Safe Discharges from Acute Care Hospitals on Weekends

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Michel Grignon, PhD¹,²,³, Laurie Kan, MA⁴, Dianna Pasic, BAH⁵,
Li Wang, MSc¹, Gioia Buckley, MA¹

¹ Centre for Health Economics and Policy Analysis (CHEPA), McMaster University
² Department of Health, Aging and Society, McMaster University
³ Department of Economics, McMaster University
⁴ Janssen Canada
⁵ Institute for Work & Health

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## TABLE OF CONTENTS

**EXECUTIVE SUMMARY** ................................................................. .................................................................. 1

**INTRODUCTION** .................................................................................. 4

**THE CONSEQUENCES OF WEEKEND AND AFTER-HOUR DISCHARGES FROM HOSPITALS: LESSONS FROM THE LITERATURE** .... .................................................................. 6

1. Introduction .................................................................................. 6
2. Search Strategy ............................................................................ 6
3. Health Outcomes .......................................................................... 7
   3.1 Mortality .................................................................................. 7
   3.2 Readmission ............................................................................ 11
   3.3 Length of Stay (LOS) ................................................................ 11
4. **Internal and External Validity** .................................................. 12
   4.1 Internal Validity ......................................................................... 12
   4.2 External Validity ......................................................................... 13
5. **Costs** ......................................................................................... 14

Appendix A: Search Strategy ............................................................... .................................................................. 15

**BARRIERS AND FACILITATORS TO WEEKEND DISCHARGE: IN-DEPTH INTERVIEWS WITH STAKEHOLDERS** ............................................................... 16

1. Project Background and Objectives ................................................. 16
2. Methods ......................................................................................... 16
3. **Findings: Barriers to Discharges on Weekends** ....................... 17
   3.1 Weekend Discharge of ALC Patients ......................................... 17
   3.2 Barriers to Weekend Discharges and Admissions .................... 18
   3.3 Barriers to Discharges and Admissions Occurring on All Days of the Week & Having a Stronger Impact on Weekends ......................... 22
   3.4 Barriers to Discharges and Admissions on All Days of the Week that have an Impact on the Stock of ALC Patients ......................................................... 25
4. **Findings: Facilitators to Support Weekend and Weekday Discharges and Admissions** .......................................................... 27
   4.1 Human Resources/Capacity: New Programs to Plan & Assist Discharges in ACHs ................................................................. 28
   4.2 Communication-Related Facilitators ........................................... 31
   4.3 Early Initiation of Discharge Planning in ACHs (& other organizational & provider targeted strategies) ......................................... 34
   4.4 Strategies to Improve Intra and Inter-Sectorial Accountability and Performance ................................................................. 34
5. **Conclusions** ............................................................................... 35
Appendix B.1: Summary of Barriers to Timely and Safe ALC Discharges from Acute to Post-Discharge Care As Identified by Study Respondents ....................... 36

Appendix B.2: Summary of Facilitators to Timely and Safe ALC Discharges from Acute to Post-Discharge Care as Identified by Study Respondents ............... 38

Appendix B.3: Quotations from Informants on Advantages and Disadvantages of Weekend Discharges from ACHs ..................................................... 39

DISCHARGES OF ALC PATIENTS FROM ACHs IN ONTARIO: PATTERNS AND TRENDS IN THE DISCHARGE ABSTRACT DATABASE .......................................................... 41
  1. Data Sources ........................................................................................................... 41
  2. Descriptive Analysis ............................................................................................... 42
     2.1 Proportion of Stays with ALC Days .................................................................... 42
     2.2 The Pattern of Discharge of ALC Patients by Days of the Week ................. 43
  3. Estimate of Number of ALC Days that could be Saved by Safe Discharges on
     Weekends ............................................................................................................... 52
  4. Multivariate Analysis ............................................................................................. 53
     4.1 Determinants of ALC Stays .............................................................................. 53
     4.2 Determinants of Weekend Discharges of ALC Patients ............................. 54

Appendix C ..................................................................................................................... 56

CONCLUSION ............................................................................................................... 58

REFERENCES ............................................................................................................. 60
EXECUTIVE SUMMARY

The Office of the Auditor General (Office of the Auditor General of Ontario, 2010) reported on the significance of the level and growth of Alternative Level of Care (ALC) patient days in Ontario and recommended that hospitals and post-discharge care facilities work to decrease it by increasing safe discharges on weekends.

In this study, we approach weekend discharges from acute-care hospitals (ACHs) from three perspectives:

• What do published studies tell us about the consequences of being discharged from an acute-care hospital on weekends or during night shifts?
• What do stakeholders in Ontario think are barriers to and facilitators of safe weekend discharges from acute-care hospitals?
• Last, how do discharge rates vary within the week, do we observe changes over time in these rates and does it depend on the type of post-discharge care (PDC) setting?

Interestingly enough, no study was published on the consequences of discharging patients on weekends or during night shifts from general hospital wards. Studies are conducted mostly on patients discharged from intensive care units (ICU). Evidence based on these patients suggests that discharges on weekends and even more so during night shifts are less safe than discharges during the day on weekdays: in-hospital mortality is reported to be higher, as well as the rate of re-admission. It is important to keep in mind that these results are based on a very small number of studies and do not necessarily translate to discharges from hospitals to non-hospital settings. Also, the only study controlling for patient health at the time of discharge (rather than admission) does not find any difference in mortality across times at discharge. The main factor identified for the higher hazard of weekend or night discharges from ICUs is the lower level of staffing at these times, both in the ICU and in the general ward in the hospital.

Stakeholders in Ontario agree that all would benefit if hospitals could safely discharge patients on weekends (this would free beds and therefore partly relieve emergency departments; this would ensure that patients receive the appropriate type of care, and families would be more easily available to help with the discharge and with the settlement in the new environment). Hospitals would also benefit from the smoothing of activity within the week. However, stakeholders also stress, that, in the current state of the health care system, discharges cannot be entirely safe on weekends (not as much as they are on
weekdays).

Stakeholders identify lack of staffing in long-term care homes and ACHs on weekends as the main reason why patients are not discharged from ACHs on weekends: staff on weekends can monitor and assist patients but cannot perform all that is necessary to admit a new patient or to discharge the patient safely (covering physicians do not always have all the necessary information to discharge).

Stakeholders also mention barriers that could be overcome without more staffing, and that are not specific to discharges on weekends (or discharges to LTC homes): the main such barrier is the lack of standardized communication between ACHs and PDC facilities. Electronic transmission is not always available, rendering records hard to read; also, discharging and receiving facilities as well as Community Care Access Centres (CCACs) do not always use the same standard for their records, making automated transmission impossible. Such communication barriers explain why staffing becomes an issue: physicians, nurses, occupational therapists, finance specialists are needed at the exact time the patient is discharged because no standardized transmission record exists that would allow staff to prepare the transition on weekdays and make sure the transition works smoothly with minimal human intervention on weekends or night shifts.

It has also been suggested by stakeholders that hospitals start working too late on the discharge plan, which prevents them from informing PDC facilities long enough before the transfer actually takes place. As a result, the discharge is not really planned with the PDC facility and can only take place when staffing is maximal in the PDC facility.

Stakeholders also suggest that the real issue is not so much to discharge more on weekends but rather to make sure that hospitals can deal with the stock of ALC patients during weekdays; if there were fewer ALC patients in the first place, the stock could more easily fall close to 0 on Friday night. The main barriers to discharging ALC patients are:

- The lack of coordination among hospital specialists (who usually work as a team on a given patient, which makes decision processes more cumbersome); surgical cases are perceived to be less often designated ALC because surgeons can make decisions on their own
- Patient choice of long-term care home (when this choice is difficult to satisfy, the patient has a right to remain in an acute-care hospital bed),
- Social and clinical complexity of the case
- Mal-distribution of resources across regions within the Province: beds and personnel in PDC settings should be distributed on the basis of the age distribution of the population in each region.
Stakeholders indicate that Local Health Integration Networks (LHINs), CCACs, and PDC settings develop initiatives such as having case managers in ACHs to reduce the stock of ALC patients and work around complex cases ahead of time; ACHs also use geriatric nurses to try and reduce inappropriate admissions. Some LHINs also experiment with virtual wards to ease discharges in the community. The need for better coordination across sectors (clinical and social, hospital and community) as well as higher standards of accountability from various providers are cited as the main facilitators of safe and timely discharges as well as reduction of ALC days in ACHs. Communication tools around discharges such as the Resource Matching and Referral initiative or escalation protocols and daily bullet-rounds are also mentioned as facilitators but it is noted that family doctors are not included in the initiative, even though they could play an important role in safe discharges to the community.

The statistical analysis of the DAD between 2004 and 2011 confirms that ALC patients are not likely to be discharged on weekends from ACHs in Ontario: on average, only 3.3% of discharges take place on a Saturday or a Sunday, versus 18.7% on a regular weekday. Moreover, the proportion of discharges on weekends was higher in 2004 than in 2010, despite the experiments and efforts described by stakeholders in interviews. It is interesting to note that discharges are more likely on Fridays (pre-weekend surges) but not on Mondays (no catching up on the backlog). Data also confirm that it is for patients discharged to LTC homes that the probability to be discharged on a weekend is lowest (at 2.5% each day). It increases to 3.5% per weekend day for patients discharged to RCC facilities, 4.5% for patients discharged to home with home care support and 5.5% for patients discharged to home without support. Overall, discharges to LTC homes on weekends are less likely now than they were in 2004, except in three LHINs that have increased that proportion. There is no clear time trend for discharges on weekends to RCC facilities or home and a striking feature is the lack of any trend common to all LHINs: some LHINs have substantially increased the proportion of discharges on weekends whereas others have seen a large drop in that proportion. A multivariate analysis shows that the type of PDC setting as well as clinical and demographic characteristics of the patient are the main determinants of the probability that a discharge takes place on weekend, the LHIN of admission playing an almost insignificant role. Last, a back-of-the-envelope calculation based on data from the DAD suggest that, were discharges on weekends as likely as discharges on weekdays, only 6% of ALC days in ACHs in Ontario would be avoided: ALC days in ACHs result from causes other than lack of discharges on weekends.
INTRODUCTION

The Office of the Auditor General (Office of the Auditor General of Ontario, 2010) reported on the significance of the level and growth of alternative level of care patient days in Ontario:

“In 2009, over 50,000 patients waited in hospital due to delays in arranging post-discharge care (also known as patients waiting for an alternative level of care, or ALC), accounting for 16% of total patient days in all Ontario hospitals. In addition, the total days ALC patients were hospitalized increased by 75% between 2005/06 and 2009/10, while total hospital patient days increased only 7%.” (page 66).

Moreover, close to half of all patients occupy acute care beds for longer than forty days (Mahboubi & McAteer, 2011). The number of ALC days spent by patients in Ontario acute care hospitals (excluding pediatric and obstetric beds) went from 505,045 in fiscal year 2004-05 to 894,292 in 2010-11 (a 77% increase, authors’ calculations based on the Discharge Abstract Database). The 2010-11 figure represents 2,450 beds occupied by an ALC patient each day, or approximately 12% of total acute-care hospital beds in the province. ALC occupancy affects patient throughput in all facets of the hospital system: it can delay patient transfers from the Emergency Department (ED) to inpatient beds, causing longer wait times for ED presentations; elective surgeries that could otherwise take place may be postponed as bed-blocking occurs throughout the hospital; further, patients who would otherwise be admitted may be sent home because beds are being tightly rationed on weekends; this could lead to higher re-admission rates as some of these patients re-visit the ED due to inadequate care in the previous visit (Asplin & Magid, 2007; Canadian Institute for Health Information, 2007); ALC days can also undermine patient satisfaction and safety since patients are not receiving care in their most appropriate setting; staff satisfaction may also deteriorate over time as the hospital operates above capacity to accommodate.

Some argue that the notably lower levels of staffing and service provision during after-hours (weekends and nights) are causing patients who are ready to be discharged to wait until after the weekend, and these delays are contributing to the high number of ALC days. Wong et al. (Wong et al., 2009) find that the weekend discharge rate is more than 50% lower (p<0.001) compared to a reference weekday (Wednesday) for inpatient services at the of Toronto General Hospital; the Friday discharge rate is 24% higher (p<0.001) than the Wednesday rate. These results provide support that weekend-induced delayed discharges may be occurring in Ontario’s hospitals; an analysis of its impacts and potential
policy responses merit serious consideration.

