

Health Outcomes for Better Information and Care (HOBIC)

**Acute Care and Home Care
in Ontario 2013**

June 2014





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ICES INVESTIGATIVE REPORT

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HOBIC assessment forms use copyrighted items related to functional and clinical status derived from the interRAI assessment systems for nursing homes and home care settings. These items are used in HOBIC forms in Ontario with permission from interRAI.

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About ICES

The Institute for Clinical Evaluative Sciences (ICES) is an independent, nonprofit research organization that produces knowledge to enhance the effectiveness of health care. Internationally recognized for its innovative use of population-based health information, ICES research provides measures of health system performance, a clearer understanding of the shifting health care needs of Ontarians, and a stimulus for discussion of practical solutions to optimize scarce resources.

Key to our work is the ability to link population-based health information, at the patient level, in a way that ensures privacy and confidentiality. Linked databases reflecting 13 million of 34 million Canadians allow ICES to follow patient populations through diagnosis and treatment and to evaluate outcomes.

ICES brings together the best and the brightest talent. Many of our scientists are not only internationally recognized leaders in their fields but are also practicing clinicians who understand the grassroots of health care delivery, making the knowledge produced at ICES clinically focused and useful in changing practice. Other team members have statistical or epidemiological training, project management skills or communications expertise. The variety of skill sets and educational backgrounds ensures a multidisciplinary approach to issues and creates a real-world mosaic of perspectives that is vital to shaping Ontario's future health care system.

ICES receives core funding from the Ontario Ministry of Health and Long-Term Care. In addition, ICES scientists compete for peer-reviewed grants from federal funding agencies, such as the Canadian Institutes of Health Research, and receive project-specific funds from provincial and national organizations. The knowledge that arises from this research is always produced independent of the funding bodies, which is critical to ICES' reputation as a trusted, impartial source of high-quality health and health services research.

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About HOBIC

The Health Outcomes for Better Information and Care (HOBIC) initiative is funded by the Information Management and Investment Division of the Ontario Ministry of Health and Long-Term Care (MOHLTC) and managed by the Institute for Clinical Evaluative Sciences (ICES). HOBIC introduces the collection of standardized clinical information (HOBIC measures) that are reflective of patient care in the following settings across Ontario:

- Acute care
- Complex continuing care
- Home care
- Long-term care

This information provides feedback to health care providers and health care leaders to support quality improvement in health care delivery.

HOBIC measures include the following patient assessments:

- Functional status/activities of daily living (e.g., eating, bathing, personal hygiene, walking, transfer to toilet, toilet use, bed mobility, bladder continence)
- Symptom status (e.g., pain, fatigue, dyspnea, nausea)
- Safety outcomes (e.g., falls, pressure ulcers)
- Therapeutic self-care/readiness for discharge (e.g., ability to manage medications, an understanding of their symptoms and how to treat them, general ability for self-care, knowing who to contact for help, ability to handle or adjust activities of daily living)

These data are a unique source of information that can be used to answer important questions about health system and provider effectiveness, as well as clinical practice.

Recent studies conducted by ICES scientists provide examples of how HOBIC data are currently being used, from a research perspective, to understand how better information can improve health outcomes.^{1,2} One study examined the relationship between HOBIC acute care discharge measures and the likelihood of readmission to acute care within 3, 30, 60 and 90 days from discharge and found that early readmissions were related to nausea, while those occurring later were more strongly related to dyspnea.¹ In addition, a higher patient score on the therapeutic self-care discharge assessment was negatively related to readmission for all time periods.¹ Another study examined changes in clinical health outcomes between admission and discharge at acute care HOBIC sites and found significant improvements in all of the outcomes studied, with the exception of pressure ulcers.² This suggests that nursing care interventions are having the desired effect on clinical outcomes, leading to an improvement in the outcomes by the time of discharge.²

Introduction

This is the third provincial report produced by ICES that examines HOBIC data. This year's report focuses on HOBIC measures in acute care and, for the first time, home care, using data collected from December 1, 2006 to March 31, 2013 and from December 1, 2009 to March 31, 2013, respectively. The report's findings are presented in the following sections:

1. **Hospital coverage** – presents provincial overview of representativeness of site-specific HOBIC data since the start of data collection.
2. **Assessment completeness** – presents information about the proportion of patients with complete and incomplete assessments at admission and/or discharge for each measure.
3. **Score changes** – reports mean admission and discharge assessment scores, along with the average percentage improvement observed for each of the HOBIC scales, using the most recent quarter of data available, January to March, 2013.
4. **Decline in activities of daily living** – shows the percentage of patients who experienced a decline in activities of daily living during the course of their hospital stay, by age and length of stay.
5. **Therapeutic self-care** – reports changes in each therapeutic self-care item score from admission to discharge and the percentage of respondents by type of response to each item.
6. **Home care** – reports HOBIC assessment intake and the distribution of change scores between patient assessments from December 2009 to December 2013 for five HOBIC scales.

For acute care, comparisons are provided, where possible, for small and large hospital sites. While individual hospitals are able to view and use their own HOBIC data, this report adds value through linkages with other databases, such as the Canadian Institute for Health Information's Discharge Abstract Database (CIHI-DAD), and by creating aggregate benchmarking across participating HOBIC sites.

Findings

Hospital Coverage

Hospital coverage is defined as the proportion of site-specific acute care discharges — recorded in the CIHI-DAD — that had an associated HOBIC admission assessment. Thus, it refers to the proportion of patients where data were available, or “covered,” in both data sets. The total number of hospital discharges between December 1, 2006 and March 31, 2013 was calculated from the CIHI-DAD (denominator). Any CIHI-DAD record with an admission and/or discharge assessment for any of the HOBIC measures was included in the numerator.

Therefore, the coverage estimate measures the proportion of acute care admissions that had any HOBIC assessment (either admission or discharge). Coverage rates for each hospital site were calculated on a bimonthly basis to ensure that at least 30 observations in each measurement period were obtained.

Exhibit 1.1 presents the median and interquartile range (distance between the 25th and 75th percentiles) for bimonthly hospital coverage for participating small and large hospitals. (*See the Technical Appendix for a full list of hospital sites.*) It is important to consider factors that could contribute to lower coverage rates (e.g., a higher number of casual or float nursing staff on a unit that

may not have been trained in HOBIC assessments, unit preparedness for HOBIC data collection, patients transferred from intensive care) in order to develop strategies aimed at improving these rates in the future.

With input from local nursing staff, HOBIC has set specific achievable targets for each site that take their unique settings into account (e.g., the target may differ for surgical and medical units). HOBIC scientific and site leads have been working with hospitals to help them achieve the ultimate goal of 80% coverage. In recent years, small hospitals on average have been meeting this target while coverage for large hospitals remains below target.

