Canadian - Health Outcomes for Better Information and Care (C-HOBIC)

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C-HOBIC

Objectives

• Learn about the background to the C-HOBIC project

• Examine how this project is being implemented in Canada

• Understand the challenges and benefits of collecting standardized information in electronic clinical documentation systems

• Examine how this information is being utilized at the point of care

• Explore other uses for this information

Background - Ontario

Driving Factors

- **Lack of information to inform decisions regarding patient care**

- **Lack of information for nurse managers to evaluate the impact of resource changes on patient outcomes and examine the quality of care provided**

- **Need for information to support nursing's accountability**

Process

- **Expert Panel – focus on acute care, complex continuing care, long-term care homes and home care**

- **Consultations with nursing stakeholders**

- **Critical appraisal of research - concept definition, valid and reliable measure and empirical evidence linking the outcome to some aspect of nursing (indicator/intervention)**

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Standardized Clinical Outcomes

- **A suite of clinical concepts that can be collected systematically and standardized across the health care system**

Acute Care and Home Care Measures	Long-term Care and Complex Continuing Care Measures
• **Functional Status**: ADL & Bladder Continence • **Symptom management**: Pain, Fatigue, Dyspnea, Nausea • **Safety Outcomes**: Falls, Pressure Ulcers • **Therapeutic Self-care** • Collected on admission & discharge	• **Functional Status**: ADL & Bladder Continence • **Symptom management**: Pain, Fatigue, Dyspnea, Nausea • **Safety Outcomes**: Falls, Pressure Ulcers • Collected on admission, quarterly, client condition changes, & discharge.

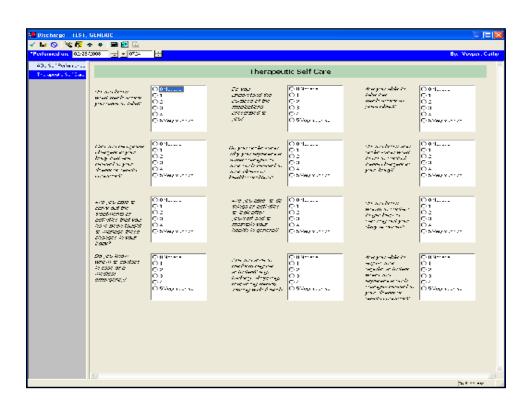## Collecting Standardized Clinical Outcomes

- **Focus on consistent collection of information electronically at the point of care – *real-time* information that nurses can use in planning for and evaluating care**

- **Integrate outcomes capture with existing nursing assessments - avoid duplication**

- **Maximize electronic capture through existing systems – work to build these questions into assessments**

- **Provide access to information for nurses, healthcare managers, researchers and ministry planners**
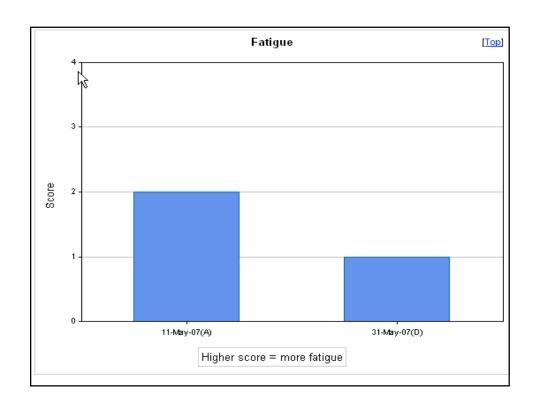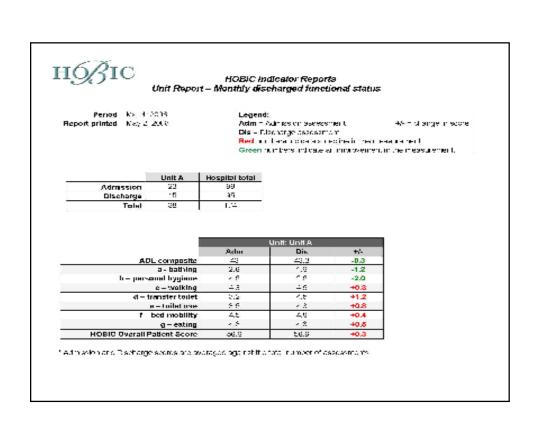
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Status

