Proceedings From the National Nursing Data Standards Symposium

APRIL 6–8, 2017

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National Nursing Data Standards

Collected Once - Multiple Uses
Informing Healthcare Improvements

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DAY 3: SATURDAY, APRIL 8, 2017

Day 1: Thursday, April 6, 2017

INTRODUCTION

Dr. Lynn Nagle

The goal of the symposium was to continue developing a national strategy to promote the adoption of a core set of standardized nursing data. More specifically, the goals are to:
- develop short-term objectives and action plans to promote such adoption in clinical administration and practice, nursing education, and research and policy domains; and
- identify the stakeholders, accountabilities, and sponsorship for actions to advance this work in Canada.

Nursing has the opportunity to delineate the data standards that will add value to clinical practice, administration, and health service delivery in Canada. It is important to identify which data standards will substantially support the continuity, quality, and safety of care across the continuum of health service delivery; provide information to support decision-making at the point of care; and inform funding and human resource planning.

The adoption of national data standards will
- allow for consistent monitoring of outcomes across the continuum of care, thereby facilitating safe, quality care and the continuity of care;
- enable national, peer-group comparability, providing both macro and micro insights to guide decision-making and inform funding requirements and health human-resource planning; and
- improve population health by enabling individuals to use consistently named, defined, and measured clinical outcomes data to understand and manage illness and improve the health of patients.

There are many types of standards in healthcare:
- practice standards, such as professional regulations;
- quality standards, such as order sets, clinical guides;
- interoperability standards, such as messaging and data exchange, e.g., HL7 (Health Level 7), FHIR (Fast Healthcare Interoperability Resources);
- data standards, such as tools, measures, terminology, including ICNP® (International Classification for Nursing Practice); SNOMED CT (Systematized Nomenclature of Medicine–Clinical Terms); C-HOBIC (Canadian Health Outcomes for Better Information and Care); LOINC (Logical Observation Identifiers Names and Codes); and interRAI (International Resident Assessment Instrument).

The value of nursing-sensitive data standards is as follows. They
- create visibility for nursing;
- support professional accountability;
- inform opportunities for quality improvement and the delivery of safer care;
- advance consistency in and alignment between nursing education and practice;
- accelerate research capabilities, particularly practice-based research;
- inform health human-resource planning;
- strengthen local, jurisdictional, and national decision-making.

WHAT INTER-OPERABILITY CAN MEAN FOR CONTINUITY OF CARE?

Finnie Flores, Program Lead, Architecture and Standards at CIHI
Lynn McNeely, Special Projects Lead, CIHI

The vision of the Canadian Institute for Health Information (CIHI) is "Better Data. Better Decisions. Healthier Canadians." CIHI collects and maintains administrative, financial, statistical, and clinical health data representing all health sectors with ISO/IEC 27001:2005 certification for information security management.

CIHI's strategic direction is focused on the following: (1) being a trusted source of standards and quality data; (2) expanding analytical tools to support measurement of health systems; and (3) producing actionable analysis and accelerating its adoption.

The Healthcare Information Management Systems Society (HIMSS) defines interoperability as "the ability of health information systems to work together within and across organizational boundaries in order to advance the effective delivery of healthcare for individuals and communities." [1] To achieve this interoperability, it is important to have
- an appreciation of the value proposition of sharing standardized data,
- confidence in the quality of data-enabling legislation/policy,
- a strong privacy and security framework, and
- consistent use of data exchange standards.

When discussing standards, it is important to understand the levels of health information technology interoperability, which include the following:
- "*foundational*" interoperability refers to technical interoperability—the ability of information systems to connect and to send and receive data;

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[1] HIMSS, *Definition of Interoperability* (Chicago: HIMSS, 2013). http://www.himss.org/library/interoperability-standards/what-is-interoperability.

- "*structural*" interoperability defines the syntax (the structure of the data to be exchanged);
- "*semantic*" interoperability is the ability to use the information that has been exchanged.

Standards enable the sharing of data among sectors and support the notion of "data collected once, used for many purposes."

KEY DISCUSSION POINTS

- There was discussion about the use of the interRAI suite of tools and the time it takes to complete these assessments. interRAI has developed a new integrated assessment suite that ensures there is consistency among the tools and serves to improve continuity of care as individuals transition across care settings. (interRAI is a collaborative network of researchers committed to improving care for disabled persons or those whose care needs are medically complex.)
- Data for interRAI are collected by clinicians at the point of care with embedded clinical and organizational decision support. The assessment starts at the individual level with functional and clinical assessments plus demographic, administrative, treatment, and service data. This information then generates a series of outputs that include outcome scales, clinical assessment protocols, quality indicators, and case mix systems. The information can be used directly from the vendor system to support point-of-care and organizational decisions. And these data are also submitted to CIHI where they are aggregated and made available for pan-Canadian comparability.
- CIHI is working with vendors to help influence the approaches to building the interface/system that supports the workflow of clinicians. (Note that vendors still have complete discretion over the design of that interface; CIHI will be as specific as possible within its specifications to which vendors must adhere for data submission.)
- CIHI's focus has been on secondary data use; however, collecting data in near real time is part of the roadmap that starts with the community sectors, including child and youth mental health, home care, and long-term care in 2018.
- CIHI is working to make data more predictive and actionable.
- The collection of health data is expanding beyond the traditional ministries of health, including ministries of child and youth services, ministries of social development, etc. The definition of health information will grow with a broader understanding of the determinants of health.

2016 Symposium Action Plan and Related Activities

CLINICAL PRACTICE

- Develop a "How to use outcomes data to inform clinical practice: A guideline for nurses at the point of care."
- Create a demonstration of alignment between nursing documentation and clinical outcomes across the continuum of care.
- Identify opportunities for standards integration, such as C-HOBIC, within existing and pending clinical documentation implementations.

Relevant Activities

- Clinical case scenario was developed to illustrate the value and use of clinical data standards (see Appendix B);
- Key messages regarding the "value of nursing data standards" were developed (included in clinical and administrative case scenarios);
- Continued discussions were held with various sites interested in implementing C-HOBIC with clinical documentation.

ADMINISTRATION

- Develop a "How to use outcomes data to inform clinical practice and administrative decision-making: A guideline for nurse leaders."
- Identify core messaging on the value of nursing data standards.
- Develop by 2017 a nurse executive informatics-competency framework that supports nurse managers and nurse executives to engage in planning and decision-making related to clinical information system acquisition, design, implementation, evaluation, and use.

Relevant Activities

- Administrative case scenario was adapted from the clinical case scenario to illustrate the value and use of clinical data standards (see Appendix C).
- Key messages regarding the "value of nursing data standards" were developed (included in clinical and administrative case scenarios).
- Drafted core informatics competencies were identified for the nurse executive/administrator; initial phase of face validity through a pre-symposium survey was completed by administrative group.

EDUCATION

- Develop by 2017 a "How to incorporate nursing data standards into clinical practice education: A guideline for nurse-educators," including teaching scenarios for nurse educators.
- Continue with Canada Health Infoway (Infoway)–Canadian Association of Schools of Nursing (CASN)-sponsored Digital Health Faculty Peer Network efforts.

Relevant Activities

- Whiteboard animation was developed in conjunction with CASN on "the value of clinical data standards," designed for use with students, faculty, and nurses in any practice setting.
- Infoway-CASN Digital Health Faculty Peer Network is hosting three regional workshops for nursing faculty in spring 2017.
- Infoway-CASN Digital Health Faculty Peer Network is delivering three national webinars in June, October, and November 2017.

