

Ten Paths to Data-Driven Care Using NIC and NOC

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This article focuses on the critical need for nursing data to be used in the care process provided by nurses. It offers 10 potential paths nurse leaders can use to increase their use of data using nursing terminology such as the Nursing Outcomes Classification and the Nursing Interventions Classification. The paths highlight the need for data about both the nurse and the patient in the care environment. These paths support the use of the nursing process in care planning for patients and highlight the critical need for outcome measurement to determine the effectiveness of nursing interventions. Nurses are important care providers in our current healthcare system and need to have accurate data to make care decisions with the patient and their family. Nurse leaders are instrumental in making this happen.

Have you ever watched a baseball game on television and marveled at the statistics available for each batter as they come to bat? It is not unusual to see a diagram of the field with specific sectors identified that provide the percentage of the time the batter hits to a specific area of the field. Teams use this information to decide how to position players on the field to increase the chances of getting an “out.” Other statistics are collected such as batting average, runs scored, and runs batted in are frequently available on a consistent basis. As nurse leaders, it would be great to have similar information about our patients and the nurses that care for them. If analytics can be quickly generated for baseball teams, why not for nurses? Although nursing terminology has been available for

several decades to enhance practice by nurses, their use has not been fully embraced by either nurse leaders or bedside nurses. This article offers 10 paths to achieve data-driven care currently available using nursing outcomes from the Nursing Outcomes Classification (NOC) and interventions from the Nursing Interventions Classification (NIC). Nurse leaders should lead efforts to increase the use of nursing data to improve patient care. Data about nurses and patients are needed for quality improvement efforts in all health care organizations. Consider what paths would improve your organization’s ability to provide data-driven care.

PATH 1

Identify the Most Frequent Patient Problems, Nursing Interventions, and Outcomes Used in Your Organization and in Each Nursing Unit

Do you know the top 10 nursing diagnoses,¹ nursing interventions,² and nursing outcomes³ used by nurses in your organization? Do nurse managers know this same information for their unit? To provide data-driven care, it is essential for nurses to be very familiar with the common patient problems and outcomes they are working to address. Knowing what interventions are provided most frequently in units across the organization and within a specific unit is an essential leadership responsibility if the goal is to provide the best care to patients. This is the first step in knowing what is needed to provide evidence-based practice as a key to meeting the social policy statement provided by the American Nurses Association.⁴

KEY POINTS

- Nurse leaders play an essential role in ensuring that patient care decisions are based on accurate clinical data.
- The author describes 10 paths that can enhance the ability of an organization to use nursing data based on the Nursing Outcomes Classification and the Nursing Interventions Classification.
- It is essential that nurse leaders work with their software vendors to determine the clinical data and reports they need to make day-to-day decisions to improve the patient care that nurses provide in their organization.

PATH 2

Use the Linkages of NANDA International Nursing Diagnoses, NIC Interventions, and NOC Outcomes to Build Care Plans

The developers of NIC and NOC have published 3 books⁵⁻⁷ that link these classifications to NANDA International nursing diagnoses,¹ as well as common clinical conditions that nurses frequently encounter in clinical practice. These linkages provide suggested outcomes and interventions that nurses can use to build care plans using standardized nursing terminologies. In addition, some of these linkages have been validated through research. For example, common outcomes for chronic pain include client satisfaction: pain management, pain: adverse psychological response, pain control, pain: disruptive effects, and pain level. These outcomes provide a variety of outcomes nurses can use to measure the patient's level of pain and response. The linkages suggest interventions in 2 categories: major interventions that are frequently used by nurses such as pain management or medication management or suggested interventions such as distraction, music therapy, or massage. Using standardized nursing terminologies to capture the important patient data within the care plan is an essential step in having data-driven care for the evaluation of nursing's contributions to patient outcomes.