- **Implementation in 4 sectors: acute care, chronic care, long-term care and home care**

- **As of December 31, 2009 148 sites (38 acute care, 110 long-term care) submitting data to provincial database**

- **Beginning to collect standardized clinical outcomes in home care sector**

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Fatigue

Higher score = more fatigue

HOBIC Indicator Reports
Unit Report – Monthly discharged functional status

Canadian Health Outcomes for Better
Information and Care Project

C-HOBIC

C-HOBIC

- **Funder: Canada Health Infoway – leading electronic health record implementation in Canada**

- **Sponsor: Canadian Nurses Association- national voice for professional nurses in Canada**

- **Provincial partners**
  - **Ontario**
  - **Prince Edward Island**
  - **Saskatchewan**
  - **Manitoba**

Map of Canada — www.trailcanada.com

Canada Health Infoway

• **Canada Health Infoway was a key outcome of a federal/provincial/territorial partnership, and was incorporated in 2001.**

• **Infoway is the federally-funded, independent, not-for-profit body whose primary focus is the development of a secure, integrated, and patient-centered electronic health record.**

• **Infoway provides matching investment funds for provincial EHR initiatives.**

C-HOBIC Objectives

- **Standardize the concepts used by HOBIC to the standardized clinical reference terminology of nursing, the International Classification for Nursing Practice (ICNP®)**

- **Capture nurse-sensitive, patient-centred, clinical outcomes data across 4 sectors (acute care, complex continuing care, long-term care and home care) sectors of the health system**

- **Store the captured and standardized data in relevant secure jurisdictional data repositories/databases in preparation for entry into provincial electronic health records**

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Nursing Process Model

Assessment → Planning → Implementation (Act) of Care → Evaluation → Assessment

Relationship Between C-HOBIC and the Nursing Process

Relationship Between C-HOBIC and the Nursing Process

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Saskatchewan - Implementation

- Implementation of C-HOBIC for 30 facilities ranging from 17 to 237 beds for a total of 2131 long-term care beds in Saskatoon Health Region

- Initially a subset of C-HOBIC measures using the Momentum LTC MDS application

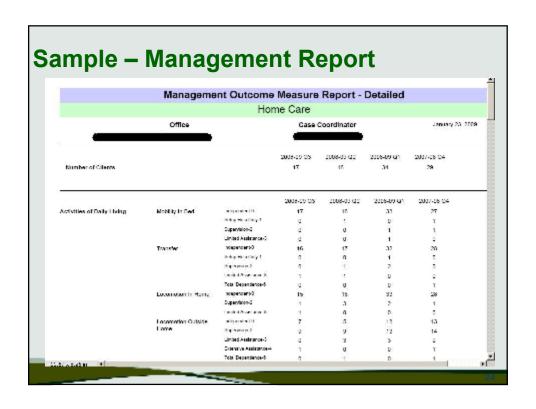- Previously this information was being entered into a database but the information was not provided back to clinicians at the bedside

- Nursing staff education about the benefits of collecting standardized clinical outcomes and use of this information to plan for and evaluate care

- Plan to develop a strategy for moving forward on a complete set as provincial EHR is implemented

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Manitoba - Implementation

- Initially committed to implementation in 4 home care offices but increased this to 6 offices

- Implementation in 2 long-term care homes for a total of 1005 long-term care beds and 6 home care offices - approximately 3,300 clients in home care in Winnipeg Regional Health Authority

- Initially a subset of C-HOBIC measures

- Previously this information was being entered into a database but the information was not provided back to clinicians at the bedside