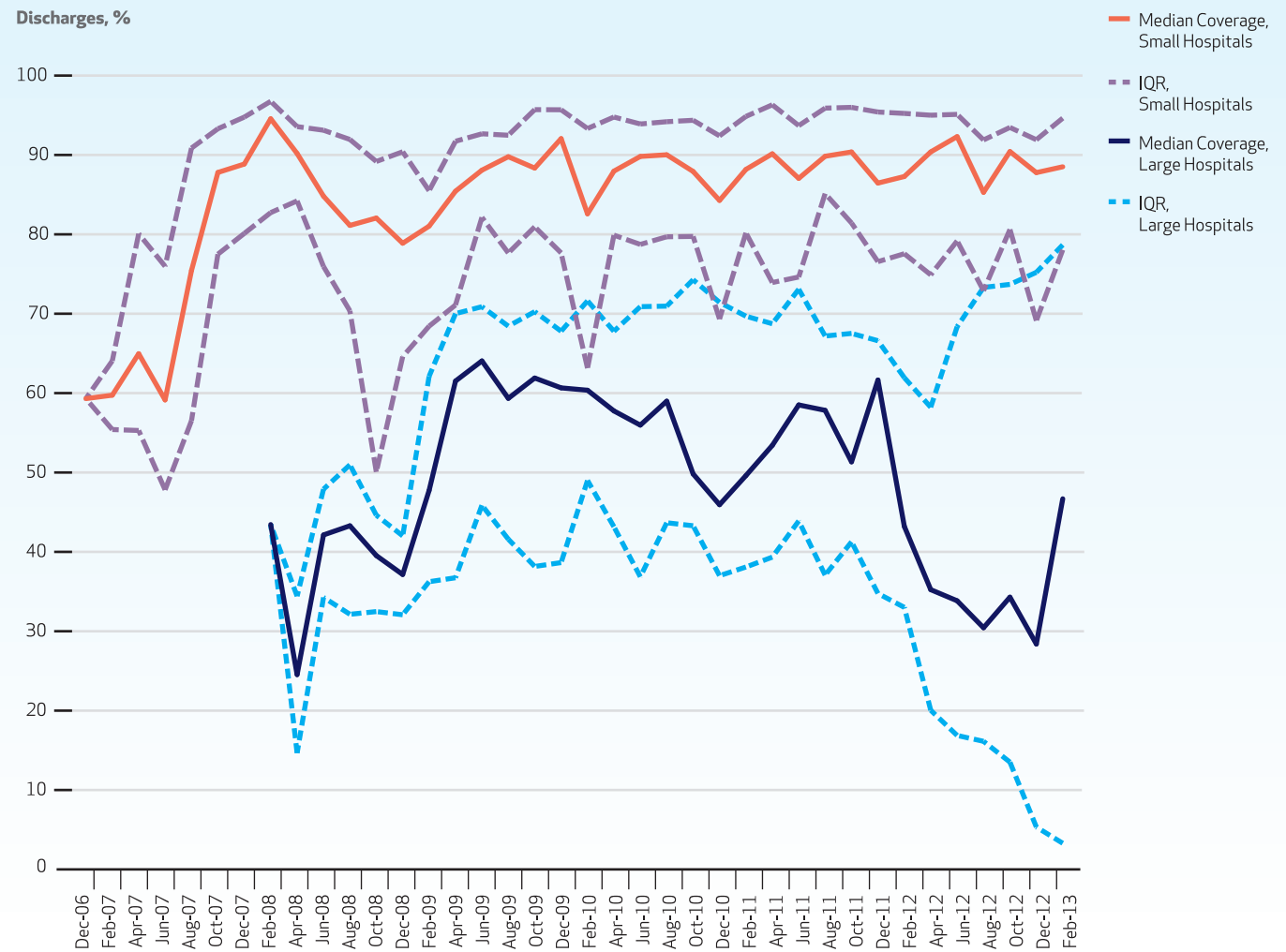
In **Exhibit 1.2**, bimonthly hospital coverage for participating hospitals is presented by the type of hospitalization: medical, surgical and “25 CMG” (Case Mix Group). Hospitalizations were broadly categorized as medical and surgical, respectively, based on the CMG partition methodology developed by CIHI.

Case Mix Groups+ (CMG+) is a methodology designed to aggregate acute care inpatients with similar clinical and resource utilization characteristics, using ICD-10-CA (International Statistical Classification of Diseases and Related Health Problems – Tenth Revision, Canada) and CCI (Canadian Classification of Health Interventions).³ The “25 CMG” group represents all patients hospitalized for one of the 25 CMGs included in the Local Health Integration Network (LHIN) accountability agreements and identified by the MOHLTC Health Analytics Branch as being associated with preventable readmissions. These CMGs fall more broadly under the following disease groups: stroke, chronic obstructive pulmonary disease, pneumonia, congestive heart failure, diabetes, cardiac and gastrointestinal. (See the **Technical Appendix** for a list of the 25 CMGs.)

EXHIBIT 1.1 Hospital coverage (percentage of site-specific acute care discharges with an associated HOBIC assessment), for large and small hospitals, in Ontario, December 2006 to March 2013