PATH 3

Use Clinical Decision Models That Support Clinical Reasoning

Nurse leaders need accurate data to make decisions about the quality of care the nurses in their organization are providing to patients. These decisions are made with the assumption that the clinical decisions nurses make for the patients admitted to their unit include accurate nursing diagnoses as the foundation of the care planning process. The OPT model^{8,9} published by Pesut and colleagues provides an excellent clinical decision-making framework for nurses who are either experts or novices. It is a model based on reflective practice and helps nurses to listen to the patient's story and determine the priority problem for the clinical situation. It also guides the nurse to choose the desired outcome for the patient using NOC and to select nursing interventions based on NIC. This clinical reasoning model supports the nursing process and helps guide care planning to generate accurate nursing data based on the patient's view of their current situation and supports patient engagement during the assessment phase of care.

PATH 4

Support Patient Engagement and Family Support in the Care Process

Current efforts in health care are focused on actively engaging patients and their families in the care

process.¹⁰ This focus was triggered by suggestions from the 2001 Institute of Medicine report *Crossing the Quality Chasm: A New Health System for the 21st Century*¹¹ that our health care system needs to be "patient-centered." Two concepts have emerged from this recommendation: Patient activation focused on a patient's knowledge, skills, and ability to manage their health care; and a broader concept of patient engagement.¹² Patient engagement includes patient activation and positive patient behaviors to improve health outcomes and lower costs, and for organizations to provide better health care. The recent edition of NOC³ added an outcome focused on this process called patient engagement behavior defined as "personal actions to actively participate in one's health care through shared decision-making with health professionals."^{3(p.415)} Additional outcomes that support patient engagement include family participation in professional care and family support during treatment. Use of these outcomes documents that the nurse is including the patient and their family in the plan of care, and can lead to better outcomes. There is a growing body of evidence that demonstrates that patients actively engaged in their health care have better outcomes at a reduced cost.¹⁰

PATH 5

Identify Key Populations of Patients Served by Your Organizations and Develop Plans of Care That Address Knowledge and Self-Management Skills Using NOC Outcomes

Do you know the most common populations of patients your organization serves? This could be the most frequent surgeries such as knee replacements or patients with congestive heart failure on your medical units. Knowing your "frequent customers" can help you identify the teaching needs of your patients and develop programs to emphasize self-management skills. The current emphasis on reducing readmissions within 30 days can impact the hospital's financial status. NOC outcomes are an excellent way to measure the patient's knowledge and self-care skills for their health condition. Specific outcomes focused on clinical conditions are included in NOC linkages⁷ for both knowledge and self-management. Examples of the conditions are arthritis, asthma, diabetes, pneumonia, and stroke. Having data to identify problems faced by these patients can impact the quality of care your organization provides.

PATH 6

Use Evidence-Based Practice Guidelines to Support Care

Current nursing practice strategies define excellent nursing care as evidence-based practice (EBP). This requires organizations to use strategies that continually

assess quality of care using that latest evidence from research. Evidence-based practice is needed to guide decisions at the patient, clinician, and health system level of the organization. Nurse leaders need to choose EBP models that demonstrate usability and utility for their organization. One model that has been widely used is the Iowa Model of Evidence-Based Practice.¹³ The Csomay Center’s evidence-based practice guidelines¹⁴ focuses on caring for older adults using NIC and NOC. Examples of the guidelines available include *Assessing Heart Failure in Long-Term Facilities*,¹⁵ *Acute Pain Management*,¹⁶ *Delirium*,¹⁷ and *Fall Prevention in Older Adults*.¹⁸

PATH 7

Base Competency of Nurses on NIC Interventions to Determine Patient Assignments on Specific Units

Once a nurse leader identifies the most frequently used nursing interventions in their organization, it is possible to base competency assessments of nurses using this information. This is important for annual assessment of competency and for competency-based training for nurses new to the organization. Two levels of competencies can be established: 1 set for the core of the organization and 1 set specific to the unit they will work on after orientation.¹⁹ In some organizations, nurse leaders have chosen to reward nurses who are willing to maintain expertise across specialty units by providing pay incentives like those given for shift differentials in the salaries of nurses. In these organizations, nurses who float to other units must have competencies for the core interventions provided in the unit they are temporarily assigned to for a shift. This focus on competencies promotes and supports nurses working at the top of their license.