- Nursing staff education about the benefits of collecting standardized clinical outcomes and use of this information to plan for and evaluate care

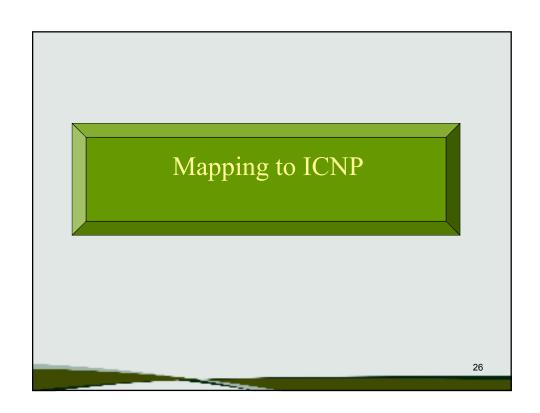- Plan to develop a strategy for moving forward on a complete set as provincial EHR is implemented

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Sample - Individual Report

Individual Outcome Measure Report - Long Term Care

					January 27, 2009
Facility		**Resident**	**Unit**	**Room**	
XXXXXXXX		XXXXXX	XXXX	XXXX	

		September 10, 2008	March 06, 2008	December 27, 2007	September 11,
Activities of Daily Living	Bed Mobility	2	2	2	2
	Transfer	3	3	3	3
	Walking in Room	8	8	8	8
	Walking in Hall	8	8	8	8
	Locomotion on unit	3	3	3	3
	Locomotion off unit	4	4	4	4
	Dressing	4	4	4	4
	Eating	0	0	0	0
	Toilet Use	4	4	4	4
	Personal Hygiene	3	3	3	3
	Bathing	3	3	3	3
Bladder Continence	Last 14 Days	4	4	4	4
Pain	Pain Frequency (0-2)	2	2	2	2
	Pain Intensity (1-3)	1	2	2	2
Falls	Fell in past 30 days	No	No	Yes	Yes
	Fell in past 31-180 days	No	No	No	No
Skin Ulcers	Stage 1	0	1	1	1
	Stage 2	0	0	0	0
	Stage 3	0	0	0	0
	Stage 4	0	0	0	0
Pressure Ulcers	Pressure Ulcers (Total)	0	0	0	0

Sample – Management Report

Sample – Summary Report

Management Outcome Measure Report - Summary

Long Term Care

Facility		Unit		March 06, 2009	

		2008-09 Q4	2008-09 Q3	2008-09 Q2	2008-09 Q1	
Number of Clients		36	145	141	52	
		Average/Resident	Average/Resident	Average/Resident	Average/Resident	Quarter Average
Activities of Daily Living	Bathing	3.64	3.70	3.63	3.69	3.67
	Bed Mobility	1.08	1.48	1.31	1.56	1.39
	Dressing	3.06	3.22	3.27	3.31	3.24
	Eating	0.75	1.14	1.19	1.42	1.16
	Locomotion off unit	1.86	2.25	2.19	2.40	2.21
	Locomotion on unit	1.28	1.85	1.88	2.00	1.83
	Personal Hygiene	2.89	3.05	3.08	3.06	3.04
	Toilet Use	2.31	2.67	2.70	2.83	2.67
	Transfer	1.61	2.13	2.10	2.44	2.11
	Walking in Hall	2.17	2.46	2.58	2.75	2.52
	Walking in Room	1.53	2.08	2.10	2.48	2.09
Bladder Continence	Last 14 Days	2.33	2.64	2.76	2.83	2.68
Falls	Fell in past 30 days	0.17	0.22	0.17	0.19	0.19
	Fell in past 31-180 days	0.31	0.32	0.30	0.33	0.31
Pain	Pain Frequency (0-2)	1.11	1.01	1.03	0.73	0.99
	Pain Intensity (1-3)	1.25	1.11	1.10	0.87	1.09
Pressure Ulcers	Pressure Ulcers (Total)	0.08	0.15	0.07	0.25	0.13
Skin Ulcers	Stage 1	0.17	0.15	0.06	0.15	0.12
	Stage 2	0.14	0.10	0.06	0.17	0.10
	Stage 3	0.00	0.03	0.03	0.04	0.03
	Stage 4	0.00	0.00	0.00	0.00	0.00