The present report provides three types of evidence on discharges of ALC patients in Ontario: a review of the published evidence on the consequences (mortality, re-admission, and length of stay) of discharging patients on night shifts and weekends; an analysis of in-depth interviews with stakeholders of the health care system in Ontario to understand the barriers and facilitators to discharges on weekends and discharges of ALC patients in general; last an analysis of the pattern of discharges by days of the week from acute care hospitals in Ontario, based on the Discharge Abstract Database, addressing questions such as the changes in the proportion of discharges taking place on weekends since 2004, or how the probability to be discharged on weekends is affected by the type of post-discharge setting.
THE CONSEQUENCES OF WEEKEND AND AFTER-HOUR DISCHARGES FROM HOSPITALS:
LESSONS FROM THE LITERATURE

This section was written by Laurie Kan, as her Major Research Paper for a Masters in
Economic Policy under the supervision of Prof. Jeremiah Hurley (Department of Economics,
McMaster University and CHEPA)

1. INTRODUCTION

The purpose of this literature review is to examine the costs and benefits of discharging
patients (and particularly ALC patients) around the clock 7 days a week, from acute care
hospitals to post discharge settings.

The literature review is organized as follows: section 2 describes the search strategy;
section 3 examines the impact of after-hours discharge on three health outcomes: mortality,
readmission, and length of stay; section 4 discusses the internal and external validity of
included studies; and section 5 discusses costs of implementing a 24/7 discharge policy
conceptually, since no evidence on costs was found.

2. SEARCH STRATEGY

The following databases were searched: PubMed (includes Medline and Cochrane Library),
ProQuest (includes Econlit), and Google Scholar. Through PubMed, search terms on after-
hours care and patient discharge/admission, and a filter for studies published since 2007
identified thirty-eight studies. Using ProQuest and Google Scholar, focussing on alternative
levels of care and expanding the time limit to 2003, six and fifty-seven studies, respectively,
were identified. Upon review of their abstracts and removal of duplications, a total of
twelve studies from all databases were retained.

Studies that focused on health outcomes associated with after-hours discharge from
hospitals (irrespective of patients’ age, gender, or condition), and studies focused on
alternative level of care were included. Please see Appendix A for the search terms used.
We identified additional relevant studies as they were cited in other pertinent work
(snowballing method).
3. Health Outcomes

In this section we examine three health outcomes and their association with after-hours discharge: mortality, readmission, and length of stay. Unfortunately, we were unable to find any studies on the impacts of discharging ALC patients (or general ward patients) during after-hours on their health outcomes. With the exception of Walraven and Bell (Walraven & Bell, 2002), and Horwich et al. (Horwich et al., 2009), the following studies look at the impact of after-hours discharge on Intensive Care Unit (ICU) patients. Findings from ICU discharge studies may not be generalizable to discharges from hospital wards (from which most ALC patients are discharged) because ICUs service a distinct population; they provide care to patients that are critically ill and discharge to other hospital departments, rather than to the community. Please see Section 4.2 for a more thorough discussion on external validity.

However, the limited availability of beds and inconsistency in staffing throughout the week are two characteristics common across departments in Canadian hospitals (Wong and Morra, 2011). To the extent that differences in health outcomes for patients discharged on a weekday compared to patients discharged on the weekend are caused by these characteristics, health outcomes associated with after-hours ICU discharge may be generalizable to after-hours ALC discharge.

A total of seven studies have been identified in the search and are detailed below.

3.1. Mortality

The evidence on mortality is mixed: four studies find a positive association between after-hours discharge and risk-adjusted mortality; three studies find no association. The studies’ internal and external validity are discussed at the end of this section.

3.1.1 Studies that found increased risk-adjusted mortality

Laupland and colleagues (K. Laupland, Shahpori, Kirkpatrick, & Stelfox, 2008) assessed the in-hospital mortality risk of discharging adults from intensive care in the Calgary Health Region on weekends and evenings. Despite controlling for age, residency, severity of illness, and medical-surgical class, the authors found an increased mortality risk associated with ICU discharge at night. Patients discharged at night on a weekday were more likely to die in the hospital compared to those discharged during the day on a weekday (odds ratio 1.20 [1.01-1.41])

\[ \text{odds ratio} = \frac{\text{number of outcomes in group}}{\text{number of non-outcomes in group}} \]

1 The odds ratio measures the likelihood of an outcome in one group compared to a baseline group. When the odds is equal to 1, the outcome is the same in the two groups; an odds higher than 1 indicates that the outcome is more likely to present itself in the group under analysis compared to the baseline group and, conversely, an odds ratio lower than 1 indicates that the outcome is less
discharged at night on a weekend were also more likely to die in the hospital compared to those discharged during the day on a weekday (odds ratio 1.35 [1.05-1.73]). The authors attributed the increased mortality of night discharges to the inconsistency in the provision of care within and outside of the ICU. In the Calgary ICUs, during the daytime on weekdays, there are approximately 3 residents per ICU bed; at night on weekends, this is reduced to one resident. Interestingly, the authors contrasted their findings and found that weekend daytime discharge was associated with lower in-hospital death compared to weekday daytime discharge (odds ratio 0.81 [0.67-0.98]). This is the only study reporting a positive impact of weekend discharges on health outcomes.

Tobin and Santamaria (Tobin & Santamaria, 2006) examined the association between the timing of ICU discharge and in-hospital mortality in one acute-care hospital in Australia. The authors categorized discharge times based on nursing shifts. After controlling for severity of illness (using the APACHE II score), origin of admission, and treatment category, the authors found that patients discharged during the afternoon nursing shift (15:00-21:59) were more likely to die in the hospital compared to patients discharged during the morning shift (07:00-14:59), with an odds ratio of 1.36 [1.08-1.70]. Patients discharged during the evening nursing shift (18:00-07:59) were also more likely to die compared to those discharged during the morning shift (odds ratio of 1.63 [1.03-2.57]). The authors attributed the increased afternoon mortality to shorter medical and nursing observation during “office-hours” of newly discharged patients compared to those discharged in the morning; they attributed the increased evening mortality to fewer physicians available during their after-hours (between 18:00-7:59).

Pilcher et al. (Pilcher, Duke, George, Bailey, & Hart, 2007) utilized the Australian and New Zealand Intensive Care Society Adult Patient Database from 2003 to 2005, which contained 70% of all ICU admissions that occurred during the two years. The authors did not specify why the database collected only 70% of all ICU admissions; therefore, it is uncertain how representative this sample is of the entire ICU population, and how this may potentially generate bias in the results. Nevertheless, the authors found after-hours (18:00 to 8:00) discharge was associated with a higher in-hospital mortality rate after controlling for the APACHE III score, source of admission, age, and limitation on medical treatment orders (odds ratio 1.42 [1.32-1.53]). While Tobin and Santamaria (Tobin & Santamaria, 2006) examined data from one hospital in Australia, likely to present itself in the group under than analysis than in the baseline/comparison group. The numbers in square brackets indicate the 95% confidence interval around the odds ratio. In the above result, the odds ratio is equal to 1.2 and, simply put, authors are 95% sure that the odds ratio is between 1.01 and 1.41.
Pilcher et al. (Pilcher et al., 2007) examined a much greater sample of ICU discharge; for the purpose of this systematic review, the Pilcher et al. (Pilcher et al., 2007) study may have more power but the calculated odds ratio of the two studies are consistent.

While other studies attributed the increased mortality associated with weekend or night discharge to reduced staffing, Pilcher et al. (Pilcher et al., 2007) attributed it to the dynamics of bed-blocking. The authors pointed out that there were fewer discharges during after-hours (18% of all discharges) compared to daytime, despite admissions occurring constantly throughout the 24-hour period. Also, after-hours admissions had higher APACHE III scores. The authors suggested that some patients might have been discharged during after-hours to make room for an emergent incoming patient. Alternatively, night discharges had occurred due to lack of available ward bed during the day, thus was delayed until after-hours. The authors were not able to ascertain which mechanism was driving the after-hours discharge, but two studies on ICU admissions have documented each of the mechanisms: Cooper et al. (Cooper, Sirio, Rotondi, Shepardson, & Rosenthal, 1999) found the most common indication for an after-hours ICU discharge was another emergency admission in the setting of insufficient ICU resources; Williams and Leslie (Williams & Leslie, 2004) argued that after-hours discharge from ICUs were mostly delayed discharges due to lack of ward beds available during daytime.

Pilcher et al. (Pilcher et al., 2007) also noted that some discharges out of the ICU where patients subsequently died represented appropriate palliative care, rather than insufficient care in the general ward or inappropriate early discharge. Since the authors were unable to identify these cases (or their timing) in the data, it was not possible to quantify how these cases would attenuate or strengthen the increased mortality associated with after-hours discharge.

Priestap and Martin (Priestap & Martin, 2006) conducted a Canadian study on thirty-one ICUs that voluntarily participated in the Critical Care Research Network’s Minimum Dataset, and most of the participating ICUs were located in Ontario. The authors added to the previous study by determining the proportion of night discharges that can be attributed to pressure to free up a bed for an emergent admission. Over the sample period between 2001 and 2004, 50.7% of night discharges (21:00-06:59) were immediately (within two hours) preceded or followed by a new admission compared with 57.4% of daytime discharges (p=0.001). To the extent that this two-hour interval was a good measure of excess demand on ICU beds, there was about 7% more excess demand during the day. This led the authors to conclude that more pressure on beds at night is not a sustaining reason for premature night discharge. Similar to findings in previous studies, patients discharged at night
were at a higher risk of death after controlling for patient characteristics (odds ratio 1.22 [1.10-1.36]).

An obvious strength of the study by Priestap and Martin (Priestap & Martin, 2006) is its large sample of 79,090 consecutive discharges from mainly Ontario’s hospitals. This study may be more suitable for marking inference on nighttime ALC discharges in Ontario compared to other studies.

3.1.2. Studies that did not find increased risk-adjusted mortality

Results from a Finnish study by Uusaro and colleagues (Uusaro, Kari, & Ruokonen, 2003) contrasted those of previous studies; the authors found no association between the time of discharge from ICU and risk-adjusted hospital mortality. Unlike previous studies, the authors controlled for the intensity of treatment in addition to admission severity; therefore, intensity of treatment may be a potential confounder in the causal pathway between after-hour discharge and health outcomes.

Horwich and colleagues (Horwich et al., 2009) examined in-hospital mortality among 81,810 heart failure admissions from hospitals that participated in “Get with the Guidelines”, a voluntary U.S. database. Although the authors did not find an association between weekend discharge and risk-adjusted in-hospital mortality, its voluntary sample may over-represent high performing hospitals; these hospitals may have relatively consistent service provision that enable a consistent mortality rate throughout the week.

Walraven and Bell (Walraven & Bell, 2002) examined all Ontario hospital discharges from 1990 to 2000 extracted from the Discharge Abstract Database (DAD). They found patients more likely to have died or been readmitted within 30 days if they were discharged on a Friday (risk-adjusted hazard ratio 1.04, 95% confidence interval 1.02-1.05). The authors argued that Friday was the most common hospital discharge day; some patients were discharged before they were ready due to staff’s recognition that discharges not made on Friday would have been pushed until Monday. Also, for those discharged on Friday or the few discharged over the weekend, medically necessary home care and social support services may not initiate until the following Monday, leading to poorer health outcomes.
3.2. Readmission

Two of the studies discussed also looked at readmission rate as a secondary outcome. Both of them found a positive association between night discharge and readmission to the ICU.

Pilcher et al. (Pilcher et al., 2007) compared readmission rates of nighttime discharges to daytime discharges in subgroups of ICU patients: elective vs. emergency, medical vs. surgical. Readmission rates ranged from 3.4% to 6.3%, and readmission rates of patients discharged at night were about one percentage point higher (p<0.001) in all subgroups. The higher readmission rate may reflect more patients prematurely discharged at night. However, since the analysis is not limited to survivors, the difference in readmission may be confounded by a higher number of daytime discharges to palliative care (when social workers and other health professionals are available). These patients obviously would not be readmitted.

