Manitoba Centre for Health Policy

Strategies for Developing a Personal Care Home Report Card in Manitoba

Spring 2019

Malcolm Doupe, PhD
Marni Brownell, PhD
Chelsey McDougall, MSc
Ina Koseva, MSc
Natalia Dik, MSc
Scott McCulloch, MA
Joykrishna Sarkar, MSc

University of Manitoba
Rady Faculty of Health Sciences

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Manitoba Centre for Health Policy
University of Manitoba
Max Rady College of Medicine
Rady Faculty of Health Sciences

408-727 McDermot Avenue
Winnipeg, Manitoba, Canada
R3E 3P5

Tel: (204) 789-3819
Fax: (204) 789-3910
Email: reports@cpe.umanitoba.ca

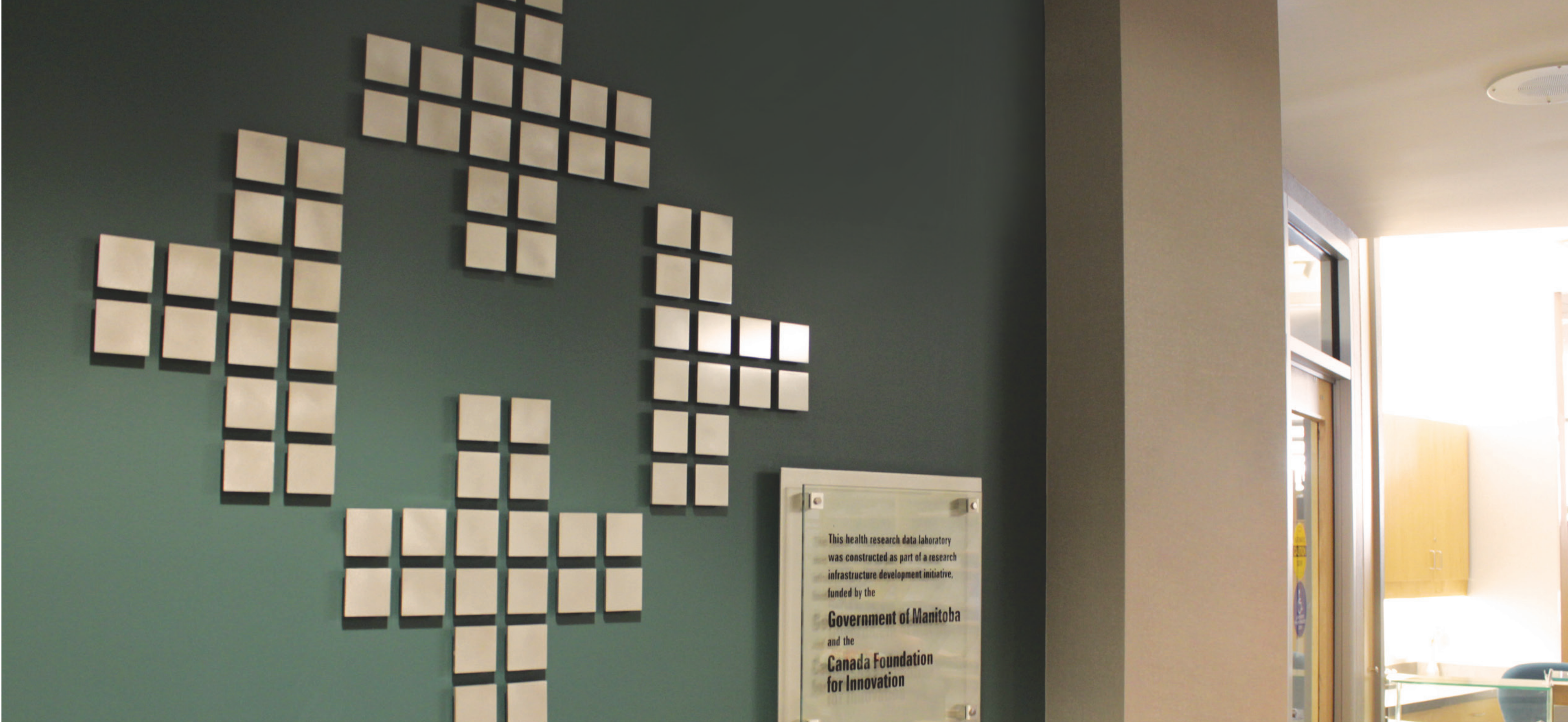
How to cite this report:
Doupe M, Brownell M, McDougall C, Koseva I, Dik N, McCulloch S, Sarkar J. *Strategies for Developing a Personal Care Home Report Card in Manitoba*. Winnipeg, MB. Manitoba Centre for Health Policy. Spring 2019.

Legal Deposit:
Manitoba Legislative Library National Library of Canada

ISBN 978-1-896489-94-0

1st printing (Spring 2019)

This report was prepared at the request of Manitoba Health, Seniors and Active Living (MHSAL), a department within the Government of Manitoba, as part of the contract between the University of Manitoba and MHSAL. It was supported through funding provided by MHSAL to the University of Manitoba (HIPC 2012/2013-46). The results and conclusions are those of the authors and no official endorsement by MHSAL was intended or should be inferred. Data used in this study are from the Manitoba Population Research Data Repository housed at the Manitoba Centre for Health Policy, University of Manitoba and were derived from data provided by MHSAL, as well as the Winnipeg Regional Health Authority. Strict policies and procedures were followed in producing this report to protect the privacy and security of the Repository data.



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The Manitoba Centre for Health Policy (MCHP) is located within the Department of Community Health Sciences, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba. The mission of MCHP is to provide accurate and timely information to healthcare decision-makers, analysts and providers, so they can offer services which are effective and efficient in maintaining and improving the health of Manitobans. Our researchers rely upon the unique Manitoba Population Research Data Repository (Repository) to describe and explain patterns of care and profiles of illness and to explore other factors that influence health, including income, education, employment, and social status. This Repository is unique in terms of its comprehensiveness, degree of integration, and orientation around an anonymized population registry.

Members of MCHP consult extensively with government officials, healthcare administrators, and clinicians to develop a research agenda that is topical and relevant. This strength, along with its rigorous academic standards, enables MCHP to contribute to the health policy process. MCHP undertakes several major research projects, such as this one, every year under contract to Manitoba Health, Seniors and Active Living. In addition, our researchers secure external funding by competing for research grants. We are widely published and internationally recognized. Further, our researchers collaborate with a number of highly respected scientists from Canada, the United States, Europe, and Australia.

We thank the Research Ethics Board on the Bannatyne Campus at the University of Manitoba, for their review of this project. MCHP complies with all legislative acts and regulations governing the protection and use of sensitive information. We implement strict policies and procedures to protect the privacy and security of anonymized data used to produce this report and we keep the provincial Health Information Privacy Committee informed of all work undertaken for Manitoba Health, Seniors and Active Living.

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Acknowledgments

The authors wish to acknowledge the many individuals who contributed to the development of this report. We apologize in advance to anyone we may have inadvertently omitted.

We thank our Advisory Group for their knowledge and advice:

- Barbara Graham North (Manitoba Health, Seniors and Active Living)
- Charles Gagné (Actionmarguerite)
- Cynthia Sinclair (Interlake-Eastern Regional Health Authority)
- Dr. David Strang (Winnipeg Regional Health Authority)
- Hana Forbes (Winnipeg Regional Health Authority)
- Heidi Wiebe (Southern Health-Santé Sud)
- Linda Norton (Winnipeg Regional Health Authority)
- Lorraine Dacombe Dewar (Manitoba Health, Seniors and Active Living)
- Marion Pringle (Revera Corporation)
- Michael Haip (Winnipeg Regional Health Authority)
- Noreen Shirtliff (Southern Health-Santé Sud)
- Paulette Goossen (Southern Health-Santé Sud)
- Roxie Eyer (Manitoba Health, Seniors and Active Living)

We are grateful for the valuable feedback provided by our external reviewer, Dr. Charlene Harrington (University of California San Francisco).

We appreciate the contributions of: Dr. Gary Teare (Saskatchewan Health Quality Council), Dr. Jeff Poss (University of Waterloo), Joe Puchniak and John David Stanway (Canadian Institute for Health Information), Judy Robertson (Winnipeg Regional Healthy Authority), Julene Reimer and Nathan Hoeppner (Manitoba Health, Seniors and Active Living), and Shauna Zinnick (formerly with the University of Manitoba).

We are also thankful for the input and assistance from our colleagues at the Manitoba Centre for Health Policy: Mark Smith (senior reader), Dr. Jennifer Enns (editor), Wendy Guenette, Ruth-Ann Soodeen, Dr. Jessica Jarmasz, Susan Burchill, Cara Jonasson, Charles Burchill, Dr. Dan Chateau, Dr. Elizabeth Wall-Wieler, Dr. Selena Randall, and Jennifer Pepneck.

We acknowledge the University of Manitoba Health Research Ethics Board for their review of the proposed research project. The Health Information Privacy Committee (HIPC) is kept informed of all MCHP deliverables. The HIPC number for this project is 2012/2013-46. We also acknowledge Manitoba Health, Seniors and Active Living, as well as the Winnipeg Regional Health Authority for the use of their data.

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Executive Summary

Study Rationale and Purpose

Personal care homes (PCHs)[1] provide care to people who face significant and multiple challenges. Strategies are needed to help care providers continually improve the quality of the medical and social care in PCHs, and to help Manitobans identify facilities where they may like to live.

The purpose of this study is two-fold. First, we identify clinical quality indicators (QIs) that providers and planners feel are most appropriate to use in PCHs. We compare these QIs across facilities in ways that help stakeholders identify residents for whom quality of care is good and also where improvements may be needed. Second, by reviewing existing websites and the academic literature, we provide a list of recommendations for developing a PCH report card website in Manitoba. This website should be designed to help people identify PCHs where they or their loved ones would like to live, and to facilitate discussions between residents and providers about the goals of PCH care.

Major Study Findings

Using the Delphi method of consensus building, PCH experts agreed upon twelve clinical QIs that they thought were both highly care sensitive (meaning that care improvements could be more easily made) and impactful (respondents felt that the QI occurred often and/or affected residents significantly). Many of these selected QIs are outcome-based (e.g., measure the prevalence of pressure ulcers, dehydration, and daily physical restraint use) and focus on the physical domain. PCH experts only selected one QI in the mental health domain (i.e., the prevalence of depression without anti-depression therapy) and did not select any QIs measuring broader healthcare use (e.g., the percent of residents who die in hospital).

We then used data from the InterRAI Minimum Data Set assessment tool (RAI-MDS 2.0) to compare these QIs across PCHs in Winnipeg. PCH-level comparisons were made across all residents combined and within sub-groups of higher risk and lower risk people. While all QI rates varied substantially across PCHs, certain patterns emerged from the data. Some PCHs consistently reported having fewer QI events, while in other facilities QI rates were consistently high. Still other facilities had many QI events but only amongst sub-groups of higher or lower risk residents. Collectively,

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[1] Defined as nursing homes elsewhere in Canada.

these findings help stakeholders to identify areas where good clinical care is being provided and also where improvement may be needed.

As part of this research we reviewed select PCH report card websites and the literature that has formally evaluated these tools. While clinical care is important, we saw in our review that PCH residents consider many additional factors when searching for suitable PCHs. Examples of these additional factors include: a) facility layout (e.g., if rooms and eating areas are arranged like a hospital or home-like setting); b) policies pertaining to food (whether it is cooked on site and if residents have a choice about what and when they get to eat), laundry (whether clothes are washed on site or outsourced), and the frequency and type of recreational activities and outings; and c) data from resident and family surveys (e.g., focusing on quality of life and how residents are treated by staff). A list of these and additional items are included in this report as recommended topics to include in a PCH report card website. We also provide recommendations on website formatting (e.g., how to show site comparisons) in this report.

Conclusions, Potential Limitations, and Next Steps

Conclusions

In this research we have: a) identified important measures of quality clinical care to help planners identify areas of success and where care improvement strategies may be needed; b) compared these QIs across PCHs located in the Winnipeg Regional Health Authority, and c) used this and other evidence to make recommendations for developing a PCH report card website in Manitoba.

Potential Limitations

Limitations Related to RAI-MDS 2.0 Data Collection. Almost all QIs in this study were derived from the RAI-MDS 2.0 data system. These data are readily available in all Winnipeg PCHs and were originally developed by an international group of experts. It is important to recognize, however, that RAI-MDS 2.0 data are recorded by multiple people and may not always undergo formal auditing procedures to verify the inter-rater reliability and the accuracy of the data. Facility-level differences in QI scores may therefore have multiple explanations (e.g., differences in actual quality versus measurement and documentation procedures).

Limitations Related to our Choice of QI Metrics. It is also important to note that our Delphi results are based on the original (prevalence-style) Center for Health Systems Research & Analysis (CHSRA) QIs as opposed to the more recently developed (incidence-style) Continuing Care Reporting System (CCRS) QI metrics. Most of these measures are similar conceptually but have different measurement time frames (e.g., metrics that measure incontinence versus the percent of residents whose incontinence worsened with time).

Limitations Related to Our Facility Comparisons. QIs are compared across PCHs stratified by select resident risk factors. While this strategy was chosen to help simplify study results, it is important to recognize that these strata provide examples of higher and lower risk residents. Facility-level differences in QI rates may therefore be due to actual differences in quality of care or differences in unmeasured resident characteristics. This is especially true when our statistical procedures resulted in a poorer model fit (see text pertaining to the 'concordance statistic' in Table 2.3 in this report).

Next Steps

Balancing Different Perspectives on QIs. Participants in the Delphi method included only decision-makers and providers. To the best of our knowledge, no research identifies how different groups of respondents (e.g., providers versus residents and their family members) rank the importance of clinical (e.g., pressure ulcers) versus non-clinical (e.g., food quality) quality of care metrics. Such evidence would further highlight the importance of developing strategies to balance the provision of high quality clinical and non-clinical care.

Comparing Clinical QIs across all PCHs in Manitoba. While RAI-MDS 2.0 is available across most of Canada, within Manitoba this tool exists only in Winnipeg, and evidence examining the quality of clinical care in other Manitoba regions is lacking.

Creating an Effective Decision-Making Tool. Report card websites need to reflect much more than clinical care and should be thought of as decision-making tools. This means that attention and resources are needed to: a) engage with stakeholders at all stages of website development to help ensure that its content and format enhance decision-making capacity; b) ensure that the data proposed to include in the website can be consistently measured across PCH sites; and c) develop evaluation strategies to ensure that the website is easily accessible and effectively supports decision-making.

Introduction, Research Purpose, and Overview of Report Content

One-quarter million Canadians [1] and 1.4 million U.S. citizens [2] reside annually in personal care homes (PCHs). By 2030, the overall number of people 75+ years old living in both Canada [3] and the U.S. [4] is expected to double. This population growth has enormous implications for future PCH use and is compounded by the fact that people are now admitted into PCHs much later in life and sicker than they were in the past [5–7]. Assessing the quality of care provided to these frail individuals is of utmost importance.

Quality indicators (QIs) are surrogate measures used to monitor and evaluate the quality of patient care [8]. Several researchers have used QIs to measure the quality of care provided in PCHs [9–11], and Shin and Bae (2012) identify 69 such metrics commonly used for this purpose [12]. Further, while most of these measures focus on the clinical domain (e.g., by measuring pain levels, the prevalence of pressure ulcers, or restraint use), the literature also shows that the general public would like to have more contextual information (e.g., about food quality) when searching for suitable PCHs to live in.

The purpose of this study is two-fold. First, we identify clinical QIs (i.e., measuring the clinical aspects of care) that providers and planners feel are most appropriate to use in PCHs. We compare these QIs across facilities in ways that help stakeholders to identify residents for whom clinical care is good and to determine where improvements may be needed. Second, we provide a list of recommendations based on a review of existing websites and the academic literature for developing a PCH report card website in Manitoba. This website should be designed to help people identify PCHs where they or their loved ones would like to live, and to facilitate discussions between residents and providers about the goals of PCH care.

Report content is provided in four sections. Section 1 shows the Delphi method results. Thirty-nine experts (PCH providers, facilities leaders, and administrative directors) participated in three survey rounds to reach consensus on a small list of clinical QIs that are most appropriate to use in PCH settings. Section 2 applies these QIs to 37 licensed PCHs in the Winnipeg Regional Health Authority (WRHA). Comparisons across these sites were made in an easily understood manner that helps to identify who the higher and lower risk residents are. This aspect of the research uses the InterRAI Minimum Data Set 2.0 (RAI-MDS 2.0) data system [13] and hence is conducted in the WRHA only[2]. Section 3 of the report summarizes the literature on public reporting PCH websites and describes how the results from the present research could be used to develop a similar website in Manitoba. Section 4 provides a study synopsis, highlights potential limitations, and briefly outlines future research directions.