RESEARCH

- Establish a national nursing data standards research consortium.
- Identify priority areas for research to advance the adoption of data standards.
- Secure funding for initial research initiatives by 2017.

Relevant Activities

- A meeting was held with a prospective funder Associated Medical Services Inc. (AMS) for evaluating the impact of using clinical data standards on patients' perceptions of care/caring.
- Exploratory discussions were held regarding potential areas of research and funding sources.

HEALTH POLICY

- Develop a targeted policy advocacy strategy to advance evidence-based nursing practice and quality care across the health system through standardized nursing data.
- Advance a national resolution for the adoption of nursing data standards through Canadian Nurses Association (CNA).

Relevant Activities

- A resolution for the adoption of national nursing data standards was submitted to the CNA Board June 2017; the resolution passed during November Board meeting (see Appendix D).
- Draft policy advocacy strategy was developed in conjunction with the CNA.
- New CNA–Canadian Nursing Informatics Association (CNIA) Joint Position Statement on Informatics was published spring 2017 (see Appendix E).

PRESENTATIONS DELIVERED

- e-Health conferences, 2016 and 2017.
- Nursing Leadership Network 2017.
- Ontario Nursing Informatics Group March 2017.

PUBLICATIONS

- Article in Canadian Nurse, November 2016.
- Feature article in Canadian Nurse, May 2017.
- Articles in Canadian Healthcare Technology, April and May 2017.

PROFILE

- Blog created on Canada Health Infoway webpage.
- E-proceedings from the 2016 symposium posted to CIHI and Infoway webpages.
- Creation of webpage on CNA website with link to e-proceedings.
- Whiteboard animation – Value of Standards (see https://www.youtube.com/watch?v=vOhdlsm3j2Y).

Day 2: Friday, April 7, 2017

PANEL: THE VALUE OF DATA STANDARDS IN CANADA

Brent Diverty, Vice President, Programs Division, CIHI

CIHI is a trusted source of health information. Our role includes creating and maintaining health data and information standards. This includes acquiring administrative, financial, statistical, and clinical data collected across the continuum of care. CIHI makes this information available for comparability within and across provinces and territories, as well as on the international stage.

The adoption and acceptance of data standards, including clinical data, across the country starts with a compelling value proposition. Clinicians need to see the value of the data for them in their practice. It is also important for clinicians to understand what this means in the bigger picture, that is, how the data that often start with them are used from point of care to secondary use. This includes the use of data to

- support decisions to improve outcomes for the individual;
- support organizational decisions and resource allocation;
- help determine policy-making; and,
- further evidence-based research.

CIHI is also making advancements in standardizing how clinical data are collected and shared through interoperable processes using modern industry standards. This will allow for easier access to standardized clinical data as part of an electronic health record. For clinicians, this means improved access to valuable health information in a timelier manner, facilitating continuity of care.

Our health system is a complex one. It is important that users of health information at the clinical, organizational, and system levels see the value of and have confidence in the data's validity. CIHI will continue to be a leader and work with others to promote the use of standardized health data.

Chris Power, Chief Executive Officer, Canadian Patient Safety Institute (CPSI)

Work is being done in thinking about the winning conditions to ensure patient safety in healthcare. Standards are an important part of this; however, there is a general mistrust of standards across Canada. For example, 6 to 13 per cent of people admitted to acute care will experience a preventable adverse event. This happens every 17 minutes across the country and is often related to communication problems. In home care, approximately 14 per cent of clients will also experience a preventable adverse effect. When we think about transitions of care, we know that the risk of adverse events increases at point-of-care transitions, particularly when patients are discharged from hospitals to other care settings. Approximately 16 per cent of patients returning home from the emergency room will experience an adverse event. Team dynamics and poor communication during care transitions are key areas of concern. Standardized data can support communication between providers and settings.

Organizations that have the fewest adverse events have good communication: clinical paths, audit and feedback mechanisms, and good data integrity.

The accuracy of health records is a big problem. For example, recent research found that only 30 per cent of charts reviewed are considered accurate. Standards allow organizations to help with performance evaluation; however, standards do require training to help/teach people to capture data in the correct way. Good data capture allows for planning across the continuum of care and supports the identification of data that can inform opportunities for improvement. Standardization of data helps in broader health system improvement.

CPSI is looking at the Charles Vincent framework for safety measurement (www.health.org.uk/publication/measurement-and-monitoring-safety). This framework is not retrospective but supports real-time data and predicts for the future; to do this, we need standardized data.

And we must look at a broader picture than just nursing; however, nurses can take a lead to ensure the patient story is translated so the patients too can look at their data and understand it. Nursing can play a leadership role in this area.

Julie Langlois, Accreditation Specialist, Accreditation Canada (AC)

The Accreditation Canada (AC) survey processes are built from best-practice standards, with over 100 standards used that are specific to the setting being evaluated (for example, hospitals to small outpost nursing stations). AC's journey with data collection began over 15 years ago. In 2007, it incorporated the collection of data specific to required organizational practices (ROPs) including those related to the safety domains: culture, medication use, communication, risk assessment, work life/workforce, and infection control. AC has noted the variability in how data are captured and used within organizations and has developed education and recommendations on how to use data to improve patient safety.

As an organization, AC recognizes that it needs to leverage outcome measures. Its current focus is on ensuring that patients are the central focus and that the patient's perspective is included in data gathering and reporting. AC is now examining how this is being done by organizations.

Lee Fairclough, Vice President, Quality Improvement, Health Quality Ontario (HQO)

The movement to support standardized clinical care will facilitate the transformation of healthcare. Clinical data have to be meaningful and comparable. The evidence now strongly supports the use of information technology (IT) to enable care in ways that benefit many of the six dimensions of quality care: safe, effective, patient-centred, timely, efficient, and equitable. In Ontario, much work is occurring to move organizations forward with a focus on quality care and outcomes. In addition, HQO is looking at patient experiences related to clinical outcomes. With a focus on quality, organizations need to think about the provision of standardized care and embedding standards at the point of care. One way to support quality improvement (QI) is by using standardized data to provide healthcare or-

ganizations and providers with feedback on their performance. The use of standardized data sets and clinical decision support as part of the workflow can further help to improve outcomes. In addition, patient involvement is important and necessary to inform the indicators that "need" to be measured as these often differ from those that clinicians/administrators want to measure.

We have to understand:
- how is care delivered to heavy users of the health system;
- clinical standardization of care and clinical quality standards program and define what care means from a patient's perspective—how patients are being supported, who supports them;
- defined outcome measures;
- how to enable clinicians with data to drive quality improvement;
- the use of IT to enable clinical data standardization;
- how to embed evidence in care and provide evidence that supports this;
- patient data because patient-important measures and provider-important measures are not the same; we need to look at how we can identify, research, and teach these measures.

GROUP DISCUSSION

How can we streamline/minimize the burden on nurses of data collection?
- Make the data set reflect nursing work and care.
- It is important that the processes are not burdening anyone in the healthcare system. Look at understanding why they are collecting the data, and integrate the collection into everyday practice.
- This might be the "norm" but the question is how to collect data in a meaningful way for clinical transformation that helps in the delivery of care.
- We need to work harder to ensure that we show the data we collect to the providers.
- It is important to review the data to ensure meaningful information is captured. Data are still not interoperable and there is the opportunity with the pace and emergence of technology to support standards (e.g., natural language processing [NLP], barcoding). There is still a long way to go to ensure systems are interoperable. This needs to be pushed through for clinical interoperability and data linkage and other opportunities about NLP, barcoding, and sensors.
- We may currently be capturing many data that are useless; it is time to take a step back and look at data to determine if they actually make a difference in the care we provide.
- Assessment/collection processes are quite long, and there seems to be the perception that more information is better. How can we change this?
- We need to consider the nurse and patient; we need to focus on the perspective that increased time with patients can lead to comprehensive and workable care plans for the patients.