Priestap and Martin (Priestap & Martin, 2006) compared unplanned readmissions (i.e. readmission after planned surgery excluded) of nighttime to daytime discharges and found night discharges more likely to be readmitted (5.7% vs. 4.6%, p=0.001). When they restricted unplanned readmission rate to those within 48 hours of ICU discharge, a measure commonly associated with inappropriate discharge from the ICU, the differential in readmission rate remained (2.4% vs. 1.7%, p<0.001). The differential may reflect that more patients are prematurely discharged at night, or that general wards are less ready to admit and provide care at night due to reduced staffing. Despite statistical significance, a 0.7 percentage point differential has questionable clinical relevance.

3.3. Length of Stay (LOS)

Only one study looked at LOS as a secondary outcome; it found a negative association between nighttime discharge and LOS in ICUs.

Priestap and Martin (Priestap & Martin, 2006) found the risk-adjusted LOS of patients discharged at night was statistically significantly shorter than those discharged during the day; however, clinical relevance is unknown because the authors did not report the numerical difference. Interestingly, while the risk-adjusted LOS of nighttime discharged patients who survived the hospital stay was similar to those of daytime discharged patients, the risk-adjusted hospital LOS of nighttime discharged patients who did not survive was statistically significantly shorter.

Although shorter length of hospital stay is associated with mortality and with nighttime discharge in this sample, shorter LOS in general does not imply better or worse health outcomes post-treatment (even though it may indicate severity of illness). Based on these
findings, a link between nighttime discharge, LOS, and subsequent mortality cannot be established.

4. **Internal and External Validity**

4.1 **Internal Validity**

- **Confounding not controlled for at time of discharge.** In four of the seven studies described above, APACHE score was used as a measure of illness severity, and then applied as a control in the regression models in order reduce the confounding effect severity of illness has on health outcomes. However, the APACHE score was determined upon admission rather than discharge, so there may be residual confounding effects not accounted for. In Pilcher et al. (Pilcher et al., 2007), for example, the unadjusted odds ratio of after-hours discharge on mortality was 1.56 while the adjusted odds ratio was 1.42. At the same time, the odds ratio of the APACHE calculated risk of death on mortality was 1.037. Considered together, the relatively small attenuation from 1.56 to 1.42 may reflect a weak capture of severity of illness with respect to hospital mortality using the APACHE score.

- Alternatively, the confounding effects were appropriately captured but they were small, which led to a small attenuation from the unadjusted to adjusted odds ratio. Sensitivity analysis on the APACHE score merits consideration in future research, and, as Pristap and Martin (2006) pointed out, Therapeutic Intervention Scoring System scores from the day of discharge may be a more adequate assessment of care needs. The other three studies used other mediating variables instead of the APACHE score, but did not indicate during which stage of patient care these variables had been measured; these studies may have the aforementioned limitation.

- **Inconsistent definition of after-hours.** “After-hours” time periods are inconsistently defined across studies. This inconsistency makes systematic comparison of results, such as the use of meta-analysis, difficult.

- **Selection bias.** In the Priestap and Martin (Priestap & Martin, 2006) and Horwich et al. (Horwich et al., 2009) studies, data were collected on a voluntary basis. If performing hospitals were more likely to participate, and these hospitals experienced less variation in mortality for daytime and nighttime discharge, then the estimated odds ratio may represent a conservative estimate. The converse may also be true.

- **Inadequate time horizon.** All seven studies used in-hospital death. This limited
time horizon may not adequately capture the impact of after-hours discharge on health outcomes.

4.2 External Validity

The impact of after-hours discharge on ICU patients may be generalizable to ALC patients because the provisions of care to the two populations share the following characteristics. To the extent that differences in health outcomes for patients discharged on a weekday compared to patients discharged on the weekend are caused by these characteristics, health outcomes associated with after-hours ICU discharge may be generalizable to after-hours ALC discharge.

- **Lower level of staffing during after-hours.** All included Canadian studies suggested that Canadian hospitals have lower staffing during after-hours, but only the studies by Laupland et al. (K. Laupland et al., 2008) & (K. B. Laupland, Shahpouri, Kirkpatrick, & Stelfox, 2008) reported staffing numbers. In Calgary's ICUs, there are approximately three residents for 10 ICU beds during the day on weekdays, but at night and on weekends, this is reduced to one resident for 10 ICU beds. While a Canadian statistic on staffing levels in general wards appears to be unavailable, Dobkin (Dobkin, 2003) documented lower numbers of residents and attending physicians working in California hospitals on weekends.

- **Bed-blocking dynamics.** As Pilcher et al. (Pilcher et al., 2007) pointed out, there are two possible reasons that could explain why we observe fewer after-hours discharges and higher APACHE scores for after-hours-admitted patients: 1) Staff recognized that an after-hours discharge was not ideal, but the patient was discharged because there had been no other ICU bed available for the emergent incoming patient; and 2) night discharge occurred due to lack of an available ward bed during the day so discharge had been delayed until after-hours.

One can relate bed-blocking dynamics to the ALC population: 1) ED patients may have a higher medical acuity, and thus place pressure on medical staff to discharge patients from the general wards to free up beds; and 2) if these patients discharged from general wards cannot go to their assigned place of treatment (i.e. LTC) immediately, they would be assigned the ALC designation.

- **Place of admission and treatment.** While ICU patients are different from ALC patients in that they have much higher treatment needs, most patients from either group have been admitted through the ED — with 50% of ICU patients (Laupland et al.) (K. Laupland et al., 2008) & (K. B. Laupland et al., 2008) and 83% of ALC patients (Walker et al.,) (Walker, Morris, & Frood, 2009) having been admitted via the ED. And of course, some ALC patients had been ICU
patients earlier in their continuum of care.

5. Costs

No studies on the cost of implementing a 24/7 discharge policy were found during the literature search. Future research addressing the relevant short-term and long-term costs of discharging ALC patients around the clock can contribute significantly to sound discharge policy-making; costs are therefore discussed only conceptually in this section.

Since the baseline characteristics of each hospital in terms of the services it provides and the patient population it serves, vary substantially, each hospital would have to create individually tailored processes to achieve a 24/7 discharge policy; however, we expect some costs to be relevant to all participating hospitals. Assuming capital investment in equipment has already been made and is unaffected by this policy, the most relevant cost pertains to increasing staffing levels during after-hours. However, a hospital may not need to increase staffing after-hours to the level where staffing is consistent throughout the week. A study by Arabi et al. (Arabi, Alshimemeri, & Taher, 2006) found weak evidence that having one intensivist\(^2\) on the weekend and at night, and three intensivists on the weekdays were sufficient to ensure weekend outcomes match weekday's outcomes.

The cost of increasing staffing may or may not be offset by fewer readmissions. While studies by Pilcher et al. (Pilcher et al., 2007) and Priestap and Martin (2006) (Priestap & Martin, 2006) found a positive association between after-hours discharge and readmission rate, the sampled hospitals had not implemented a 24/7 discharge policy. Those after-hours discharges occurred when staffing and care provision were lower during after-hours, which may have contributed to worse outcomes for patients discharged during after-hours. Khanna et al. (Khanna et al., 2011) sampled from a hospital that maintained consistent staffing and found readmission rates consistent throughout the week. Further, as mentioned in the introduction, a 24/7 discharge policy has the potential of reducing readmission rate by admitting more patients on the weekend, and thereby reducing the number of patients who should be but are not admitted due to lack of available beds.

In the U.S., there is a growing number of “nocturnists”, hospitalists who specialize in after-hours care; in the U.K., interdisciplinary night teams are becoming more prevalent. Investigating the cost of increasing hospital staff on the weekends versus engaging a few “night and weekend” specialists or teams may be fruitful.

\(^2\) An intensivist is a physician who specializes in the care and treatment of patients in intensive care units.
APPENDIX A: SEARCH STRATEGY

Google Scholar

57 results with some overlap with ProQuest results; apply limit: since 2003; used advanced search:

- With all of the words: ALC patients
- With the exact phrase: alternative level of care
- With at least one of the words: weekend “after hours” “alternative level of care”
- Without the words alcohol
- Where words occur: anywhere in the article

Search command:

ALC patients weekend OR "after hours" OR "alternative level of care" "alternative level of care" –alcohol

PubMed (includes Medline, Cochrane)

38 results; applied the following limits: since 2007; can directly input the following into basic search.

Search command:

(After-hours care [mh] OR night care [mh]) AND (patient discharge [mh] OR patient admission [mh])

ProQuest (includes Econlit and applied health sciences)

6 results; applied limit: since 2003; used advanced search

Search command:

((all ("Alternative level of care") OR all ("alternative-level-of-care")) NOT tag (alcohol*)) AND stype.exact ("Scholarly Journals" OR "Dissertations & Theses")

Notes

2. Searching after-hours and discharge keywords in Google Scholar and ProQuest produced many irrelevant results, and narrowing using ALC keywords produced too few results; therefore, PubMed was used to focus on clinical evidence on after-hours discharge; ProQuest and Google Scholar were used to hone in on literature on ALC.
BARRIERS AND FACILITATORS TO WEEKEND DISCHARGE: IN-DEPTH INTERVIEWS WITH STAKEHOLDERS

This section was written by Dianna Pasic and Michel Grignon. All members of the team contributed to the interview guide and definition of the sampling procedure.

1. Project Background and Objectives

The goal of this study was to identify and explore the barriers and facilitators to implementing weekend discharge of alternate level of care (ALC) patients from acute care hospitals to post discharge care facilities from the perspective of key health system stakeholders in Ontario. The study findings will help inform discharge planning policy in Ontario.

2. Methods

A descriptive, qualitative methodology was utilized with key informant interviews (conducted by telephone) as the primary data collection tool. The study sample was comprised of key stakeholders including health providers, administrators, managers, and senior staff from a sample of long-term care (LTC) homes, rehabilitation and complex continuing care (RCC) facilities, acute care hospitals (ACHs), community care access centres (CCACs), local health integration networks (LHINs) as well as individuals from day programs and other local coordinating agencies from across Ontario. The interview questions provided respondents with an opportunity to identify the factors that both enable and delay timely and safe discharge of ALC patients from acute to post discharge care on weekends but also, more generally, on any day of the week, in order to explore more fully the overall context in which all ALC patient discharges occur. For instance, those more general barriers and facilitators may in fact exert more detrimental effects on weekends than on weekdays (and those same facilitators have a stronger impact on weekends than weekdays) — and higher discharge rates in general decrease the stock of ALC patients, which would in turn alleviate the issue of discharging patients on weekends.

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3. In this report we use indifferently alternative or alternate level of care for ALC, as both terms are used in Ontario and in the literature.
A total of 28 individuals from 5 LHIN regions across Ontario participated in 23 telephone interviews between June 2012 and March 2013. The breakdown of respondents according to stakeholder category is as follows: LHINs (6), CCACs (5), acute care hospitals (7), and post-discharge care facilities (6).

3. FINDINGS: BARRIERS TO DISCHARGES ON WEEKENDS

3.1 Weekend Discharge of ALC Patients

As anticipated, a majority of respondents indicated that discharges of ALC patients from ACHs to Post Discharge Care (PDC) settings occur less frequently on weekends than on weekdays (and this is confirmed by the descriptive statistics we present in the next section). In addition, respondents noted that the rate of weekend discharge differs depending on the type of PDC setting to which a patient is being admitted: with weekend discharges to LTC homes occurring less frequently than discharges to rehabilitation hospitals, complex continuing care facilities and/or home (all of which were thought to occur with some regularity and frequency⁴). This claim is also partially confirmed by the statistics we present below.

Another distinction between weekend admissions to LTC homes versus other PDC settings is that the former are typically planned several days in advance (i.e., the bed offer and all necessary provisions are in place prior to the weekend). It is important to note that a few informants reported weekend discharge rates in their respective facility or LHIN region that did not conform to the above-stated patterns, indicating that variations do exist within and between jurisdictions across the Province: for instance, a few respondents stated that weekend admissions to rehabilitation hospitals and CCC facilities in their jurisdictions occur just as often on weekends as on weekdays, which again suggests that variations in discharge patterns exist both within and across jurisdictions in Ontario.