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[2] Within Manitoba, RAI-MDS 2.0 data are captured in the WRHA only and not in the other Regional Health Authorities.

Section 1.

Defining Appropriate Measures of Quality Clinical Care

1.1 An Introduction to the Delphi Method

The Delphi method provides a structured approach to develop consensus on a given topic and to determine where differences in opinion exist [14]. Respondents are asked to rank the importance of various ideas using pre-defined evaluation criteria and by considering their peers' responses. Respondents repeat this process iteratively until consensus opinion is reached.

Three rounds of Delphi surveys are usually conducted. In round one, experts respond to a series of statements or questions in a manner that ranks their perceived importance. In round two, each expert receives feedback comparing their round one responses to those of their peers and is asked to consider amending their original responses based on this information. Depending on the level of consensus reached during this process, a third Delphi round is conducted to seek further clarification. The Delphi method has been used in PCHs to help develop appropriate palliative care practices [14], to define potentially inappropriate medication use [15], and to identify residents who are at higher risk of developing PCH-acquired pneumonia [16].

1.2 Study Methods

The Delphi method was used to identify clinical QIs that are most appropriate for the PCH setting. Additional information about the study methods is provided in the following text.

a) **The Expert Panel**. The Delphi method was carried out in consultation with select PCH stakeholder groups. We invited members from each of the following WRHA groups to participate in the Delphi method: i) Leadership Council (composed mainly of PCH executive directors), ii) Directors of Care (composed mostly of nurses who oversee day-to-day care in a PCH facility), and iii) Medical Directors (this group oversees physician care at each site). The Advisory Group for this report also invited experts from the WRHA Actionmarguerite Joint Medical Council (who oversee the medical care provided in two Winnipeg PCHs) and the Manitoba Continuing Care Council (who represent each of the five provincial health regions) to participate in the Delphi method.

b) **QI Selection Criteria**. Respondents were asked in each Delphi round to rank QIs according to three criteria:

i. **Care sensitivity** (how easy it is to improve care in this area): Respondents were asked to rank each QI as being: a) not care sensitive (not feasible to improve care), b) somewhat care sensitive (care can be improved as long as additional resources are provided), and c) highly care sensitive (care can be improved by using existing resources differently and/or by changing daily approaches to care).

ii. **Frequency** (how often the QI occurred): Respondents were asked to provide a response ranging from 1 (QI occurs rarely) to 10 (QI occurs frequently).

iii. **Degree of Negative Impact on the Resident:** Respondents were asked to provide a response ranging from 1 (QI impacts residents in a minor way) to 10 (QI impacts residents in a major way).

Our goal in this research was to identify highly impactful and/or frequently occurring QIs perceived to be highly care sensitive. At any stage of the Delphi method a QI was deemed to be:

a) **Accepted** if at least 70% of respondents ranked it as being highly care sensitive, and at least 50% provided a combined frequency and impact score of 10 or higher;

b) **Rejected** if fewer than 50% of respondents ranked it as being highly care sensitive, and if fewer than 50% provided a combined frequency and impact score of 10 or higher;

c) **Inconclusive** in all other scenarios (e.g., if one but not both of the criteria for acceptance was met).

1.3 Study Results

Thirty-nine experts agreed to participate in this phase of the research (Table 1.1); 16 (41.0%) of these respondents were nurses or physicians who provided direct care to residents, and the remaining respondents were either facility leaders (e.g., Directors of Care) or administrative directors (e.g., facility executive directors and regional-level planners). About two-thirds (64.1%) of all respondents had a degree in medicine or nursing. Respondents had an average of 16.2 years of PCH experience and 6.7 years of experience in their current position. At least 50% of respondents completed each round of the Delphi method.

An initial list of 35 QIs was chosen to include in the research (Table 1.2). Data from the RAI-MDS 2.0 data system have been used often to assess PCH quality of care [17–22], and we used all of the original Center for Health Systems Research and Analysis (CHSRA) RAI-MDS 2.0 QIs as outlined in the Canadian Institute for Health Information 2012-2013 Output Specification Manual [23]. Some additional quality measures (e.g., pertaining to healthcare use) were suggested by Advisory Group members, and respondents were also invited to add QIs during round one of the Delphi method.

Nineteen of the original QIs were outcome-based (i.e., measured a consequence) and the other 16 QIs measured processes (i.e., actions without considering the consequence). Almost two-thirds (62.9%; N=22) of the original QIs reported events in the physical domain (e.g., pressure ulcers), 20.0% (N=7) involved prescription drugs, and 11.4% (N=4) and 5.7% (N=2) were related to resident mental health and broader healthcare use, respectively.

Table 1.1: Description of Delphi Participants

	Overall (All Participants)	Participant Category		
		Provider*	Facility Leader†	Administrative Director‡
Count	**39**	**16**	**10**	**13**
Profile				
Participant Sex (% Female)	62.0	63.0	80.0	46.0
Total Years Experience in Personal Care Homes; Mean (Standard Deviation)	16.2 (10.6)	11.8 (8.7)	18.6 (12.5)	19.8 (10.1)
Years Experience in Current Position; Mean (Standard Deviation)	6.7 (6.8)	7.3 (6.1)	7.3 (9.6)	5.4 (5.1)
Education Type (%)				
Doctor of Medicine	17.9	43.8	0.0	0.0
Nurse	46.2	37.5	90.0	23.1
University Other	35.9	18.8	10.0	76.9
Participant Response Rate by Delphi Round (%)				
Round 1	100.0	81.3	100.0	100.0
Round 2	71.8	68.8	80.0	56.3
Round 3	64.1	50.0	70.0	62.5

* Provides direct care to residents (e.g., Medical Directors, Clinical Nurse Specialists).
† Oversees and manages others who provide direct care at a personal care home (e.g., Directors of Care, Managers of Resident Services).
‡ Provides administrative support and overall direction at the facility (e.g., Chief Executive Officers) or regional (e.g., Program Executive Directors) level.

Table 1.2: Description of Quality Indicators Used in the Research

Quality Indicator	Source*	Description	
Incidence of decline in late loss activities of daily living (ADLs)	RAI-MDS 2.0	Outcome	Physical health domain
Incidence of decline in range of motion	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of little or no activity	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of bladder or bowel incontinence	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of occasional/frequent bladder or bowel incontinence without a toileting plan	RAI-MDS 2.0	Outcome†	Physical health domain
Prevalence of fecal impaction	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of urinary tract infections	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of weight loss	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of dehydration	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of stage 1-4 pressure ulcers	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of falls	RAI-MDS 2.0	Outcome	Physical health domain
Incidence of new fractures	RAI-MDS 2.0	Outcome	Physical health domain
Percent of residents who self-report moderate to severe pain	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of behavioural symptoms affecting others	RAI-MDS 2.0	Outcome	Mental & cognitive health
Prevalence of symptoms of depression	RAI-MDS 2.0	Outcome	Mental & cognitive health
Prevalence of depression without anti-depression therapy	RAI-MDS 2.0	Outcome†	Mental & cognitive health
Incidence of cognitive impairment	RAI-MDS 2.0	Outcome	Mental & cognitive health
Prevalence of daily physical restraints	RAI-MDS 2.0	Process	Physical health domain
Prevalence of bedfast residents	RAI-MDS 2.0	Outcome	Physical health domain
Prevalence of indwelling catheters	RAI-MDS 2.0	Process	Physical health domain
Prevalence of tube feeding	RAI-MDS 2.0	Process	Physical health domain
Prevalence of use of 9 or more different medications	RAI-MDS 2.0	Process	Prescription drug use
Prevalence of anti-anxiety/hypnotic drug use amongst people without schizophrenia, Huntington's chorea, or hallucinations	RAI-MDS 2.0	Process	Prescription drug use
Prevalence of hypnotic drug use more than two days in past week	RAI-MDS 2.0	Process	Prescription drug use
Prevalence of anti-psychotic drug use without psychotic and related conditions	RAI-MDS 2.0	Process	Prescription drug use

* RAI-MDS 2.0=InterRAI Minimum Data Set; Admin Records=Administrative healthcare use records; Participant Added=Added by participants during round 1 of the Delphi method.

† As reported by Zimmerman (2003), these quality indicators can be considered as both process and outcome [18]. We have considered them as outcome.

Table 1.2: Continued

Quality Indicator	Source*	Description	
Use of potentially inappropriate drugs (BEERS Criteria)	Admin Records	Process	Prescription drug use
Rates of transfers to the emergency department	Admin Records	Process	Healthcare use
Percent of residents who die in hospital	Admin Records	Process	Healthcare use
Percent of residents without an advance care plan	Admin Records	Process	Physical health domain
Percent of residents not receiving the seasonal influenza vaccine	Admin Records	Process	Prescription drug use
Prevalence of pneumonia	Participant Added	Outcome	Physical health domain
Percent of residents not receiving the pneumococcal vaccine	Participant Added	Process	Prescription drug use
Percent of residents who do not get daily oral care	Participant Added	Process	Physical health domain
For residents requiring assistance with locomotion, percent who receive walking training and practice	Participant Added	Process	Physical health domain
For residents who are bedfast most of the time or who use a wheelchair as their primary mode of locomotion, percent who are part of a turning or repositioning program	Participant Added	Process	Physical health domain

* RAI-MDS 2.0=InterRAI Minimum Data Set; Admin Records=Administrative healthcare use records; Participant Added=Added by participants during round 1 of the Delphi method.

† As reported by Zimmerman (2003), these quality indicators can be considered as both process and outcome [18]. We have considered them as outcome.

Results from the Delphi method are provided in Tables 1.3A-C. After three Delphi rounds, respondents reached consensus on twelve clinical QIs that they felt were most appropriate for measuring quality of care in PCHs (Table 1.3A). Nine of these QIs were accepted after Delphi round two, and the remaining three were accepted after Delphi round three. Between 71% (daily restraints, the prevalence of anti-psychotic drug use) and 93% (pressure ulcers) of respondents reported that these QIs were highly care sensitive, and between 60% and 96% reported that these QIs were highly impactful and/or occurred frequently.

Table 1.3A: Quality Indicator Scores by Delphi Round: Accepted Measures
Results are presented as the percent of participants

Quality Indicator	Round 1		Round 2		Round 3	
	Frequency + Impact ≥10	Highly Care Sensitive	Frequency + Impact ≥10	Highly Care Sensitive	Frequency + Impact ≥10	Highly Care Sensitive
Prevalence of stage 1-4 pressure ulcers	90	65	96	93	Accepted After Round 2	
Prevalence of dehydration	90	63	93	89	Accepted After Round 2	
Prevalence of fecal Impaction	73	70	71	86	Accepted After Round 2	
Prevalence of urinary tract infections	78	60	89	86	Accepted After Round 2	
Prevalence of occasional/frequent bladder or bowel incontinence without a toileting plan	80	60	89	79	Accepted After Round 2	
Percent of residents who self-report moderate to severe pain	80	60	93	79	Accepted After Round 2	
Use of potentially inappropriate drugs (BEERS Criteria)	45	45	61	75	Accepted After Round 2	
Prevalence of daily physical restraints	70	53	71	71	Accepted After Round 2	
Prevalence of anti-psychotic drug use without psychotic and related conditions	73	55	82	71	Accepted After Round 2	
Percent of residents who do not get daily oral care	n/a*	n/a*	79	68	76	88
Prevalence of depression without anti-depression therapy	75	53	82	68	64	72
Prevalence of hypnotic drug use more than two days in past week	75	55	68	68	60	72

* This quality indicator was suggested by a participant during round 1.

Seven QIs were rejected by respondents (Table 1.3B). Respondents generally felt that these measures were less impactful (i.e., they provided lower frequency and impact scores) and very few respondents defined these measures as highly care sensitive (e.g., only 4% felt that the prevalence of tube feeding was easy to change).[3] Lastly, respondents did not reach consensus on 16 QIs (Table 1.3C). While respondents generally agreed that these QIs occurred frequently and/or were highly impactful (e.g., scores of 92% for resident falls and 96% for behavioural symptoms affecting others), fewer people defined these QIs as being highly care sensitive. As an example, only 28% of respondents felt that reducing the symptoms of depression was highly care sensitive, and only 4% felt that reducing the prevalence of bladder or bowel incontinence was easy to do.

Table 1.3B: Quality Indicator Scores by Delphi Round: Rejected Measures
Results are presented as the percent of participants

Quality Indicator	Round 1		Round 2		Round 3	
	Frequency + Impact ≥10	Highly Care Sensitive	Frequency + Impact ≥10	Highly Care Sensitive	Frequency + Impact ≥10	Highly Care Sensitive
Percent of residents not receiving the pneumococcal vaccine	n/a*	n/a*	46	50	12	40
Percent of residents who die in hospital	43	23	21	18	Rejected After Round 2	
Prevalence of bedfast residents	58	20	57	14	32	8
Percent of residents not receiving the seasonal influenza vaccine	20	33	11	14	Rejected After Round 2	
Prevalence of tube feeding	33	5	18	4	Rejected After Round 2	
Prevalence of indwelling catheters	25	8	11	0	Rejected After Round 2	
Incidence of cognitive impairment	83	10	96†	0	Rejected After Round 2	

* This quality indicator was suggested by a participant during round 1.
† This quality indicator was removed after round 2 as 89.3% of respondents felt that it was not care sensitive (data not shown).

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[3] Respondents often reported that these QIs were not care sensitive at all (i.e., they were almost impossible to improve on). As an example, 93% of respondents considered tube feeding to be not care sensitive even with additional resources, while 57% of respondents felt that it was not feasible to reduce how often residents died in hospital (data not shown).

Table 1.3C: Quality Indicator Scores by Delphi Round: Undecided Measures

Results are presented as the percent of participants

Quality Indicator	Round 1		Round 2		Round 3	
	Frequency + Impact ≥10	Highly Care Sensitive	Frequency + Impact ≥10	Highly Care Sensitive	Frequency + Impact ≥10	Highly Care Sensitive
For residents who are bedfast most of the time or who use a wheelchair as their primary mode of locomotion, percent who are part of a turning or repositioning program	n/a*	n/a*	61	57	40	80
Percent of residents without an advance care plan	23	53	21	68	8	72
Prevalence of anti-anxiety/hypnotic drug use amongst people without schizophrenia, Huntington's chorea, or hallucinations	80	55	86	68	76	60
Prevalence of little or no activity	70	43	86	46	72	44
Prevalence of use of 9 or more different medications	75	50	89	64	80	44
For residents requiring assistance with locomotion, percent who receive walking training and practice	n/a†	n/a†	61	32	64	32
Prevalence of symptoms of depression	88	43	96	32	88	28
Prevalence of pneumonia	n/a†	n/a†	71	32	68	16
Rates of transfers to the emergency department	75	20	71	18	76	12
Prevalence of weight loss	80	33	86	18	76	8
Prevalence of falls	85	20	96	11	92	8
Prevalence of behavioural symptoms affecting others	90	18	100	14	96	8
Incidence of decline in range of motion	80	10	86	0	84	4
Prevalence of bladder or bowel incontinence	93	25	93	7	88	4
Incidence of new fractures	83	13	89	11	80	4
Incidence of decline in late loss activities of daily living (ADLs)	78	8	82	0	76	0

* This quality indicator was suggested by a participant during round 1.

Two additional analyses were conducted on the twelve accepted QIs. First, final care sensitivity scores were compared across respondent sub-groups (Table 1.4). Respondents from each sub-group scored seven of these QIs (pressure ulcers, daily oral care, dehydration, fecal impaction, urinary tract infections, moderate to severe pain, and incontinence without a toileting plan) as being highly care sensitive. Sub-groups scored the remaining five QIs somewhat differently. Most providers and facility leaders (75-88%) scored daily restraint use and untreated depression as highly care sensitive versus fewer than 65% of administrative directors. Conversely, fewer than 65% of facility leaders (versus at least 70% of providers and administrative directors) felt that strategies to reduce potentially inappropriate prescription drugs and anti-psychotic drugs were highly care sensitive. Lastly, 67% of providers (versus 71% of facility leaders and 88% of administrative directors) felt that strategies to reduce hypnotic drug use were highly care sensitive. In almost all instances, respondent sub-groups scored all accepted QIs similarly by their combined frequency and impact scores (data not shown).