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Mapping to ICNP

Goals

- **Standardize the C-HOBIC concepts to the adopted national clinical reference terminology of nursing, the International Classification for Nursing Practice (ICNP®)**

- **Demonstrate the value of mapping current information, and position nursing sensitive outcomes for inclusion in the pan-Canadian health record**

- **Provide an approach for coding nursing information that will support interoperability, consistency, and comparability of clinical information that is reflective of nursing practice across health care system(s) and facilitate future mapping of these concepts to SNOMED-CT**

- **Where possible, contribute to the development of ICNP® terms and catalogues**
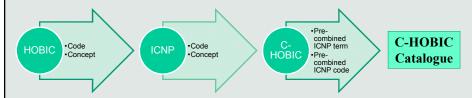
C-HOBIC MEASURES

Category	Sector			
	AC	CCC	LTC	HC
Functional Status (ADL & IADL)				
- Bathing	√	√	√	√
- Personal	√	√	√	√
-Walking	√	√	√	√
- Toilet Transfer	√	√	√	√
- Toilet Use	√	√	√	√
- Bed Mobility	√	√	√	√
- Locomotion on unit	√	√	√	√
- Locomotion off unit	√	√	√	√
- Locomotion in home				√
- Locomotion outside of home				√
- Dressing				√
- Eating	√	√	√	√
- Bladder Continence	√	√	√	√
- Meal preparation				√
- Ordinary Housework				√
- Managing				
Pain - Frequency	√	√	√	√
Pain - Intensity	√	√	√	√
Fatigue	√	√	√	√
Dyspnea	√	√	√	√
Nausea	√	√	√	√
Falls	√	√	√	√
Pressure Ulcer	√	√	√	√

Readiness for Discharge
Acute Care and Home Care ONLY

• **Knowledge of current medications**
• **Understand purpose of the medication**
• **Ability to take medications as prescribed**
• **Recognition of changes in body (symptoms) related to illness**
• **Understand why experience some changes in body (symptoms) related to the illness**
• **Knowledge of what to do (things or activities) to control these changes**
• **Ability to carry out the treatments or activities as taught**
• **Ability to do things or activities to look after self and to maintain health**
• **Knowledge of whom to contact to get help in carrying out daily activities**
• **Knowledge of whom to contact in case of a medical emergency**
• **Ability to perform regular activities (such as bathing, shopping, preparing meals, visiting with friends**
• **Ability to adjust regular activities when body changes (symptoms) related to the illness are experienced**

Mapping Process

- **Conceptual and semantic equivalency**

HOBIC → •Code •Concept → ICNP → •Code •Concept → C-HOBIC → •Pre-combined ICNP term •Pre-combined ICNP code → **C-HOBIC Catalogue**

- **Consensus meeting**
  - Review and validate expert mapping

- **Draft report**
  - Review and validation
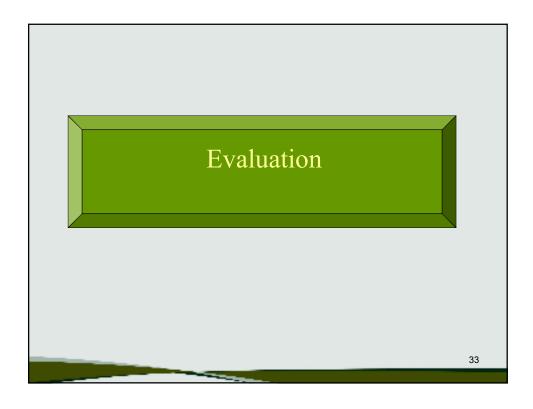
- **Final report** – *Mapping Canadian Clinical Outcomes in ICNP®*