It should also be noted that most informants suggested that smoothing the rate of discharges that occur between Monday to Friday, and possibly even across a 7-day week, would be preferable to the current situation, for the following reasons:

• It would improve the ability of hospitals to plan human resources needs and to avoid overload on weekdays

⁴The statistical analysis of discharges from ACH presented in the next section of this report will confirm this general assessment from interviewed stakeholders.
• It would alleviate wait times in emergency departments and increase their capacity to treat (and/or admit when necessary) patients in a more timely manner

• It would allow patients to leave hospitals as soon as they can rather than staying one or two days beyond what is necessary in places that are not staffed to satisfy their need (notably, long-term care)

• On weekends, family members are more likely to be available to support ALC patients than on weekdays

However, a few informants were of the opinion that discharges on weekends would, at best, never be as reliable and secure as discharges on weekdays because the health care system is not (and is unlikely to ever be) fully functional seven days a week. At worst, it would compromise patient safety and indeed equity of care. A full summary of the advantages and disadvantages of weekend discharges identified by respondents is provided in Appendix B.3.

As stated earlier, although the focus of this study was weekend discharge of ALC patients to PDC settings, respondents were provided with an opportunity to identify barriers and facilitators to both weekend and weekday discharge. The rationale for this is as follows:

• Some barriers or facilitators apply to all days of the week, but yield even greater consequences on weekends (due to potential interactions among one or more factors)

• Changing the outflow of ALC patients could affect the stock of ALC patients and, as a result, alleviate the issue of discharges on weekends.

Interestingly, while some barriers and facilitators related specifically to weekends, the vast majority had implications for all ALC discharges (regardless of when they might occur); thereby suggesting that many potential avenues may exist for achieving improvements to both the timeliness and/or safety of these discharges.

Outlined below is a review of the most frequently identified barriers and facilitators to ALC patient discharges that occur 1) on weekends, and 2) at any time during the week.

3.2 Barriers to Weekend Discharges and Admissions

a) Lack of human resources/capacity in LTC homes on weekends relative to weekdays

The most frequently identified barrier to weekend discharges and admissions was related to insufficient resources/capacity in terms of weekend staffing (human resources) and access to certain diagnostic, laboratory, and pharmacy services.
Although resources/capacity issues were cited in both acute (sending) and non-acute (receiving) facilities/destinations, these factors were most frequently identified in relation to weekend admission to LTC homes. Respondents explained that on weekends, the staff and managers necessary to admit patients to LTC homes, and perform the mandated admission assessments, are often unavailable or have significantly reduced hours. These staff positions may include physicians, dieticians, recreationists, registered nurses, speech and language pathologists, occupational and physical therapists, personal support workers, administrative personnel, senior managers (such as directors of care, clinical care coordinators or executive directors), and business/office managers. Access to pharmacy and diagnostic services are also reduced on weekends.

“So … [the LTC facility] … will likely not have a physician on site to do the initial physician assessment [or the] … physiotherapists or occupational therapists … [necessary] …to complete some of the functional and mobility assessments [on weekends]…”

“Well, the Director of Care needs to be involved in looking at the care plan. That person’s usually only there Monday to Friday. Finance is a huge piece [too] because they have to …re-establish …[the patient’s] payment ability …[And] they need to spend a lot of time speaking with the patient and the family about their rights and privileges …[as] mandated by the [Long-Term Care Homes] Act.”

One respondent emphasized that although weekend staff working in LTC facilities have the skills and expertise necessary to provide care and services to their existing residents, they often do not have the experience necessary to deal with the types of problems that would arise if unplanned, complex admissions were accepted on a regular basis.

b) Lack of human resources / capacity in ACHs on weekends relative to weekdays

Resource-/capacity-related issues were also identified as barriers to implementing weekend discharge of ALC patients in ACHs (i.e., sending facilities) – although with much less frequency than those identified in relation to the admission of these patients to LTC facilities. In particular, respondents stated that weekend discharges of ALC patients are often delayed due to a lack of allied health professionals, such as occupational therapists and physiotherapists and/or speech pathologists as well as other staff including discharge planners and senior managers responsible for patient flow.
In addition, a few respondents indicated that physicians are less available to write discharge orders on weekends, and that covering physicians and hospitalists may be less inclined to discharge these patients.

“So ... [hospitals] don’t have the same staffing levels or availability of staff on evenings and weekends ...If ... everything [is] ready, but we are waiting for a report...from an occupational therapist or physiotherapist and we can’t get that [report] until Monday, then the discharge will be delayed.”

“Some physicians are in the hospital on the weekend and available to complete discharge orders ... [but some are not] -- that’s an inconsistency across the system.”

“One of the reasons [for fewer discharge orders being written] is [that] physicians cover for other physicians on the weekends, and they don’t really know the patient, so they’re a little bit, you know, shy to discharge another physician’s patient home over the weekend. And that’s the same with the hospitalist service. When ... [a] hospitalist is covering over the weekend, they’re a little shy to discharge a patient home.”

“...And I can say to you, my docs in medicine don’t round until 2:00 pm because it's the weekend ...there just is not the same level of support ...to manage [anything] other than the [provision of] bed side [care].”

One informant pointed out that physicians are often prevented from writing discharge orders for ALC patients on weekends because other necessary assessments, such as those performed by physiotherapists and occupational therapists, have not been completed.

c) **Lack of human resources / capacity in other institutions and settings (complex continuing care facilities, rehabilitation hospitals, CCACs, and community services)**

Although cited as barriers much less often, a few respondents noted that weekend admissions to complex continuing care facilities and rehabilitation hospitals are also hampered by reduced staff coverage including occupational and physiotherapists, physicians, and pharmacy services.

“...[Due to the fact that] physician ...[and] hospital staff coverage is decreased on the weekends [in rehabilitation hospitals] ...there is less of a desire then to send folks, or receive folks, from a rehab hospital’s point of view, on Saturdays and Sundays given that they won't necessarily [be] getting active rehabilitation...”
Also identified as a barrier to timely and safe weekend discharges is the lack of weekend resources/capacity within community care access centres (CCACs) and the broader community services sector. Several informants noted that CCACs in their jurisdictions, while providing some services on weekends, do not provide the placement coordination services necessary to facilitate new bed offers to LTC facilities. As two respondents stated:

“...our own CCAC placement staff works 5 days a week, they don’t work on the weekends.”

“The Placement Coordination Team ... manages the waitlist: they get the beds that are called in and they match up the patients to the beds - that’s their job. They aren’t there after 5 o’clock and on weekends or statutory holidays.”

Some respondents emphasized that there is insufficient weekend demand — that is, a lack of bed offers being called in by local LTC facilities — to justify the provision of CCAC placement services during these time periods.

Decreased availability of services in the broader community sector (especially in terms of the specialized services required for complex patients) was also identified as an obstacle to weekend discharge of ALC patients from ACHs to home. As one respondent stated, successful discharge to a patient’s home requires leveraging other community services that may not be available.

“...Meals on Wheels, day programs -- those things might not typically run on Saturdays and Sundays ... So if ...ancillary services [are] required to support the individual in the home, it might limit the ability to discharge people on weekends.”

It is important to note that services such as Meals on Wheels are not only needed for recently discharged patients but for all patients in the community — can services be provided on Friday to patients in the community, to be used on weekends?

In a similar vein, lack of access to primary care was also identified as an important barrier to weekend discharges of ALC patients from ACHs to home:

“I think ... discharging on the weekend [to home] when there is no primary care available for the patient is challenging ... It’s [also often] challenging ...on a weekday ...but it’s more challenging on the weekend ...especially if they’re complex.”

Appendices B.1 and B.2 provide a summary in table-form of all of the barriers identified by study respondents.
3.3 Barriers to Discharges and Admissions Occurring on All Days of the Week & Having a Stronger Impact on Weekends

As stated earlier, the overwhelming majority of barriers identified by study respondents did not relate exclusively to weekends, and instead have implications for all ALC discharges regardless of when they occur. These barriers clustered around the following themes: a) communication within and across organizations and sectors — including the transmission of discharge summaries and electronic health records — and between providers and with patients and families; b) late initiation of discharge planning processes in ACHs; c) patient complexity (and other patient level factors); d) rules governing patient selection of LTC homes (patient choice); and e) resources/capacity in the LTC sector. Although these barriers are not related exclusively to weekends, they exert a differential impact on weekends: either by virtue of generating a stronger impact (deleterious or beneficial) and/or increasing (or decreasing) the overall stock of ALC patients during weekends. We begin with a) and b), which, although not specific to weekends, have a stronger impact on weekends compared to weekdays.

a) Communication Barriers

Almost all respondents identified at least one barrier related to inadequate communication or transmission of information, at either the level of providers (most often between individuals working (or employed by) different organizations and/or sectors) and/or between providers and patients. It is important to note that all informants readily and easily identified strategies and mechanisms that were being (or had already been) implemented to address these issues in their respective jurisdictions. (Note: a full discussion of facilitators is presented in a subsequent section of this report).

The transmission of discharge summaries and electronic health records were the most frequently identified barrier related to communication, with some respondents stating that this information is often incomplete, inadequate, illegible, and/or not transmitted in a timely manner to post-discharge care settings.

“One of the barriers would be [a] lack of complete and timely discharge information … [including]… current information [regarding] the patient’s full care needs [as well as] … medications [and] treatments that are required …”

“There have been examples where there’s not full documentation [from the ACH] to support the person’s requirements [in the PDC facility] ... [and at this time] ...it’s a paper
process ... so sometimes, it’s very difficult because of the ...legibility of the information that’s provided.”

Several respondents also stated that there is little, if any, information flowing from ACHs to primary care physicians when their patients become ALC and when they are discharged back to the community. As two respondents stated:

“[Primary care physicians] ... clearly ...don’t know when their patients are in hospital [and] they don’t often know when they [are discharged back]... home.”

“I think the whole communication to the ... patient’s family physician is a challenge in terms of ... discharge summaries, although there’s been lots of improvement ... Clearly, they don’t know when their patients’ are in hospital [and] they often don’t know when they come home.”

A few respondents explained that impaired communication between ACH discharge planners/care teams and CCAC case managers working on-site in ACHs (but who are employed by CCACs), is due in large part to a lack of standardization and documentation of information. As two respondents working in ACHs commented:

“So ... [our] ... front line staff ... [are] ...saying: “I get it. I believe in the [Home First] philosophy, but we never know what CCAC is doing ... a referral goes in and we never hear what happens. We don’t know where [the CCAC is in regard to the discharge] ...process.”

“... you’re dealing with a different organization and ... reporting structure... [that has implications for] ... the communication of the information [regarding] ... what has happened ... [between] the CCAC and the client, and what has happened between the client and the hospital staff. So there have been some communication issues that we are working on and addressing. The documentation ... of that communication is also something that we are looking at improving upon.”

“There have been a couple of problems that the ... [ACH discharge planners] have noticed. One ...is that CCAC has their own pattern of documentation with their own records. So the amount they record on the hospital chart can be minimal, and while they have certain standards they have to meet, usually ... [these] standards are around decision points and not [in relation to] on-going processes. So if there is no decision point reached ... [for example when working] ...with the family to ... determine a list of options for long-term care facilities, we [often] have no idea where they’re at with the process ...Now they’re getting better at it.”
Finally, several participants emphasized that continuity of patient care is jeopardized when provider-level discussions between sending and receiving facilities are not possible.

“... if ... [an ALC patient is discharged to] ... rehab or to long-term care at any time -- Monday, Tuesday, Wednesday during the day or evenings or weekends -- [the care team in the PDC setting] should have the ability to call ... the doc in acute care ... and say “We’re having this problem help us with it.”

“...and this sounds very basic, but it’s always helpful – that there’s good communication between the acute and post-acute destination.”

Several respondents explained that communication between ACH staff and patients (and their families) can be a significant barrier to timely and safe ALC patient discharges on both weekends and weekdays. Particularly problematic are those instances when ACH providers (including physicians and/or other care team members) initiate discussions with patients and their families about the most suitable PDC option prior to completion of the required eligibility assessments by CCAC case managers. Indeed, some respondents suggested that physicians and other providers may be reluctant to discharge ALC patients to home settings due to certain perceptions they possess about the ability of CCACs, and the broader community services sector more generally, to successfully arrange and provide the necessary services to care for their patients on weekends and weekdays.

b) Late initiation of discharge planning processes in ACHs

Approximately, one quarter of the study respondents stated that discharge planning is initiated too late in some ACHs.

“...[Discharge] ...planning ... does not start anywhere near the time of the [patient’s] admission ... it just waits until the patient is ... deemed to be ...[ALC]...Now that’s not true of all cases, but often enough and you can see it ...

