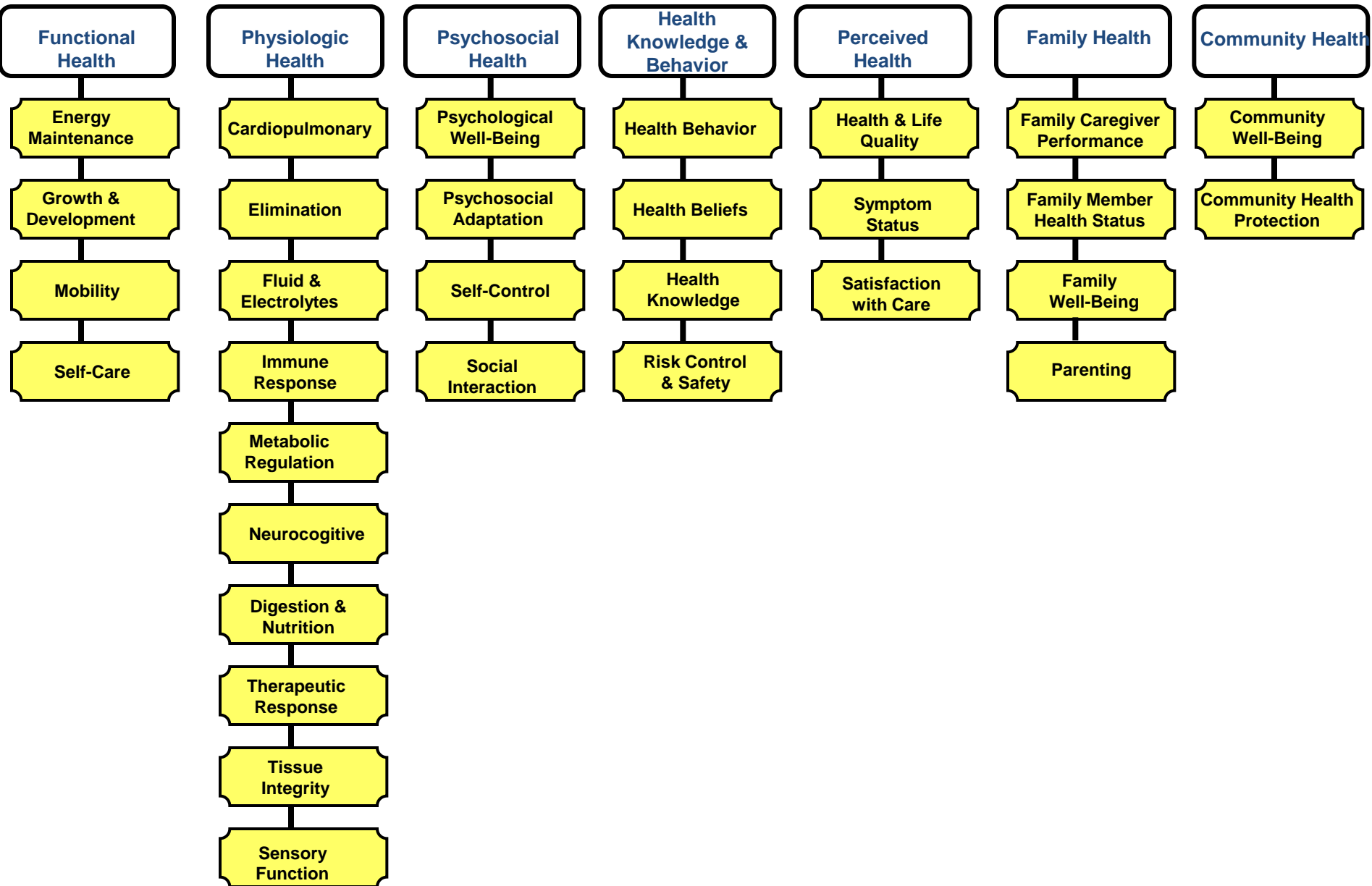
- **Inter-rater Reliability** %
- **Criterion Validity**  $r > .60$
- **Change** t-test
- **Practicality, Time, Cost, Ease of Use**

# **NOC Domains in the Taxonomy**

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- **Functional Health**
- **Physiological Health**
- **Psychological Health**
- **Health Knowledge Behavior**
- **Perceived Health**
- **Family Health**
- **Community Health**

# Taxonomy of Nursing Outcomes: Domains & Classes



# NOC Classes in Taxonomy (32)

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- 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

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- **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**

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- **Individual & Family Caregiver**
- **Family**
- **Community**