Functional Status (ADL) Terms - Acute Care

Item	HOBIC Concept	HOBIC Code	C-HOBIC Pre-Combined ICNPØ Term	C-HOBIC Pre-Combined ICNPØ Code
Functional Status/ADL interRAI AC:GI	AC	0- Independent	Dependent/Never	10005778/10013173
		1- Set up help Only	Dependent/Minimal	10005778/(new code)
	ADL SELF-PERFORMANCE Š Assess for performance over full 24 hours, considering all occurrences of activity	2- Supervision	Dependent/Minimal	10005778/(as above)
		3- Limited Assistance	Dependent/Minimal	10005778/(as above)
		4- Extensive Assistance	Dependent/Partial	10005778/(new code)
		5- Maximal Assistance	Dependent/Extensive	10005778/(new code)
		6- Total Dependence	Dependent/Complete	10005778/(new code)
	Bathing		Ability To Bath	10000121
	Personal hygiene		Ability to Groom Self	10000178
	Walking		Ability To Walk	10000258
	Transfer toilet		Ability To Transfer	10000204
	Toilet use		Ability To Toilet Self	10000197
	Bed mobility		Bed Mobility	10003181
	Eating		Ability To Feed Self	10000166

Mapping Outcomes

96 terms were addressed in this project

- **58 HOBIC concepts** were matched and validated as C-HOBIC terms

- **13 HOBIC concepts** were partially mapped and required a new term for completion as C-HOBIC terms

- **24 new C-HOBIC** terms were proposed for inclusion in ICNP®

- **1 HOBIC concept** ("Activity did not occur") could not be mapped to ICNP®

- **2 HOBIC** ordinal scales were retained for use in C-HOBIC, including the pain scale and the number of falls.

Evaluation

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Evaluation

As part of Canada Health Infoway's *End User Acceptance Strategy*, the evaluation:

• **Examined the value of C-HOBIC information to nurses in planning for and evaluating patient care**

• **Explored how C-HOBIC information is integrated into the work flow of nurses' daily activities**

• **Considered how the aggregated data is used by managers and policy makers**

• **Identified parameters that need to be implemented within four types of settings (acute care, complex continuing care, long-term care and home care) to ensure conditions for success and nursing uptake of technology.**

Context

- **Focus:**
  - C-HOBIC focuses on information management, unlike other Infoway Innovation & Adoption (I&A) projects which focus on information technology.
  - Infoway Benefits Evaluation Framework required considerable modification

- **Timing**
  - constrained by timelines for I&A project – required to table a final report in July 2009.
  - In July 2009, Implementation
    - in Ontario completed for 1 year
    - in Manitoba implementation was completed a few weeks <u>after</u> the start of the data collection
    - in Saskatchewan was still in progress while evaluation data collected

Context

Scope
- C-HOBIC initiative is cross-jurisdictional (i.e. across provinces). Information collected was standardized, but there was jurisdictional variation in how information was made available to nurses for their use

- evaluation might have been effected by the same questions being asked in all provinces
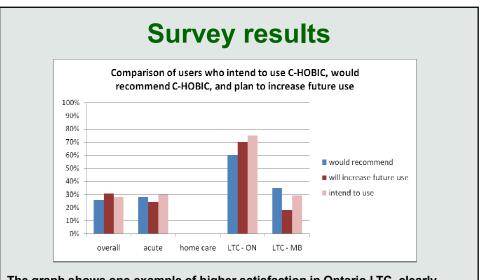
Methodology
- questionnaire completed electronically

- infrastructure did not exist – not all nurses have access to email and/or the internet in their workplace or even in their homes

Responses*

Sector	Number of Users	Length of time as users
Acute (Ontario only)	26	85% using for 7-24 months
Long Term Care (Ontario)	10	78% using for 7 months – 5 years
Long Term Care (Manitoba)	23	90% using less than 3 months
Long Term Care (Saskatchewan)	2	100% using 7 months – 5 years
Home Care (Manitoba only)	11	100% using for less than 6 months
Sector not indicated	4	Time spent using C-HOBIC not indicated
TOTAL	76*	

*The survey response rate is low – 76 respondents from a total of approximately 3000 trained users from 57 sites where C-HOBIC has been implemented and that were invited to participate.