Table 1.4: Differences in Care Sensitivity Scores by Participant Category: Accepted Quality Indicators

Accepted Quality Indicators	Overall (All Participants)	Participant Category		
		Provider*	Facility Leader†	Administrative Director‡
Prevalence of daily physical restraints	74%	75%	88%	64%
Prevalence of occasional/frequent bladder or bowel incontinence without a toileting plan	85%	100%	75%	82%
Prevalence of fecal impaction	89%	88%	100%	82%
Prevalence of urinary tract infections	89%	75%	100%	91%
Prevalence of dehydration	96%	100%	100%	91%
Prevalence of stage 1-4 pressure ulcers	96%	100%	100%	91%
Percent of residents who self-report moderate to severe pain	81%	78%	88%	80%
Prevalence of depression without anti-depression therapy	78%	88%	86%	63%
Prevalence of hypnotic drug use more than two days in past week	75%	67%	71%	88%
Prevalence of anti-psychotic drug use without psychotic and related conditions	71%	78%	50%	82%
Use of potentially inappropriate drugs (BEERS Criteria)	75%	89%	63%	73%
Percent of residents who do not get daily oral care	96%	100%	100%	88%

* Provides direct care to residents (e.g., Medical Directors, Clinical Nurse Specialists).
† Oversees and manages others who provide direct care at a personal care home (e.g., Directors of Care, Managers of Resident Services).
‡ Provides administrative support and overall direction at the facility (e.g., Chief Executive Officers) or regional (e.g., Program Executive Directors) level.

We also assessed whether respondents disproportionately selected certain types of QIs (Figure 1.1). Fifty-one percent of the original 35 QIs were outcome-based as compared to 58.3% of those accepted by respondents. Respondents were also somewhat more likely to select QIs in the physical health and prescription drug domains (e.g., 62.9% of the original 35 QIs versus 66.7% of the accepted QIs measured residents' physical health) and were less likely to select QIs related to resident mental health and healthcare use (e.g., while 5.7% of the original QIs measured healthcare use, respondents did not accept any of these QIs in the Delphi method).

Figure 1.1: Distribution of Original versus Accepted Quality Indicators by Measurement Type

1.4 Concluding Remarks

Researchers from multiple jurisdictions agree that PCHs have become increasingly complex care environments that house the frailest of people [7,24–27]. For these and other reasons, researchers have sought to identify quality measures that are 'best' to use in PCH settings [17,28–34]. Researchers have selected these QIs using somewhat different criteria[4], and (not surprisingly) the results across studies exhibit both similarities and differences. Similar to the present research, Estabrooks et al. (2013) report that urinary tract infections, pressure ulcers, pain, physical restraints, and anti-psychotic drug use without psychosis are all practice sensitive conditions [17]. Conversely, while these authors reported that falls, tube feeding, indwelling catheters, and late loss activities of daily life decline were also practice sensitive, these measures were not selected by participants in the present study as being highly care sensitive. Similar to the present study findings, Rantz et al. (2004) report that pressure ulcers, urinary tract infections, dehydration, and depression without therapy were important measures to consider, but unlike our findings, they report that polypharmacy and weight loss (for example) were important clinical care measures [28]. These inter-study differences may be attributed to differences in the original QIs used and study participants selected, the criteria used to define 'best' QI metrics, and/or the cut-points used to accept and reject these measures.

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[4] For example, Estabrooks et al. (2013) identified QIs thought to be practice sensitive (modifiable), Rantz et al. (2004) identified QIs thought to be most sensitive (i.e., differentiate between facilities), and Saliba & Schnelle (2002) defined QIs that were both 'valid and important' [17,28,30].

Section 2.

Comparing Clinical Quality Indicators across Personal Care Homes

2.1 Introduction

This section compares across PCHs the clinical QIs recommended by Delphi experts. Comparisons were made across 37 licensed PCHs in Winnipeg. These sites are identified using a numerical value; a link to facility names is provided in Appendix Table 1.

Analyses in this section balance the importance of making fair inter-site comparisons (e.g., recognizing that facilities care for residents with different clinical profiles) with ensuring that results can be easily interpreted. Rather than adjust for site differences using traditional statistical techniques, we compared QIs across PCHs in their crude (unadjusted) form, overall and among higher and lower risk residents. This strategy: i) retains output in easily understood units (i.e., results show the percent of assessments where a QI was reported); ii) facilitates inter-site comparisons within different strata of residents (higher or lower risk); and iii) helps planners to identify sub-groups of residents for whom QIs were most likely to occur. It is important to recognize, however, that the strata represent examples of higher and lower risk residents, meaning that inter-facility differences may also be attributed to other resident features.

2.2 Study Methods

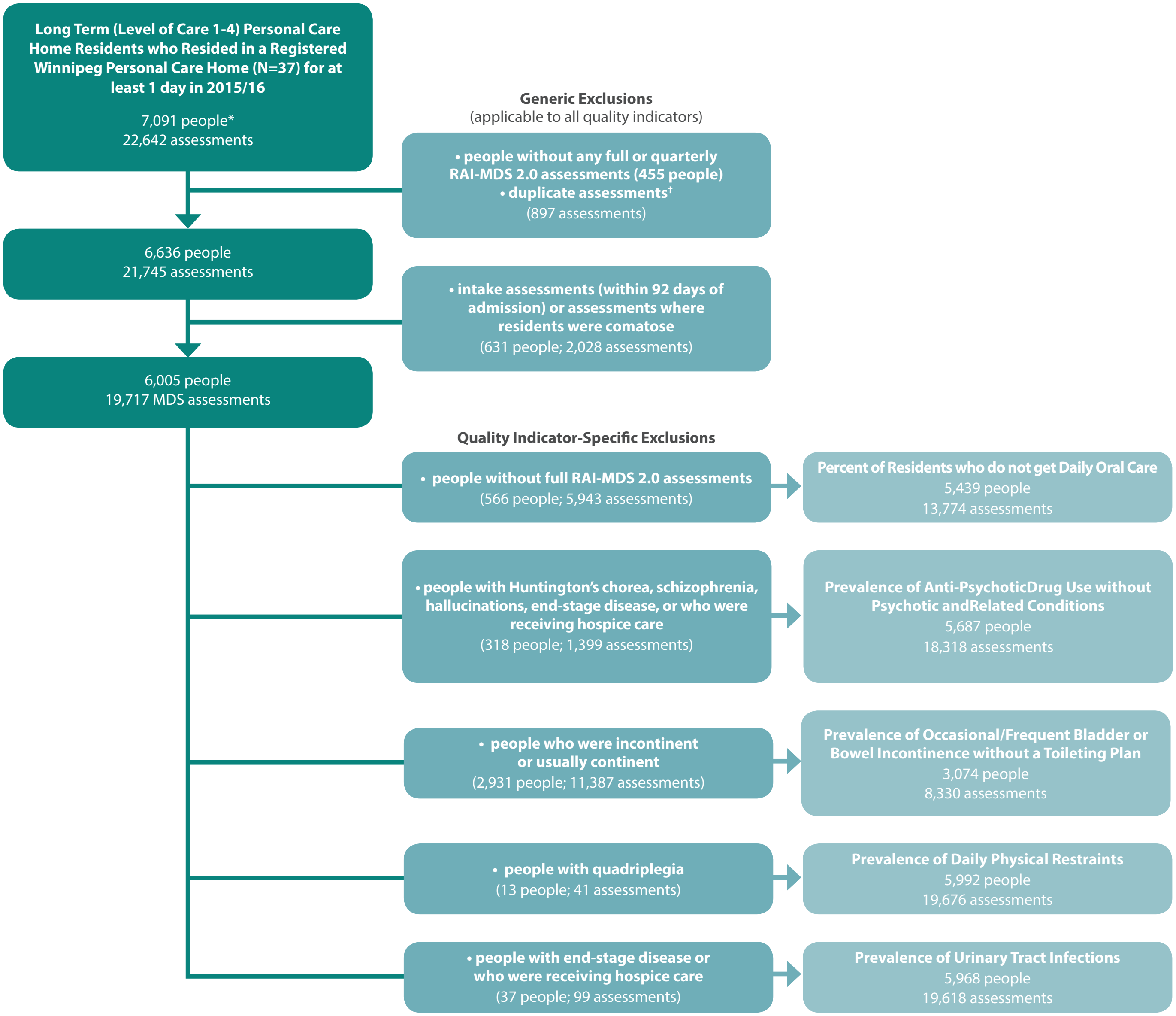
This section provides an abbreviated review of the methods used to create facility-level comparisons. Additional details are available from the first author of the report.

a) **The Data.** This report used data contained in the Manitoba Population Research Data Repository (Repository) which is housed at the Manitoba Centre for Health Policy. The Repository is a comprehensive collection of person-level administrative, registry, survey, and other data relating to residents of Manitoba. All data in the Repository are de-identified but can be linked using a scrambled identifier. Analyses in this section were conducted using the Long-Term Care–Utilization History file (which contains resident admission and separation dates by PCH site), and the Long-Term Care–MDS Assessment file (also called the InterRAI Minimum Data Set file; RAI-MDS 2.0).

RAI-MDS 2.0 provides repeated (assessment-based[5]) measures of QI events for each PCH resident. While our analysis in this section was assessment-based, we also determined if QIs were reported for many residents once or for fewer people repeatedly.

b) **The Cohort.** Inclusion and exclusion criteria are provided in Figure 2.1. The original cohort consisted of all long-stay (level of care 1-4[6]) residents who resided in a Winnipeg PCH for one or more days between April 1, 2015 and March 31, 2016 (7,091 people with 22,642 RAI-MDS 2.0 assessments). Residents without any RAI-MDS 2.0 assessments were excluded, as were those with intake assessments only,[7] leaving 6,005 people with 19,717 RAI-MDS assessments for analysis.

Figure 2.1: Cohort Development of Personal Care Home Residents and Minimum Data Set (RAI-MDS 2.0) Assessments, 2015/16



* This number includes 71 people who moved between PCH facilities.
† Duplicate assessments were defined as multiple assessments recorded for an individual on the same date at the same PCH.

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[5] RAI-MDS 2.0 requires that a full-length assessment is completed for each resident at personal care home admission and annually thereafter, interspersed by shorter quarterly assessments. Each full assessment contains responses to about 400 standardized items that profile residents by various clinical (e.g., cognitive performance) and QI domains. Each assessment is completed by a trained assessor (usually a nurse) using all available information including clinical charts and observations made by the family, staff, physicians, and volunteers.

[6] Manitoba defines personal care home residents by their level of care. Levels 1-4 define long-stay residents while level 5 defines residents receiving respite care. Levels 6-9 define people residing in chronic care hospitals on a permanent or respite basis, and who are waiting for personal care homes or chronic care in hospital.

[7] RAI-MDS 2.0 guidelines exclude intake assessments (i.e., those completed within the first 92 days of PCH admission) when reporting quality of care to help attribute events to personal care home facilities [46].

c) **Quality Indicators (QIs).** While Delphi respondents agreed on twelve QIs, only ten are reported in this section. The prevalence of dehydration was excluded given its low prevalence (reported in only 0.2% of RAI-MDS 2.0 assessments). The Beers Criteria provide a list of potentially inappropriate drugs for use by older adults [35]. This measure was excluded as the only 'non-RAI-MDS 2.0' QI selected during the Delphi method. A list of the remaining QIs used in this section and their definitions [36] is provided in Table 2.1.

Table 2.1: Quality Indicator Definitions

Quality Indicator	Quality Indicator (QI) Definition and Corresponding RAI-MDS 2.0 Assessment Questions*
Prevalence of stage 2-4 pressure ulcers	This QI measures the presence of a stage 2-4 pressure ulcer in the last 7 days (M2a). Data are gathered by reviewing the resident's records, consulting with staff, and conducting a full body exam to determine the stage and number of ulcers.
Prevalence of daily physical restraints	This QI measures the daily use of trunk restraints (P4c), limb restraints (P4d), or chairs that prevent rising (P4e) over the last 7 days. Data are gathered by checking the resident's records, consulting with staff, and observing the resident. Residents with quadriplegia (I1bb) are omitted from this calculation.
Percent of residents who self-report moderate to severe pain	This QI uses RAI-MDS 2.0 items J2a (pain frequency) and J2b (pain intensity) to define the percent of residents who experienced daily moderate pain or excruciating pain at least once in the last 7 days. A variety of strategies are used to measure pain levels including discussions with and observation of resident, consulting with staff, and clinical judgement.
Prevalence of urinary tract infections	This QI measures the presence of a urinary tract infection in the last 30 days (I2k). Data are gathered by accepting statements by the resident that seem to have clinical validity, and checking the resident's records, which must include significant laboratory findings. Residents with end-stage disease (J5c) or who are receiving hospice care (P1ao) are omitted from this calculation.
Prevalence of anti-psychotic drug use without psychotic and related conditions	This QI measures the receipt of anti-psychotic medications for 1 or more days in the last week, or receipt of long-acting anti-psychotic medications used less than weekly (O4a). Data are gathered by reviewing the resident's clinical records. Residents with schizophrenia (I1ii), Huntington's chorea (I1x), or end-stage disease (J5c), who have experienced hallucinations in the last 7 days (J1i), or who are receiving hospice care (P1ao) are omitted from this calculation.
Prevalence of fecal impaction	This QI measures the presence of fecal impaction in the last 14 days (H2d). Data are gathered by interviewing and examining the resident, checking with staff, and reviewing the resident's clinical records.
Prevalence of hypnotic drug use more than two days in past week	This QI measures residents' receipt of hypnotic medication for more than 2 days in the last 7 days (O4d). Data are gathered by reviewing the resident's clinical records.
Prevalence of occasional/frequent bladder or bowel incontinence without a toileting plan	This QI: i) applies only to residents who are occasionally or frequently bladder (from 2+ times a week to daily) (H1a) or bowel incontinent (1-3 times a week) (H1b); and ii) identifies those without a scheduled toileting plan (H3a) or bladder retraining program (H3b) in the last 14 days. Data are gathered by reviewing the resident's clinical records and by consulting with staff.
Prevalence of depression without anti-depression therapy	This QI: i) applies to residents showing signs and symptoms of depression (e.g., making negative statements, resisting care, losing weight) (E1a, E1g, E1j, E1n, E1o, E1p, E2, E4eA, K3a, N1a, N1b, N1c); and ii) identifies those who did not receive an antidepressant medication in the last 7 days (O4c). Data are gathered by consulting and observing the resident, reviewing the resident's clinical records, and consulting with staff and the resident's family.
Percent of residents who do not get daily oral care	This measure defines residents in the last 7 days: i) with debris in their mouth prior to going to bed at night (L1a); ii) with mouth pain (K1c); iii) without some or all of their natural teeth and without dentures or partial plates (L1c); iii) with broken, loose, or carious teeth (L1d); iv) with inflamed or bleeding gums, oral abscesses, ulcers, or rashes (L1e); or v) who did not get daily mouth care (L1f). Data are gathered by asking the resident about their oral care, observing them during meals, examining their mouth, and consulting with staff and the resident's chart.

* Definitions were derived from the Resident Assessment Instrument (RAI) MDS 2.0 and RAP User's Manual [36]. The text in brackets identifies the RAI-MDS 2.0 assessment item.

d) **Developing Sub-groups of Higher and Lower Risk Residents.** Our Advisory Group recommended that we profile PCHs overall and by sub-groups of higher and lower risk residents. We selected risk factors to create higher and lower risk groups based on the information provided in Continuing Care Reporting System (CCRS) RAI-MDS 2.0 adjustment guidelines[8] and with input from Advisory Group members. A list of these variables is provided in Table 2.2.

e) **Data Analysis.** Logistic regression was used to create higher and lower risk groups for each QI. This process worked as follows. First, we calculated pseudo R^2 values[9] as part of each model to identify the two risk factors that most strongly influenced the QI. These two 'most important' risk factors were then each collapsed to create a dichotomous group of higher risk (i.e., were more likely to experience the QI across all PCHs combined) and lower risk (were less likely to experience the QI across all PCHs combined) people. Second, we again used logistic regression and the concordance (C) statistic to determine how well these two dichotomous variables defined when QIs occurred. The C statistic ranges from 0.5 (i.e., defines models that have no ability to discriminate between when QIs occurred and did not) to 1.0 (i.e., defines models that perfectly define when QIs occurred and did not). As per the recommendations of Hosmer and Lemeshow (2000), a C statistic of greater than 0.7 defines models that have good discriminatory abilities [37]. All data analyses were conducted using SAS® version 9.4.

f) **An Overview of Higher and Lower Risk Groupings.** Table 2.3 provides an overview of the higher and lower risk groupings created for each QI, and indicates the percent of assessments defined as higher risk. As shown in this table, the C statistic for QIs ranged from: i) greater than 0.8 (daily restraint use); ii) between 0.7 and 0.8 (depression without therapy, fecal impaction); iii) between 0.6 and 0.7 (pressure ulcers, presence of moderate to severe pain, prevalence of anti-psychotic drug use in the absence of psychotic and related conditions), and; iv) less than 0.6 (urinary tract infections, bowel and bladder incontinence without a toileting plan, percent of residents not getting daily oral care). PCH-level data were divided into higher and lower risk categories for QIs that had a C statistic of greater than 0.6.