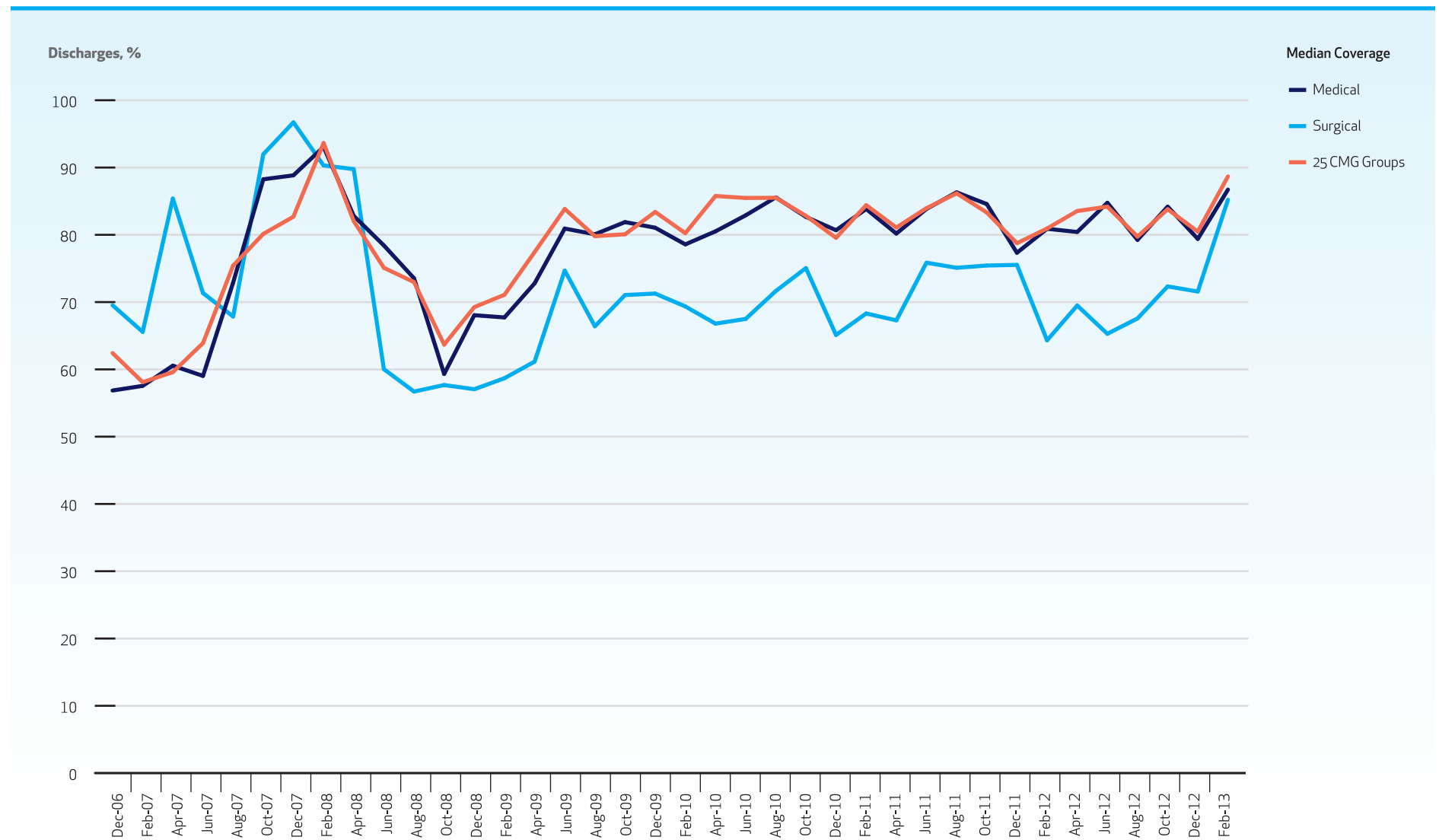
Key Findings

- Median coverage for small hospitals increased from 2006 to February 2008, and has remained above 80% since 2009.
- Median coverage for large hospitals was less than that of small hospitals over the study period, ranging from 24% to 64%.



IQR = interquartile range (between 25th and 75th percentile)

EXHIBIT 1.2 Median hospital coverage (percentage of site-specific acute care discharges with an associated HOBIC assessment) for participating sites, by type of hospitalization, in Ontario, December 2006 to March 2013



Assessment Completeness

In addition to knowing how many eligible patients are receiving a HOBIC assessment, it is also important to look at how complete these assessments are.

Assessment completeness is reported in **Exhibit 2.1** as the number and proportion of patients who had complete, partially complete or incomplete assessments for each of the 10 HOBIC scales. Data are presented for the most recent quarter, January 1 to March 31, 2013.

Sites should aim to have complete data for all eligible patients with both an admission and discharge assessment for all scales. A patient's HOBIC record was deemed complete if all required items for a given scale were completed at both an admission and discharge. An assessment was considered partially complete for a given scale if one assessment was completed at either admission or discharge for that scale.

For the Therapeutic Self-Care (TSC) Scale, patients with a recorded TSC version 2 score were interpreted as having a completed TSC assessment. The overall patient score indicates completeness across all scales, excluding TSC. If a single measure was missing, then an overall score could not be calculated for the patient; hence the measure for that patient record was marked as incomplete. (*See the **Technical Appendix** for more details.*)

Several practices have been shown to be effective in improving assessment completeness:

- Including a HOBIC information session in hospital orientations.
- Embedding HOBIC within existing patient care assessments to avoid duplication.
- Working with nurses to reinforce the value and importance of the discharge assessment.
- Presenting HOBIC coverage and completion rate information at team meetings to reinforce the importance of these assessments.
- Presenting HOBIC reports to nursing advisory groups and including them in the pursuit of higher completion rates.
- Demonstrating commitment to and use of HOBIC reports by senior nurse executives.

EXHIBIT 2.1 Completeness of HOBIC assessments (at admission and/or discharge) performed at participating sites for 10 HOBIC scales, in Ontario, January 1 to March 31, 2013

Key Findings

- Rates of completion for both admission and discharge assessments for the HOBIC scales ranged from 23.1% (ADL composite) to 37.3% (fatigue) and 15.1% of all assessments were completed across all scales, excluding therapeutic self-care, version 2.
- Rates of completion on all measures improved over the previous year.
- For partially completed assessments, most scales had a higher proportion of missing discharge assessments than missing admission assessments, which may lead to gaps in discharge planning (e.g., patient education and postdischarge care).

| HOBIC Scales | Complete | Partially Complete | | Incomplete |
|-----------------------------|----------------------------------------------|------------------------------|------------------------------|--------------------------------------------|
| | Completed Admission and Discharge Assessment | Missing Admission Assessment | Missing Discharge Assessment | Missing Admission and Discharge Assessment |
| | Number (%) | Number (%) | Number (%) | Number (%) |
| ADL composite | 91 (23.1) | 122 (31.2) | 96 (24.4) | 84 (21.4) |
| Bladder continence | 133 (34.0) | 108 (27.4) | 125 (31.7) | 27 (6.9) |
| Pain composite | 120 (30.6) | 94 (24.0) | 130 (33.1) | 49 (12.4) |
| Fatigue | 147 (37.3) | 98 (24.9) | 131 (33.4) | 17 (4.4) |
| Dyspnea | 139 (35.4) | 105 (26.7) | 126 (32.2) | 23 (5.8) |
| Nausea | 137 (34.9) | 105 (26.8) | 128 (32.6) | 23 (5.7) |
| Falls | 140 (35.6) | 100 (25.4) | 130 (33.0) | 23 (5.9) |
| Pressure ulcers | 133 (33.8) | 104 (26.5) | 126 (32.2) | 29 (7.4) |
| Therapeutic self-care, v. 2 | 129 (32.8) | 102 (25.9) | 123 (31.3) | 39 (10.0) |
| Overall patient score | 59 (15.1) | 100 (25.5) | 77 (19.6) | 157 (39.9) |

ADL = activities of daily living

Note: Excludes patients who died, patients who were transferred from or to another hospital or intensive care unit (ICU), mental health admissions, and patients with a length of stay less than 48 hours.

Score Changes

For patients with both an admission and discharge assessment, the average percentage score change for each measure is reported in **Exhibit 3.1**. In order to present the percentage change as a positive improvement, all changes are measured on a positive scale. Higher scores for therapeutic self-care are better while higher scores for all other measures represent greater dependency and worse outcomes. Therefore, changes in therapeutic self-care are calculated as the mean score at discharge minus the mean score at admission, divided by the mean score at admission, while for all other measures (where lower scores are better) changes are calculated as the mean score at admission minus the mean score at discharge, divided by the mean score at admission. Data are presented for the most recent quarter, January 1 to March 31, 2013.

Several practices have been shown to be effective in improving score changes. These include:

- Using HOBIC measures in clinical care huddles to target areas of focus for the interdisciplinary team (e.g., improving ambulation and continence).
- Using the therapeutic self-care scale on admission and 24 to 48 hours before discharge to give clinicians more information about the needs of their patients, thus making them better able to target patient-specific education requirements at discharge.

