

Using Prior Home Care Data to Predict CCC Length of Stay

Chi-Ling Joanna Sinn¹, J. Leo Chow², Tim Pauley³, John Hirdes^{1,4}

¹University of Waterloo, ²The Salvation Army Toronto Grace Health Centre, ³Toronto Central Community Care Access Centre, ⁴Ontario Home Care Research Network

Introduction

- What is Complex Continuing Care?
 - Complex Continuing Care (CCC) programs provide medically complex and specialized services to individuals recovering from acute illness or whose needs cannot be managed at home or in long term care.
 - In 2013, 82.9% were 65 years or older and 55% were female.
- Why is patient flow relevant to CCC?
 - Shorter acute length of stay, population aging, greater life expectancy, and increasing prevalence of chronic conditions will lead to greater need for post-acute care, including CCC.
 - For most patients, the goal is to help patients regain functional levels so that they can be discharged to the community or long term care. Therefore, CCC frequently acts a transition point between acute care and these settings.
- What is the issue?
 - A substantial proportion of Ontario CCC beds are occupied by Alternate Level of Care patients, and many Ontario CCC programs are at near 100% occupancy rates.^{1,2}
 - There is a need to improve patient flow through the healthcare system, and to improve CCC's capacity to anticipate resource needs such as length of stay.
- What are known predictors of length of stay in post-acute facilities?
 - More established predictors include young age, ADL impairment, cognitive impairment, neurological diagnosis, psychiatric diagnosis, and cancer diagnosis.³⁻⁶
 - Less established predictors include clinical instability, incontinence, recent falls, pressure ulcer risk, end-stage disease, lack of preference to return to the community, and absence of support person in the community.^{3,4}
 - Past research has been limited to studying predictors based on assessments completed during the CCC episode.
 - Can any variables measured prior to CCC admission predict length of stay?**

Objectives

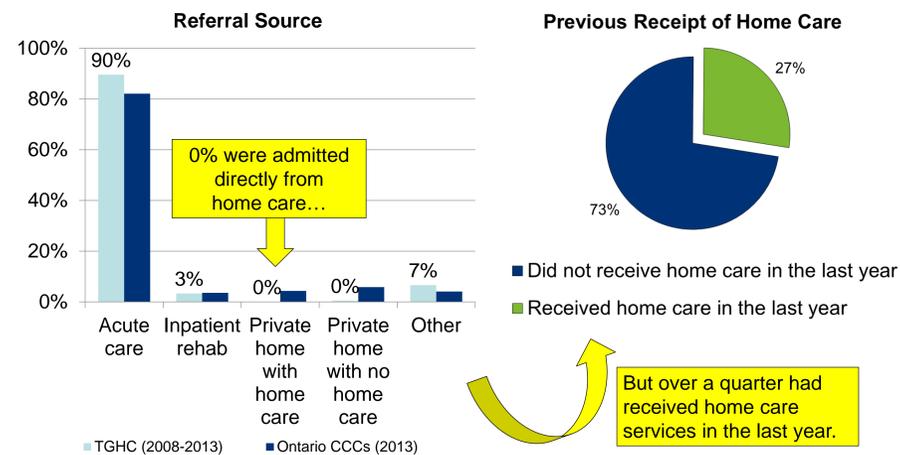
- To estimate the proportion of patients who received home care services up to one year prior to CCC admission
- To identify predictors of CCC length of stay from home care assessments completed up to one year prior to CCC admission

Methods

- Sample
 - A whole sample was defined based on all unique patients (N = 211) who were admitted to Toronto Grace Health Centre's CCC program between September 1, 2010 and August 31, 2013.
 - By matching patient name and date of birth, the last home care (RAI-HC) assessment that occurred before the CCC admission date was retrieved and linked to the CCC (MDS 2.0) admission assessment. **58** patients had a RAI-HC assessment completed within one year of CCC admission.
 - After excluding patients who had not been discharged from CCC, the final sample consisted of **43** patients.
- Analysis
 - Simple linear regression was used to identify variables based on a p<0.05 significance level.

Results

What proportion of patients received home care services up to one year prior to CCC admission?



Do any variables measured in the community up to one year prior to CCC admission predict CCC length of stay?