What does clinical transformation mean?

- Automating the paper documents that are used in an organization is not a solution; a building-up of paper documentation to cover the scope of nursing practice is not efficient. We need to think about what clinical transformation is and how we can foster the process.

What efforts are being made to harmonize reporting across organizations?

- Partnerships are critically important when harmonizing standards in reporting.
- Standardized reporting methodologies are in use.
- Outcomes-based accreditation is in use.

Working Groups

CLINICAL PRACTICE WORKING GROUP

Suggestions re key messages

- The point-of-care decision-making was missing the decision support for nursing; the term "monitoring" does not resonate.
- Change the wording of the key messages:
  - The adoption of national nursing data standards "…needs to…" (instead of will).
  - Data standards need to improve work process and work flow in providing patient care to reduce the burden of care on nurses.

Review of Clinical Scenario (see Appendix B)

- The patient exemplar really resonates with clinicians. We have to be clear about what is in it for nursing and how do we make the work easier for nurses. The "sell" should focus on the exemplar, as "national data standards" may not be the relevant message, particularly to the front-line nurse.

Key Discussion Points

- Ideas were proposed about adding interprofessional team to the development of data standards. We all need to populate the plan of care. Is there a way to populate the key components and have the allied professionals add to this care plan?
- How do we know which provider is affecting the care of patients? We will not be able to truly understand this until we have a unique provider number.
- We are looking at how the electronic health record (EHR) builds in a linear way, for example, by the nurse entering data. But we may need to look more broadly and focus on what information we can provide to the nurse in a synthesized form to support decision-making and feedback on the outcomes of the care they are providing. The value of feedback given months after the fact is of no value and does not support adoption of the suggestion(s).
- C-HOBIC is often viewed as a "make work" project. Nursing assessment is a continuous process and an admission and discharge assessment does not help with daily patient care planning; nursing needs to have ongoing assessment. As well, nurses never see the outcome reports from C-HOBIC so the utility of the tool has been lost.
- Some provinces are struggling with the lack of even a minimum data set so their only recourse is to recreate what existed on paper. Is there something that can be borrowed? Also, we need to find champions of data standards across Canada and work with them, and promote data standards with leaders. We need to show success.
- We have interRAI in acute care, emergency department (ED), home care, and mental health;

however, it does not replace all documentation. If our team is going to acquire this information in the ED, will it have to be redone once the patient is moved to the floor? How do we populate the information or streamline the information?

- When we talk about standardizing data, we need to understand what drives current practices:
  - Is it nursing practice?
  - Is it risk and adverse events?
  - What can we do to build capacity within people to push back in terms of what drives documentation?
- In the next year, we need to address the following:
  - C-HOBIC and interRAI need to be clearly defined.
  - Articulate that these are the tools we will use; understand what they are and how to make them part of care planning and how to communicate back to clinicians.
  - Identify some great leaders who can champion this.
  - Focus on the transitions, the clinical transformation; we can focus on the value of standardization using the tools (interRAI, C-HOBIC).
- We need to address the following:
  - Governments (provincial):
    - They do not all have the same budget for information technology (IT) and thus it is hard to have similar outcomes; this needs to change.
  - Vendors:
    - "Make the right thing easier to do;"
    - They should enable the appropriate use of tools by ensuring nursing data standards are incorporated into clinical documentation systems.
  - Educators:
    - There is a need to re-educate: employ a different approach to help nurses understand they are constantly using data and that this is not something to be afraid of. Nurses do not see vital signs as data; this needs to change.
  - Leaders:
    - Their role is to communicate the value of data standards.
    - Make data and standards relate, for example, ROPs.
    - The importance of standards needs to be articulated.
  - Nurses:
    - The world is changing and they need to be nimble and flexible.
    - Nursing practice is constantly changing.
- We need an action plan.
  - Could CNA advocate for the role of standards at a national level?
  - We need solid advocacy between senior leadership and front line.
  - The CNA Resolution should be shared with leaders.

- What can we do with clinicians? How can we get them to use standards?
- We can put meaning into the data standards through deliberate conversations with staff, phrasing the messaging of data standards using lay language to create the value.
- Vendor systems do not support the use of specific data standards. We need systems that pull information that is meaningful; currently, this requires quite a lot of customization.
- There needs to be more work in the physician space than the nursing space; we have to ensure those workflows are embedded and made meaningful.
- The documentation is "bloated." How does one get the change management piece in front of the nurse?
- Can workflow be standardized?
- We need to define what we want from an EMR/EHR.
- A new vocabulary is needed to articulate the value.
- With financial challenges nationwide, how do we work within those constraints?

- For the next symposium, discussions should be organized around topics such as transitions of care and continuity of care.
- For areas such as pediatrics, the C-HOBIC data set is not relevant. There is work needed in this area.
- For primary care, we could look at the Primary Care data set from CIHI. Is there an opportunity to leverage these data?
- We need to map out the data sets. This would help to make the gaps visible.
- Consider having patients complete some assessment information prior to hospital or physician visit, information from the patient's perspective: What is your current state? What are your anticipated needs? This could be piloted with patients pre-booked for surgery.

Action Items—Clinical Practice

1. Use the clinical scenario and whiteboard animation with clinicians to demonstrate value.
2. Map standards from primary care (PC) to acute care (AC) to home care (HC) to long-term care (LTC) to mental health, and identify gaps, that is newborn, maternal child, pediatrics.
3. Provide the online community of practice with link to Canadian Nursing Informatics Association (CNIA) webpage where clinicians and others can go to find standards information and champions.
4. Demonstrate the value of data standards with demonstration initiative.
5. Advocate to vendors for systems that
   - pull information together;
   - are not big box, so organizations do not have to spend time/resources removing fields;
   - support interprofessional documentation.
6. Consider forming groups around key areas such as transitions of care, continuity of care; have policy, practice, research, administration, and education in this group.
7. Can we standardize workflow?
8. Identify what we want out of the electronic health record (EHR).

9. Disseminate the information:
   - Publish in the Canadian Nurse journal.
   - Publish in healthcare technology journals.
   - Work with CIHI.
   - Use online virtual collaboration space to share tools and resources, linked with CNIA webpage.
   - Investigate if there is an opportunity to work with students, ensuring the use of standardized data and emphasizing the importance of same embedded in curricula with the support of the CASN.
   - Work with graduate programs; identify research/thesis opportunities focused on clinical/nursing data standards; ensure relevant content is embedded in nursing leadership courses.
   - Work with RPNs and regulators.
   - Reach out specifically to the specialty groups within the CNA; each has its own website.
   - Reach out to the regulatory bodies in each province; material from the provincial regulatory body is more likely to be read.

ADMINISTRATION WORKING GROUP

Review of Administrative Scenario (see Appendix C)
The group reviewed the administrative scenario and concluded that it was, in principle, a useful approach and educational tool. Comments included the following:
- It needs to be shorter, maximum one to two pages.
- It was primarily relevant to acute medical patients.
- Additional scenarios could be created, perhaps for different populations or a scenario that focuses on patient safety and another that crosses different sectors and demonstrates the value of improved communication across the continuum of care.
- Add appendices to support the case study with definitions of indicators and resources/references.