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[8] Most variables used to define higher and lower risk residents were selected in the present research if they were listed as person-level covariates in the CCRS risk adjustment process for one or more QIs (for more information, contact the first author of the report). Three additional points are noted. First, while CCRS in some instances uses individual items for risk adjustment (e.g., locomotion, decision making problems, end-stage disease with six or fewer months to live), in the present research we replaced these items with the psychometric scales for which they are included (e.g., activities of daily living hierarchy scale; cognitive performance scale; changes in health, end-stage disease and symptoms and signs; see Table 2.2). Alternatively (second), various QIs are risk adjusted using the personal severity index (PSI) in the original CCRS methodology. This scale contains individual items that were used to measure select QIs in the present research (e.g., pressure ulcers, incontinence), and that comprise additional scales already selected as covariates (e.g., cognitive skills for daily decision making, locomotion, end-stage disease with six or fewer months to live). To help avoid challenges related to collinearity, we selected individual items from PSI that were not present in any other QIs or as part of other study covariates. Selected items from PSI include periods of lethargy; and conditions or diseases that makes resident's cognition, activities of daily living, mood or behaviour patterns unstable (see Table 2.2). Third, from interim analysis we found that the cognitive performance scale (CPS) was significantly but inversely related to select QIs (the percent of residents who self-reported moderate to severe pain, the prevalence of urinary tract infections, fecal impaction, and the prevalence of hypnotic drug use more than two days in the past week). This measurement challenge has been noted in the scientific literature (especially as it relates to pain)[47–49], and as a result, CPS was excluded as a risk factor for these QIs.

[9] As explained by Smith et al. (2006), pseudo R^2 values estimate the percent of total QI variation uniquely associated with each risk factor [50]. These values are influenced by both the effect size (strength of the association) and the frequency with which a risk factor occurred. Therefore, a large pseudo R^2 value can result from less common events with a large effect, or from more common events with a smaller effect.

Table 2.2: Risk Factors used to Define Sub-groups of Higher and Lower Risk Personal Care Home Residents

Risk Factor	Definition	Scoring
Age	Resident age is measured on the date of the RAI-MDS 2.0 assessment.	0-64
		65-74
		75-84
		85+
Activities of Daily Living (ADL) Hierarchy Scale	This scale measures the amount of assistance people needed to complete the following ADL tasks: personal hygiene, toilet use, locomotion, and eating.	Independent, or at most, requiring set-up help in all 4 ADLs (0)
		Requiring at most supervision in all 4 ADLs (1)
		At most, limited (non-weight bearing) assistance to complete each ADL (2)
		Extensive (weight-bearing assistance) for toilet and personal hygiene; at most, limited (non-weight bearing) assistance for locomotion and eating (3)
		Extensive (weight-bearing assistance) for locomotion and eating (4)
		Full dependence for locomotion and eating (5)
		Full dependence for all ADLs (6)
Cognitive Performance Scale (CPS)	CPS measures the extent and severity of people's ability to make daily decisions (e.g., when to eat) and make themselves understood, and their memory recall.	Intact (0)
		Borderline intact (challenges in one area but not severe) (1)
		Mild impairment (challenges in 2 or 3 areas, none severe) (2)
		Moderate impairment (challenges in 2 or 3 areas, and more severe in 1 area) (3)
		Moderate severe impairment (challenges in 2 or 3 areas, and more severe in 2 areas) (4)
		Severe impairment (5)
		Very severe impairment (6)
Modified Aggressive Behaviour Scale (M-ABS)*	This outcome measures the frequency and degree of verbally or physically abusive behaviour, socially inappropriate or disruptive behaviour, and resistance to care.	No challenges (0)
		At most 1-3 times in past week, easily altered (1)
		1-3 times in last week, not easily altered (2)
		4 or more times in last week, easily altered (3)
		4 or more times in last week, not easily altered (4)
Modified Depression Rating Scale (M-DRS)*	This outcome measures a number of depressive symptoms. These include: persistent anger with self/others, making negative statements, expressions of unrealistic fears, repetitive health complaints, repetitive anxious complaints/concerns, sad/pained/worried facial expressions, and crying/tearfulness.	No challenges (0)
		Challenges in one area, no more than 5 times/week (1)
		Challenges in multiple areas, no more than 5 times/week (2)
		Any combination of challenges, but only 1 where challenges happen daily (3)
		Multiple challenges daily (4)
Changes in Health, End-Stage Disease and Symptoms and Signs (CHESS)	This scale measures residents' degree of clinical instability. Factors include: i) changes in cognitive status and ADL function in the last 90 days; ii) the presence of dehydration, edema, shortness of breath, and vomiting in the last 7 days; iii) the presence of an end-stage disease with 6 months or less to live; iv) whether the resident has lost 5% or more of their weight in the last 30 days or 10% or more in the last 180 days; and v) if the resident regularly left 25% or more of their food uneaten in the last 7 days.	No challenges in any domain (0)
		Challenges in 1 domain only (1)
		Challenges in 2 domains (2)
		Challenges in 3 domains (3)
		Challenges in 4 domains (4)
		Challenges in 5 or more domains (5)
Periods of Altered Perception or Awareness of Surroundings (MDS B5B)	This question identifies residents who in the last 7 days: i) moved their lips or talked to someone not present, ii) believed he/she was somewhere else, or iii) was confused about day and night.	Behaviour not present (0)
		Behaviour present, not of recent onset (1)
		Behaviour present, over last 7 days appears different from resident's usual functioning (e.g., new onset or worsening) (2)
Periods of Lethargy (MDS B5E)	This question identifies residents who in the last 7 days: i) were sluggish, ii) were stared into space, iii) were difficult to arouse, or iv) had little body movement.	Behaviour not present (0)
		Behaviour present, not of recent onset (1)
		Behaviour present, over last 7 days appears different from resident's usual functioning (e.g., new onset or worsening) (2)
Mental Function Varies Over the Course of the Day (MDS B5F)	This question identifies residents whose mental function or behaviour varied throughout the day.	Behaviour not present (0)
		Behaviour present, not of recent onset (1)
		Behaviour present, over last 7 days appears different from resident's usual functioning (e.g., new onset or worsening) (2)
Condition or Diseases Make Resident's Cognitive, ADL, Mood, or Behaviour Patterns Unstable (MDS J5A)	This question asks if residents had a condition or disease that caused their cognitive, ADL, mood, or behaviour to vary throughout the day.	Not present (0)
		Present (1)

* These RAI-MDS 2.0 scales have been modified for the purpose of the report.

Table 2.3: Defining Higher and Lower Risk for Quality Indicators

Quality Indicator	Most Important Risk Factors		Concordance Statistic (Calculated Using the Most Important Risk Factors Only)*	Higher Risk Definition†	% of RAI-MDS 2.0 Assessments per Personal Care Home Defined as Higher Risk; mean (SD)
Prevalence of stage 2-4 pressure ulcers	Activities of Daily Living (ADL) Hierarchy Scale	Changes in Health, End-Stage Disease and Symptoms and Signs (CHESS)	0.63	Defines people who: a) required at minimum weight-bearing help to complete some ADLs (ADL=3+) &/or b) showed any sign of a serious decline in their health status (e.g., end-stage disease) (CHESS=1+)	81.1 (7.8)
Prevalence of daily physical restraints	Activities of Daily Living (ADL) Hierarchy Scale	Condition or Diseases Make Resident's Cognitive, ADL, Mood, or Behaviour Patterns Unstable (MDS J5A)	0.82	Defines people who: a) required at minimum weight-bearing help to complete all ADLs (ADL=4+) &/or b) experienced any degree of unstable cognitive, ADL, mood, or behaviour patterns (MDS J5A=1)	58.0 (12.3)
Percent of residents who self-report moderate to severe pain	Modified Depression Rating Scale (M-DRS)	Changes in Health, End-Stage Disease and Symptoms and Signs (CHESS)	0.65	Defines people who: a) expressed any degree of depressive symptoms (M-DRS=1+) &/or b) showed any sign of a serious decline in their health status (e.g., end-stage disease) (CHESS=1+)	64.4 (16.6)
Prevalence of urinary tract infections	Activities of Daily Living (ADL) Hierarchy Scale	Changes in Health, End-Stage Disease and Symptoms and Signs (CHESS)	0.55	Facilities not partitioned into higher and lower risk assessments	
Prevalence of anti-psychotic drug use without psychotic and related conditions	Modified Aggressive Behaviour Scale (M-ABS)	Modified Depression Rating Scale (M-DRS)	0.65	Defines people who: a) displayed aggressive behaviour that was not easily altered (M-ABS=2+) &/or b) expressed multiple depressive symptoms daily (M-DRS=4).	29.3 (11.9)
Prevalence of fecal impaction	Activities of Daily Living (ADL) Hierarchy Scale	Condition or Diseases Make Resident's Cognitive, ADL, Mood, or Behaviour Patterns Unstable (MDS J5A)	0.71	Defines people who: a) required at minimum weight-bearing help to complete all ADLs (ADL=4+), &/or b) experienced any degree of unstable cognitive, ADL, mood, or behaviour patterns (MDS J5A=1).	58.0 (12.3)
Prevalence of occasional/frequent bladder or bowel incontinence without a toileting plan	Activities of Daily Living (ADL) Hierarchy Scale	Condition or Diseases Make Resident's Cognitive, ADL, Mood, or Behaviour Patterns Unstable (MDS J5A)	0.58	Facilities not partitioned into higher and lower risk assessments	
Prevalence of depression without anti-depression therapy	Modified Aggressive Behaviour Scale (M-ABS)	Changes in Health, End-Stage Disease and Symptoms and Signs (CHESS)	0.78	Defines people who: a) displayed any degree of aggressive behavior (M-ABS=1+) &/or b) showed any sign of a serious decline in their health status (e.g., end-stage disease) (CHESS=1+).	60.3 (13.9)
Prevalence of hypnotic drug use more than two days in past week	None‡		Not applicable	Facilities not partitioned into higher and lower risk assessments	
Percent of residents who do not get daily oral care	Modified Aggressive Behaviour Scale (M-ABS)	Changes in Health, End-Stage Disease and Symptoms and Signs (CHESS)	0.59	Facilities not partitioned into higher and lower risk assessments	

* Personal care homes were not further partitioned into higher and lower risk sub-groups when logistic model concordance statistics were less than 0.6.

† Reciprocal definitions define lower-risk residents (e.g., for pressure ulcers, people neither requiring weight-bearing help to complete ADLs, or experiencing serious declines in health).

‡ No risk factors were statistically associated with this quality indicator.

2.3 Study Results

2.3.1 Descriptive Findings

Further details about the QIs included in this section are provided in Table 2.4.

a) Most QIs were calculated using the vast majority of eligible RAI-MDS 2.0 assessments and PCH residents. As exceptions, three of the QIs are based on conditional scenarios involving select residents. The 'anti-psychotic drug use in the absence of psychosis and related conditions' QI excluded individuals with schizophrenia, Huntington's chorea or end-stage disease, who had experienced hallucinations in the last seven days, or who were receiving hospice care. The QI related to toilet planning was measured only for residents who were occasionally or frequently incontinent, and the oral care QI was measured only during full RAI-MDS 2.0 assessments (see Figure 2.1).

b) QI prevalence varied substantially in the study. Process QIs were reported most frequently (e.g., residents were reported to not get daily oral care during 27.7% of full RAI-MDS 2.0 assessments, incontinent residents had no toileting plan during 32.5% of their assessments), while select outcome QIs were reported much less often (e.g., residents were reported to have had a stage 2-4 pressure ulcer during 3.4% of all assessments and experienced fecal impaction during 0.5% of all assessments). These scores also varied substantially across individual PCHs as noted by large standard deviation values. In several instances, the standard deviation was nearly the same numerical size as the mean (e.g., daily restraint use was reported during 11.1% of assessments in the WRHA but with a standard deviation of 9.1% across individual facilities), indicating that QIs were reported much more frequently in some facilities versus others.

Table 2.4: Descriptive Information about Quality Indicators

Data are presented as an average percent (standard deviation) per personal care home

Quality Indicator (QI)	Percent of All Assessments Included in the Analysis	Percent of All Residents Included in the Analysis	Percent of Assessments Where the QI was Present	Of Residents with the QI, the Percent Who Experienced It During One Assessment Only
Prevalence of stage 2-4 pressure ulcers	100.0 (0.0)	100.0 (0.0)	3.4 (1.7)	62.0 (18.6)
Prevalence of daily physical restraints	99.8 (0.4)	99.9 (0.3)	11.1 (9.1)	34.9 (27.3)
Percent of residents who self-report moderate to severe pain	100.0 (0.0)	100.0 (0.0)	11.5 (9.5)	46.9 (25.7)
Prevalence of urinary tract infections	99.5 (0.5)	99.6 (0.6)	4.0 (3.3)	61.9 (23.6)
Prevalence of anti-psychotic drug use without psychotic and related conditions	93.2 (3.9)	94.8 (2.7)	19.5 (6.8)	26.9 (13.6)
Prevalence of fecal impaction	100.0 (0.0)	100.0 (0.0)	0.5 (0.8)	46.5 (46.2)
Prevalence of hypnotic drug use more than two days in past week	100.0 (0.0)	100.0 (0.0)	11.4 (4.8)	29.1 (15.5)
Prevalence of occasional/frequent bladder or bowel incontinence without a toileting plan	43.3 (10.3)	51.5 (9.9)	32.5 (18.9)	43.0 (17.1)
Prevalence of depression without anti-depression therapy	100.0 (0.0)	100.0 (0.0)	7.1 (4.9)	50.1 (23.2)
Percent of residents who do not get daily oral care	68.7 (38.1)	88.9 (14.5)	27.7 (9.1)	60.7 (34.0)

Assessments = RAI-MDS 2.0 Assessments

c) Table 2.4 also shows that people experienced QIs with different degrees of frequency. For example, of all residents who experienced moderate to severe pain, 46.9% did so during one RAI-MDS 2.0 assessment only, while the remainder did so repetitively. While people tended to experience select other QIs (e.g., pressure ulcers, urinary tract infections) during one assessment only, they often experienced other QIs on multiple occasions (e.g., of all people restrained physically, 65.1% were so across multiple RAI-MDS 2.0 assessments).