Variables associated with longer CCC length of stay			
Variables from CCC assessments (MDS 2.0)	Significance (p)	Variables from Home Care assessments (RAI-HC)	Significance (p)
Greater ADL impairment	0.1272		
Greater cognitive impairment	*0.0292		
Poor verbal comprehension (occasionally to never understands)	*0.0153	Poor verbal comprehension (occasionally to never understands)	*0.0037
Bladder incontinence (occasionally to completely incontinent)	0.1817	Bladder incontinence (occasionally to completely incontinent)	*0.0189
Bowel incontinence (occasionally to completely incontinent)	*0.0447	Bowel incontinence (occasionally to completely incontinent)	*0.0196
		Greater IADL impairment	*0.0351
Variables associated with shorter CCC length of stay			
Variables from CCC assessments (MDS 2.0)	Significance	Variables from Home Care assessments (RAI-HC)	Significance
Establishes own goals	*0.0034		
Preference to return to the community	*0.0636		

*Significant at p<0.05

This research is generously supported by The Salvation Army Toronto Grace Health Centre.

This research project obtained ethics approval from the University of Waterloo Research Ethics Board and the Joint Bridgepoint-West Park Toronto Central Community Care Access Centre Research Ethics Board.

Results (continued)

Variable (Decline in the last 90 days)	From RAI-HC Significance in regression model (p)	From MDS 2.0 Significance in regression model (p)	Cohen's kappa (k)	Significance level of Cohen's kappa (p)
Decline in decision making	0.0902	0.4294	0.162	0.2710
Decline in communication	*0.0013	0.8964	0.351	*0.0043
Decline in bladder continence	*0.0025	0.8707	0.209	0.0709
Decline in mood	0.2879	0.6385	0.335	*0.0060
Decline in behaviour	0.6549	0.8830	0.430	*0.0002
Decline in ADL status	0.1591	0.4793	0.135	0.2749

*Significant at p<0.05

Conclusions

- Limitations of this research include small sample size, inability to access home care data from other CCACs, and inability to access acute care data.
- Variables measured up to one year prior to CCC admission (e.g., comprehension, bladder incontinence) may be as strong as variables measured during the CCC episode in ability to predict CCC length of stay.
- Several decline-related variables may also predict CCC length of stay, but it is true only for decline assessed in the community.
 - Applying Cohen's kappa test shows that there is disagreement between community-coded and CCC-coded decline variables.
 - This disagreement may be due to inaccurate information from the patient and/or family at CCC admission, or a real finding that a decline in the past year is more predictive than a decline in the past 90 days.
- This research supports increased sharing of information between care settings (e.g., home care and CCC). Doing so will allow CCCs to better anticipate resource needs such as length of stay, and may encourage more tailored care plans so that patients can return to the community (or long term care) as soon as possible.
- This research is part of an ongoing project involving Toronto Grace Health Centre, Toronto Central CCAC, and the University of Waterloo. One of the project goals is to incorporate previous RAI-HC assessments completed by Toronto Central CCAC into the clinical record for new admissions into Toronto Grace Health Centre.

References

- Integrated Strategic Alliances Networks. Complex Continuing Care bed access and utilization in Thames Valley Hospitals: an investigation of CCC beds in the Thames Valley hospitals and options for sub-acute and Alternative Level of Care patients. London: ISAN; 2008.
- Task Group on Coordinated Strategy for Complex Care. An integrated program for complex care in the Hamilton Niagara Haldimand Brant Local Health Integration Network. HNHB LHIN; 2010.
- Turcotte L. Clinical predictors of protracted length of stay in Complex Continuing Care facilities [MSc thesis]. Waterloo, Ontario: University of Waterloo; 2014.
- Gassouris ZD, Fike KT, Rahman AN, Enguidanos SM, Wilber KH. Who transitions to the community from nursing homes? Comparing patterns and predictors for short-stay and long-stay residents. Home Health Care Serv. 2013; 32(2): 75-91.
- Canadian Institute of Health Information. Facility-based continuing care in Canada, 2004-2005: an emerging portrait of the continuum. Ottawa: CIHI; 2006.
- Banaszak-Holl J, Liang J, Quinones A, Cigolle C, Lee IC, Verbrugge LM. Trajectories of functional change among long stayers in nursing homes: does baseline impairment matter? J Aging Health. 2011; 23(5): 862-882.