Key Discussion Points
- The group discussed how to use standardized outcome data to demonstrate the value of nursing, to strengthen continuity of care, and to advocate for system changes that support quality of care across settings. Comments included the following:
  - We collect a lot of information for others' use. Many stakeholders and organizations are requesting information in different formats. It is placing a significant burden on nurses.
  - Messaging should be more than just demonstrating the value of nursing; we need to tie our messaging to how nursing care improves outcomes that matter to patients as well as to organizations.
  - Nurse leaders have a responsibility and obligation to advocate for and support front-line clinicians. We need to identify the core set of metrics that are useful for nurses and nurse

leaders, and advocate for those. We need to draw "a line in the sand" and inform organizations such as Accreditation Canada, CIHI, CPSI, Health Quality Ontario, etc. what metrics in what formats/definitions are of value to nurses.

- We have also created complicated and onerous documentation systems that take time away from direct care and are not consistently adding value to patients and nurses. Our role as leaders is to determine what is of value and to let go of items not of value.
- We have learned a lot from C-HOBIC and NNQR-C and we should leverage that knowledge to advocate for a core set of metrics, which would be implemented both nationally and provincially.
- It was recognized that this would require revisiting NNQR-C—perhaps looking at the U.S. minimum data set again, as well as developing a targeted approach to engage the numerous and varied stakeholders across Canada. Perhaps we could work with CIHI on the nursing data set, although it was noted that the individual provinces define the data to be collected.
- It was noted that we have not consistently considered nursing workflow when designing EHRs. The group wondered whether there were some organizations and systems that were doing a better job from which we could learn.
- The group also discussed the differing perspectives of various health professionals and the need to establish a common approach. We represent more than nursing.
- Healthcare Information and Management Systems Society (HIMSS) data show that only 30 per cent of organizations even attempt to integrate equipment-sensor data into the EHR and workflow. This group really needs to be part of those conversations when the systems are selected and purchased. Nurses have to be at the table in IT design to ensure we are represented and to advocate for systems that support patient care and nursing workflow and provide meaningful outcome data.

- The group discussed the implications and uses of standardized nurse staffing ratios, particularly as they related to the CIHI "staff to patient" ratio currently under development. It was noted that this ratio could be very useful if it is used carefully and thoughtfully (and not to reduce everyone to the lowest common denominator). The following was noted:
  - This ratio would be an annual average, not real time, and would apply initially to hospital inpatient units. It is calculated at the level of functional centre, from data submitted by provinces/jurisdictions. Some areas may be able to look at a more granular level at staff type (RN, RPN, etc.) but this would not be achievable everywhere.
  - It was recommended that CIHI consider using clinical data such as C-HOBIC to connect to staffing data to ensure comparability and meaningfulness.
  - In home care, a ratio such as this needs to be considered at the practice level (RN, Care Aide, LPN).
  - Any type of report needs to be clear about the limitations of this type of data.
    It needs to be used for the right reasons and perhaps not reported publicly for fear it would be misinterpreted.

- The group reviewed the draft Nurse Executive Informatics Competency Framework. It was noted that the competencies underwent an initial review by stakeholders and the plan was carry out a broader consultation through a Delphi, after reviewing and incorporating findings from recent publications.
- It was agreed that the competency framework would be very useful in ensuring nurse leaders are aware of their responsibility for advocating and ensuring that hospital information systems support nursing care delivery and include standardized data elements and outcomes. The competencies can be used as a self-assessment as well as an educational tool. The group liked the idea of mapping the competencies to the Canadian Council of Health Leaders (CCHL) LEADS framework and suggested that a sample job description for a chief nursing informatics officer (CNIO) be included. If there is no CNIO, it could be made clear that the competencies were the responsibility of the Chief Nurse Executive (CNE) or equivalent. Participants suggested that sustainability, analytics, continuous improvement, and population health elements could be added to the competencies.

Action Items—Administration

1. Establish a nursing management minimum data set (based on the NNQR) and bring it to the next level (cross sector, etc.), ensuring a core set of structure, process, and outcome measures. These should replace, not add, to existing reporting requirements.
   - Critically evaluate what standards add value and what can be let go.
   - The measures need to support nurses' professional accountability and the delivery of safe, efficient care.
   - We must ensure that that direct-care nurses are no longer seen as the default source of data collection.
   - Establish guiding principles such as keep it simple, document once, leverage many times, ensure relevance to clinical care, etc.
2. Look for opportunities to use plain language so the EHR is shareable among professions, patients, and organizations.
3. Case studies demonstrating the value of data standards will be useful but need to be shorter; include resources such as the standards video, bibliography, etc.
4. Continue the work of developing nursing leadership competencies: complete the Delphi process, disseminate it through multiple channels (including the Provincial Nursing officers), and use for self-evaluation, education, and development (similar to the Entry-to-Practice Competencies).

RESEARCH WORKING GROUP

Key Discussion Points

- Researchers may need to consider the main opportunities for this initiative around data standards. This type of research could have multiple outcomes. We could look at, for example,

the following questions: Why are we asked to submit data reports to multiple organizations (e.g., CIHI, Accreditation Canada, etc.)? How might we tackle that from a research perspective? How can we leverage these reports to make optimal use of technologies in healthcare (e.g., to support clinical decision-making, integrating guidelines into workflow)?

- With the Liberal government, there are newly identified priorities for federal-level funding. The group needs to determine what would be most valuable to move the agenda forward for data standards.

- We need to push the nursing computerized decision-support agenda forward as it will encompass a lot of the work that nursing researchers are currently doing. Another area to examine is natural language processing. Not much work is done in this area in Canada; however, there is at the international level. We could consider how can we leverage that work and/or collaborate with agencies doing this work.

- Primary care is a current area of focus in healthcare but the role of nursing in this area is being undermined. If this group makes strategic moves, we may be able to make nursing's role visible. There is discussion in different provinces/jurisdictions about reporting data from primary care. Alberta has developed a community data hub. This creates a platform that will support research.

- It will be beneficial to bring the broader nursing informatics research group in Canada together to support the work and to get a better sense of what is going on in this area. An inventory of nursing informatics researchers in Canada should be created and list their key areas of research.

- A few years ago, CNIA completed a survey on what the nursing informatics research agenda should be. It may help to re-invigorate the research arm of CNIA. CNIA is the body that goes through CNA, which is the connection to the International Medical Informatics Association (IMIA). IMIA hosts a biennial conference on international nursing informatics research. If we get a critical mass with a great interest in this topic, CNIA would be its logical home because of its relationship with IMIA. It is hoped that we can get a small grant to bring everyone together.

- What do we know about nursing data standards from a research perspective? There are a lot of questions, for example: How do nurses globally perceive using data standards? Are the data standards data, information, knowledge?

- There is concern that, in Quebec, there is an issue with standardized languages. If we cannot discover what benefits nurses, we will not likely be successful. This requires education of nurses and nurse leaders.

- From a research adoption perspective – using interRAI as an example – there is a problem in that nurses are required to access a separate documentation system that is not well integrated with nursing care. Even when we have adopted standards, we are not yet at a place where adopted standards are well integrated and driving practice. Research focused on decision support will be of value to nurses and other clinicians. For example, how do you use the standardized information to make practice changes?