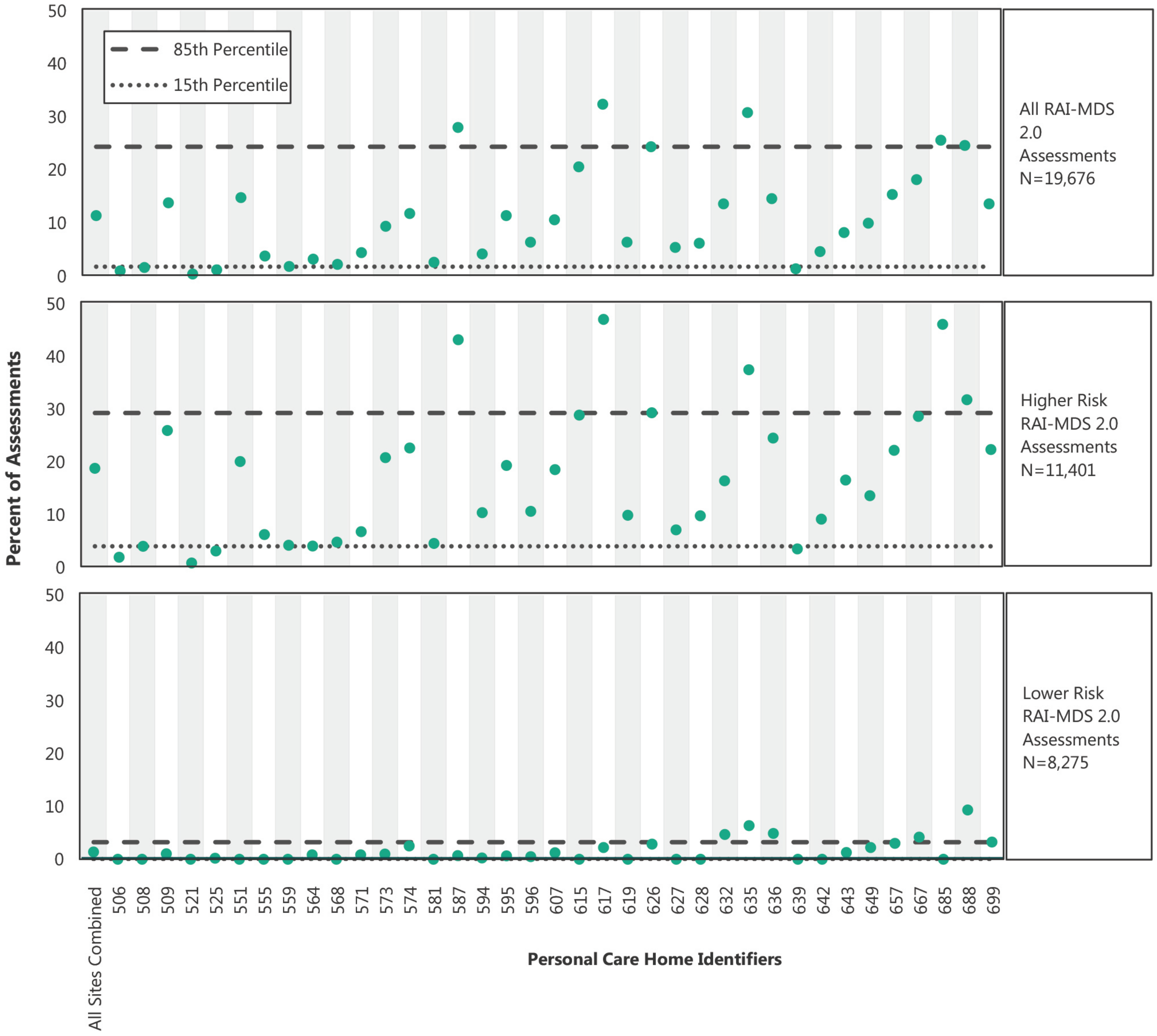
2.3.2 Personal Care Home Comparisons

QI variation across PCHs is shown in Figures 2.2 to 2.11, overall and stratified by higher and lower risk categories. Within each stratum, 15th and 85th percentile thresholds were used to identify PCHs where QIs occurred less and more frequently. Key points from these figures are as follows:

a) Using the results for daily physical restraint use as an example (Figure 2.2), this QI was reported during 11.1% of all assessments, during 18.8% of higher risk assessments, and during 1.4% of lower risk assessments. Facility-level data show where and for whom this QI was reported most often. Select PCHs (ID 506, 508, 521, 639) reported having the lowest prevalence (i.e., below the 15th percentile) of daily physical restraint use, overall and within both higher and lower risk strata. Conversely, daily physical restraint use was reported most frequently amongst both higher and lower risk residents in select other facilities (e.g., ID 635 and 688). The prevalence of daily restraint use in yet other facilities was conditional (e.g., in some facilities this QI occurred most frequently amongst higher risk residents only [ID 587, 617, 685], and in other facilities this QI occurred most frequently amongst lower risk residents only [ID 632, 636, 667]). These data help to define PCHs from which best practices could be adopted and also those where reform strategies may be desirable.

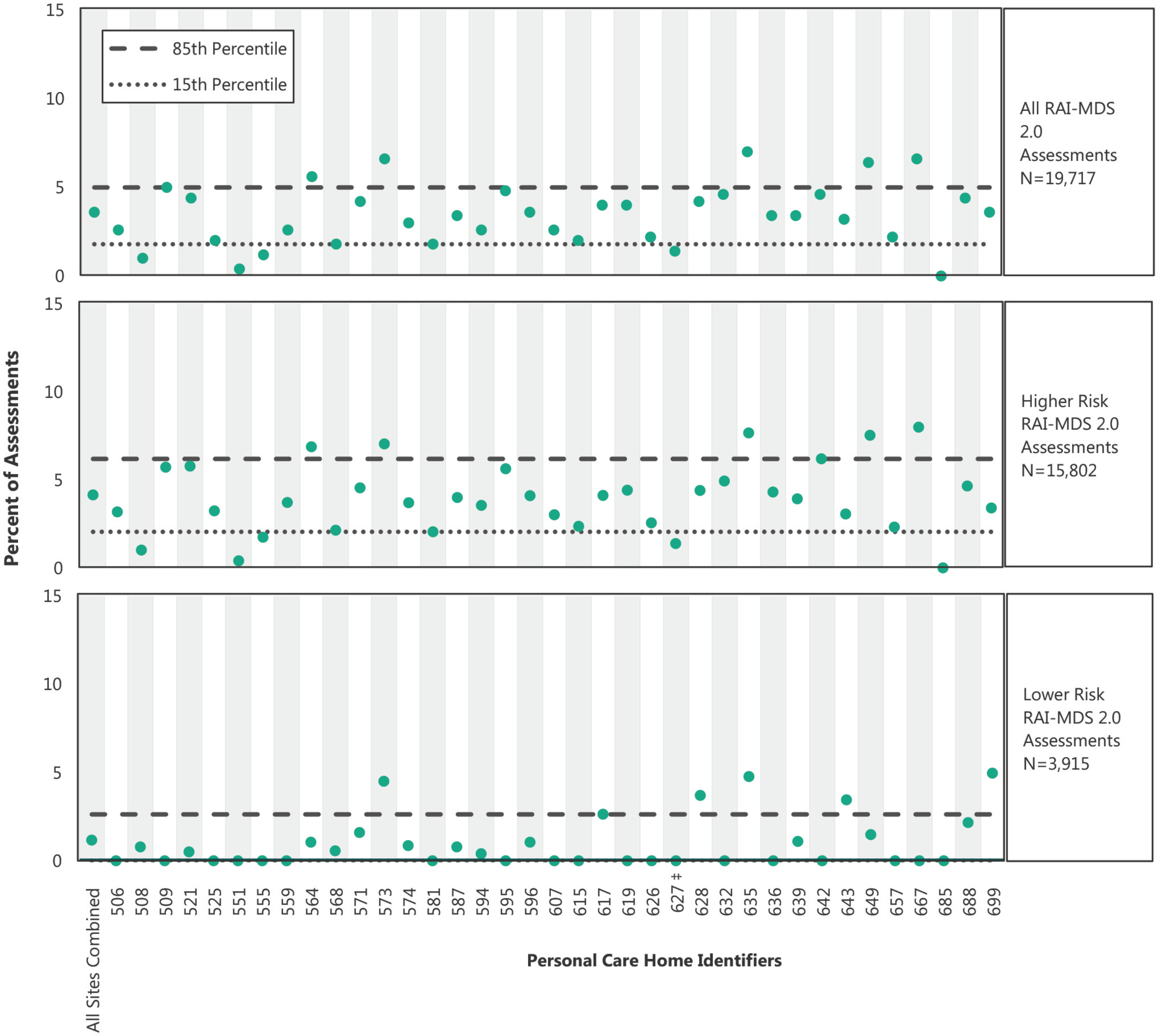
b) The frequency of all other QIs varied three- to five-fold across PCHs (Figures 2.3 to 2.11). As an example, while the prevalence of fecal impaction was negligible in most PCHs, this QI was reported during 3.8% of all assessments in ID 688. Residents were also reported to experience moderate to severe pain during at least 30% of assessments in some facilities (ID 617, 636) versus fewer than 2% of assessments in multiple facilities. 'Outlier' facilities were typically more prominent when looking at higher versus lower risk residents (e.g., residents had moderate to severe pain during 42.3% of higher risk assessments in one facility [ID 617], and during about 23% of lower risk assessment in three facilities [ID 509, 573, 636]).

Figure 2.2: Prevalence of Daily Physical Restraints across Personal Care Homes, Overall and Stratified by Higher and Lower Risk Minimum Data Set (RAI-MDS 2.0) Assessments



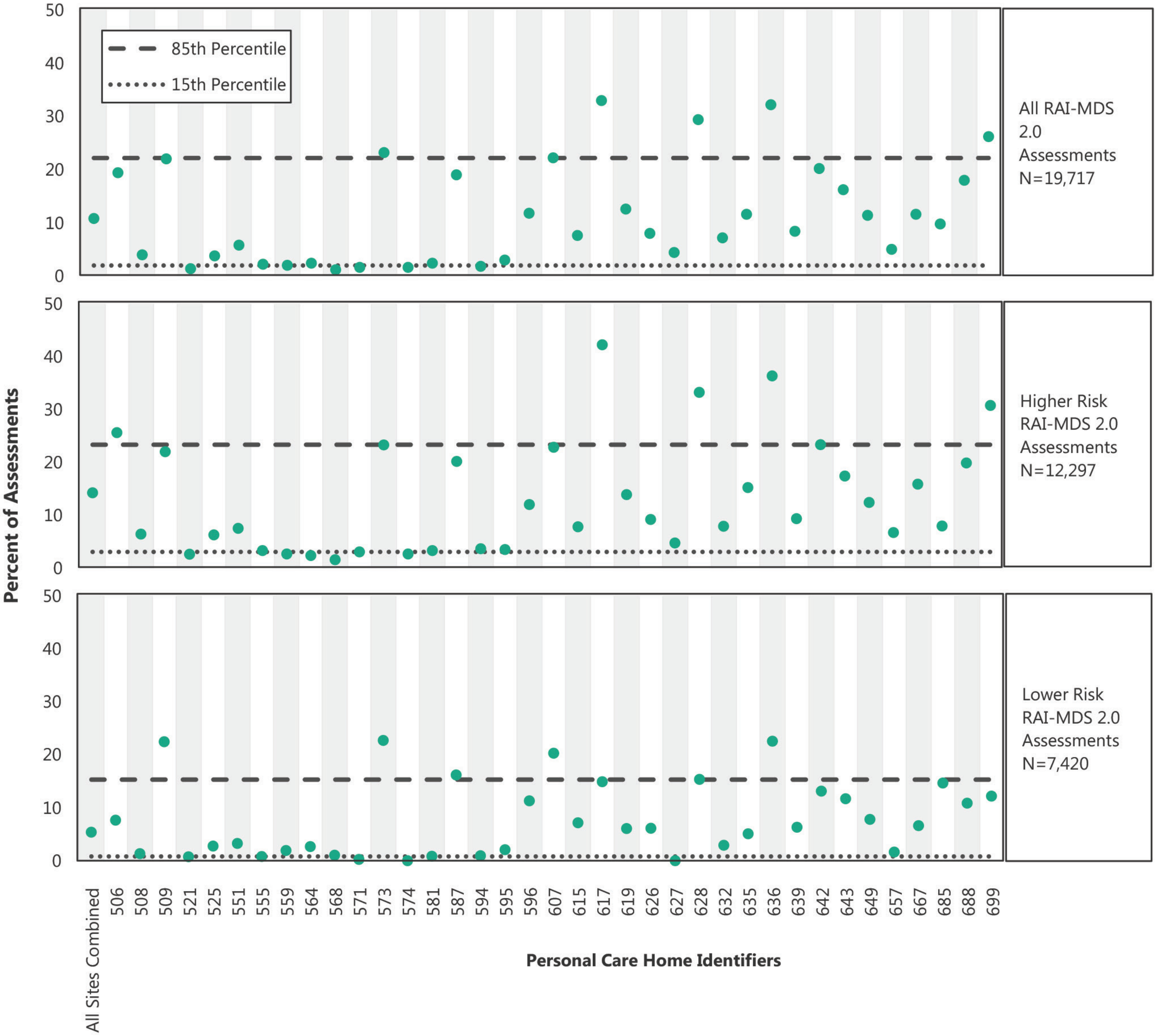
* indicates fewer than 20 RAI-MDS 2.0 assessments overall; † indicates fewer than 20 higher-risk RAI-MDS 2.0 assessments; ‡ indicates fewer than 20 lower-risk RAI-MDS 2.0 assessments.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal homes above this percentile reported having the quality indicator most often
Refer to Table 2.3 for definitions of higher and lower risk residents

Figure 2.3: Prevalence of Stage 2-4 Pressure Ulcers across Personal Care Homes, Overall and Stratified by Higher and Lower Risk Minimum Data Set (RAI-MDS 2.0) Assessments



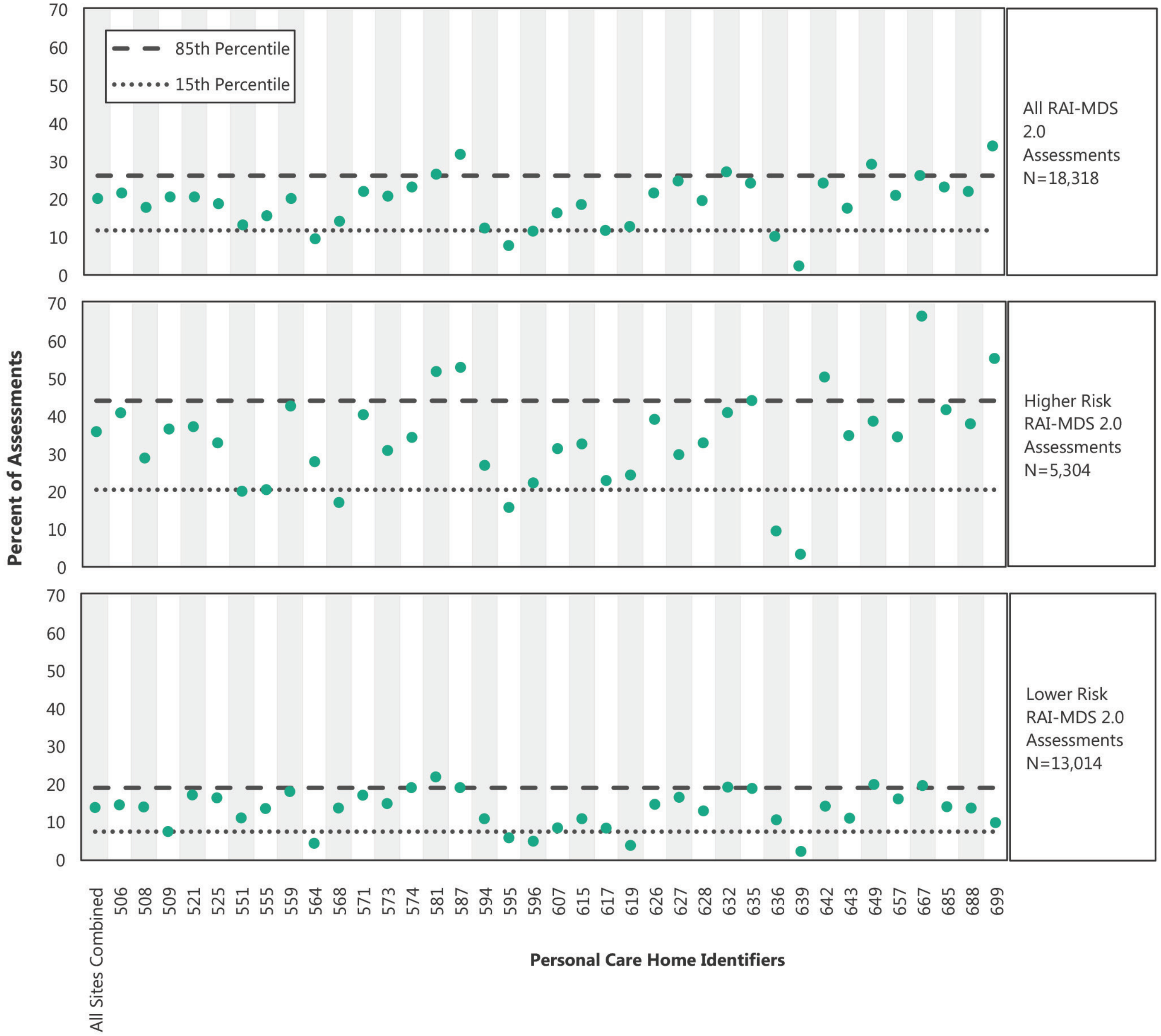
* indicates fewer than 20 RAI-MDS 2.0 assessments overall; † indicates fewer than 20 higher-risk RAI-MDS 2.0 assessments; ‡ indicates fewer than 20 lower-risk RAI-MDS 2.0 assessments.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often
Refer to Table 2.3 for definitions of higher and lower risk residents

Figure 2.4: Percent of Residents who Self-Report Moderate to Severe Pain across Personal Care Homes, Overall and Stratified by Higher and Lower Risk Minimum Data Set (RAI-MDS 2.0) Assessments