Indeed, one respondent noted that the need for weekend discharges might be significantly reduced if discharge planning was implemented in a more timely manner.

“I think so much in the system could be improved if we really focused on early, thoughtful ... discharge planning as soon as [possible] ...in the patients [acute care] hospital stay...
Safe Discharges from Acute Care Hospitals on Weekends

[which itself would facilitate an] ...adequate amount of discharges [on weekdays] ...and [then weekends]... might not be that big of an issue.”

3.4 Barriers to Discharges and Admissions on All Days of the Week that have an Impact on the Stock of ALC Patients

c) Patient complexity (and other patient/family level factors) - should this start it again?

Over a third of respondents stated that patient complexity (e.g., presence of co-morbidities including cognitive and/or behavioural issues) is a key barrier to timely and safe ALC patient discharges in general, regardless of the day of the week on which they transpire. In a similar vein, challenging social situations — including a lack of family members able or willing to support a patient — as well as financial limitations (in particular, low income seniors) all create significant obstacles to discharge. Because of these difficulties, some ALC patients stay longer than necessary in ACHs and the issue for these patients is not so much to be discharged on weekends but rather to be discharged at all.

“Many receiving institutions ... may not take individuals if they have certain ... medical [and social complexities and] characteristics that ... [the facility is not equipped to] handle...”

“...ALC individuals ... who are staying in the hospital for a very long period of time ... [are] typically ... quite complex. [They are] different than those clients who are just waiting for [their] one choice of a LTC home ... those [patients] could wait for 5 months, 6 months, [and] they may not be incredibly complex [but] their choice has made them ... wait. There are individuals who are who are incredibly complex, who ... are not restricted by choice, but it's their care needs, it's the complexity of their condition that prevents them from an easy discharge to another location.”

Closely related to the issue of patient complexity is the likelihood that specialists within ACHs are often unable (or unwilling) to quarterback more timely ALC discharge due to the nature of the care and services provided to their patients (that is, multiple providers, treatments and assessments), and to a lack of incentivization regarding patient flow. This stands in sharp contrast to the role of surgeons who usually make care decisions on their own and have strong financial incentives to discharge patients and admit more cases.

“...there [are many directives] ...that surgeons are [are subject to] in terms of moving people through the system [and] reducing wait times... They know what generates their
revenue, so freeing up the bed makes sense to them ... [whereas within] the medical side ... [multiple providers must] ... cross-communicate and [must] really fixate on a very complex case and ... there isn’t an incentive to turn the bed over in medicine. You know, if you’re palliative, “Well, you can stay here for another two weeks”, and if you don’t have family supports, “You don’t have to go home yet”. So there’s not that same driver of another medical patient ready to fill that bed, even though there’s thirty sitting in emerg [sic]...?

Additional patient-/family-level factors that may hamper the discharge of ALC patients include those situations where the families have not engaged in any pre-planning or discussions about what might happen in the event that the patient is no longer able to look after him or herself. Indeed, many families lack the information necessary to begin such planning and are sometimes unaware of the full range of programs and services available to ALC patients (beyond what is provided by LTC facilities).

“...families in the community don’t necessarily plan or don’t know how to plan ahead, so when you have a 90 year old in the community, and there’s never ever been a conversation ... you’re starting from scratch...”

d) Rules governing patient selection of LTCHs choices

Just under half of the study respondents stated that ALC patient discharge to LTC is often hampered when patients/families select only one or two options of possible facilities.

“The legislation very much supports patient choice ... as it should. But having said that, it flies in the face of good patient flow because the legislation only requires you to have one choice, and the length of .... the wait for that choice is irrelevant in the legislation.”

e) Resources/capacity

Half of our study informants noted that lack of LTC facilities (and/or specialized beds/services) is an important barrier to patient discharges, particularly in small, rural and/or remote communities.

“A long-term care home will have maybe six ... [or fewer] ... spots for people with gastrostomy feeds, and [thus, these patients] could be waiting a very long time for those beds to come up – so it’s a bed within a bed.”
Similarly, respondents explained that homes are not always adapted to frail patients with special needs (hand rails for instance), and insufficient resources exist in the community to retrofit senior apartments and/or equip the homes of senior/frail patients discharged from ACHs. Also, a lack of PSWs available seven days a week increases the stock of ALC patients in ACHs and makes their discharge more difficult. To overcome these barriers more resources overall directed toward frail patients are required, or better equalization formulas taking into account the age distributions of populations served by various CCACs, which is not the case at present. As one participant noted:

“… the government [should do] ... some better per capita funding that matches [population needs in] each geography because there’s [currently] ... huge [discrepancies].”

4. FINDINGS: FACILITATORS TO SUPPORT WEEKEND AND WEEKDAY DISCHARGES AND ADMISSIONS

As stated earlier, study respondents were asked to identify facilitators to both weekend and weekday discharge of ALC patients; interestingly, the resulting pattern of findings reveal the overwhelming majority of these enablers were unrelated to the day of the week in which discharges occur. In addition, the high degree of convergence between the facilitators and barriers suggests that many jurisdictions across Ontario are actively, and often successfully, addressing various facets of discharge planning for ALC (and non-ALC) patients (the statistical analysis in the next section provides insight on temporal trends in rates of weekend discharges and lengths of stay of ALC patients).

As could be anticipated, stakeholders suggested or described facilitators that directly reflect the barriers they mentioned earlier: increasing human resources in ACHs on weekends (remedies the current insufficient supply of these resources and decreases the stock of ALC patients more generally); enhancing communication within and across facilities and sectors, and with patients and families addresses the communication barriers; initiating discharge planning earlier in ACHs, as well as a range of other organizational and provider targeted strategies remedies the barriers associated with current discharge planning practices and reduces (and in some cases even prevents the creation of) the overall stock of ALC patients; last, implementing intra and inter-sectoral accountability can also be seen as a way to decrease the stock of ALC patients in general.
Outlined below is a more detailed review of each of the specific facilitators that comprise the above-stated themes (those enablers that are relevant to weekends are highlighted, but are not presented in a separate section).

4.1 Human Resources/Capacity: New Programs to Plan and Assist Discharges in ACHs

Just over two thirds of study respondents identified facilitators to timely and safe ALC patient discharge that related to increased resources/capacity including: 1) the development of a variety of new programs and services (both within ACHs and the broader community sector), and 2) recommendations regarding the need to increase the number of staff and/or hours of staff weekend coverage in ACHs, CCACs and/or PDC settings.

With regard to the former, several jurisdictions have implemented a variety of new programs and services that are delivered in ACHs (but often funded by LHINs and staffed by CCACs or PDC facilities), which are designed to prevent patients from ever becoming ALC and/or to reduce their length of stay by facilitating the earliest possible discharge to the appropriate PDC setting.

“CCAC has case managers that work in the emergency department and their sole responsibility is to do case-finding around difficult client situations that ... [can] prevent a patient from being admitted [unnecessarily] or, if they are admitted, then they can flag to the [Unit-level] case manager[s] and discharge planners ... to say... these are the issues [for this patient] and I really think that they’re going to need a comprehensive plan when they leave the hospital.”

Another respondent discussed how geriatric emergency nurses working in (and employed by) ACHs facilitate patient care and reduce inappropriate ACH admissions.

“Having geriatric emerg [sic] nurses ...in the Emergency Department, I think, helps with the elderly. [It allows] ...you [to] identify a lot of psychosocial problems ... in the emergency department and sometimes prevent admission because when some of these psychosocial problems [are the primary] ...reason for admission, they go to the ALC level very quickly and then they block a bed.”

One respondent explained how staff employed in rehabilitation hospitals work on-site in ACHs to facilitate ALC patient discharges to their facilities.

“...it’s worked fabulously well, especially with complex discharges. Sometimes on an application, the subtleties [are not evident] ... but when you have the ... [rehabilitation staff] person present ...to...review the application, and actually interview the patient and ...
Other programs and services that were identified by respondents as enablers to ALC discharge planning within ACHs included the:

- Utilization of intensive CCAC case managers to help facilitate discharge of extremely complex ALC patients (this program is LHIN-funded)
- Creation of short-term restorative care beds/units within ACHs for:
  - Patients who appear to require LTC, but may in fact be able to return to their home (or a home-like setting) if additional support is provided
  - For patients who are not quite ready for rehabilitation. (These types of beds/units may present a disadvantage for ACHs as they increase overall length of stay metrics).

In contrast, another respondent noted that ACHs are the least appropriate setting for the provision of restorative care.

“[Restorative care should not] ...reside in acute care. The faster [ALC patients] ...get out of acute care, the better it is ...they need to get into an environment that's conducive to managing senior care ...”

Approximately one-half of our study respondents identified recently developed programs and services within the broader community sector that enable timely and safe ALC patient discharge. Within this cluster were two enablers that relate specifically to weekends: community pharmacies that are open 24 hours per day (and are designed with drive-thru capacity), and automated systems that allow staff in PDC facilities to fill prescriptions during weekends (and other off-hours).

Relevant to both weekends and weekdays are a host of targeted programs and services developed by CCACs in response to local population needs including: 1) short-term programs that help ALC patients resettle in their homes (e.g., personal support workers who escort patients home upon discharge from an ACH (picking up groceries and prescriptions on the way, if necessary), and assisting with other activities, such as navigating stairs and bathing until family members and/or other providers arrive (usually for 24 or 72 hours); and/or 2) those programs that support ALC patients to function in their homes on an on-going basis (including, for example, home visits by PSWs, advanced practice nurses, pharmacists and/or respiratory therapists; community-based bathing
programs; day programs; group therapy programs for patients at high risk of falling, and tele-home care and virtual wards).

“The virtual ward is for those patients with characteristics] ... that [place] them [at] a high[er] risk for readmission ... [based on] ... previous admissions or visits to the ED [sic], and certain chronic conditions) So ... they ... receive a telephone call from our virtual ward nurses daily, and they get a visit from CCAC on an assessed needs basis, and that allows the patient to feel more comfortable at home. The [staff] ... can screen for any symptoms that would ...indicate [the patient is declining in condition] ...[but] ...that's not a substitute for 911 ...it is a support in terms of [assessing] ... what [the] patients’ needs might be, and then electively bring[ing] in those patients into the appropriate clinics, or ... diagnostics, or blood work, or whatever.”

Finally, a third of respondents discussed the need for additional weekend staff (or hours of service provision) in PDC facilities, and, to a lesser extent in ACHs. In LTC homes, additional weekend coverage is required from physicians, pharmacy services, and occupational and physiotherapists as well as the staff required to greet and admit patients and families. Similarly, in RCC facilities, additional weekend coverage is required from occupational and physiotherapists, physicians, dieticians, speech and language pathologists, patient flow coordinators, and the staff responsible for administering medical supplies and equipment.

Of particular note was the recommendation by a few respondents that a 7 day per week model of health care should be implemented in Ontario (including primary care, acute care, community-based care, and PDC settings).

“I think the whole system has to agree that medicine is practiced seven days a week. Right now, it’s just practiced five days a week, really. It’s practiced seven days a week by some people, right?[sic] But I think it stalls on the weekends, and if we want to improve things and get the system working better, we ...all [have to] agree that medicine and patient care, whether it be acute care, long-term care, all patient care is a seven-day-a-week [enterprise].... And ... what you can do on Tuesday is exactly what you can do on Saturday and Sunday. And unless we do that, we’re just going to stay where we’re at.”

Interestingly, a few respondents stated that although care should be available 7 days a week, the specific services provided on weekends do not need to be identical to those provided on weekdays. In addition, one respondent emphasized that the costs associated with such a model needs to be determined.

“I think ... it ...requires ... careful consideration of all the impacts and benefits ...What would be the cost to the system of going to ... [a] ...seven day a week [model], and what would be the
benefit ... [In addition] the weekend model doesn’t have to look exactly like the Monday to Friday model, but I think it’s important to understand what services are needed Monday through Sunday”

### 4.2 Communication-Related Facilitators

All of the study respondents identified at least one communication-related facilitator to timely and safe ALC patient discharges. Most frequently mentioned was the establishment of highly collaborative, joint CCAC-ACH planning committees that meet on a regular basis to review highly complex ALC discharges. In addition to participation by members of the ACH care team and CCAC staff, these committees often include senior managers within ACHs (who are responsible for patient flow) as well as representatives from LHINs and PDC facilities. In some jurisdictions, higher-level steering committees (comprised of senior managers from local sending and receiving facilities, CCAC staff, and primary care physicians) have also been put in place to focus — at a system level — to facilitate ALC patient discharges and transitions to PDC.