- The U.S. nursing data standards initiative based at the University of Minnesota is focused on a research agenda that is concentrated on areas such as: care coordination, clinical data sets analytics working group, context of care, and encoding nursing assessments.
- Internationally, there is much work being done around standardized care planning as well as data elements to support that shared documentation.
- Why we are working on nursing standards rather than health data standards was discussed. It is important that we make the role of nursing in healthcare visible and evidence informed. The interRAI suite of tools currently in use could provide an opportunity for nursing to select those elements relevant to its practice. The suite is broad and deep enough in enough areas that it should serve multiple health disciplines.
- Lori Block recently completed work in this area that was focused on mapping the SNOMED Clinical Terms to the British Columbia provincial wound and skin assessment data elements. There were only 43 per cent hits. She has completed a recent literature review on the topic of research into mapping. The research surrounding mapping continues to expand and could be a subject of a knowledge synthesis.
- The group proposed a research question: What is the current ability of standardized terminologies to represent clinical practice? What are the best practices for assessing the above question? The group decided to employ an interprofessional approach.
- Are the standardized terminologies sufficient to represent components of relevant clinical practice for nursing? Answering this would allow nursing to determine if there are some specific areas that need to be supplemented to serve nursing.
- It is important to move on these recommendations over the next year. We need an action plan that is focused on
    - linking with CNIA;
    - creating an inventory of "What is the research capacity in this country?" Who is doing what where?" to determine whether we should form a team to apply for funding to investigate the state of development of informatics science in Canada.

Action Items—Research

It was suggested that the 2017 NNDS establish a research cluster to answer the following question(s):

1. What is the current ability of standardized terminologies to represent clinical practice?
2. What is the Canadian capacity for conducting nursing informatics research?
    - Who are the individuals involved and what are their self-identified research interests?
    - Who are the graduate students and what is the focus of their research?

POLICY WORKING GROUP

Key Discussion Points

- Two action items from last year were achieved in the targeted policy advocacy strategy:
  - The national resolution on data standards was advanced. It was approved by the Board of the Canadian Nurses Association at their November 2016 meeting. (See Appendix D.)
  - A CNIA/CNA joint position statement on nursing informatics was developed. (See Appendix E.)
- We need to develop a policy position statement that can be used at federal and provincial levels around standardization of documentation, data standards, instruments, and how to use the data to inform health decision-making. The current prime minister has talked about evidence-informed decision-making. We can use this to drive the agenda, as we cannot have evidence-informed policy without standardized data underlying the decision.
- How do we draft position statements that will help leaders create momentum for change in their organization around standardized documentation and data standards and instruments? We need to look at collecting consistent data in a consistent way, described and defined in a consistent way across jurisdictions.
- Provincial and federal governments have invested in systems that collect information differently. Decision-makers do get the information but the concern here is cost.
- At the 1992 meeting that CNA convened regarding a nursing minimum data set,[2] there was consensus on the need to collect the following data: nursing contribution to client assessment, nursing interventions, nursing contribution to client outcomes, nursing identifier, and nursing workload.
- Nursing needs to consider what nurses should contribute and what they should not. While the focus is on the patient, it is also necessary to examine our discipline's contribution. A multidisciplinary perspective is good but, if we do not look at nursing' contribution, who will?
- There is a need to capture a unique identifier for nursing in health information systems. The nursing community is broadening: licensed practical nurses, registered practical nurses, registered nurses, nurse practitioners. From an economics perspective, the role of the registered nurse has been compressed. There is a potential benefit in articulating the various roles from a "value/ policy advising" perspective. A data set that can support attribution to a provider would allow us to measure the impact on patient care when we move to a different category of nurses and when other providers shift functions to nursing. Value statements should add something about a data set needing to be attributable to a particular type of nursing resource. Analysis can be carried out if we have the data necessary to model and use health human-resource planning to answer the following questions:

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[2] Canadian Nurses Association, *Proceedings of the Nursing Minimum Data Set Conference* (Ottawa: CNA, 1993).

- How can our resources be used to optimize care?
- Are we using dollars effectively so each member of the team is delivering safe care?
- Can data better inform workforce planning?
- The regulatory bodies and unions will have to be part of the discussion regarding a unique identifier number.

Action Items—Health Policy

1. Engage key nursing stakeholders, especially regulators and unions, in advancing the National Nursing Data Standards.
2. Develop a briefing note that clearly articulates the issue, background, assessment, and recommendation for the use of regulators, unions, and others. Create the briefing note based on existing position statements/resolutions, using wording meaningful to health system/nursing leaders and direct care.
3. Work to address the gap in having unique national identifiers for providers (all categories of nurse providers) so that care can be allocated to the appropriate provider (those giving the care).
4. Follow up with the presidents of the CCRNR (Canadian Council of RN Regulators), CCPNR (Canadian Council for Practical Nurse Regulators), and CFNU (Canadian Federation of Nurses Unions) regarding the unique identifier.
5. Provide an update to the Provincial Nursing Advisory Task Force regarding National Nursing Data Standards (NNDS) and the need for a unique nursing provider identifier.
6. Create a regular working group that leverages Canada Health Infoway resources (change management framework, virtual community of practice).
7. Accreditation Canada is to recruit patient representation to the group.

EDUCATION WORKING GROUP

Key Discussion Points

- Many faculty do not understand that "informatics" is a foundational, ubiquitous competency.
- Operationalizing competencies was discussed—"scaffolding" them (blueprint) in an educational learning progression. (Refer to ACEN (2015) RN competencies.)
- There is a need to create capacity within the faculty as well developing the argument for faculty to adopt such informatics capacity.
- What nursing education needs to look like in the future was addressed:
  - Information literacy is the synthesizing of information to make informed decisions.
  - Faculty needs to be prepared to set the context.
  - Simulation labs could be used.
  - Alignment between faculty and practice needs could be improved. Is there a strategy that can align practice with education? Practice issues need to be better understood, utilizing research.
- Are there are new initiatives that may help advance this work?

- In Saskatchewan, students will have EHR access through an Allscripts solution.
  - The British Columbia Institute of Technology is working on a custom build with open source for what students need. It is developing eight case studies that focus on the patient's journey from the patient's viewpoint. System design will inform practice and allow the experiential learning of students.
  - Is there a way to collaborate across the schools and share a national EHR solution rather than each school creating its own? With this approach, there is the opportunity to inform the design enhancements of IT and create/design a tool kit, working with clinical practice, research, and education.
- There is a need for CNA Nursing Informatics Competencies certification.
- We need a national partnership to share simulation labs/consolidation to bypass the silos of individual development. A mechanism to start sharing resources and a shared platform or solution could be created.
- The University of New Brunswick has completed a comprehensive review of its curriculum blueprints and mapped them to competencies; others have also done this work.
- CASN volunteered to develop and lead a Faculty Development Education course on informatics competencies for nurses, recognizing that development work requires skills different from those needed in the delivery of pre-existing tools.
- As with most change-management initiatives, we need to provide an organizational readiness assessment tool so faculties can start to work on this from their current position of readiness. We can tailor assistance based on where they are with respect to their evolution on the continuum of development and NI leadership.
- CASN will be holding a consultation process for its accreditation standards for entry to practice (undergraduate). This is also an important time to contribute constructive feedback and strategic priorities such as nursing data standards and demonstrable informatics competencies for inclusion in accreditation criteria.
- Infoway-CASN Faculty Peer Leader initiative and focus of webinars for 2017 is to discuss the integration of standards content:
  - three regional workshops (West, in February; Ontario, in May; Eastern Canada, in June);
  - three webinars (eDocumentation, Patient Empowerment, Privacy/Professional standards);
  - two whiteboard animations for faculty use (applying key informatics concepts, the value of data standards).
- Key teaching concepts are the following:
  - standardized clinical terminologies,
  - standardized nursing data,
  - continuity of information across the continuum of care, and
  - using data to inform practice.