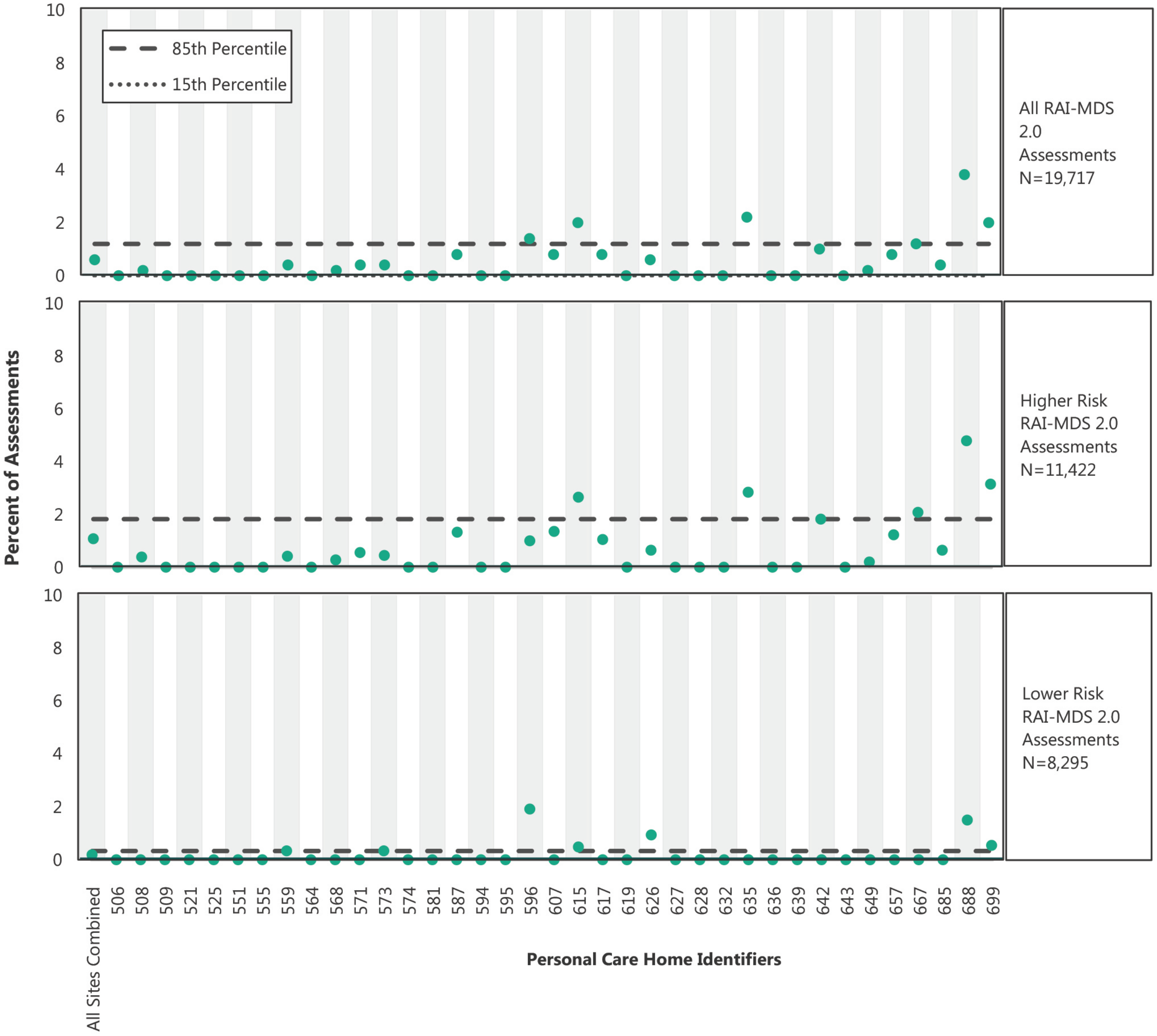
* indicates fewer than 20 RAI-MDS 2.0 assessments overall; † indicates fewer than 20 higher-risk RAI-MDS 2.0 assessments; ‡ indicates fewer than 20 lower-risk RAI-MDS 2.0 assessments.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often
Refer to Table 2.3 for definitions of higher and lower risk residents

Figure 2.5: Prevalence of Anti-Psychotic Drug Use without Psychotic and Related Conditions across Personal Care Homes, Overall and Stratified by Higher and Lower Risk Minimum Data Set (RAI-MDS 2.0) Assessments



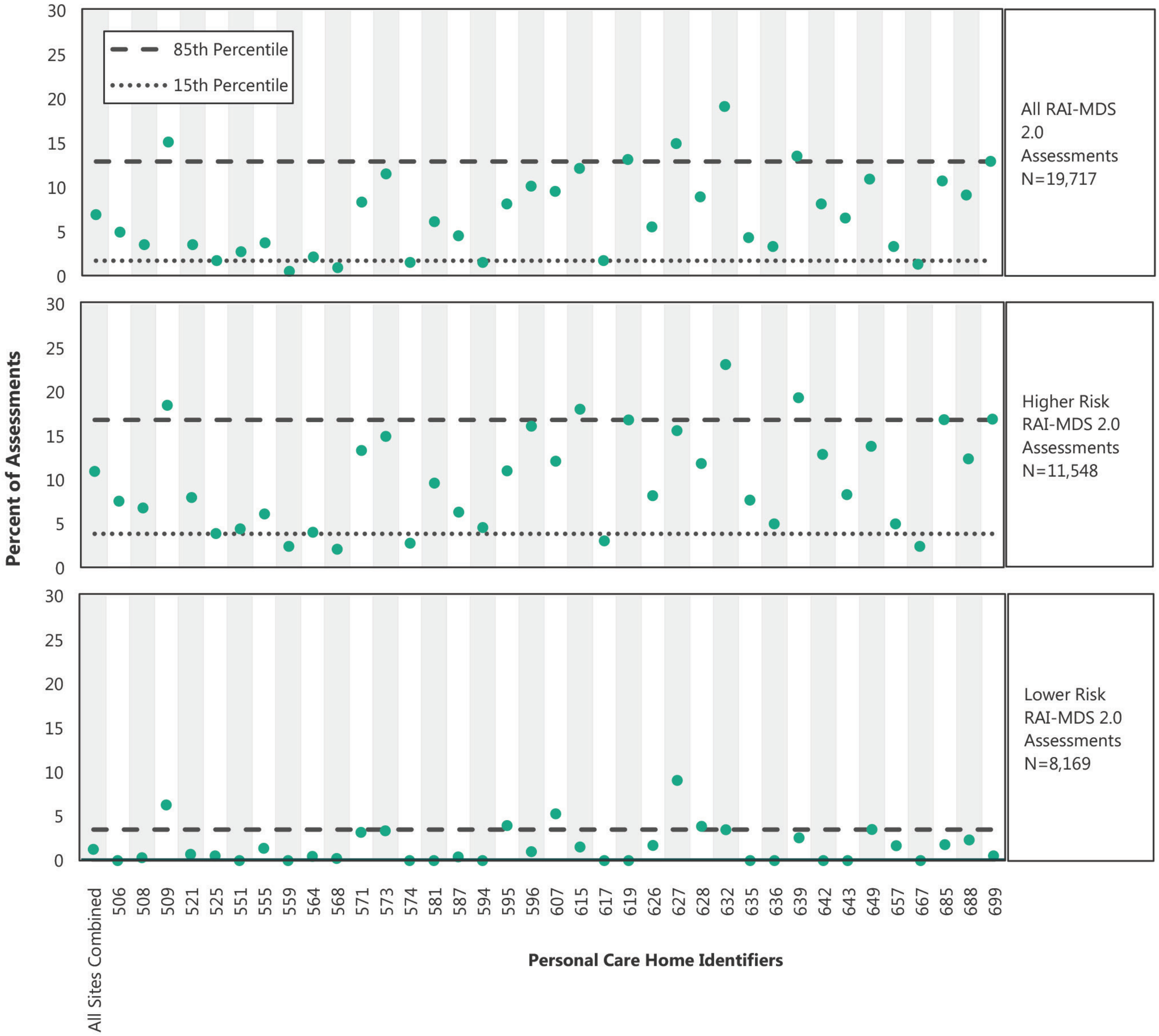
* indicates fewer than 20 RAI-MDS 2.0 assessments overall; † indicates fewer than 20 higher-risk RAI-MDS 2.0 assessments; ‡ indicates fewer than 20 lower-risk RAI-MDS 2.0 assessments.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often
Refer to Table 2.3 for definitions of higher and lower risk residents

Figure 2.6: Prevalence of Fecal Impaction across Personal Care Homes, Overall and Stratified by Higher and Lower Risk Minimum Data Set (RAI-MDS 2.0) Assessments



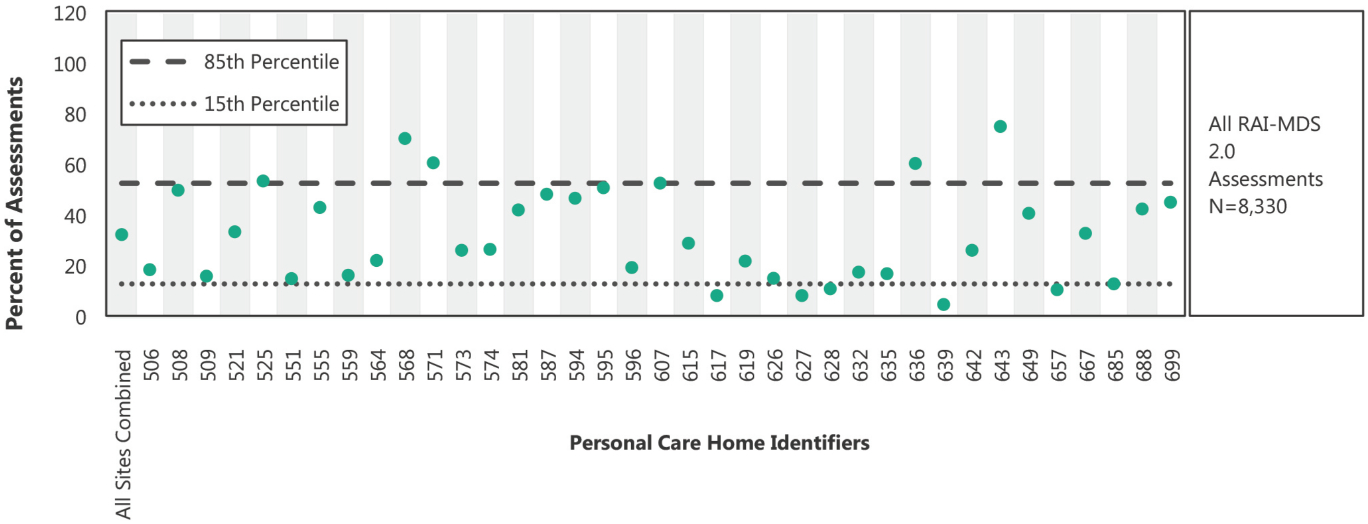
* indicates fewer than 20 RAI-MDS 2.0 assessments overall; † indicates fewer than 20 higher-risk RAI-MDS 2.0 assessments; ‡ indicates fewer than 20 lower-risk RAI-MDS 2.0 assessments.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often
Refer to Table 2.3 for definitions of higher and lower risk residents

Figure 2.7: Prevalence of Depression Without Anti-Depression Therapy across Personal Care Homes, Overall and Stratified by Higher and Lower Risk Minimum Data Set (RAI-MDS 2.0) Assessments



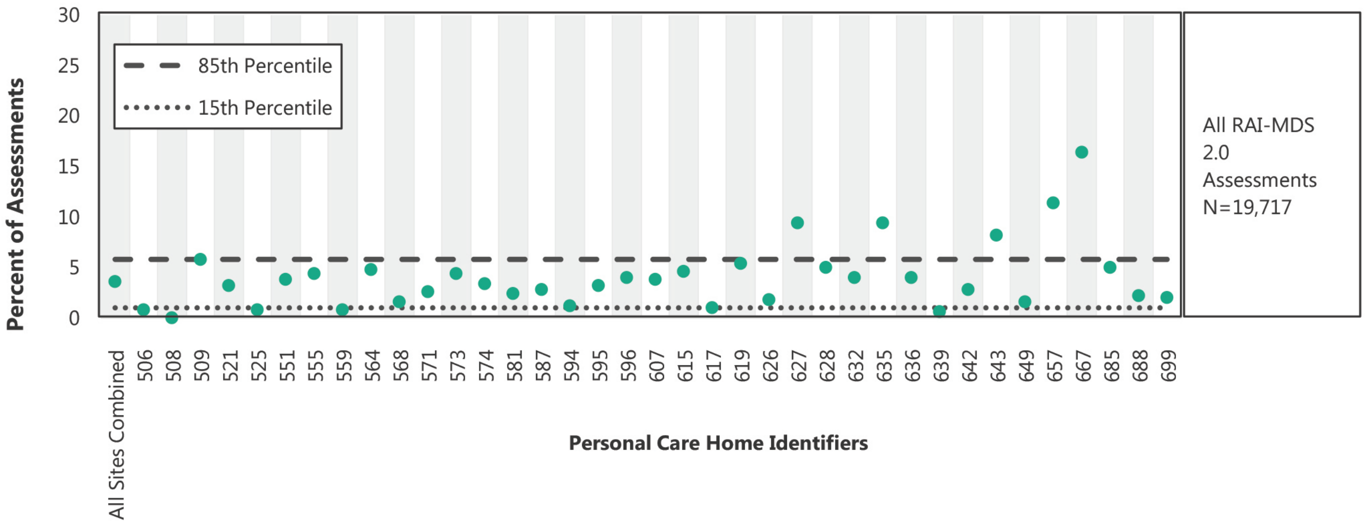
* indicates fewer than 20 RAI-MDS 2.0 assessments overall; † indicates fewer than 20 higher-risk RAI-MDS 2.0 assessments; ‡ indicates fewer than 20 lower-risk RAI-MDS 2.0 assessments.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often
Refer to Table 2.3 for definitions of higher and lower risk residents

Figure 2.8: Prevalence of Occasional/Frequent Bladder or Bowel Incontinence without a Toileting Plan across Personal Care Homes, Overall



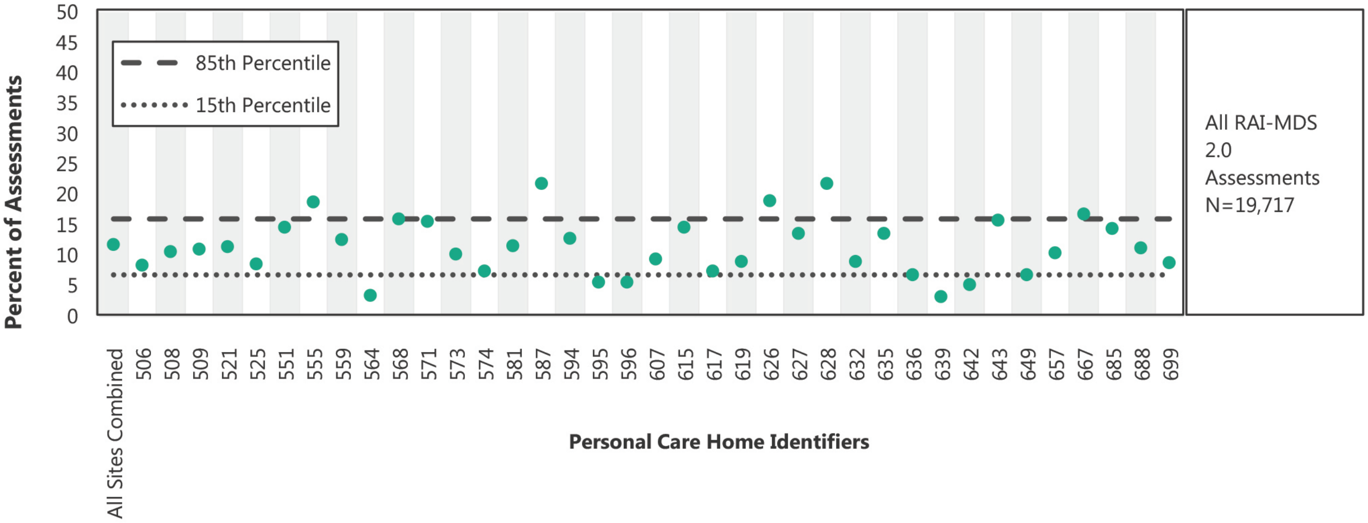
* indicates fewer than 20 RAI-MDS 2.0 assessments overall.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often