**Focus of measurement changes across these levels**

# NOC Outcomes for Individuals

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- **Activity Tolerance**
- **Aspiration Prevention**
- **Body Image**
- **Gastrointestinal Function**
- **Kidney Function**
- **Knowledge: Depression Management**
- **Pain Control**



# NOC Outcomes for Families

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- **Family Coping**
- **Family Functioning**
- **Family Health Status**
- **Family Participation in Professional Care**
- **Family Resiliency**
- **Family Social Climate**
- **Family Support During Treatment**

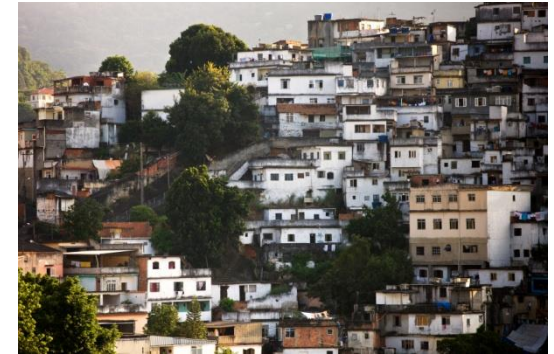




# NOC Outcomes for Communities

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- **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**



# **NOC Measurement Scales**

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**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**

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- **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**

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- **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?

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- **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

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

# NOC Example

## 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 \_\_\_\_\_

	Severely compromised	Substantially compromised	Moderately compromised	Mildly compromised	Not compromised	
<b>OUTCOME OVERALL RATING</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>Indicators:</b>						
022201 Steadiness of gait	1	2	3	4	5	NA
022202 Balance while walking	1	2	3	4	5	NA
022203 Walking posture	1	2	3	4	5	NA
022204 Walks in straight line	1	2	3	4	5	NA
022205 Length of stride	1	2	3	4	5	NA
022206 Step symmetry	1	2	3	4	5	NA
022207 Speed appropriate for activity	1	2	3	4	5	NA
022208 Base of support	1	2	3	4	5	NA
022209 Arm swing	1	2	3	4	5	NA
022210 Range of right knee flexion	1	2	3	4	5	NA
022211 Range of left knee flexion	1	2	3	4	5	NA
022212 Range of right hip flexion	1	2	3	4	5	NA
022213 Range of left hip flexion	1	2	3	4	5	NA
	<b>Severe</b>	<b>Substantial</b>	<b>Moderate</b>	<b>Mild</b>	<b>None</b>	
022214 Hesitancy	1	2	3	4	5	NA
022215 Limping	1	2	3	4	5	NA
022216 Shuffling gait	1	2	3	4	5	NA
022217 Weaving	1	2	3	4	5	NA
022218 Stumbling	1	2	3	4	5	NA
022219 Hopping	1	2	3	4	5	NA
022220 Leaning from side to side	1	2	3	4	5	NA
022221 Twisting hips	1	2	3	4	5	NA
022222 Lifting of knees as in marching	1	2	3	4	5	NA
022223 Stiff-legged walk	1	2	3	4	5	NA
022224 Forward stooped posture	1	2	3	4	5	NA

*Domain-Functional Health (D)*

*Class-Mobility (C)*

*5th edition 2013*

### OUTCOME CONTENT REFERENCES:

Harris, M. H., Holden, M. K., Cahalin, L. P., Fitzpatrick, D., Lowe, S., & Canavan, P. K. (2008). Gait in older adults: A review of the literature with an emphasis toward achieving favorable clinical outcomes, Part I. *Clinical Geriatrics, 16*(7), 32-44.

Harris, M. H., Holden, M. K., Cahalin, L. P., Fitzpatrick, D., Lowe, S., & Canavan, P. K. (2008). Gait in older adults: A review of the literature with an emphasis toward achieving favorable clinical outcomes, Part II. *Clinical Geriatrics, 16*(8), 37-45.

Otsuki, T., Nawata, K., & Okuno, M. (1999). Quantitative evaluation of gait pattern in patients with osteoarthritis of the knee before and after total knee arthroplasty. Gait analysis using a pressure measuring system. *Journal of Orthopaedic Science, 4*(2), 99-105.

Romei, M., Galli, M., Motta, F., Schwartz, M., & Crivellini, M. (2004). Use of the normalcy index for the evaluation of gait pathology. *Gait & Posture, 19*(1), 85-90.

Salzman, B. (2010). Gait and balance disorders in older adults. *American Family Physician, 82*(1), 61-68.

Tinetti, M. E. (1986). Performance-oriented assessment of mobility problems in elderly patients. *Journal of the American Geriatric Society, 34*(2), 119-126.