EXHIBIT 3.1 Percentage change in HOBIC assessment scores on selected measures from admission to discharge, by small and large hospitals, in Ontario, January 1 to March 31, 2013

Key Findings

- On average, patients improved from admission to discharge for each of the HOBIC scales, with the exception of therapeutic self-care. The magnitudes of improvement across scales were similar for small and large hospitals (data not shown).
- The median percentage improvement for the health outcomes of ADL, pain assessment and management, and management of nausea and dyspnea symptoms was substantial from admission to discharge (reflected by a lower score at discharge). This is consistent with initial research, which suggests that care interventions are leading to improvements in the outcomes.²

| HOBIC Scales | Mean Score at Admission | Mean Score at Discharge | Percentage Change in Scores | | | | | | Average Percentage Improvement |
|-----------------------------|-------------------------|-------------------------|-----------------------------|--------------------------|-----------------|-----------------|--------------------------|-----------------|--------------------------------|
| | | | Small Hospitals | | | Large Hospitals | | | |
| | | | 25th Percentile | 50th Percentile (Median) | 75th Percentile | 25th Percentile | 50th Percentile (Median) | 75th Percentile | |
| ADL composite | 6.5 | 3.8 | 35 | 41 | 52 | 28 | 43 | 52 | 39.4 |
| Bladder continence | 0.5 | 0.4 | 11 | 29 | 38 | 12 | 30 | 42 | 26.5 |
| Pain composite | 1.1 | 0.6 | 37 | 51 | 61 | 22 | 30 | 70 | 41.5 |
| Fatigue | 1.2 | 0.8 | 23 | 35 | 39 | 31 | 35 | 50 | 31.9 |
| Dyspnea | 0.7 | 0.4 | 35 | 46 | 53 | 40 | 54 | 64 | 46.2 |
| Nausea | 0.3 | 0.1 | 64 | 76 | 85 | 61 | 73 | 78 | 70.2 |
| Falls | 0.5 | 0.4 | 23 | 33 | 47 | 19 | 35 | 49 | 34.6 |
| Pressure ulcers | 0.1 | 0.1 | -13 | 0 | 38 | -6 | 13 | 50 | 7.8 |
| Therapeutic self-care, v. 2 | 1.7 | 1.7 | -8 | -4 | -1 | -8 | -4 | -2 | -5.2 |
| Overall patient score | 10.4 | 6.2 | 32 | 40 | 47 | 30 | 42 | 57 | 38.3 |

ADL = activities of daily living

Declines in Activities of Daily Living

The decline in activities of daily living (ADL) functioning associated with long lengths of stay in acute care settings is problematic, particularly for older adults who may decompensate during hospital stay. While **Exhibit 3.1** shows considerable improvement in ADL for most patients, a substantial proportion of patients, particularly older adults, do experience declines in ADL, and longer lengths of stay exacerbate this. **Exhibit 4.1** shows the percentage of patients who experienced a decline in their ADL score over the course of their acute care hospital stay. Patients with a discharge score that was greater than their admission score were defined as having a decline. The measure includes only patients who had both admission and discharge assessments for ADL between December 1, 2006 and March 31, 2013. In order to better characterize patients with a functional decline in ADL, the percentage of patients with a decline in ADL was calculated for different lengths of stay (1–7, 8–14, 15–30, 31–90, more than 90 days) and age groups (18–40, 41–65, 66–79, 80–89, more than 89 years).

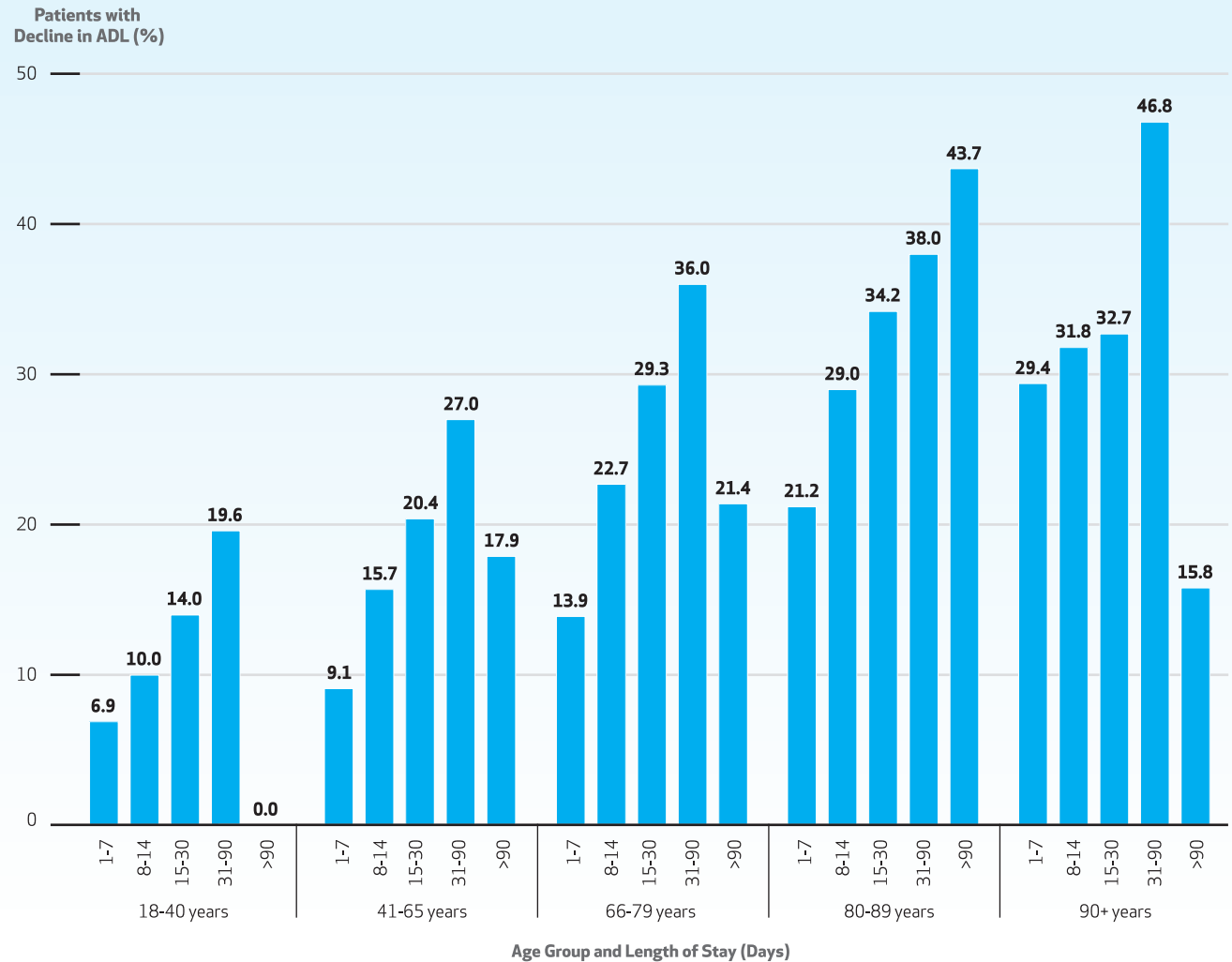
Several practices have been shown to be effective in preventing decline in ADL. These include:

- Posting HOBIC information on unit-based quality boards so that the team can use this information to focus practice.
- Incorporating HOBIC information into senior-friendly care programs, restorative care units and acute geriatric units—information that can add value in focusing on specific areas for these populations (e.g., function, fatigue, falls and continence).

EXHIBIT 4.1 Percentage of patients with a decline in ADL functioning, by age group and length of stay in acute care, in Ontario, December 1, 2006 to March 31, 2013

Key Findings

- Within each length of stay grouping, the percentage of patients experiencing a decline in ADL functioning increased with age.
- Within a given age group, the percentage of patients experiencing a decline in ADL functioning increased with length of stay in acute care.
- These trends were not observed consistently across all sites (data not shown). It would be quite valuable for health care leaders to understand the reasons for these differences across sites.