PATH 8

Use Nursing Data to Determine Staffing Needs Based on NIC or NOC

Historically nursing workload has focused on measuring the acuity of patients and the needed interventions nurses were providing to meet patients’ care needs. Each edition of NIC² provides time estimates and educational levels for all interventions. These can be used to estimate nursing workload for patients based on nursing diagnoses or clinical conditions. In addition, some vendors are looking at creative ways to better estimate workload for staffing determinations. For example, Cerner Clarvia uses predictive intelligence to create a customized calculation of nurse workload using NOC outcomes, interventions, and observations.³ This system does not assume that all patients require equal amounts of care for similar clinical conditions and sets the staffing needs within the expected length of stay for that admission diagnosis.

This system fosters patient assignments by matching the most qualified nurse available to each patient considering staff competencies, continuity of care, and expected transitions of care during the hospital stay. This is considered an outcomes-driven acuity system based on individual patient needs. It provides important nurse and patient data to make personnel decisions that promote quality care and positive patient outcomes. There are many report options available to assist nurse leaders manage workforce needs and planning in this system.

PATH 9

Work With Your EHR Vendor to Generate Reports That Summarize Patient Data for Nurse Executives and Nurse Managers

When working with your vendor, it is critical that you share what data you would like to retrieve for reports that will help your organization improve care. These reports can be focused on the overall organization or for unit-level data to be used by nurse managers. Nurses that are aware of the outcomes they are or are not achieving are more likely to take steps to change their approach to patient problems. Feedback is the first step in helping nurses improve the care they provide to patients and families. Frequently, vendors focus more on getting data into the system rather than extracting data out for reports from the system. Being clear about what data are important to your organization is the first step in providing data driven care.

PATH 10

Evaluate Quality of Care and Patient Outcomes Achieved by Your Organization Using NIC and NOC Data—Make Quality Improvements Based on This Data

Once an organization implements the use of NIC and NOC, it is possible to determine the effectiveness of specific nursing interventions or groups of interventions that are performed by nurses. Many organizations focus their outcome measures on the “never events” such as inpatient falls or hospital-acquired infections. This approach limits the identification of the many positive patient outcomes nurses achieve. Focusing only on negative events about patient care can impact the job satisfaction of nurses and the satisfaction of the patient and family admitted to your organization. NOC outcomes can capture positive outcomes that nurses achieve through their daily delivery of nursing interventions selected from the care planning process. The measurement of outcomes at appropriate intervals provides feedback to both the patient and the nurse about the progress that is being made to reach desired outcomes. Measuring outcomes can also identify nursing interventions that are not changing the patient’s status and may be more appropriate for a

different phase of care. For example, teaching patients about their clinical condition care needs during short hospitalizations is not always effective. The inclusion of NIC interventions and NOC outcomes in the care process greatly impacts the types of nursing and patient data available to nurse managers and nurse leaders in your organization.

CONCLUSION

We are in an era where data in our personal lives are readily accessible to us through electronic devices, but the health care environment for nurses has not addressed our need for data well. Other industries are using technology to provide relevant analytics to their business endeavors. Professional baseball, for example, provides up-to-date statistics for coaches, players, announcers, and viewers that greatly impact how the game is played and the information fans want to better understand the game. Because nurses are in the business of improving health and saving lives, it is critical that nurses' need for data to improve their practice is addressed. Nurse leaders must be the champions of making data-driven care possible. It is time for nurse leaders to "swing for the fences" to obtain the nurse and patient data they need to improve care.