“... [It's a] joint discharge planning committee .... [and it's] ...been very effective in ... [finding and assembling] the right resources before the client is ready for discharge...”

“... it’s a working group made up of hospital ... [and] CCAC managers ...We also have long-term care and some of our community partners [involved]. So, we really look at the problem situations that are occurring, and ... [then problem solve] around ...gaps in service. We have the LHIN at the table ... so we can look at [any] areas ... [where we may need]... to [consider] ... providing some [new] funding to ... enable ... or support discharges.”

“...at the steering committee level, you’ve got a much broader group including long-term care and primary care physicians .... And they’re constantly talking about system level challenges and how they might ... do things differently. ”

Another type of facilitator that many respondents suggested could improve communication is the development of automated systems that provide early notification to primary care physicians, CCACs and/or PDC facilities regarding patients that will soon be discharged into their care. A few respondents noted that the Resource Matching and Referral initiative, which is an electronic information and referral system that (among other functionalities) matches patient/client needs with appropriate LTC bed offers, also serves as a useful early warning to CCACs.

Over a quarter of the study respondents discussed the need for discharge summaries to be transmitted to primary care physicians.
“... how primary care supports patients post-acute care discharge is another important enabler... Some ...[facilities] ... have created systems where, at [the time of patient] discharge, that discharge summary [is] ready, and it does go quickly to family practitioners and ... [to] other supports in the community.”

Several participants noted that mechanisms to ensure the timely transmission of discharge summaries need to be in place in order to support both ALC and non-ALC patient discharges. In addition, the provision of simple and easy-to-understand discharge summaries (as well as follow-up telephone calls) to patients constitutes another important enabler to both ALC and non-ALC patient discharges.

“...whether it's an ALC patient or [not] ... I think it's having the proper information ready at [the time of] discharge -- both for any providers that are going to pick up the care, but also for patients ... [in order to provide answer to questions such as] ...When is their next [follow-up] appointment [and] has it been arranged? [Does the patient know]...what their medications are [and whether]...they need to go to a pharmacy ... [to]... pick them up? ...Will [the patient] ...have follow-up in primary care? I think all of that needs to be done. Some hospitals are doing follow-up telephone calls [too]; I think that's another enabler ...”

“[With regard to] ... the patient's need for information ... the discharge summary ... [should be] very easy [to understand and written in] ... plain language [so the patient can]... understand the implications of their diagnosis, the implications of their medication, [and] what they should [and should not] be doing. I think that information ... [facilitates]...the discharge process.”

Another closely related enabler is the development of standardized discharge summaries to convey all of the necessary information to support ALC patients as they transition to PDC.

“ ...one of the initiatives that [is being undertaken in our jurisdiction] ... is a standardized discharge report ...[it’s] a key piece to enhance communication not only from hospital to hospital, but hospital to family physician ... And it’s not just to illustrate what happened in hospital, but in the case of the family physicians, it needs to illustrate ... the next steps and ...[other factors that should] ...be ...[taken] ...into consideration for ... [the] ...patient or client.”

Several respondents explained how standardization and documentation can improve communication — and in fact safeguard the therapeutic relationship — between ACH providers and patients/families, especially with regard to the Home First philosophy.
“We ... provided scripts for the physicians ...to use with their patients when ... ... [these patients] no longer [require] the services of an acute care bed. So the physician would ...basically say ‘You no longer need the services of acute care, and my discharge team will work with you now to come up with the best possible plan for you when you go home.’ Something along those lines, so that it kind of ‘let them off the hook’, in terms of the discharge ...

Similarly, another respondent explained how the development of escalation protocols safeguards the therapeutic relationship between providers and patients.

“We’ve put together an escalation strategy so ... [that discharge planners or social workers] ... [can] ...maintain a positive therapeutic relationship with the patient and the family. Their job is to provide the menu [of options] ... So when a family pushes back [with regard to the proposed discharge] and says “I am not gonna [sic], I’ve paid my taxes, I am going to go to the media” ... that prompts the escalation. So then we  [refer] ... to the management level [and following that, the director or senior management level] ... [This process] ...ensures that ... that we never ... [require] our frontline staff [to deliver] .... corporate messages. And it provides an opportunity to reinforce messages to families and patients and say to the staff ‘We’ve got your back and you’re saying this and we’re right behind you, and we’ll look after the tough stuff and you keep the positive therapeutic relationship with the family’.”

Another facilitator identified by respondents was very focused daily, or even twice daily, bullet rounds (or team huddles) among members of multidisciplinary care teams working in ACHs in order to ensure good communication about the care and status of ALC (and potential ALC) patients.

“A bullet rounds differs from regular rounds because] ... it’s ... a more purposeful opportunity for the team to gather and talk about the patients together. So ... if [for instance] ...the physician says: “From our perspective this patient can go home tomorrow” and everybody [else says]: “Whoa! No they can’t!” [they can problem solve together]”

One facilitator, specific to weekend discharges is the creation of on-call physicians who, prompted by a family physician, can act as the primary care physician of the patient during weekends or after-hours, and make all decisions, including admission to a PDC facility on behalf of the family physician.
4.3 Early Initiation of Discharge Planning in ACHs (and other organizational and provider targeted strategies)

The third and final large cluster of facilitators identified by our study respondents is related to ACHs and the early initiation of discharge planning as well as a range of other related organizational and provider targeted strategies. Many respondents cited the Home First philosophy as a particularly important enabler to timely and safe ALC patient discharge.

“I think … [a] … key piece is … when discharge planning starts early in a patient’s stay. We see a lot of things fall apart … when … people don’t [begin] … discussions about clients … upon arrival] … “

“The goal of Home First is … to get a patient home before we consider any other options. That we don’t talk about LTC in the hospital, and that … [we engage CCAC] … at point of admission, and not 3 to 4 days later. So, … even if the patient is still medically unstable … [the] … CCAC. … social work, front-line nurse, [and] OT/PT [sic] [are all] … building relationships with the family, understanding what the current conditions are at home, how the patient has been coping, and then collectively, we’re making a decision about what would be the most appropriate discharge destination.”

Informants also identified a range of other strategies to support the Home First philosophy and discharge planning more generally including physician engagement and staff education (e.g., newsletters, meetings, and information posted on the ACH website), and efforts to standardize and codify key tools and processes (described previously in the section on communication facilitators).

4.4 Strategies to Improve Intra and Inter-Sectoral Accountability and Performance

Finally, several respondents stated that in order to facilitate timely and safe ALC patient discharges new strategies and mechanisms to improve system-level accountability and performance are necessary.

“I think … the complete subdivision and the lack of overlap in terms of accountability of the indicators between the hospital sector and the community sector— [is a barrier]…. [And] … I think it’s just now, this year, that hospitals are actually being held accountable for ALC rates … [but] I think that … having the shared accountability whether it’s through financial accountability … [for instance] … the hospital owns both the acute setting and the community setting, or by [creating] … accountability [through other mechanisms such as] … accountability agreements … is a key enabler to making things move.”
In a similar vein, several respondents discussed the valuable role played by LHINs and CCACs in enabling timely and safe discharge of ALC patients.

“I know many LHINs are holding their health care providers... the organizations in their LHINs, [such as]... hospitals and CCAC[s], accountable to a specific ALC rate or ...target [as well as] ...ER performance measures ... in terms of the... wait times. So I think those kind of performance measures are good in the sense that there’s accountability tied to it ... [and] ...expectations in terms of performance.”

5. CONCLUSIONS

The interviews conducted to date reveal that jurisdictions across the Province are actively addressing the issue of ALC discharge, and, at least in some jurisdictions, real progress has been achieved. The Home First philosophy, in particular, was lauded by almost all study respondents as a key strategy for ensuring safe and timely ALC discharges from acute to post discharge care.

Strategies and actions announced earlier this year in Ontario’s Action Plan for Health Care (e.g., investments in community care, reforms to LHINs to provide seamless coordination of services provided to patients) should also contribute in reducing the number of ALC patient days in acute care hospitals.

One overarching theme from the qualitative investigation of barriers and facilitators to weekend and weekday ALC patient discharge is that the experiences of respondents from the different jurisdictions sampled in this study closely mirror one another; however, significant variations appear to exist due in part to: 1) the specific configuration of local health systems (e.g., number of long-term care facilities; availability of community-based services; organization of services (e.g., rehabilitation provided within an ACH — either on-site or in a free-standing but affiliated facility — versus independent rehabilitation hospitals); 2) geographic and demographic disparities (e.g., rural, urban, remote, and/or sparsely populated jurisdictions; and proportion of elderly citizens); and 3) implementation of a diverse array of LHIN, CCAC, and province-wide initiatives/strategies; some jurisdictions (both sending and receiving facilities) appear to have implemented such initiatives and programs while others are considering implementation, or are in the early stages of adoption).
## APPENDIX B.1: Summary of Barriers to Timely and Safe ALC Discharges from Acute to Post-Discharge Care As Identified by Study Respondents

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Description</th>
<th>Time Period</th>
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</table>
| **Resources and Capacity** | **LTC facilities:**  
- Reduced staff on weekends (including physicians, dieticians, recreationists, registered nurses, speech and language pathologists, occupational and physical therapists, administrative personnel, senior managers (including directors of care clinical care coordinators or executive directors), and business/office managers).  
- Reduced access to pharmacy and diagnostic services on weekends.  
- Lack of LTC facilities (and/or specialized LTC beds and services). | Mon-Fri | Sat-Sun |
| **ACHs:** | - Reduced (non-physician) staff on weekends including occupational and physiotherapists, discharge planners, and senior managers responsible for patient flow.  
- Fewer physicians available to write discharge orders on weekends  
- Somewhat less capacity to perform certain diagnostic tests on weekends. | | ✓ |
| **Rehabilitations Hospitals and CCC facilities:** | - Reduced staff on weekends including occupational and physiotherapists, physicians and pharmacy services. | | ✓ |
| **CCACs:** | - Reduced hours and/or no coverage by placement coordinators on weekends. | | ✓ |
| **Broader Community Sector:** | - Decreased availability of some programs and services on weekends (e.g., Meals on Wheels, day programs).  
- Reduced availability of non-urgent patient transportation on weekends.  
- Lack of financial resources to retrofit homes (and other home-like settings) to accommodate needs of frail elderly. | | ✓ |
| **Primary Care:** | - Reduced access to primary care physicians on weekends. | | ✓ |
| **Inadequate Communication** | - Patient discharge summaries (and electronic health records) are often inadequate, and are not transmitted to PDC destinations as well as CCACs and primary care physicians in a timely manner.  
- Insufficient communication between ACH staff and (on-site) CCAC case managers (due in part to a lack of standardization and documentation).  
- Members of the acute care team (including physicians, nurses, and allied health professionals as well as the discharge planning team) may provide patients with inconsistent messaging regarding post-discharge care options and eligibility protocols (e.g., Home First philosophy).  
- Primary care physicians are often unaware that their patients have been admitted to hospital (and/or have been discharged).  
- CCACs and PDC facilities may not have adequate (if any) opportunities for ongoing communication with the acute care team once patients have been transferred to. | | ✓ |
<p>| <strong>Lack of Timely Initiation/Completion of Discharge Planning Processes</strong> | - ALC designation and initiation of discharge planning may simply begin too late. | | ✓ |</p>
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<th>Barrier</th>
<th>Description</th>
<th>Time Period</th>
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| **Patient Complexity and other patient level factors** | - Presence of co-morbidities (including cognitive and/or behavioural issues) make patients difficult to place in PDC facilities (and increases number hand-offs and timeliness of ALC designation).  
- Socio-economic factors (including lack of family support and/or financial limitations (in particular, low-income seniors).  
- Lack of preparedness (including creation of medication lists and key contacts) and prior planning by patients and families regarding PDC options and patients’ wishes. | ✓           |
| **Legislative (Rules governing patient selection of LTC homes)** | - Patients are permitted to select as few as one choice of LTC facility, and are permitted to wait for this choice in acute care rather than an “idle bed” in another facility.                                                      | ✓           |
| **Other**                                        | - Lack of financial incentives tied to patient flow for (non-surgical) specialists in ACHs tied to patient flow                                                                                           | ✓           |
**APPENDIX B.2: Summary of Facilitators to Timely and Safe ALC Discharges from Acute to Post-Discharge Care as Identified by Study Respondents**