Survey Results

- **20 out of 76 (27%) of users overall were satisfied with C-HOBIC**

- **Satisfaction was highest in LTC where it has been used the longest**

- **overall satisfaction in Ontario LTC was 50%**

- **overall satisfaction in Manitoba LTC was 28%.**

Survey results

Comparison of users who intend to use C-HOBIC, would recommend C-HOBIC, and plan to increase future use

 The graph shows one example of higher satisfaction in Ontario LTC, clearly illustrating that respondents who have used C-HOBIC the longest were most likely to say they would recommend it, increase future use, and also had the highest intention to use.

Survey results

User satisfaction by sector - all users

•27% (19 out of 69) of all respondents were highly or moderately satisfied
•38% (13 out of 34) of respondents from Long Term Care were highly or moderately satisfied
•The majority of Home Care respondents (73% or 8 out of 11) were neither dissatisfied nor satisfied.
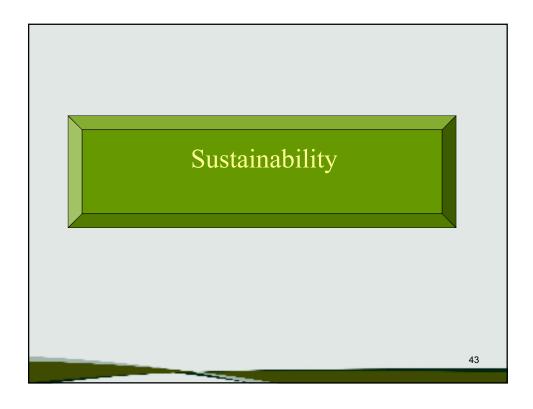•No users in Home Care (0 out of 11) were satisfied or highly satisfied.

Nurses' Voices

- *"We use C-HOBIC and RAI 2.0 when assessing residents or clients - you can see the changes in LTC residents and change your care - but for convalescent clients it just shows how they were coming in and how much they have improved on discharge."*

- *"During Annual Care Conferences [with families of LTC patients], I use it to compare information to the previous year. C-HOBIC can elicit information not normally attained. Keeps the floor updated regarding recent treatments, etc. prior to patients admission."*

- *Interpreting assessment results and evaluation has improved outcomes."*

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Nurses' Voices

- *[For us to use reports in that way will require] our staff need to get used to taking these reports and really looking at the value of seeing what they have in them… Actually seeing it work. Having success stories come out of it, see results, progress. Have a meeting where you've actually seen a result and then everybody believes it; you use a report at a meeting and the family says wow, they've seen the progress made. [The Nurses say] this is great. We have to bring this back. Once they [the Nurses] have seen this then they'll look at these reports and share them again at every meeting. Then they'll use these reports over and over again.*

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Sustainability

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Strategy

- **Education**
  - Fact Sheet
  - Nursing education materials
  - Toolkit for use by other jurisdictions

- **Engagement with Academic Leaders – goal to incorporate education on C-HOBIC into nursing programs**
  - Met with leaders in Ontario, PEI, Manitoba and Saskatchewan

- **Communication to key stakeholders**
  - Provincial Chief Nursing Advisors
  - Canadian Institute for Health Information

- **Articles in journals**
  - Hannah, Kathryn J., White, Peggy A., Nagle, Lynn M., Pringle, Dorothy M. (2009) Standardizing Nursing Information in Canada for Inclusion in Electronic Health Records: C-HOBIC. *Journal of the American Medical Informatics Association.* 16(4) July/August

- **Presentations:** local, national and international

Challenges, Opportunities and Future Directions

- **Challenges**
  - Current clinical information systems do not provide outcomes information to clinicians in 'real time'