Figure 2.9: Prevalence of Urinary Tract Infections across Personal Care Homes, Overall



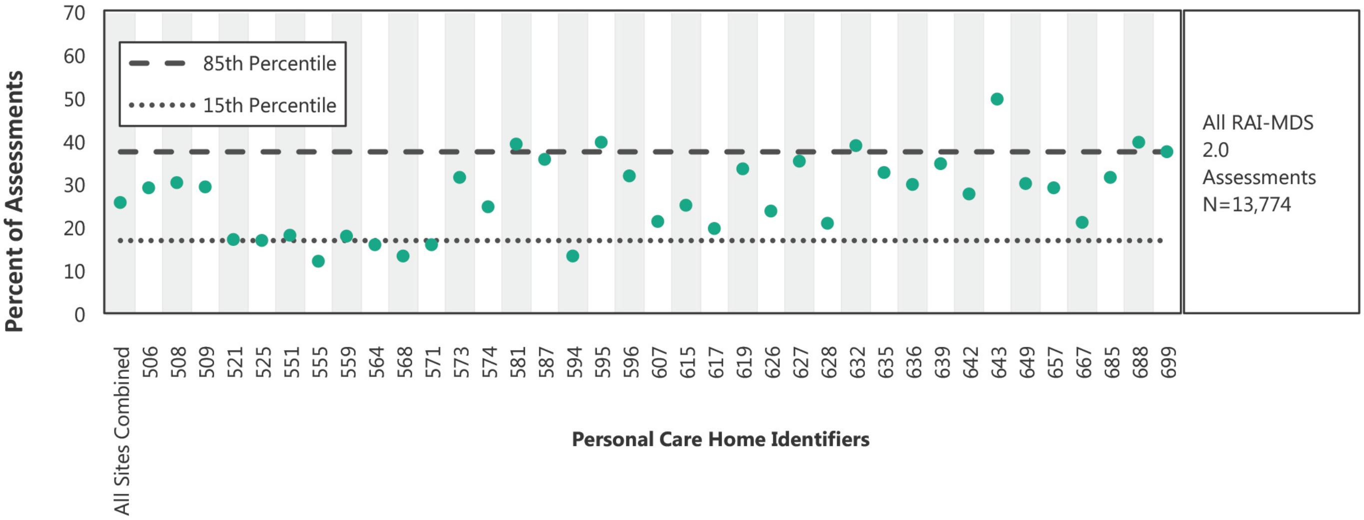
* indicates fewer than 20 RAI-MDS 2.0 assessments overall.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often

Figure 2.10: Prevalence of Hypnotic Drug Use more than Two Days in Past Week across Personal Care Homes, Overall



* indicates fewer than 20 RAI-MDS 2.0 assessments overall.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often

Figure 2.11: Percent of Residents who do not get Daily Oral Care across Personal Care Homes, Overall



* indicates fewer than 20 RAI-MDS 2.0 assessments overall.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often

2.3.3 Patterns Across all Quality Indicators Combined

Patterns across QIs are shown in Table 2.5.

a) QIs were consistently reported less often in some PCHs. Across all assessments combined (higher and lower risk), several facilities (IDs 506, 508, 521, 525, 555, 564, 568, 574, 594, 595, 627, and 639) reported having fewer events (below the 15th percentile) for at least 3 of 10 QIs. Most of these facilities also consistently scored better (below the 15th percentile) on the sub-set of QIs where higher and lower risk residents were defined.

b) Conversely, other facilities (IDs 587, 632, 635, 643, 667, 688, and 699) reported the occurrence of many QIs. When considering all assessments combined, ID 635 ranked above the 85th percentile in 4 of 10 QIs (pressure ulcers, daily restraint use, fecal impaction, and urinary tract infections). When considering higher risk residents only, facility ID 699 ranked above the 85th percentile in 4 of the 6 QIs (fecal impaction, moderate to severe pain, anti-psychotic drug use in the absence of psychotic and related conditions, and depression without anti-depression therapy) where risk factor sub-groups were developed.

c) In select other facilities, the pattern of QI results was different for higher risk versus lower risk residents. For example, PCH ID 617 had amongst the highest rates of daily restraint use and moderate to severe pain amongst higher risk residents, but never ranked above the 85th percentile amongst residents who were lower risk. Conversely, PCH ID 628 had higher rates of two QIs (rates of pressure ulcers and depression without anti-depression therapy) amongst lower risk residents, but amongst higher risk residents only ranked above the 85th percentile once (moderate to severe pain). This PCH also had one of the highest overall rates of hypnotic drug use.

Table 2.5: Patterns of Quality Indicator Scores by Personal Care Home

Personal Care Home Identifier	All Assessments (n = 10 Quality Indicators)		Higher Risk Assessments (n = 6 Quality Indicators)		Lower Risk Assessments (n = 6 Quality Indicators)	
	Percent of QIs above 85th Percentile	Percent of QIs below 15th Percentile	Percent of QIs above 85th Percentile	Percent of QIs below 15th Percentile	Percent of QIs above 85th Percentile	Percent of QIs below 15th Percentile
506		30%	17%	33%		50%
508		30%		33%		33%
509	10%	10%	17%	17%	33%	33%
521		30%		50%		50%
525	10%	30%		33%		33%
551		20%		50%		50%
555	10%	30%		33%		67%
559		20%		33%		33%
564	10%	40%	17%	33%		33%
568	10%	30%		50%		33%
571	10%	20%				33%
573	20%		17%		33%	
574		30%		50%		33%
581	20%	10%	17%	17%	17%	50%
587	30%		33%		33%	17%
594		40%		17%		17%
595	10%	30%		33%	17%	50%
596	10%	20%			17%	17%
607					33%	33%
615	10%		33%		17%	33%
617	20%	10%	33%	17%		17%
619	10%	10%		17%		67%
626	10%				17%	17%
627	20%	30%		33%	17%	67%
628	20%	20%	17%	17%	33%	33%
632	30%	10%	17%	17%	33%	33%
635	40%		50%		33%	17%
636	20%	20%	17%	33%	33%	33%
639	10%	60%	17%	50%		50%
642		10%	17%			50%
643	30%	10%		17%	17%	17%
649	20%		17%		17%	17%
657	10%	10%				33%
667	30%	10%	50%	17%	33%	33%
685	10%	10%	17%	17%		50%
688	30%		33%		33%	
699	30%		67%		33%	

QI = quality indicator
Blank cells denote 0%.
15th percentile - personal care homes below this percentile reported having the quality indicator least often
85th percentile - personal care homes above this percentile reported having the quality indicator most often

2.4 Concluding Remarks

This section is designed to help providers examine certain aspects of their quality of care more closely. Three additional points are important to note. First, PCHs provide care to the frailest of our population, and given the complex medical needs of these people (e.g., residents often have substantial challenges across multiple domains), it is not feasible to create inter-facility comparisons that completely account for these differences. The results in this section provide examples of higher and lower risk residents, and it is important to recognize that many other factors may place residents at different degrees of QI risk. Second, caution should be used when interpreting these results from the perspective of how data are entered into RAI-MDS 2.0 (e.g., ensuring that sites with the highest scores are not simply those who entered data most judiciously). Third, our cut-points of acceptability (i.e., 15th and 85th percentiles) are relative, meaning that for each QI, some facilities had to be scored as 'high'. After reviewing these data, decision-makers may feel that QI rates for the highest scoring facility are acceptable, or alternatively, that scores greater than (for example) the 50th percentile should be defined as 'high'. Results in this section are intended to help providers reach decisions on care improvement strategies, ideally with repeated follow-up analysis to help test their effectiveness.

Section 3.

Guidelines for Building a Personal Care Home Public Report Card Website: The Need for Both Clinical and Non-Clinical Measures

3.1 The Purpose of Report Card Websites

According to Hefele et al. (2016), the purpose of public PCH report cards is to: 1) provide both residents and healthcare planners with quality information to help them make decisions, and 2) facilitate discussions between these groups at minimum to decide if there is an appropriate 'fit' between a prospective resident and facility [38]. While report cards have value for various stakeholders, both Mattke et al. (2003) and Harrington et al. (2003) emphasize that websites should be designed primarily to facilitate resident decision-making processes [26,39]. Also, despite the large number of report card websites in North America, it is important to note that most vary considerably in terms of their content and format, and many score poorly on readability and language [40].

From a review of these websites and the literature where researchers have conducted more formal evaluations [26,38–44], we have identified the type of information that should be included in report card websites and provided suggestions on how the data should be presented to maximize clarity and readability. We conclude this section with a list of recommendations for developing PCH report card websites in Manitoba. We have also included a list of the report card websites we found in our search in Appendix Table 2.

3.2 Website Content

In their review of U.S. literature, Castle et al. (2010) conclude that most PCH websites report on deficiency citations and specific clinical measures such as pressure ulcers, catheter use, and physical restraint use [10]. While facility characteristics (e.g., size, ownership type) are often also provided, additional factors such as staff composition, measures of resident satisfaction, and quality of resident life are reported less often. In an effort to help streamline the type of information shown, Harrington et al. (2003) propose that report card websites should at minimum include information about: i) the PCH facility (e.g., location, ownership type, size, services provided), ii) residents (e.g., socio-demographic factors and case-mix profile), iii) staffing (volume and type, turnover), iv) deficiencies and complaints (including their scope, severity, and frequency), v) financial measures (e.g., resident fees, profits made), and vi) clinical QIs (e.g., pressure ulcers and restraint use) [26].

Despite this knowledge, the type of data provided by websites continues to vary dramatically. Castle et al. (2011) note that U.S.-based websites use between one and 34 clinical QIs to report on PCH quality of care [41]. Authors also show that less than half of all websites provide a PCH leader name and email address for follow-up information, only 10% provide a link to the facility website, less than 25% provide information about special care beds and the types of services offered, and only 8% provide information about resident demographics.

The literature also demonstrates that there is a large discrepancy between what residents are looking for in a report card website and what they receive. Both Shugarman & Brown (2006) and Hefele et al. (2016) have investigated this matter with PCH residents and their family members [38,44]. While the themes emerging from these studies are similar to those of Harrington et al. (2003), in many instances the ideas comprising each theme vary substantially. For example, under the category of 'facility', Hefele et al. (2016) report that users would like more knowledge about the facility layout (e.g., the overall structure and availability of private rooms), food (e.g., quality and whether it is prepared on site, flexible meal times) and laundry policies (e.g., outsourced or conducted on site), plus information on recreational activities and medication practices (e.g., the use of sedatives) [38]. Similarly, under the heading of 'staffing', Hefele et al. (2016) report that respondents would like to know more about specialized training, certification, background checks, whether more staff work at certain times of the day (e.g., mealtimes), and greater knowledge about how staff treat residents. User groups also stated that more resident feedback (e.g., via satisfaction surveys or anecdotal stories) would be particularly useful. Encompassing these and other themes is people's desire to learn more about the facility gestalt (e.g., a clearer picture of life in the PCH, for example by describing whether residents are actively engaged or spend most of their time sitting idly).

From studies conducted by Shugarman & Garland (2006), Shugarman & Brown (2006), and Hefele et al. (2016), it is interesting to note that user groups did not identify clinical QIs as priority knowledge areas [38,40,44]. This may be attributed to the technical aspects of QIs (e.g., statistical adjustment), or to difficulties with interpreting QIs in the absence of contextual data. However, based on the available evidence, experts agree on the need to provide users with a wide range of report card measures that include but are not limited to clinical QIs. More information about the various measures proposed for use in websites is presented in Section 3.4.

3.3 Website Format

In addition to providing suitable content, Shugarman & Garland (2006) emphasize that websites should be easily accessible, understandable in terms of the language used and the layout of data, and functional in terms of the ease in which inter-facility comparisons can be made [40]. These criteria are especially important given that many users access report card websites in a state of duress and often with limited time to make key decisions. Castle et al. (2011) demonstrate that U.S.-based websites require, on average, three maneuvers (computer 'clicks', with a range from 0 to 7) to obtain facility-level comparisons [41]. Authors also report that less than 13% of websites provide user-friendly services such as adjustable font size and pop-ups explaining measures and how to interpret results. Only 14% of U.S.-based websites rank PCHs using the data provided, and just less than 50% provide direct comparisons to state average scores or provide an overall rating of the facility [41]. These and other comparisons are essential to help people make informed decisions.

Liu & Lu (2015) state that the PCH web-based report cards in California, Florida, and Minnesota are exceptional [42]. As part of the present report, we have provided a more detailed review of these websites as well as those created by the Canadian Institute for Health Information (CIHI) and the U.S. Centers for Medicare and Medicaid Services (CMS). Details of this review are provided in Appendix Table 3. Key points are summarized as follows:

a) **Clinical Quality of Care Measures.** The number of clinical QIs listed per website ranges from 9 (CIHI) to 21 (CMS) and include the prevalence of pressure ulcers, restraint use, infections, and levels of moderate to severe pain. Four of the five websites utilize data from the RAI-MDS system. Only one website (CMS) explains why specific QI metrics were chosen. All websites provide a QI description (e.g., using pop-up boxes or hyperlinks).

b) **Non-Clinical Data.** Additional information varies by website ranging from basic resident profiles (e.g., resident age and sex) and facility information (e.g., size and location) (CIHI) to data on inspection reports, special programs and services, and the proportion of beds in a single room.

c) **How Information is Presented.** Facility-level data is accessible directly from the main page of each website. All sites except Florida compare clinical QIs across PCHs, either to other individual facilities or to average values at the regional or national level. All websites use rating systems to make comparisons (e.g., colour-coded circles and five-star ratings to illustrate if the facility is above or below average), and all but one website (Florida) also provide the underlying scores. In all instances, text is provided to help explain the rating system. In one instance (Minnesota), QIs are risk-adjusted, but on all other websites, information about risk adjustment is challenging to find.

d) **Additional Information.** All websites provide data at the PCH level (i.e., do not separate results into higher and lower risk residents as we have done for healthcare planners). Three of the five websites (Minnesota, Florida, CMS) enable users to request follow-up information (either by email or phone), while only one website (Florida) provides links to the actual facility website. None of the websites provide a virtual tour of the facility.

3.4 Implications for Website Development in Manitoba

While the development and launch of a report card website is beyond the scope of this research, we have provided a list of measures important to consider for designing and populating website content along with some basic suggestions when developing the website format.

a) **Website Content.** We recommend that a report card website in Manitoba contain the following types of information:

i. **Facility-level Information.** This includes information such as location/address, owner-operator status, size and number of private rooms, and facility layout (e.g., if rooms and eating areas are arranged like a hospital or home-like setting). This information should be accompanied by a link to the facility webpage, provide a facility-specific email address and phone number for people to call with additional questions, and ideally should also include a virtual tour of the facility.

ii. **Religious and/or Cultural Affiliation.** The website should indicate if a facility cares for residents from a particular religion or culture, and should provide examples of how this occurs (e.g., by food preparation practices, or by celebrating certain religious and/or cultural events and holidays).

iii. **Policies and Practices.** Information about select policies and care practices should be discussed. Examples include food (whether it is cooked on site and whether residents have a choice about what and when they get to eat), laundry (whether it is done on site or outsourced), the frequency and type of recreational activities and outings offered, and other areas where residents and family members have the opportunity to interact (e.g., visiting hours). This section should also provide a clear picture of how residents are welcomed into the facility (e.g., what type of orientation session exists for residents and/or family members) and the expectations that exist for family members.

iv. **Resident Information.** The website should identify the types of residents cared for (e.g., age and sex, the proportion of residents who are immobile and who are unable to eat on their own, and those with severe cognitive and behavioural challenges).

v. **Staffing and Specialized Care Options.** Information should be provided about the volume and types of staff who work in the facility (not just nurses and healthcare aides, but also rehabilitation staff, social workers, and recreational therapists), and whether this changes at certain times of the day. This section should also include information about staff certification and specialized training, policies and practices about primary care (e.g., if the residents' medical charts will accompany her/him, how a new provider is assigned, care continuity), and provide additional information about specialized care options that are available.

vi. **Resident and Family Surveys.** Information from current and past residents and family members should also be provided, both in the form of satisfaction surveys (focusing on quality of care and quality of life, choice of activities, and evaluation of staff care) and with opportunities for people to include open source comments (e.g., containing anecdotal stories that help to define the facility gestalt).

vii. **Clinical QIs and Related Information.** Information on quality of care metrics (e.g., the QIs recommended in this research) should be included on the website, as should the results from provincial inspection/assessment reports and other sentinel events.

b) **Website Format.** While website format is more challenging to describe, we recommend the following:

i. **Keep it Simple, yet Informative.** It is important to remember that most people will be accessing the website under duress and with limited time to make a decision. From this perspective, we recommend that the website quickly 'get to the point' (e.g., ensure that the aforementioned types of data are easily accessible). Pop-up bubbles and other strategies should be used to explain what the different measures mean, how they were collected, and how comparisons should be interpreted. Ideally, the website should provide a phone number and email to assist with website navigation and interpretation. When exiting the website, users should be asked to constructively evaluate the site to assist with ongoing improvements.

ii. **The Website is a Decision-Making Tool.** Comparative data are essential to help users make decisions. Ideally, users should be able to make comparisons on as many of the aforementioned measures as possible. For clinical QIs, this could occur via a three-star method (reflecting how often events occurred as per Section 2 of this report), while other comparisons could help users to determine the uniqueness of the facility (e.g., how many other PCHs provide flexible meal times for residents). Each facility should be compared at minimum to the regional average and preferably to other facilities of the user's choice.

c) **Final Remarks.** Report card websites are intended to be dynamic decision-making tools which require continuous updating, evaluation, and revision. Mattke et al. (2003) attribute the success of the Maryland website to the 'grass roots' engagement process that was used to develop this tool [39]. In addition to the measurement-specific recommendations put forth in this report, we recommend that a similar process occur in Manitoba (e.g., that planners, providers, and end-users are jointly involved in the website development). Measurement is a critical aspect of this process, and care should be taken to ensure that the appropriate data are collected in ways that accurately depict sites (versus, for example, differences in data collection methods used across sites). Additional decisions are required to decide the frequency at which website data are updated, and the processes that will be used to evaluate the effectiveness and modify this tool.