ADL = activities of daily living

Note: Across all age groups, percentages for patients with a length of stay of greater than 90 days were based on less than 20 patients.

Therapeutic Self-Care

Therapeutic self-care (TSC) is critical for successful transition to and management of conditions in the community. Self-care refers to patients' ability to perform activities that are aimed at maintaining health and managing their health conditions at home, after discharge from hospital.

The TSC assessment is designed to determine a patient's perceived ability to engage in four aspects of self-care:

- Taking medications
- Managing symptoms
- Performing activities of daily living
- Managing changes in condition

The TSC Scale, which has displayed adequate reliability and validity, was originally designed as a self-reporting measure. However, nurses also administer the scale, ideally within 24 hours of admission to hospital and again upon discharge. In 2010, refinements to version 1 of the scale were made in response to feedback from nurses and researchers. Questions were modified to make them easier to use, understand and respond to, resulting in version 2 of the scale.⁴ All results shown in this report are based on the revised version.

To provide a full perspective on the outcomes of the TSC measure, it is presented in two ways: **Exhibit 5.1** shows the changes in each TSC item score between admission and discharge, and **Exhibit 5.2** shows the percentage of all respondents by type of response to each item on admission and discharge.

Several practices have been shown to be effective in improving TSC. These include:

- Teaching back the four aspects of self-care through clinician and patient interaction, clarification and comprehension.
- Sharing the discharge assessment, including TSC scores, with Community Care Access Centres, physicians and others involved in the patient's care following discharge.
- Using the TSC Scale on admission and 24-48 hours before discharge makes clinicians better informed about the needs of their patients on discharge and allows them to target education specific to the patient.

EXHIBIT 5.1 Percentage change in therapeutic self-care item scores from hospital admission to discharge, by response, in Ontario, April 1, 2011 to March 31, 2013**Knowledge of Medications**

| % of total frequency | | Discharge | | |
|----------------------|---|-----------|-----|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 2.4 | 2.4 | 2.0 |
| | 1 | 1.3 | 7.1 | 12.2 |
| | 2 | 0.8 | 7.9 | 64.0 |

Reason for Medications

| % of total frequency | | Discharge | | |
|----------------------|---|-----------|-----|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 2.1 | 2.2 | 1.5 |
| | 1 | 1.2 | 7.3 | 11.7 |
| | 2 | 0.7 | 8.3 | 64.9 |

Taking Medications

| % of total frequency | | Discharge | | |
|----------------------|---|-----------|-----|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 1.0 | 1.0 | 1.8 |
| | 1 | 0.5 | 2.8 | 9.0 |
| | 2 | 1.0 | 6.4 | 76.4 |

Symptoms

| % of total frequency | | Discharge | | |
|----------------------|---|-----------|-----|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 1.1 | 1.4 | 1.2 |
| | 1 | 0.8 | 5.2 | 11.0 |
| | 2 | 0.7 | 7.5 | 71.1 |

Note: Responses are based on the Therapeutic Self-Care Scale, version 2.

Carrying Out Treatments for Symptoms

| % of total frequency | | Discharge | | |
|----------------------|---|-----------|-----|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 1.8 | 2.3 | 2.5 |
| | 1 | 1.3 | 8.1 | 14.6 |
| | 2 | 0.9 | 8.5 | 60.0 |

Ability to Do Everyday Things

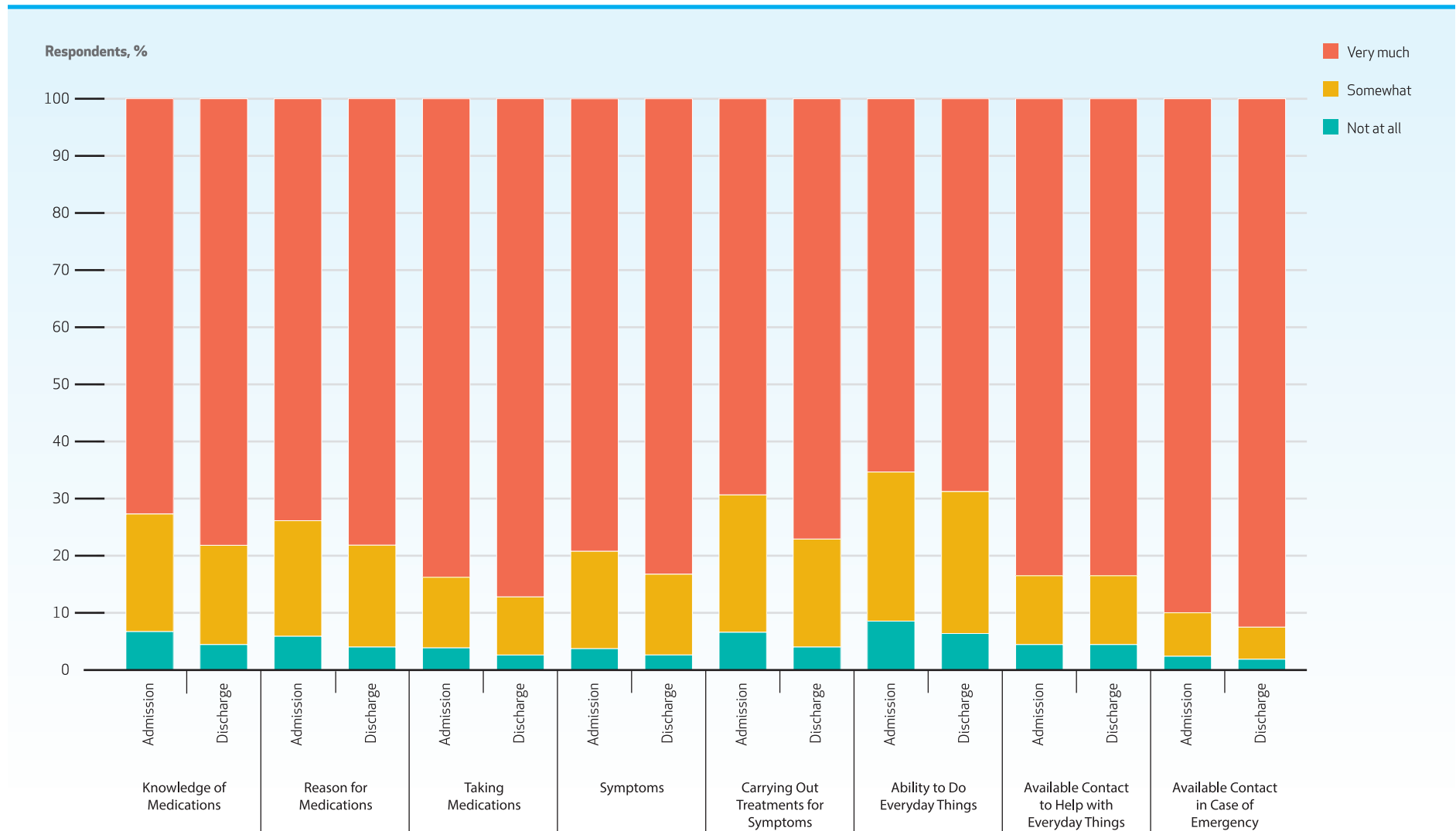
| % of total frequency | | Discharge | | |
|----------------------|---|-----------|------|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 2.8 | 3.1 | 2.7 |
| | 1 | 2.2 | 9.9 | 14.1 |
| | 2 | 1.4 | 11.9 | 52.0 |