REFERENCES

1. Herdman TH, Kamitsuru S, eds. *NANDA International Nursing Diagnoses: Definitions & Classification 2018-2020*. 11th ed. New York: Thieme; 2018.
2. Butcher HK, Bulechek GM, Dochterman JM, Wagner CM, eds. *Nursing Interventions Classification (NIC)*. 7th ed. St. Louis, MO: Elsevier; 2018.
3. Moorhead S, Johnson M, Maas ML, Swanson E, eds. *Nursing Outcomes Classification (NOC): Measurement of Health Outcomes*. 6th ed. St. Louis, MO: Elsevier; 2018.
4. American Nurses Association. *Nursing's Social Policy Statement: The Essence of the Profession*. 3rd ed. Silver Spring, MD: American Nurses Association; 2010.
5. Johnson M, Bulechek G, Dochterman JM, Maas M, Moorhead S, eds. *Nursing Diagnoses, Outcomes, and Interventions: NANDA, NOC, & NIC Linkages*. 1st ed. St. Louis, MO: Mosby; 2001.
6. Johnson M, Bulechek G, Butcher H, et al., eds. *NANDA, NOC, & NIC Linkages: Nursing Diagnoses, Outcomes, and Interventions*. 2nd ed. St. Louis, MO: Mosby; 2006.
7. Johnson M, Moorhead S, Bulechek G, Butcher H, Maas M, Swanson E. *NOC and NIC Linkages to NANDA-I and Clinical Conditions: Supporting Critical Reasoning and Quality Care*. 3rd ed. St. Louis, MO: Elsevier Mosby; 2012.
8. Pesut DJ, Herman J. *Clinical Reasoning: The Art & Science of Critical & Creative Thinking*. Albany, NY: Demlar; 1999.
9. Kuiper R, O'Donnell S, Pesut D, Turrise S. *The Essentials of Clinical Reasoning for Nurses: Using the Outcome-Present State Model for Reflective Practice*. Indianapolis, IN: Sigma Theta Tau International; 2017.
10. James J. Health policy brief: patient engagement. *Health Aff (Millwood)*. 2013;32(2):1-6.
11. Institute of Medicine, Committee on Quality of Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press; 2001.
12. Hibbard JH, Greene J. What the evidence shows about patient activation: better health outcomes and care experiences; Fewer data on costs. *Health Aff (Millwood)*. 2013;32(2):207-214.
13. Iowa Model Collaborative, Buckwalter KC, Cullen L, Hanrahan K, et al. Iowa Model of Evidence-Based Practice: revisions and validation. *Worldviews Evid Based Nurs*. 2017;14(3):175-182.
14. Barbara and Richard Csomay Center for Gerontological Excellence. EBP guidelines. U Iowa Csomay Gero Resources. Available at: <http://www.UiowaCsomayGeroResources.com/category-s/124.htm>. Accessed July 10, 2019.
15. Harrington CC. *Assessing Heart Failure in Long-Term Facilities*. Rev ed. Iowa City, IA: The University of Iowa, College of Nursing, Barbara and Richard Csomay Center for Gerontological Excellence; 2019.
16. Cornelius R, Herr KA, Gordon DB, Kretzer K. *Acute Pain Management in the Older Adult*. Rev ed. Iowa City, IA: The University of Iowa, College of Nursing, Barbara and Richard Csomay Center for Gerontological Excellence; 2016.
17. Sendelback S, Guthrie PF, Rayborn S. *Delirium*. Rev ed. Iowa City, IA: The University of Iowa, College of Nursing, Barbara and Richard Csomay Center for Gerontological Excellence; 2015.
18. Kruschke C. *Fall Prevention in Older Adults*. Rev ed. Iowa City, IA: The University of Iowa, College of Nursing, Barbara and Richard Csomay Center for Gerontological Excellence; 2016.
19. Nolan P. Competencies drive decision making. *Nurs Manage*. 1998;29(3):27-29.

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