Section 4.

Conclusions, Potential Limitations, and Next Steps

Conclusions

In this research we have: a) identified important measures of quality clinical care to help planners identify areas of success and where care improvement strategies may be beneficial; b) compared these QIs across PCHs located in the Winnipeg Regional Health Authority; and c) used this and other evidence to make recommendations for developing a PCH report card website in Manitoba.

Potential Limitations

Limitations Related to RAI-MDS 2.0 Data Collection. Almost all QIs in this study were derived from the RAI-MDS 2.0 data system. These data are readily available in all Winnipeg PCHs and were originally developed by an international group of experts. It is also important to recognize, however, that RAI-MDS 2.0 data are recorded by multiple people and often without formal auditing procedures to verify the inter-rater reliability and the accuracy of these data. Facility-level differences in QI scores therefore may have multiple explanations (e.g., differences in actual quality versus measurement and documentation procedures). This process of RAI-MDS 2.0 data collection (e.g., multiple people without audits) may encourage some facilities to either deliberately under-report (to avoid sanctions) or over-report (to increase resident acuity and hence funding) resident scores, at least in regions where data are linked to case-mix funding strategies. For these and other reasons, RAI-MDS 3.0 has been developed to more actively engage the resident in the assessment process and to create more standard and rigorous data collection procedures and check points [45].

Limitations Related to our Choice of QI Metrics. It is also important to note that our Delphi results are based on the original (prevalence-style) Center for Health Systems Research & Analysis (CHSRA) QIs as opposed to the more recently developed (incidence-style) Continuing Care Reporting System (CCRS) QI metrics [23]. Most of these measures are similar conceptually but have different measurement time frames (e.g., metrics that measure incontinence versus the percent of residents whose incontinence worsened with time).

Limitations Related to Our Facility Comparisons. QIs are compared across PCHs stratified by select resident risk factors. While this strategy was chosen to help readers easily interpret the results, it is important to recognize that these data provide examples of higher and lower risk residents. Facility-level differences in QI rates may be due to actual differences in quality of care, or due to differences in unmeasured resident characteristics. This is especially true when our statistical procedures resulted in a poorer model fit (see 'concordance statistic' in Table 2.3 in this report).

Next Steps

Balancing Different Perspectives on QIs. Participants in the Delphi method included only decision-makers and providers. To the best of our knowledge, no research identifies how different groups of respondents (e.g., providers versus residents and their family members) rank the importance of clinical (e.g., pressure ulcers) versus non-clinical (e.g., food quality) quality of care metrics. Such evidence would further highlight the importance of developing strategies to balance the provision of high quality clinical and non-clinical care.

Comparing Clinical QIs across all PCHs in Manitoba. While RAI-MDS 2.0 is available across most of Canada, within Manitoba this tool exists only in Winnipeg, and evidence examining the quality of clinical care in other Manitoba regions is lacking.

Creating an Effective Decision-Making Tool. Report card websites need to reflect much more than clinical care and should be thought of as decision-making tools. This means that attention and resources are needed to: a) engage with stakeholders at all stages of website development to help ensure that its content and format enhance decision-making capacity; b) ensure that the data proposed to include in the website can be consistently measured across PCH sites; and c) develop evaluation strategies to ensure that the website is easily accessible and effectively supports decision-making.

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Appendix

Appendix Table 1: Personal Care Homes in Winnipeg

Identifier	Name
506	Calvary Place
508	Beacon Hill Lodge
509	Misericordia Place
521	Central Park Lodge (Poseidon Bay)
525	Central Park Lodge (Edmonton Street)
551	Golden Door Geriatric Centre
555	Heritage Lodge Personal Care Home
559	Charleswood Care Centre
564	Kildonan Personal Care Centre
568	Maples Personal Care Home
571	Oakview Place
573	Concordia Place
574	River East Personal Care Home
581	St. Norbert Nursing Home
587	Riverview Health Centre
594	Tuxedo Villa Nursing Home
595	Vista Park Lodge
596	West Park Manor Personal Care Home
607	Bethania Mennonite Personal Care Home
615	Saul & Claribel Simkin Centre
617	Convalescent Home of Winnipeg
619	Donwood Manor Personal Care Home
626	Foyer Valade
627	River Park Gardens
628	Fred Douglas Lodge Personal Care Home
632	Golden West Centennial Lodge
635	Holy Family Nursing Home
636	Deaf Centre Manitoba
639	Lions Manor
642	Meadowood Manor
643	Luther Home
649	The Middlechurch Home of Winnipeg
657	Park Manor Personal Care Home
667	St. Joseph's Residence
685	Golden Links Lodge
688	Taché Center
699	Deer Lodge Centre

Appendix Table 2: Sample of Personal Care Home Report Card Websites

Canada	Canada	http://yourhealthsystem.cihi.ca/hsp/indepth?lang=en#/ http://www.comfortlife.ca/advanced-search.php?t=1&type=3 http://www.torontonursinghomes.com/
	Alberta	http://standardsandlicensing.alberta.ca/
	British Columbia	https://www2.gov.bc.ca/gov/content/family-social-supports/seniors/health-safety/health-care-programs-and-services/retirement-homes-nursing-homes-and-care-homes
	New Brunswick	http://www2.gnb.ca/content/gnb/en/departments/social_development/nursinghomes.html
	Ontario	http://publicreporting.ltchomes.net/en-ca/default.aspx http://www.health.gov.on.ca/en/public/programs/ltc/home-finder.aspx
United States	USA	http://www.medicare.gov/nursinghomecompare http://health.usnews.com/best-nursing-homes http://healthinsight.org/rankings/nursing-homes
	Arizona	http://hsapps.azdhs.gov/ls/sod/SearchProv.aspx?type=LTC
	California	http://www.calqualitycare.org/ http://hfcis.cdph.ca.gov/search.aspx http://www.nursinghomeguide.org/NHG/nhg_search_city.lasso
	Colorado	https://www.colorado.gov/pacific/cdphe/find-and-compare-facilities
	Delaware	http://www.delawareadrc.com/
	Florida	http://www.floridahealthfinder.gov/
	Illinois	https://ltc.dph.illinois.gov/webapp/LTCApp/ltc.jsp
	Louisiana	http://lnha.org/FindaFacility#/cid/534/id/401
	Maryland	http://mhcc.maryland.gov/consumerinfo/longtermcare/SearchPage.aspx?qs=NH
	Massachusetts	https://eohhs.ehs.state.ma.us/nursehome/default.aspx/Default.aspx
	Minnesota	http://nhreportcard.dhs.mn.gov/ http://www.health.state.mn.us/divs/fpc/index.html
	Mississippi	http://www.mshca.com/consumers/default.asp
	Missouri	https://health.mo.gov/seniors/longtermcare.php
	Nebraska	https://www.nehca.org/location-lookup-page/
	New Jersey	http://web.doh.state.nj.us/apps2/healthfacilities/fssearch.aspx
	New York	https://profiles.health.ny.gov/nursing_home/
	Ohio	https://ltc.ohio.gov/FacilitySearch.aspx
	Oklahoma	http://www.oknursinghomeratings.com/
	Pennsylvania	https://www.findpacare.org/find-care/
	Tennessee	https://www.thca.org/facility-finder/
	Vermont	http://dlp.vermont.gov/nursing-homes-directory
	Virginia	http://www.vhi.org/ltc_intro.asp
	Washington	https://www.dshs.wa.gov/altsa/long-term-care-services-information
	Wisconsin	https://www.forwardhealth.wi.gov/WIPortal/DQA%20Provider%20Search/tabid/318/Default.aspx

Appendix Table 3: Summary of Five Personal Care Home Report Card Websites

	Canadian Institute for Health Information (CIHI) http://yourhealthsystem.cihi.ca/hsp/indepth	**Minnesota** http://nhreportcard.dhs.mn.gov/	**California** http://www.calqualitycare.org/	**Florida** http://www.floridahealthfinder.gov/	**U.S. Centers for Medicare & Medicaid Services (CMS)** https://www.medicare.gov/nursinghomecompare/
Clinical Quality Care Measures					
Number of quality measures provided	9 quality indicators	20 unique quality indicators; 19 quality indicators for long-stay residents, 2 for short-stay residents	14 unique quality indicators; 10 quality indicators for long-stay residents, 7 for short-stay residents	9 performance measures	21 unique quality indicators; 15 quality indicators for long-stay residents, 9 for short-stay residents
Quality measures	• Falls in last 30 days • Worsened pressure ulcers • Inappropriate use of antipsychotics • Restraint use • Improved physical functioning • Worsened physical functioning • Worsened depressive mood • Experiencing pain • Experiencing worsened pain	**Long-Stay residents:** • Worsening or serious resident behavior problems • Prevalence of depressive symptoms • Prevalence of physical restraints • Worsening or serious bowel incontinence • Worsening or serious bladder incontinence • Prevalence of occasional to full bowel incontinence without a toileting plan • Prevalence of occasional to full bladder incontinence without a toileting plan • Prevalence of indwelling catheter • Prevalence of urinary tract infections • Prevalence of infections • Percent of residents experiencing one or more falls with major injury • Prevalence of unexplained weight loss • Prevalence of pressure sores in high risk residents • Prevalence of anti-psychotics without a diagnosis of psychosis • Worsening or serious functional dependence • Worsening or serious mobility dependence • Worsening or serious range of motion limitation • Percent of residents who self-report moderate to severe pain • Walking as well or better than on a previous assessment **Short-Stay residents:** • Prevalence of residents who report moderate to severe pain • Prevalence of new or worsened pressure sores	**Long-Stay Residents:** • Activities of Daily Living worsened • Ability to move independently worsened • High-risk residents with pressure sores • Use of catheters • Use of restraints • Urinary tract infections • Moderate to severe pain • One or more falls with injury • Antipsychotic use • Antianxiety or hypnotic medication use **Short-Stay Residents:** • Pressure sores • Moderate to severe pain • Improvements in function • Emergency department visits • Re-hospitalized after nursing home admission • Successful discharge • Antipsychotic use	• Nutrition and hydration • Restraints and abuse • Pressure ulcers • Decline • Dignity • Overall inspection • Quality of care • Quality of life • Administration	**Long-Stay Residents:** • One or more falls with major injury • Urinary tract infection • Moderate to severe pain • Pressure ulcers • Lose control of bowel or bladder • Catheter inserted and left in bladder • Physically restrained • Ability to move independently worsened • Need for help with daily activities increased • Lost too much weight • Symptoms of depression • Antianxiety or hypnotic medication • Flu shot for current flu season • Vaccine to prevent pneumonia • Antipsychotic medication **Short-Stay Residents:** • Improved ability to move around on their own • Re-hospitalized after nursing home admission • Outpatient emergency department visit • Successfully discharged to the community • Moderate to severe pain • Pressure ulcers that are new or worsened • Flu shot for current flu season • Vaccine to prevent pneumonia • Antipsychotic medication for the first time
Data source for quality measures	Minimum Data Set (MDS)	Minimum Data Set (MDS)	Minimum Data Set (MDS)	Inspections	Minimum Data Set (MDS)
Rationale provided for quality measures selected?	No	No	No	No	Yes
Description of quality measures provided?	Yes	Yes	Yes	Yes	Yes

Appendix Table 3: Continued…

	Canadian Institute for Health Information (CIHI) http://yourhealthsystem.cihi.ca/hsp/indepth	**Minnesota** http://nhreportcard.dhs.mn.gov/	**California** http://www.calqualitycare.org/	**Florida** http://www.floridahealthfinder.gov/	**U.S. Centers for Medicare & Medicaid Services (CMS)** https://www.medicare.gov/nursinghomecompare/
Non-Clinical Data					
	• Residents older than 85 • Residents younger than 65 • Female residents • Residents with dementia • Residents with congestive heart failure • Facility size • Facility location	• Resident quality of life • Family satisfaction survey • State inspection results • Hours of direct care • Staff retention • Temporary staff agency use • Proportion of beds in single room • Facility daily rates • Additional charges for private rooms	**Facility characteristics:** • Facility type • Payments accepted • Number of beds • Occupancy rate • Types of care available **Resident characteristics:** • Age • Gender • Race and ethnicity • Need for assistance • Special care needs **Staffing:** • Medicare days of care • Nursing staff turnover • Nursing hours per resident day • Physical therapist hours per resident day • Nursing wages per hour • Benefits per hour (all employees) **Quality of facility:** • Deficiencies and citations • Deficiency severity and scope • Complaints • Facility enforcement actions **Cost and finances:** • Average total expenditures per resident day • Expenditures as a percent of revenues • Average charges per resident day • Resident care days by payment source • Net operating income or loss • Operating margin	• Inspection reports • Owner/licensee • Profit status • Number of beds • Bed types • Daily rate • Occupancy rate • Languages spoken • Payment forms accepted • Special programs and services • Emergency power plan summary • Legal actions	**General information:** • Number of beds • Participates in Medicare and/or Medicaid • Part of Continuing Care Retirement Community (CCRC) • Part of hospital • Resident and/or family council **Health inspections:** • Recent health inspection • Previous standard health inspection • Average number of health citations in state and in U.S. • Number of complaints and facility-reported issues resulting in citation **Fire safety inspections:** • Automatic sprinkler systems • Recent standard fire safety inspection • Total number of fire safety citations • Average number of fire safety citations in state and in U.S. **Staffing:** • Average number of residents per day • Total number of licensed nurse staff hours per resident per day • Nurse aid hours per resident per day • Physical therapist staff hours per resident per day • Registered nurse hours per resident per day **Penalties:** • Federal fines • Payment denials by Medicare **Ownership information**
How Information is Presented					
Location of quality measures information	On main page for each facility	Summary on main page; details available by clicking on text box	'Quality of Care' tab	'Nursing Home Guide' hyperlink	'Quality of resident care' tab
Quality measure comparisons	Compares to other personal care homes, health region average, provincial average and national average	Compares to itself at previous assessments and state average; also provides facility rank	Compares to other personal care homes and state average	Shows facility rank relative to other facilities in its region	Compares to other personal care homes, state average and national average
Scoring and ranking systems	Scores (percents) Colour coded circles (above, same as, or below average)	Scores (percents) Ratings out of 5 stars	Score (percents) Overall quality care rating using 5 point scale	Ratings out of 5 stars	Scores (percents) Ratings out of 5 stars
Explanation of how to interpret results?	Yes	Yes	Yes	Yes	Yes
Risk factor adjustment or stratification	No indication of adjustment No stratification	Adjusted No stratification	No indication of adjustment No stratification	No indication of adjustment No stratification	No indication of adjustment No stratification
Additional Information					
Multiple layers of reporting	Yes	Yes	No	No	No
Facility email address or phone number provided	No	Yes	No	Yes	Yes
Link to facility website provided	No	No	No	Yes	No
Virtual tour of facility provided	No	No	No	No	No

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408-727 McDermot Avenue
Winnipeg, Manitoba, Canada
R3E 3P5

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Fax: (204) 789-3910
Email: reports@cpe.umanitoba.ca

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