Relevant Entry-to-Practice Informatics Competencies[3]

Ability to analyze, interpret, and document pertinent nursing data and patient data using standardized nursing and other clinical terminologies (e.g., ICNP, C-HOBIC, and SNOMED CT, etc.) to support clinical decision-making and nursing practice improvements;

- Ability to articulate the significance of information standards (i.e., messaging standards and standardized clinical terminologies) necessary for interoperable electronic health records across the healthcare system;
- Ability to articulate the importance of standardized nursing data to reflect nursing practice, advance nursing knowledge, and contribute to the value and understanding of nursing.

Review of Clinical Scenario (see Appendix B)

- The scenario is missing salient pieces; the traditional scenario does not highlight the depth of nursing or detailed knowledge activities in play. (The knowledge synthesis and decision-making that historically remain explicit and articulated are not adequately exposed in the scenario.)
- The scenario is missing the nursing knowledge piece; nursing knowledge needs to be explicit.
- There are several questions about the intent of the scenario:
  – Is the focus of the scenario the coordination of care?
  – Who are the key members of the team?
  – Who brings in what piece and which role?
- The scenario needs explicit communication of changes during interim/transitional assessments.
- The scenario does not show nurses' use of knowledge and decision-making. As nurses start to use/access data at the point of care, their decision-making is invisible. How do we make it more visible? An example, patient teaching is not a task but is a decision that the nurse makes.
- The scenario needs to position nurses as knowledge workers versus taskmasters.
- It needs to re-frame nursing tasks (e.g., iterative patient assessments) that transform and demonstrate our roles.
- The scenario needs to show how nurses practise differently once standardized data are integrated into nursing practice.
- The scenario needs to show how care is documented and how this documentation can be re-purposed for future decision-making, demonstrating that what nurses need to do is not just completing tasks.

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[3] CASN, *Nursing Informatics Teaching Toolkit: Supporting the Integration of the CASN Nursing Informatics Competencies into Nursing Curricula* (Ottawa: CASN, 2013). www.casn.ca/2014/12/nursing-informatics-teaching-toolkit/.

Action Plan—Education

1. Carry out the following regarding expectations/requirements and foundations:
   – Faculty survey,
   – Accreditation requirements/review consultation,
   – Organizational readiness assessment,
   – Curriculum blueprints and competencies.
2. Develop the following tools:
   – Case studies,
   – Simulation labs/consolidation with national partnerships.
3. Work on advancing the following:
   – CASN faculty development education,
   – Practice/professional education (CEUs),
   – NI certification.

AFTERNOON REPORT BACK – KEY POINTS FROM LARGE GROUP DISCUSSION

- The question is whether policy can help create data linkages for research, practice, and policy purposes. Currently, there is a gap in connecting other clinical data with mental health/corrections data and the determinants of heath. Would closing that gap require a new nursing assessment that supports these data sources or something that combines them with other health data?

- We need to look at the social determinants of health. CNA has developed a toolkit with the health assessment parameters of the social determinants of health. Infoway noted that integrated care planning resonates with this work.

- We need to move ahead with the agenda related to harmonization of reporting among organizations such as CIHI, Accreditation Canada, etc. Nursing has to continue to address this issue and look at whether we can decrease the information burden:
  – There is still a lot redundancy, duplication of forms, etc.;
  – Can we rethink the process?
  – This may be an action item to continue going forward within the policy group.

- We should consider simultaneous English/French translation at the next symposium and reach out to the federal government or Infoway for funding of same.

- Next year, we have to focus on topics that are integrated with all "roles/streams" in each group.

Day 3: Saturday, April 8, 2017

KEY POINTS FROM THE LARGE GROUP DISCUSSION

- There was discussion whether we could develop a national simulation lab that would create a nursing focus on clinical documentation. Perhaps we could link this work to the cognitive workflow of nurses.
- We would like to see something concrete, a guideline for data set/standards use in the clinical documentation of care for specific settings and patient populations. For example, these requirements may vary between acute care, mental health, pediatric versus adult care, long-term care, and/or homecare. There is a real opportunity for guideline development in the use of clinical data standards.
- At the CNA board meeting in November 2016, a resolution was approved to advocate for the use in Canada of C-HOBIC and the LOINC Physiological Assessment Panel. (LOINC is the Logical Observation Identifiers Names and Codes.) The symposium group supported their appropriate use within specific care environments. There must be consistency in nursing documentation standards related to these data sets across Canada. It is important these standards be included in clinical documentation systems along with real-time reports on the data for staff and managers.
- C-HOBIC was discussed:
  - This tool is not integrated for primary care but is a starting point.
  - As it is a starting point, it is adaptable.
  - There was talk of how this content is acquired if it is not in the public domain. The topic will be further discussed at a meeting between P. White, K. Hannah, CIHI, and interRAI leads on April 12, 2017
  - One needs to be aware that public health is missing from our discussions about its use.
  - As built, C-HOBIC is not appropriate for mental health but therapeutic self-care may fit.
  - The wording "where appropriate" should be built in.
  - The C-HOBIC and interRAI are both coded from a terminology perspective in SNOMED or ICNP®.
  - One of the lessons learned is that one must always build in real-time reports for staff, managers, and leaders; otherwise, the tool will not be valued and sustained.
  - All agreed that timing is important as many provinces/jurisdictions and organizations are currently implementing clinical documentation systems.
  - There was agreement that C-HOBIC, interRAI, and the LOINC Physiologic Assessment panel would be the basic standardized information that should be embedded in clinical documentation systems.

- A demonstration should be developed to show how this can be brought to life.
- We need a simultaneous piece of work that gets us to the documentation standard.
- We should consider creating a series of webinars—maybe through CNIA, CNA, or CASN— to disseminate this knowledge and operationalize it.
- A national repository of the data sets is needed so we can map one source of information.
- A national provider identity registration is needed within the circle of care and perhaps a national citizen identity. This becomes critical around the appropriate linking of data.
- We agreed to use C-HOBIC as a standard but we also require the other data elements to build out other assessment requirements. There may be an opportunity to standardize other clinical assessments (wound, GU, GI).
- We need to keep our focus on what matters to patients when we choose what measure in nursing:
  - Statistics do not matter to patients the same way they do to executives (for example, patients do not care about rate of readmission, only if they have to be readmitted).
  - We have to look at the care left undone (answering bells, when nurses talked to me).
  - We need to get some Indigenous indicators as well as francophone indicators for representation in this work moving forward.
- From a care plan perspective, we must ensure that clinicians have the information they need. If we are looking at an interoperable, patient-accessible, and interdisciplinary care plan, we may need a product so we can "sell" it. In addition, a sustainability plan has to be defined.
- We need to disseminate these messages more forcefully to the broader nursing community, as we do not yet have uptake on a wide scale.
- Nurse leaders require a package/product of data standards that can be used in RFPs (responses to Requests for Proposals).
- If we have a unique provider identifier and C-HOBIC, we can begin work on NNQR-C (National Nursing Quality Report in Canada).
- Next year, CNA at its 150th meeting, could make an announcement about data standards.