Available Contact to Help with Everyday Things

| % of total frequency | | Discharge | | |
|----------------------|---|-----------|-----|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 1.2 | 0.8 | 2.4 |
| | 1 | 0.8 | 2.3 | 9.0 |
| | 2 | 1.5 | 5.6 | 76.4 |

Available Contact in Case of Emergency

| % of total frequency | | Discharge | | |
|----------------------|---|-----------|-----|------|
| | | 0 | 1 | 2 |
| Admission | 0 | 0.7 | 0.5 | 1.2 |
| | 1 | 0.5 | 1.3 | 5.9 |
| | 2 | 0.7 | 3.8 | 85.4 |

EXHIBIT 5.2 Proportion of response options for therapeutic self-care items on hospital admission and discharge, in Ontario, April 1, 2011 to March 31, 2013

Note: Responses are based on the Therapeutic Self-Care Scale, version 2.

Home Care

In the home care sector, HOBIC assessments are completed on admission to and discharge from the home care program by home care nurses. Provider organizations currently participating in the HOBIC initiative include Bayshore Healthcare, ParaMed Home Health Care, Revera Home Health and St. Joseph's Home Care.

EXHIBIT 6.1 Number of HOBIC home care assessments per month, in Ontario, December 2009 to December 2013

Key Findings

- Assessment intake per month rose from December 2009, with the largest increase observed from December 2011 to March 2012.
- On average, almost 1,800 assessments were performed each month in 2013.

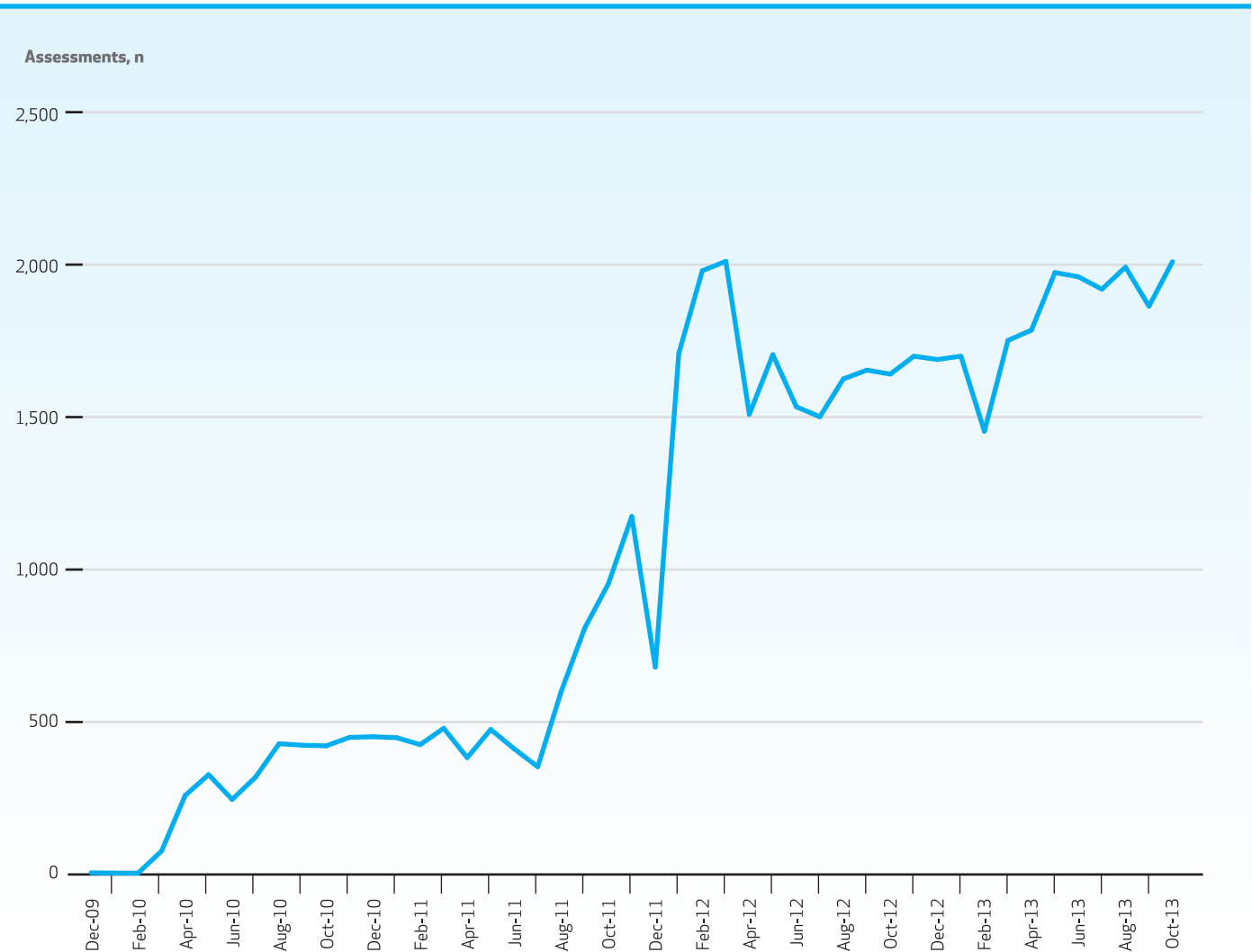


EXHIBIT 6.2 Distribution of the number of home care assessments per patient and average number of weeks from last assessment, in Ontario, December 2009 to December 2013

Key Findings

- Among home care patients, 63.3% had one assessment and 94.7% had two or less.
- On average, the second home care assessment was performed 9.3 weeks after the first.

| Number of Assessments | Number of Patients (%) | Average Number of Weeks from Last Assessment (Standard Deviation) |
|-----------------------|------------------------|-------------------------------------------------------------------|
| 1 | 22,708 (63.3) | - |
| 2 | 11,260 (31.4) | 9.3 (14.4) |
| 3 | 1,209 (3.4) | 17.7 (19.3) |
| 4 or more | 687 (1.9) | 10.7 (12.6) |

EXHIBIT 6.3 Distribution of change scores from the first to the second assessment for fatigue, dyspnea, nausea, pain and self-care scales, in Ontario, December 2009 to December 2013

Key Findings

- Between the first and second assessments, no change was observed 90.2% of the time for nausea, 88.2% of the time for dyspnea and 78.4% of the time for self-care.
- Pain scores remained unchanged between the first and second assessment 49.9% of the time and increased 36.5% of the time.
- Fatigue scores remained unchanged between the first and second assessment 60.4% of the time and decreased 23.8% of the time.