<table>
<thead>
<tr>
<th>Facilitator</th>
<th>Description</th>
<th>Time Period</th>
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</thead>
</table>
| **Resources and Capacity**       | - Development of new provider roles within ACHs to prevent inappropriately admitting patients who are likely to become ALC or to reduce the overall stock of ALC patients including:  
  - CCAC case managers working in EDs  
  - Staff from rehabilitation hospitals working in ACHs to help facilitate the identification of ALC patients ready for discharge to their facilities  
  - Geriatric nurses working in EDs  
  - Intensive CCAC case managers designed to assist ACHs with discharge of extremely complex ALC patients  
  - Increased number of staff or hours of staff coverage for providers working in LTCHs, RCC facilities, and ACHs on weekends  
  - Creation of short-term restorative care beds (for patients who will eventually be discharged to home, LTC or to rehabilitation hospitals)  
  - Availability of community pharmacies open 24 hours, 7 days per week (with drive-thru capacity)  
  - Development of a variety of CCAC-administered programs and services to meet local population needs including:  
    - Short-term resettlement programs (e.g. PSW who escorts ALC patients home and provides time-limited support until family members or other providers arrive);  
    - Programs that support ALC patients to live in their own homes on an on-going basis (e.g., home visits by PSWs, advanced practice nurses, pharmacists and other allied health professionals)  
    - Day programs  
    - Community bathing programs  
    - Group-therapy programs for patients at high risk of falling  
    - Tele-home care and virtual wards  
  - Provision of CCAC placement services on weekends                                                                                                                                                                                                                                                                                                                                                       | ✓           |
<p>|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ✓           |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ✓           |</p>
<table>
<thead>
<tr>
<th>Facilitator</th>
<th>Description</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>- Highly collaborative joint CCAC-ACH planning committees that meet on a regular basis to review highly complex ALC discharges&lt;br&gt;- Development of automated systems that provide early notification to primary care physicians, CCACs and/or PDC facilities about soon to be discharged ALC patients&lt;br&gt;- Provision of standardized comprehensive (and easy to understand) discharge summaries (and electronic health records) to primary care physicians, CCACs and PDC facilities (and patients themselves) at time of patient discharge&lt;br&gt;- Development of escalation protocols for staff working in CCACs (to help preserve therapeutic relationship between frontline providers and patients (and their families)&lt;br&gt;- Bullet rounds (and team huddles)&lt;br&gt;- Creation of on-call physicians</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Lack of Timely Initiation/Completion of Discharge Planning Processes</td>
<td>- Home First Philosophy&lt;br&gt;- Resource Matching and Referral Initiative</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Intra and Inter-Sectoral Accountability</td>
<td>- LHIN role&lt;br&gt;- CCAC role&lt;br&gt;- Mechanisms to promote accountability among ACHs, CCACs and PDC facilities (including accountability agreements)</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
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**APPENDIX B.3: QUOTATIONS FROM INFORMANTS ON ADVANTAGES AND DISADVANTAGES OF WEEKEND DISCHARGES FROM ACHS**

**Advantages:**

“Well ... having a smooth patient flow means um that you’re not in crisis come Monday, Tuesday [or any] ...day. And that’s sort of what ...happens to a certain degree ...now. And any time you’re in crisis ...planning parameters [are] now in most facilities ... .... at least eighty-five to ninety per cent occupancy. If you’re surging, that’s putting you over a hundred per cent. That means you’re getting into [staff] over-time, you’re ... scrambling for resources... Ontario’s hospitals are spending a significant chunk of money on over-time and I would suspect that if you dug into it deeper, you would find some of these timing differences are on weekends really play a huge part [in] ... that ... So, you know having a more smooth patient flow across the board, across weekends, across holidays ...would help to [improve the] planning [and allocation of human and financial] ... resources ...”

“[Weekend discharge of ALC patients would improve patient flow] ... because our discharges are probably between about 10 and 18% Monday to Friday, and they drop down to about 2-5% on the weekend. So we affectionately call Monday our cleanup day, which means people
are accumulating in emerg [sic], and we do the best we can to place them, but if you don’t have discharges, you can’t place the patient. So if the doctors aren’t discharging on the weekend and long-term care homes aren’t accepting patients on the weekend, and if I’m a physician and I’m covering for you, I’m not going to discharge your patient. And Monday it kind of comes to a head, and then we’re looking at a lot of discharges, a lot of patients to place that are accumulating in emerg [sic].”

“I don’t think there’s any disadvantages, if you do it right and the same way during the week. I think the advantages are to the patient, too. I think it’s better for the patient [to leave acute care as soon as possible] …, because acute care hospitals are not staffed [in a manner that’s directed toward the needs of] … ALC patients everything, is [focused on] the acute care patient [Indeed] … the acute care setting is [not] there … to mobilize somebody out of bed several times a day. That does take place in the long-term care facilities.”

“You know, if anything, I think it would be easier, from a patient perspective, it would be easier for them to transition on the weekend because you’ve got family that doesn’t need to take time off work, generally speaking, and that would provide … greater support for the patient to transition over the weekend.”

**Disadvantages:**

“… you don’t need … everybody for everybody—but you do need a few key people for everybody. And so [even if, for instance, acute care sends all the patient’s meds [sic], would we need a pharmacist? Well, technically you wouldn’t, [but]… Accreditation Canada and CPSI and ISNP and all the other organizations that look at quality and safety would say that the place where things get most messed up is in hand-offs. And so if you say we’re going to cheap out and … not … have all the usual suspects [sic] available when a patient is admitted to long-term care or to rehab [sic], you risk all of the things that … those[regulating] bodies would tell you are mandatory and necessary to keep a patient safe at a time of handoffs. So handoff is the biggest place for errors … And if you are going to do weekend and evening [afterhours] admissions, either to rehab or LTC, and negate the fact that you have all hands on deck that you would have if this was an admission at 9 o’clock in the morning, then you are not treating that patient in the same way, with the same equity, as you are treating the patient at 9 o’clock in the morning patient?”
DISCHARGES OF ALC PATIENTS FROM ACHs IN ONTARIO: PATTERNS AND TRENDS IN THE DISCHARGE ABSTRACT DATABASE

This section was written by Li Wang and Michel Grignon. Gioia Buckley led the data request process. All members of the team contributed to the design of the statistical analysis.

1. DATA SOURCES

The Discharge Abstract Database (DAD) was used to identify patients classified as Alternate Level of Care (ALC) and to describe the timing and patterns of their discharge. The DAD is an exhaustive data set of all inpatient hospitalizations in Ontario, providing information such as date of admission and date of discharge, as well as diagnosis at admission and secondary diagnoses, and ALC days during the stay. All stays with a discharge date between April 1st, 2004 and December 31, 2011 were selected (note that most stays are observed prior to when a standardized definition of ALC was used in all provincial hospitals). This yields information on all fiscal years between 2004-05 and 2010-11, plus three quarters of fiscal year 2011-12. Diagnoses are coded using the International Classification of Diseases (ICD) 10.

To ensure meaningful rates of ALC patients, we followed the Canadian Institute for Health Information’s (CIHI’s) recommendations and excluded:
- Pediatric cases (younger than 17) because the concept of ALC status in children is not widely accepted and/or coded.
- Obstetric cases (MCC 13 & 14) because they have a different care pathway relative to the general hospital population.

All Acute Care Hospitals (ACHs) in Ontario have started using the following definition of ALC patients July 1 2009: “When a patient is occupying a bed in a hospital and does not require the intensity of resources/services provided in this care setting (acute, complex continuing care, mental health or rehabilitation), the patient must be designated ALC1 at that time by the physician or his/her delegate. The ALC wait period starts at the time of designation and ends at the time of discharge/transfer to a discharge destination (or when the patient’s needs or condition changes and the designation of ALC no longer applies).” (Ontario Ministry of Health and Long-Term Care, 2013).
• Patients admitted under the ICD 10 code Z76 (These are situation where a healthy person is accompanying a sick person).
• Transfers from one acute hospital to another in order to avoid the double counting of hospitalization (Canadian Institute for Health Information, 2009, Technical Notes – Methodology, pages 15-16).

Beyond what CIHI recommends, we also excluded, for obvious reasons:
• Patients if the health card is not issued by Ontario.
• Patients who died in the hospital.

2. DESCRIPTIVE ANALYSIS

2.1 Proportion of Stays with ALC Days

As can be seen in Table 1, the patient was categorized as ALC at some point in 6.1% of inpatient stays in the province of Ontario between April 2004 and December 2011. It must be noted that fiscal year 2011-12 cannot be compared to other fiscal years because it is missing its last quarter (January to March) and data for other years show strong seasonal variations in the rate of stays with ALC days: the proportion of stays with ALC days tends to increase in winter, therefore proportions for that last year are underestimates.

Table 1: Proportion of stays with at least one day categorized ALC, by fiscal year and Local Health Integration Network (LHIN)

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<td>0.059</td>
<td>0.074</td>
<td>0.078</td>
<td>0.077</td>
</tr>
<tr>
<td>Central East-3509</td>
<td>0.061</td>
<td>0.046</td>
<td>0.046</td>
<td>0.054</td>
<td>0.071</td>
<td>0.065</td>
<td>0.077</td>
<td>0.073</td>
<td>0.057</td>
</tr>
<tr>
<td>South East-3510</td>
<td>0.058</td>
<td>0.052</td>
<td>0.061</td>
<td>0.067</td>
<td>0.057</td>
<td>0.054</td>
<td>0.061</td>
<td>0.062</td>
<td>0.050</td>
</tr>
<tr>
<td>Champlain-3511</td>
<td>0.053</td>
<td>0.054</td>
<td>0.050</td>
<td>0.054</td>
<td>0.050</td>
<td>0.050</td>
<td>0.053</td>
<td>0.056</td>
<td>0.060</td>
</tr>
<tr>
<td>North Simcoe Muskoka-3512</td>
<td>0.064</td>
<td>0.046</td>
<td>0.051</td>
<td>0.056</td>
<td>0.062</td>
<td>0.068</td>
<td>0.076</td>
<td>0.082</td>
<td>0.078</td>
</tr>
<tr>
<td>North East-3513</td>
<td>0.058</td>
<td>0.051</td>
<td>0.055</td>
<td>0.061</td>
<td>0.055</td>
<td>0.059</td>
<td>0.059</td>
<td>0.061</td>
<td>0.067</td>
</tr>
<tr>
<td>North West-3514</td>
<td>0.078</td>
<td>0.069</td>
<td>0.072</td>
<td>0.075</td>
<td>0.076</td>
<td>0.080</td>
<td>0.084</td>
<td>0.092</td>
<td>0.080</td>
</tr>
<tr>
<td>Total</td>
<td>0.061</td>
<td>0.050</td>
<td>0.053</td>
<td>0.058</td>
<td>0.060</td>
<td>0.063</td>
<td>0.069</td>
<td>0.070</td>
<td>0.068</td>
</tr>
</tbody>
</table>

The proportion has increased substantially over the past seven years, from 5% of stays with at least one day categorized as inpatient in FY (fiscal year) 2004-05 to 7% in FY2010-11, or a 40% increase in the proportion. Table 1 also shows variation across LHINs in the
province, from an overall (all years) proportion of 4.7% in the South West LHIN to 8.5% in the Hamilton Niagara Haldimand Brant (HNHB) LHIN. Last, it appears that there was much less variation across LHINs in 2004\(^6\) (all were concentrated around a proportion of 5%, the only exception being North West at 6.9%) but that a few LHINs (Waterloo-Wellington, HNHB, North Simcoe Muskoka, and North West) have seen their proportion of stays with ALC days increase substantially since then, driving the increase in the provincial proportion.

**Figure 1: Percentage of ALC patients by LHIN in FY 2004, 2007 and 2010**

![Figure 1: Percentage of ALC patients by LHIN in FY 2004, 2007 and 2010](image)

Figure 1 illustrates the same data that were presented in Table 1 – we dropped FY 2011-12 from the figure since it is not directly comparable to previous years.