APPENDIX A – PARTICIPANTS

Group	Name	Position and Organization
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Practice – Admin *Facilitator:* Julia Scott *Scribe:* Lori Block	Irene Andress	Chief Nursing Executive, Michael Garron Hospital
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	Kayleigh Gordon	PhD Student – Scribe for Practice
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	Brent Diverty	Vice President Programs, Canadian Institute for Health Information
	Lee Fairclough	Vice President, Quality Improvement, Health Quality Ontario

APPENDIX B – PRACTICE CLINICAL SCENARIO

Clinical Scenario Using C-HOBIC as Exemplar

Mrs. Smith is a 78-year-old female who has had frequent admissions to her local acute care hospital over the past three years due to her congestive heart failure (CHF). On admission to acute care, she is asked about her functional status, symptoms, and ability to manage her care and she states that she is able to ambulate on her own but is "having difficulty breathing" and is "tired." The assessment information is entered into the clinical record in a narrative format. On discharge, she is asked about who is at home to help her and then provided with her prescriptions and told to make a follow-up appointment with her family doctor. She is discharged home with home care but discharged from that program after two visits as her dyspnea and fatigue appear to have improved and she can manage her own care. Usually within four to six weeks, she again experiences shortness of breath and fatigue and ends up back in ER.

On her most recent admission, the nurse assesses Mrs. Smith and asks her specific questions about her functional status, dyspnea, fatigue, and therapeutic self-care including knowledge of medications and ability to manage her care post-discharge. The questions are standardized and are coded for inclusion in the electronic health record.

Mrs. Smith reports that she has shortness of breath and is unable to do any activities and that she is so tired that she is unable to start day-to-day activities. She can get to the bathroom but is too tired and short of breath to cook and manage her bathing. She has swelling in her feet and ankles and she can't wear her shoes. She does not have any nausea or pain, no history of falls, no issues with continence, and her skin is clear. Mrs. Smith is prescribed blood work, chest x-ray, and intravenous diuretics in addition to her current medications.

The registered nurse (RN) is aware from recent research using the standardized C-HOBIC data set that patients who are admitted with fatigue may have a longer length of stay.[4] A referral is made to physiotherapy for assessment regarding exercise and required lifestyle changes related to her CHF; another referral is made to occupational therapy regarding energy management.

On discharge, Mrs. Smith is asked the same questions that she was asked on admission—about function, symptoms, and ability to manage her care. Since the same questions were asked on admission and coded, the RN is easily able to compare the information at both points in care and evaluate the impact of the unit practice on Mrs. Smith's health and assess her readiness for discharge.

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[4] Jeffs, L., D. Jiang, G. Wilson, E. Ferris, B. Cardiff, M. Lanceta, P. White, and D. Pringle, "Linking HOBIC Measures with Length of Stay and Alternate Levels of Care: Implications for Nurse Leaders in Their Efforts to Improve Patient Flow and Quality of Care," *Nursing Leadership* 25, no. 4 (2012): 48–62.

Mrs. Smith reports that she is independent in bathing and ambulation. She has shortness of breath when performing moderate activities such as climbing stairs but has no fatigue at this time. The occupational therapist reports that Mrs. Smith is able to prepare a meal and eat without shortness of breath. The physical therapist reports that Mrs. Smith is able to walk in the corridor without shortness of breath. A pharmacist has met with Mrs. Smith to go through her medications prior to discharge and make sure that she understands why she is taking the medications. While this is an improvement from her admission, the RN tells Mrs. Smith that they know from recent research that people who have dyspnea and difficulty managing their self-care often end up back in the hospital so they are going to put in place a plan of care post-discharge to support Mrs. Smith's remaining in her home,[5] Mrs. Smith meets with the dietitian before discharge who provides her with information about sodium restriction and fluid intake in her home.

Because the assessment information is standardized and coded upon discharge, a summary report is created and shared with the healthcare team (family doctor, home care nurse) to support care planning. This summary report provides a snapshot of information on Mrs. Smitwh's functional status, continence level, symptoms (pain, nausea, fatigue, dyspnea), safety outcomes (falls, pressure ulcers), and therapeutic self-care on admission and discharge to assist in organizing and coordinating care. This information supports the development of a coordinated care plan. Since the home care coordinators use the same standardized information in their assessments, they are more confident in the data contained in the report and can use this information to develop a plan of care and to monitor progress toward preventing readmissions to acute care.

What data are available?

- *Electronic versus paper process*
  If this information is collected on paper, then it is "buried" within a chart and clinicians must through the chart to understand if there were changes in items such as function, fatigue from admission to discharge, and to think about changes related to their practice. If information is collected electronically, then individual/unit level reports can be created to provide information about performance and for benchmarking

Meaning of outcomes

- *Within care settings*
  The use of standardized questions to capture information on functional status, continence, symptoms (pain, nausea, fatigue, dyspnea) falls, pressure ulcers, and self-care (questions about medication management, symptom management) allows clinicians to compare this information

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[5] Wodchis, W., L. McGillis-Hall, and L. Quigley, "Increasing Patient Self Care to Avoid Hospital Readmissions – Demonstrating Value with HOBIC Data." Presentation at HOBIC Symposium, *Demonstrating Value With HOBIC Data*, Toronto, Ontario, February 8, 2012.

at different points in time and to think about the practice on their unit and what interventions are leading to improved outcomes.

It is critically important in this time of fiscal constraint that nurses demonstrate the impact of their practice on patient outcomes. Furthermore, the use of standardized information expands and strengthens nurses' use of outcome data for assessment and care planning.

- *Between care settings—transitions*
  The electronic collection of standardized questions supports transitions as information can be shared among providers/organizations/settings, as it is the same data set that other clinicians are using. Because the information in this organization is collected electronically and available in real time, they can generate a summary report on discharge that compares the changes in outcomes information from admission to discharge and to share this information with the family health team/home care provider.

- *Implications for practice, clinical decisions, and supports*
  The use of standardized questions to capture information on items such as functional status, continence, symptoms, falls, pressure ulcers, and self-care allows clinicians to compare this information at different points in time. In acute care, they assess this information on admission and discharge and can look at changes for the individual or unit and think about interventions are leading to improved outcomes.
  - If the unit has implemented best practices around pain management, are patients leaving the unit with their pain managed?
    - Are patients being discharged from acute care with high levels of dyspnea? There is research to support that this can result in readmissions. What practices were put in place to manage this during the acute care stay? What can be done on discharge to support the patient's remaining in the home and to prevent readmission?

APPENDIX C – ADMINISTRATIVE SCENARIO

A Scenario for Nurse Leaders Using Standardized Data and Outcomes to Inform
Clinical Practice and Administrative Decision-Making

Leadership of an acute care hospital is focusing on improvements in the care of patients with chronic obstructive pulmonary disease (COPD) with the following goals: (a) enhancing the patients' functional ability; (b) achieving benchmark length of stay; (c) supporting a safe transition home; and (d) reducing unnecessary emergency visits and readmissions. The senior team is exploring measures to demonstrate the value of this focus for the staff, patients, and community.

The team recognizes that, in addition to measuring items that are of value to the interprofessional team, they also need to ensure that the items being measured are important to the patient/family. They believe that, by focusing on patient-identified goals, they can enhance the patient experience as an enhanced patient experience improves clinical outcomes. Furthermore, the team recognizes that the measures need to align with other organizational initiatives in healthcare such as quality of patient experience, senior-friendly care, medication reconciliation, cost efficiency, patient safety, etc.

Leaders also recognize that clinical staff must be engaged in understanding the value of this initiative, as staff engagement is critical with any change and contributes in turn to improved clinical outcomes.

The organization has recently introduced a standardized approach for measuring functional status, dyspnea, pain, and therapeutic self-care (TSC) that was built into the electronic health record and a by-product of clinical documentation by the interprofessional team. They used the interRAI measures for functional status and dyspnea, as these are the measures used in the home care sector. Leaders recognized that, to be patient-centred and to ensure a system focus, they should standardize assessment measures where possible, thus enabling cross-sectoral comparisons and continuity. This was extremely important to both the organization and the region as there is a large population of seniors with chronic illnesses. The longer-term vision is to provide patients/families with access to their own health information to support self-care so it is crucial that the information is collected using the same questions in all sectors.