Fatigue

| % of total frequency | | Score at Second Assessment | | | | |
|---------------------------|---|----------------------------|------|-----|-----|-----|
| | | 0 | 1 | 2 | 3 | 4 |
| Score at First Assessment | 0 | 45.8 | 9.2 | 2.7 | 0.3 | 0.0 |
| | 1 | 12.2 | 10.5 | 2.5 | 0.3 | 0.0 |
| | 2 | 4.3 | 5.4 | 3.7 | 0.4 | 0.2 |
| | 3 | 0.4 | 0.6 | 0.7 | 0.3 | 0.1 |
| | 4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 |

Nausea

| % of total frequency | | Score at Second Assessment | | | | |
|---------------------------|---|----------------------------|-----|-----|-----|-----|
| | | 0 | 1 | 2 | 3 | 4 |
| Score at First Assessment | 0 | 89.4 | 2.1 | 0.6 | 0.1 | 0.0 |
| | 1 | 4.7 | 0.7 | 0.2 | 0.0 | 0.0 |
| | 2 | 1.3 | 0.3 | 0.2 | 0.0 | 0.0 |
| | 3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Self-Care

| % of total frequency | | Score at Second Assessment | | | | |
|---------------------------|---|----------------------------|-----|-----|-----|------|
| | | 0 | 1 | 2 | 3 | 4 |
| Score at First Assessment | 1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.2 |
| | 2 | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 |
| | 3 | 0.1 | 0.2 | 0.8 | 1.5 | 1.6 |
| | 4 | 0.1 | 0.2 | 0.9 | 5.9 | 9.8 |
| | 5 | 0.2 | 0.2 | 0.7 | 4.7 | 71.1 |

Note: Results are provided for complete data only.

Dyspnea

| % of total frequency | | Score at Second Assessment | | | |
|---------------------------|---|----------------------------|-----|-----|-----|
| | | 0 | 1 | 2 | 3 |
| Score at First Assessment | 0 | 84.6 | 3.1 | 0.6 | 0.4 |
| | 1 | 4.2 | 2.8 | 0.4 | 0.3 |
| | 2 | 1.0 | 0.7 | 0.4 | 0.2 |
| | 3 | 0.5 | 0.5 | 0.2 | 0.3 |

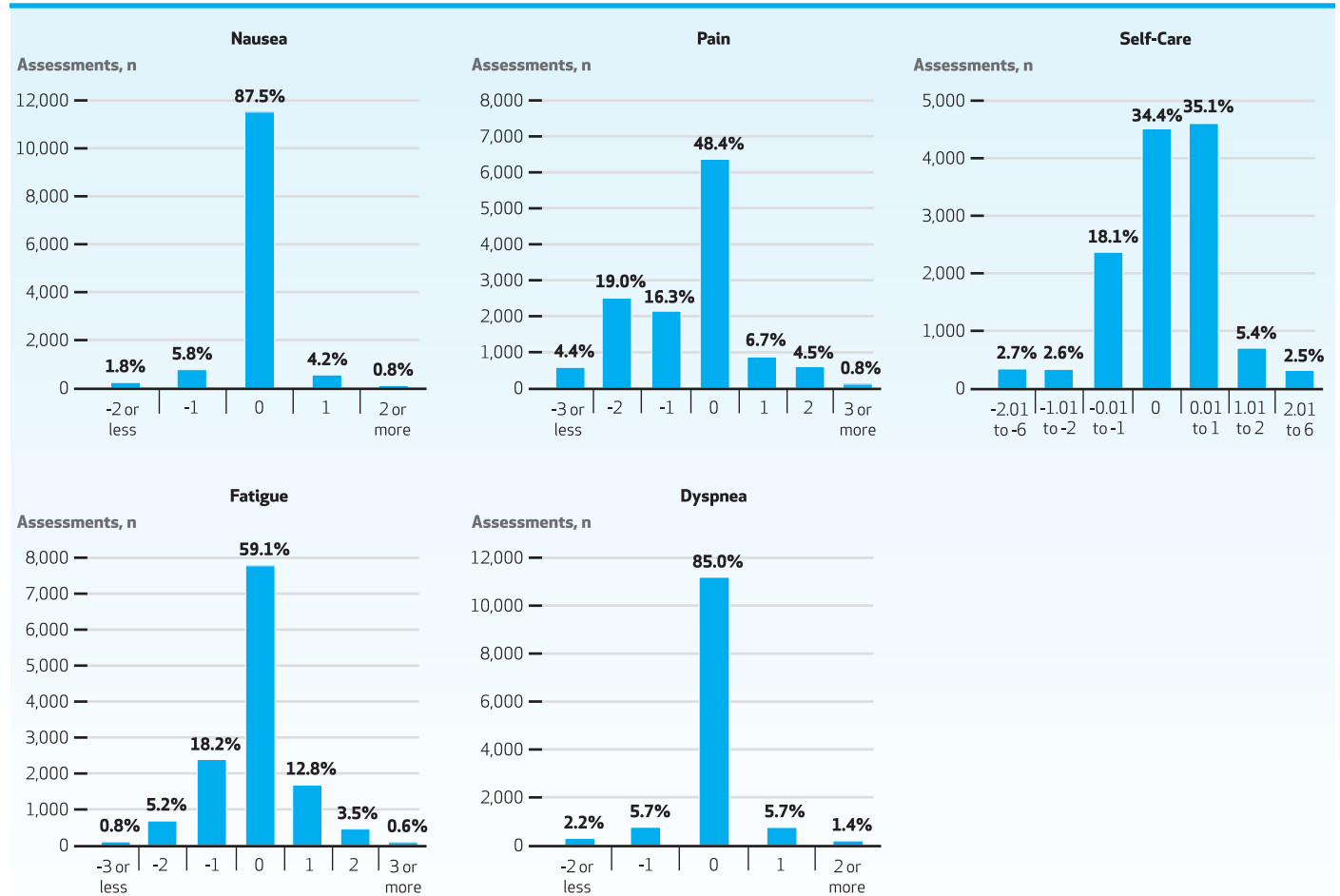
Pain

| % of total frequency | | Score at Second Assessment | | | |
|---------------------------|---|----------------------------|-----|------|-----|
| | | 0 | 1 | 2 | 3 |
| Score at First Assessment | 0 | 35.8 | 7.9 | 18.5 | 3.4 |
| | 1 | 3.5 | 2.4 | 5.7 | 1.1 |
| | 2 | 4.0 | 1.4 | 10.8 | 2.9 |
| | 3 | 0.5 | 0.2 | 1.0 | 0.8 |

EXHIBIT 6.4 Distribution of change scores between any two consecutive assessments for nausea, pain, self-care, fatigue and dyspnea scales, in Ontario, December 2009 to December 2013

Key Findings

- Between any of the assessments, scores for nausea and dyspnea remained unchanged.
- The distribution of scores for pain and self-care highlights improvements between assessments, while the distribution of scores for fatigue shows a mixed trend of worsening and improvement.



Conclusion

This report provides information about the coverage and completion rates of HOBIC measures for participating acute care sites across the province. There have been improvements in coverage and completion rates over time; however, larger hospitals have not achieved their target completion rates.

The examination of changes in HOBIC scores from admission to discharge provides health care organizations with evidence to use for improving patient care and local nursing practice. There have been improvements over time in score changes from admission to discharge. These improvements may reflect strategies that were implemented after preliminary studies highlighted some of the challenges involved in collecting and using HOBIC

data,^{5,6} and demonstrate the commitment to and value placed on HOBIC by health care leaders in the province.⁶

Given Ontario's aging population and increased focus on acute care length of stay, the HOBIC data that are focused on declines in activities of daily living provide health care organizations with valuable information to implement and evaluate interventions to mobilize patients, particularly older adults, early in their stay.