# Select Outcomes Based on Several Factors

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- **Problem/Diagnoses**
- **Patient Preferences**
- **Patient Characteristics**
- **Nursing Treatments**
- **Nurse Competency**



# Compare to Reference Person

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



# Comparison

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- **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

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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

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

- Maintain at \_\_\_\_\_
- Increase to \_\_\_\_\_



# Rate Patient Status

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- **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**

# Change in Rating Score

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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

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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

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<b>Outcome</b>	<b>N</b>	<b>Average Baseline</b>	<b>Average Follow-up</b>	<b>Average Change</b>
<b>Cognitive Orientation</b>	<b>19</b>	<b>3.89</b>	<b>4.05</b>	<b>0.16</b>
<b>Health Orientation</b>	<b>21</b>	<b>3.52</b>	<b>3.76</b>	<b>0.24</b>
<b>Social Involvement</b>	<b>21</b>	<b>3.43</b>	<b>3.48</b>	<b>0.05</b>

# NOC Change Scores

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<b>Outcome</b>	<b>N</b>	<b>Average Baseline</b>	<b>Average Follow-up</b>	<b>Average Change</b>
<b>Self-Mutilation Restraint</b>	<b>06</b>	<b>2.17</b>	<b>4.33</b>	<b>2.17</b>
<b>Respiratory Status: Gas Exchange</b>	<b>31</b>	<b>2.94</b>	<b>4.13</b>	<b>1.19</b>
<b>Mobility Level</b>	<b>53</b>	<b>2.47</b>	<b>3.62</b>	<b>1.15</b>

# **Example: Patient with Hypertension**

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- **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

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- **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


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- **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

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<b>Knowledge Outcome</b>	<b>Primary Behavioral Outcomes</b>	<b>Secondary Behavioral Outcomes</b>
<p data-bbox="112 596 564 715"><b>Knowledge: Fall Prevention (1828)</b></p>  <p>A cartoon illustration of a man with brown hair, wearing an orange long-sleeved shirt and blue pants, falling backwards. He has a surprised expression with wide eyes and an open mouth. Below him is a blue puddle on the ground, with motion lines indicating the fall.</p>	<p data-bbox="691 596 1097 715"><b>Fall Prevention Behavior (1909)</b></p>	<p data-bbox="1255 596 1812 1210"><b>Ambulation (0200)</b> <b>Ambulation:</b> <b>Wheelchair (0201)</b> <b>Heedfulness of Affected Side (0918)</b> <b>Safe Home Environment (1910)</b> <b>Transfer Performance (0210)</b></p>

# NOC Performance Outcomes Related to NOC Knowledge Outcomes

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<b>Knowledge Outcome</b>	<b>Primary Behavioral Outcomes</b>	<b>Secondary Behavioral Outcome</b>
<p data-bbox="85 748 552 862"><b>Knowledge: Labor &amp; Delivery (1817)</b></p> 	<p data-bbox="595 748 1016 939"><b>Maternal Status: Intrapartum (2510)</b></p>	<p data-bbox="1097 748 1808 1090"><b>Coping (1302) Energy Conservation (0002) Family Participation in Professional Care (2605) Pain Control (1605)</b></p>

# Implementation- NOC

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- **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**

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- **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

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- **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

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**Chinese (simplified and traditional)**

**Dutch**

**Italian**

**French**

**Japanese**

**German**

**Korean**

**Norwegian**

**Portuguese**

**Spanish**



# Coming soon- NOC 6<sup>th</sup> Edition

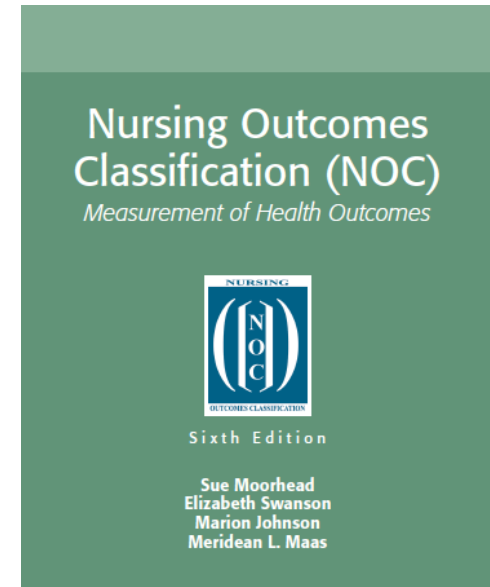
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**540 outcomes**

**Release date February 2018**

**Structure**

- **Label name**
- **Definition**
- **Measurement scale(s)**
- **List of Indicators**
- **References**



# **NOC is Celebrating 20 Years 1997 - 2016**



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