Since the information is collected electronically as a by-product of clinical documentation, the team is able to produce individual, unit-level, and organization reports in real time, on demand. They can produce reports/graphs on specific issues such as patient functional status over time and use these to further engage staff/patients/ families in improving health outcomes.

Leadership strategies

- By linking to priorities of patients and staff, leaders create momentum for change.
- By focusing on the improvements between admission and discharge, nurses and interprofessional team members can demonstrate their impact on clinical outcomes.
- By incorporating patient-specific goals, staff can engage patients and families as partners in their care.

Value of using standardized data and outcomes within care settings

- The use of standardized questions in an electronic health record allows clinicians to utilize standardized information—collected on admission with patient input—to develop a care plan. The team is aware of recent research demonstrating that the predictive ability of functional status on length of stay (LOS) and alternate level of care (ALC) status. Patients who score high on these indicators on the admission assessment are at increased risk for a longer LOS or ALC, so they identify these patients at team meetings and immediately focus on interventions to maintain function.

- The use of standardized questions in an electronic health record allows clinicians to create, access, and use reports to examine unit-level data on changes in outcomes from admission to discharge and to consider the practice on their unit/program. The team is aware that recent research on the TSC scores demonstrated a consistent and significant protective effect for readmission to acute care at 7, 30, and 90 days. TSC assesses patient knowledge of their medications as well as their ability to take medication as prescribed, to recognize and manage symptoms, and to perform and adjust regular activities of daily living to manage symptoms. A one-point improvement in TSC scores was associated with approximately a 10 per cent reduction in the likelihood of readmission. Furthermore, a high dyspnea score on discharge was more strongly related to readmission at 30 and 90 days.

- The use of standardized questions in an EHR allows the senior team to access organizational-level reports for performance measurement, benchmarking, and reporting to the board.

Value of using standardized data and outcomes between care settings

- The organization is able to produce a summary report for each patient that can be sent to the family health team/home care organization on discharge. This enables primary care and community providers to understand the patient's functional status on admission compared with his/her status on discharge and use this information to inform the plan of care.

- The information is assessed using the same questions that the home care organization uses. Therefore, this supports efforts to understand if outcome improvements are being maintained in the community. A recent study in home care highlighted the importance of assessing TSC in relation to protecting against hospital readmissions and other adverse events. In this study, the authors analyzed TSC scores vis-à-vis two types of adverse events: (1) the use of healthcare resources, including new emergency room visits and unplanned hospital readmissions; (2) safety outcomes that included client falls, unintended weight loss, new urinary tract infection, ADL decline, new pressure ulcer or ulcer deterioration, and non-compliance/adherence with medication The authors found that clients with a high TSC ability experienced fewer adverse outcomes (including new hospital visits, ADL decline, new falls, unintended weight loss, and non-compliance/adherence with medication) than those individuals with a low TSC ability.

- With more and more people living with chronic disease, it is increasingly important to be able to understand outcome information longitudinally over time. The use of standardized information across care settings will support this.

Implications for practice and clinical decisions

- The leadership team recognized the value of measuring the things that are important to the patient/family as well as the nursing and interprofessional team. Since this initiative aligns with numerous other initiatives within the organization including reducing length of stay and readmissions, having a senior-friendly hospital, improving patient experience, improving safety, etc., the team is able to obtain buy-in and support from all levels and roles within the organization. The posting of graphs and clinical outcomes reports on the units allows staff to see both where they are doing well and where they need to increase their focus.
- Leadership found that, by focusing on items that were of value to both patient and clinicians, the completeness of the clinical documentation was improved. This allowed for better reports to be shared within the organization and on transition to other sectors.

Next steps

Nursing leadership is planning a review of the model of care for the medical and surgical programs in the next fiscal year. They plan to use the standardized data they are collecting as a baseline so that they can answer questions related to changes in the model of care and their impact on clinical outcomes, for example, on functional status, readiness for discharge, and patient satisfaction. They are aware that CIHI is investigating the development of a staff-to-patient ratio that will provide a nationally comparable, systematic method of measuring the number of patients cared for per staff member. They believe that using standardized data for both clinical outcomes and staffing hours/mix will enable them to better understand and demonstrate the relationship between staffing levels and clinical outcomes.

APPENDIX D – RESOLUTION TO THE CNA
ANNUAL GENERAL MEETING, JUNE 2016

The highlighted amendment was submitted as a change following the June 2016 CNA annual meeting.

"RESOLUTION 12   National Nursing Data Standards

BE IT RESOLVED THAT the Canadian Nurses Association (CNA) advocate for the adoption of two standardized clinical reference terminologies, ICNP® and SNOMED-CT, as well as a standardized approach to nursing documentation in all clinical practice settings across Canada, specifically C-HOBIC and LOINC Nursing physiologic assessment panel.

Please Refer to November 2016 CNA Board of Directors Meeting for complete resolution as submitted including rationale at: https://www.cna-aiic.ca/~/media/cna/page-content/pdf-en/cna-2016-annual-meeting-of-members-resolutions.pdf?la=en

JOINT POSITION STATEMENT

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NURSING INFORMATICS

INTRODUCTION

The Canadian Nurses Association (CNA) and the Canadian Nursing Informatics Association (CNIA) endorse the definition of nursing informatics used by the special interest nursing group of the International Medical Informatics Association (IMIA, 2009): "Nursing Informatics science and practice integrates nursing, its information and knowledge and their management with information and communication technologies to promote the health of people, families and communities worldwide" (para. 2).

Nursing informatics enhances decision-making in all direct and indirect nursing roles, through the collection, extraction, aggregation, analysis and interpretation of standardized data, using the emerging principles and methods of data science.

The appropriate use of information and communication technologies (ICTs) will add value to our health-care system while decreasing costs (Naylor et al., 2015). This view is aligned with CNA's position on primary health care (PHC),[1] which seeks to address current challenges to our health-care system (CNA, 2015). The result will further the shift toward person-centred approaches to care delivery focused on health promotion and disease prevention. To achieve a person-centred model of health and wellness, nursing engagement with digitally connected health services environments is essential.

The concept of *digitally connected health* encompasses the use of ICTs to empower nurses and assist the Canadian health-care system in achieving a PHC focus. *Digital health* is inherently patient-centred, emphasizing the use of ICTs to help individuals and their families track, manage and improve their health (Topol, 2013). Canada Health Infoway sees patient-centred ICT solutions as a way "to improve health, transform quality and reduce health system costs" (2016, para. 2).

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[1] PHC "*is a principle-based, comprehensive approach.* It seeks to improve the health of populations across the continuum of care (e.g., acute, community, long term, rehabilitation, hospice, corrections, etc.), from birth to death, in all settings" (CNA, 2015, p. 2).

CANADIAN
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CNIA
Canadian Nursing Informatics Association

References for position statement:

Canadian Nurses Association. Primary Health Care. Position statement. Ottawa: CNA, 2015.

International Medical Informatics Association. *IMIA-NI Definition of Nursing Informatics Updated.* Heidelberg, Germany: IMIA, 2009. https://imianews.wordpress.com/?s=definition+of+nursing-+informaticsMIA.

Naylor, D., et al. *Unleashing Innovation: Excellent Healthcare for Canada. Report of the Advisory Panel on Healthcare Innovation.* HC catalogue no. H22-4/9-2015E-PDF. Ottawa: Health Canada, 2015.

Topol, E. *The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care.* New York: Basic Books, 2013.

ACKNOWLEDGEMENTS

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