The increasing use of HOBIC in home care provides further opportunities for measuring patient outcomes from their presentation in acute care to their reintegration to the community. Monitoring the outcomes of care within and across care settings is

an increasingly important approach to assessing value in the health system. The data in this report highlight some of the opportunities to better understand Health Outcomes for Better Information and Care.

Throughout this report, effective strategies for improving assessment completeness, score changes, declines in activities of daily living, and therapeutic self-care are highlighted. Health care leaders are encouraged to incorporate these strategies to enable better data quality, facilitate better decision-making and, ultimately, improve patient care.

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Technical Appendix

Peer Hospitals

Participating HOBIC sites in Ontario were categorized as either small or large hospitals. In total, there were 35 small hospitals and 17 large hospitals, the latter consisting of two academic/teaching hospitals and 15 community hospitals. The small hospitals had from four to 104 acute care beds (excluding mental health, chronic care, general and special rehabilitation beds). The large hospitals had from 92 to 458 acute care beds. **Exhibit 7.1** lists the hospitals in each category.

EXHIBIT 7.1 HOBIC sites grouped by hospital size, in Ontario, 2013

| Small Hospitals | Large Hospitals |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Alexandra Hospital Campbellford Memorial Hospital Collingwood General and Marine Hospital Deep River and District Hospital Englehart and District Hospital Georgian Bay General Hospital – Midland site Grey Bruce Health Services – Lions Head site Grey Bruce Health Services – Markdale site Grey Bruce Health Services – Meaford site Grey Bruce Health Services – Southampton site Grey Bruce Health Services – Wiarton site Groves Memorial Community Hospital Haldimand War Memorial Hospital Haliburton Highlands Health Services Corporation – Haliburton site Hanover and District Hospital Headwaters Health Care Centre – Dufferin site Kirkland and District Hospital Lakeridge Health Corporation – Bowmanville site Lakeridge Health Corporation – Port Perry site Niagara Health System – Fort Erie Douglas site Niagara Health System – Niagara-on-the-Lake site Norfolk General Hospital North Wellington Health Care – Mount Forest site North Wellington Health Care – Palmerston site Northumberland Hills Hospital Quinte Healthcare Corporation – Bancroft site Quinte Healthcare Corporation – Picton site Quinte Healthcare Corporation – Trenton site Smooth Falls Hospital South Bruce Grey Health Centre – Chesley site South Bruce Grey Health Centre – Durham site South Bruce Grey Health Centre – Walkerton site South Bruce Grey Health Centre – Kincardine site St. Francis Memorial Hospital Stevenson Memorial Hospital, Alliston</p> | <p>Brant Community Healthcare System – Brantford site Grand River Hospital Corporation – Waterloo site Hamilton Health Sciences Corporation – McMaster site Joseph Brant Memorial Hospital Lakeridge Health Corporation – Oshawa site Peterborough Regional Health Centre Public General Hospital Society of Chatham Quinte Healthcare Corporation – Belleville site Ross Memorial Hospital Royal Victoria Hospital of Barrie Scarborough Hospital – Grace site Scarborough Hospital – Scarborough General site Southlake Regional Health Centre St. Mary's General Hospital St. Michael's Hospital Timmins and District Hospital Trillium Health Centre – Mississauga site</p> |

Hospital Coverage

In calculating hospital coverage, CIHI-DAD records created prior to the first HOBIC assessment submitted by each site were excluded from the denominator. In accordance with HOBIC business rules, the following were also excluded:

- Patients younger than 18 years at hospital admission
- Maternity care admissions
- Mental health admissions
- CIHI-DAD records with an ICU flag

The numerator included any site-specific acute care hospitalization identified in the CIHI-DAD (same exclusions as for the denominator) for which there was also a linkable HOBIC record. Any CIHI-DAD record with an admission and/or discharge assessment for any of the HOBIC measures was included in the numerator.

25 CMGs

This group represents all patients hospitalized for one of the 25 CMGs included in the LHIN accountability agreements and identified as being associated with preventable readmissions by the Health Analytics Branch of the Ministry of Health and Long-Term Care. These CMGs are available from the CIHI-DAD and fall broadly under the following disease groups: stroke, chronic obstructive pulmonary disease, pneumonia, congestive heart failure, diabetes, cardiac and gastrointestinal.

EXHIBIT 7.2 Case Mix Groups in the “25 CMG” group used to classify the type of hospitalization for HOBIC assessments

| CMG+ | | CMG+ Description |
|---------------------------------------------------------|---------------------------|------------------------------------------------------------------------|
| Stroke (Age ≥ 45) | | |
| CMG 2009 | 25 | Hemorrhagic event of central nervous system |
| | 26 | Ischemic event of central nervous system |
| | 28 | Unspecified stroke |
| Chronic Obstructive Pulmonary Disease (Age ≥ 45) | | |
| CMG 2009 | 139 | Chronic obstructive pulmonary disease |
| Pneumonia (All Ages) | | |
| CMG 2009 | 136 | Bacterial pneumonia |
| | 138 | Viral/unspecified pneumonia |
| | 143 | Disease of pleura |
| Congestive Heart Failure (Age ≥ 45) | | |
| CMG 2009 | 196 | Heart failure without cardiac catheter |
| Diabetes (All Ages) | | |
| CMG 2009 | 437 | Diabetes |
| Cardiac (Age ≥ 40) | | |
| CMG 2009 | 202 | Arrhythmia without cardiac catheter |
| | 204 | Unstable angina/atherosclerotic heart disease without cardiac catheter |
| | 208 | Angina (except unstable)/chest pain without cardiac catheter |
| Gastrointestinal (All Ages) | | |
| CMG 2009 | 231 | Minor upper gastrointestinal intervention |
| | 248 | Severe enteritis |
| | 251 | Complicated ulcer |
| | 253 | Inflammatory bowel disease |
| | 254 | Gastrointestinal hemorrhage |
| | 255 | Gastrointestinal obstruction |
| | 256 | Esophagitis/gastritis/miscellaneous digestive disease |
| | 257 | Symptom/sign of digestive system |
| | 258 | Other gastrointestinal disorder |
| | 285 | Cirrhosis/alcoholic hepatitis |
| | 286 | Liver disease except cirrhosis/malignancy |
| | 287 | Disorder of pancreas except malignancy |
| 288 | Disorder of biliary tract | |

Assessment Completeness

To calculate assessment completeness, patients who were ineligible to receive a HOBIC assessment were excluded based on the following criteria: they were transfers to or from another hospital or intensive care unit, were mental health admissions, died or had a hospital length of stay of less than 48 hours. The denominator includes only site-specific hospitalizations that were identified in the HOBIC database; these include patients who had at least one assessment either at admission or discharge for any of the HOBIC scales. Patients discharged to long-term care homes do not require a therapeutic self-care assessment on discharge; however, they were not excluded from the assessment completeness calculation.

Average Percentage Improvement

The average percentage improvement represents the site-specific mean score difference (the discharge score minus the admission score) divided by the mean admission score. In order to present the percentage change as a positive improvement, all values except therapeutic self-care were converted to a positive scale (i.e., multiplied by negative one).



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