  - Information is focused on one sector and does not follow the patient across the system

  - Nurses frequently do not have access to the intranet or internet to retrieve information from the provincial database or EHR

- **Opportunities**
  - Standardized information that is patient-centred and can follow the patient across sectors and be available over time – **improved patient care**

Benefits - Nurses

- Identify how nursing practice impacts patient health outcomes - quality indicators

- Identify trends/changes in patient outcomes over time

- Increase awareness of patients' symptoms and needs

- Promote reflective practice and evaluate different approaches to care

> *"With respect to pain management, when they came in on a scale of 1 to 10 their pain was 9. When they are discharged that pain is now 2. That nurse has made a difference. There are so many obvious things we can pull out of this C-HOBIC measurement."*
> **C-HOBIC user**

Benefits for Nurse Executives

- Reports available in real-time at the unit level
- Linking C-HOBIC information to other information – staffing, financial, to inform decisions regarding staffing and resource allocation

- Inform clinical practice and facilitate benchmarking and sharing of best practices with other health settings

> *"We propose to use C-HOBIC within CQI team; get reports out and share information, e.g. if more skin breakdowns why is this happening and use this information in local CQI efforts."*
> **C-HOBIC user**

Benefits - provincial and pan-Canadian EHRs

- Standardize assessment and documentation of patient outcomes by nurses in participating provinces

- Standardize terminology used for entry of patient-centred clinical outcomes into jurisdictional EHRs by nurses in participating provinces

- Foster user uptake of the EHR by nurses in participating provinces by providing content in the EHR that is useful in nursing practice

- Develop a consistent methodology that will contribute to outcomes data for the EHR

- Lay the foundation for the collection of health outcomes across the health care system by all clinicians

- Initial cross sectoral, cross jurisdictional project; **first nursing project in Canada**
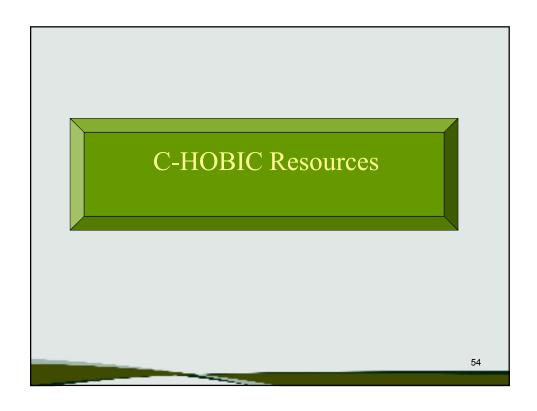
Future Directions

- **Incorporate measures into provincial/national standards**

- **International Council of Nursing and the International Health Terminology Standards Development Organization (IHTSDO) are exploring mapping from ICNP to SNOMED-CT**

- **Proposal to Canada Health Infoway for funding for Phase 2 – many other provinces interested in collecting standardized clinical information to support improving patient care**

Imagine the possibilities

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- **Having access to common, consistently measured outcome data across the continuum of care, across the country…**

- **Capability to analyze health service outcomes on the basis of:**
  - **Diagnoses**
  - **Age**
  - **Region – Sector - Provider**
  - **Cost of care**
  - **Skill mix, staff ratios**
  - **Access to resources**

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The Potential To Influence

- **Funding**
- **Health Care Policy**
- **Allocation of Resources**
- **Delivery of Services**
- **Quality of Care**

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C-HOBIC Resources

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Available - February 2010
www.cna-aiic.ca/c-hobic

1. *Mapping Canadian Clinical Outcomes in ICNP®*

2. *C-HOBIC Final Report to Canada Health Infoway*

3. *C-HOBIC Evaluation Report*

4. *C-HOBIC Toolkit*
    – **Fact Sheet for Clinicians**
    – **C-HOBIC Assessment Measures**
    – **Sample slide deck – education**

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