### 2.2 The Pattern of Discharge of ALC Patients by Days of the Week

#### 2.2.1 Overall discharge rates of ALC patients

It is clear that ALC patients are not discharged on average on weekends: we show in figure 2 the distribution of discharges by days of the week. If discharges took place with equal probability each day of the week we should observe a constant proportion of one seventh (14%) on all days (14% of discharges observed in a given week would occur on every given day of the week). However, we observe that, on average, only 3.3% of discharges take place on a Saturday or Sunday (mostly on Saturdays and less so on Sundays) versus 18.7% on an average weekday. These proportions are relatively stable across LHINs and over time during the period under study.

---

\(^6\) For ease of exposition, we will refer to the fiscal year – April 1 to March 31 – as the “year”. For example, “2004” will now refer to the 2004-05 fiscal year (i.e., April 1, 2004 to March 31, 2005).
Among weekdays the probability of being discharged one particular day does not vary substantially, except for a Friday blip. However, no Monday blip (surge in discharges when staffing resumes back to normal in ACHs and PDC settings) was discernible in the data, except in LHIN South East. Figure 2 even indicates that, on average, discharges are less likely on Mondays than on other weekdays.

We now go more in depth by describing the timing of discharges by PDC setting: the largest proportion (43%) of patients categorized ALC are discharged to rehabilitation and chronic care facilities, followed by discharges in the community, with home care support (21%) and long-term care homes (20%), 11% are discharged to the community without home support and 5% are discharged to other PDC settings. Since staffing issues in long-term care homes have been cited in our in-depth interviews with stakeholders as a major barrier to discharges on weekends, we start with describing the timing of discharges to these settings over days of the week. In the following analysis we group discharges on Saturdays, Sundays, and holidays (hence, the proportion is for the total of these days, not on a single day).

2.2.2 Discharges to long-term care homes (20% of discharges of ALC patients)

Among discharges to long-term care homes, weekend (Saturday, Sunday and holidays) discharges represent a very small proportion at around 4% (this would mean that, on average, one day in the weekend represents about 2% of discharges). Moreover, that proportion has decreased between 2004 (it was 4.8%) and 2011 (it now sits at 3.3% only). Despite efforts and policies implemented in the study period (facilitators mentioned during...
in-depth interviews), discharges to long-term care homes on weekends are even less probable now than seven years ago and represent a very small proportion of all discharges.

**Figure 3-1: ALC patients discharged to LTC homes on weekend, 2004, 2009 and 2010**

Figure 3-1 shows that the proportion of discharges of ALC patients to long-term care homes taking place on weekends has decreased throughout the Province during the study period except in the South West LHIN (3502, London), HNHB (3504) and Central West (3505, Brampton) where it increased very modestly.

**Figure 3-2: ALC patients discharged to LTC homes in 2004**
Figures 3-2, 3-3, and 3-4 show some variation in weekend discharges to long-term care homes across LHINs but it is not significant, especially after 2004.

There seems to be somewhat of a Monday blip in discharges of ALC patients to long-term care homes, especially in some LHINs and in more recent years. However, ALC patients are even more likely to be discharged to LTC homes on a Thursday or a Friday: there is a pre-weekend surge (expediting discharges) rather than post-weekend backlog reduction effort in ACHs.
2.2.3 Discharges to Rehabilitation/Chronic Care (RCC) facilities (43% of discharges of ALC patients)

Around 5% of discharges to these facilities take place during weekends and holidays and that proportion has remained constant over the period of study (from 4.9% to 5.2%, see figure 4-1).

Contrary to what happened for discharges to LTC homes (where proportions of discharges taking place on weekends decreased almost everywhere), LHINs have very different stories for the proportion of discharges to RCC facilities taking place during weekends. For example, the proportion increased substantially in Central LHIN (3508, from 2.7% in 2004 to 10.4% in 2010) but dropped in North Simcoe Muskoka (3512, from 7.0% to 1.2%). In 2010, the lowest weekend discharge proportions of ALC patients to RCC facilities were 1.2% (3512) versus 11.2% in North West.

Figure 4-1: ALC patients discharged to RCC facilities on weekend, 2004, 2009 and 2010

Figure 4-2: ALC patients discharged to RCC in 2004
Figure 4-4 shows a small Monday blip in one LHIN only (South East, 3510). Otherwise, discharges to RCC facilities take place uniformly during weekdays.

2.2.4 Discharges to home with home care support (HHCS, 21% of discharges of ALC patients)

The proportion of discharges of ALC patients to home with home care support taking place on weekends is slightly higher than to LTC homes or RCC facilities, at about 9%. It has decreased slightly over the period, from an average of 9.6% in 2004, to an average across LHINs of 8.4% in 2010 (Figure 5-1). There are no significant differences across LHINs (Figures 5-2 to 5-4) and a small Monday blip can be observed in five LHINs (3501, 3503, 3509, 3510 and 3512) in 2010 (Figure 5-4).
Figure 5-1: ALC patients discharged to home care on weekend, 2004, 2009 and 2010

Figure 5-2: ALC patients discharged to home care in 2004

Figure 5-3: ALC patients discharged to home care in 2009
2.2.5 Discharge to home, without home care support (11% of discharges of ALC patients)

The proportion of discharges of ALC patients to home without support taking place on weekends is close to 11% (the highest proportion across types of post-discharge environments) and it has increased slightly from 2004 (10.1%) to 2009 (12.0%) before decreasing in 2010 (to its original level of 10.0%, see Figure 6-1).

This overall average results from considerable differences across LHINs: for example, the proportion of discharges on weekends significantly increased from 7.7% in 2004 to 17.0% in 2010 in the South East LHIN (3510), but decreased from 15.5% to 8.8% in North Simcoe Muskoka (3512) and remained the same in the South West (3502) and Central West (3505) LHINs.
A Monday blip for discharges to home without home care support was observed in LHINs 3502, 3508, 3509 and 3511 in 2010 (see Figure 6-4).

**Figure 6-2: ALC patients discharged home in 2004**

![Figure 6-2: ALC patients discharged home in 2004](image)

**Figure 6-3: ALC patients discharged home in 2009**

![Figure 6-3: ALC patients discharged home in 2009](image)

**Figure 6-4: ALC patients discharged home in 2010**

![Figure 6-4: ALC patients discharged home in 2010](image)
3. ESTIMATE OF NUMBER OF ALC DAYS THAT COULD BE SAVED BY SAFE DISCHARGES ON WEEKENDS

In this section we use the pattern of discharges within the week described above to estimate the reduction in ALC days that one would obtain if patients were discharged at the same rate all days of the week.

To do so, we assume that stays with more than 8 ALC days would not be affected by an increase in safe weekend discharges (the reason for the patient blocking the bed is not that they could not be discharged on a weekend). We also assume that stays with only one ALC day are not caused by weekends (if weekend discharges were the cause there would be 2 ALC days at least). On average, a patient discharged on a weekday will be discharged on a Wednesday. Had that patient been discharged the preceding weekend, he/she would have spent 3.5 fewer days (Sunday, Monday and Tuesday for if discharged on Sunday; and Saturday, Sunday, Monday and Tuesday if discharged on Saturday) as an ALC patient.

The DAD indicates 21,328 such stays with 2 to 8 ALC days in 2010-11; it also shows that 3.7% of these stays were discharged on a Saturday or a Sunday\(^7\) (slightly more than the average of 3.3%\(^7\) for all stays with ALC days). The potential for increase in weekend discharges for these stays is therefore \((0.143 - 0.037) / 0.143 = 0.106 / 0.143 = 0.741\)^8.

Overall, the number of potential ALC days that could be saved if discharges took place on weekends as on weekdays can be approximated as:

<table>
<thead>
<tr>
<th>Total number of hospital stays with 2 to 8 ALC days</th>
<th>Average number of days saved by a weekend discharge</th>
<th>Potential increase in weekend discharges (proportion)</th>
</tr>
</thead>
</table>

or, numerically:

\[21,328 \times 3.5 \times (10.6 / 14.3) = 55,333,\] or 6% of the total of ALC days in 2010-11\(^9\). This is a very rough approximation but it suggests that increasing weekend discharges would not

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\(^7\) This is the one-day average calculated over the number of Saturday and Sunday discharges.

\(^8\) Please note that this proportion is the same if calculated over 2 days: \((0.286-0.074)/0.286=0.741.\)

\(^9\) One could argue that this calculation should not be restricted to 2-8 ALC day stays only, but calculated over all ALC stays. Although it might be more appropriate to use a 1.5 average number of days saved due to the patient having been unable to be discharged on Saturday (2 days saved) or Sunday (1 day saved), let us continue to use the higher number of 3.5 days saved per stay. The Office of the Auditor General (2009) indicated that about 50,000 hospital stays were ALC stays. Therefore, in this extreme case, the number of potential ALC days that could be saved if discharges
dramatically decrease the number of ALC days in Ontario; as noted by stakeholders in the interviews a more pressing issue is that of ALC days in general, and the complexity of discharging these complex patients rather than the mere issue of weekend discharges.

4. MULTIVARIATE ANALYSIS

4.1 Determinants of ALC Stays

We now revisit the issue of ALC stays (stays with at least one day categorized as ALC): the descriptive analysis shows substantial variation across LHINs in the proportion of stays with at least one day as ALC and we want to understand whether this comes from differences in the composition of the patient population across LHINs (who is admitted) or if there is some effect of the LHIN independent of individual characteristics (something that could be linked to policies implemented in LHINs and which might suggest the role of barriers and facilitators to ALC stays). This might allow us to understand the process generating ALC stays.

We use the individual stay as our unit of analysis and run a logistic regression of the probability that a stay will comprise days in which the patient was categorized as ALC explained by demographic and clinical characteristics of the patient (age, sex, diagnosis at admission) as well as other indicators of the complexity of the stay (number of providers involved, which was also cited as a barrier to early discharge in in-depth interviews and number of secondary diagnoses). We use these patient characteristics as controls and our two variables of interest are:

- The LHIN where the stay took place, and
- The facility to which the patient was discharged.

We enter age and age squared to control for complex relationships between age and the probability of becoming ALC (it is likely that the probability increases more than linearly with age). Diagnostic groups are coded following CIHI (Canadian Institute for Health Information 2009): in this work, CIHI indicates that several specific diagnostic groups, such as trauma, diseases of the nervous and circulatory systems and “other reasons” are conducive to the patient being categorized as ALC.

Last, we include a variable indicating the year (to control for possible temporal trends) and we correct standard errors for heteroskedasticity and we use the data to test between a
random or a fixed effect of LHIN (the Hausman test rejected the random effect hypothesis, therefore we entered each LHIN as a dummy variable in the regression).

Results: Table 2 summarizes the results of the regression explaining the probability that a stay will involve ALC days. Controls have the expected effects (i.e., older and more complex patients are more likely to be categorized as ALC).

Controlling for these patient characteristics, we observe that patients discharged to RCC facilities and, to a lesser extent, LTC homes are much more likely to be categorized ALC than patients who are going to be discharged to the community, without support; being discharged with home care also makes a difference (more likely to be categorized ALC) but it is much smaller than for patients who are discharged to RCC or LTC homes. Overall, the discharge setting explains 10% of total variance (that is 25% of what our model can explain: 57% of total variance remains unexplained once we control for individual characteristics, post-discharge setting, and LHIN).

Also, controlling for individual patient characteristics and discharge setting, there is a specific effect of being admitted to hospitals located in some LHINS: patients admitted in a hospital situated in North East (3513, North Bay) or South East (3510, Belleville) are substantially more likely to be categorized ALC at some point during their stay than patients admitted in Toronto Central (used as the reference LHIN in the analysis); conversely, patients admitted to a hospital located in Mississauga-Halton (3506) or Champlain (3511, Ottawa), are substantially less likely to be categorized ALC during their stay. However, one must keep in mind that these variations are very small compared to the effect of clinical or demographic characteristics and LHIN of admission only explains 1% of total variance in the probability of being categorized ALC (that is 2.5% of what is explained by the variables entered in the model).

Last, there is a very small trend toward a decline in the probability of being categorized ALC, controlling for clinical characteristics.

Our main conclusion is that the probability of being categorized as ALC depends mostly on clinical characteristics of the patients and, to a much lesser extent, on where the patient is going to be discharged to. The effect the LHIN of admission has is small.

4.2 Determinants of Weekend Discharges of ALC Patients

Similarly to the above regression analysis conducted in order to understand ALC stays, we now revisit our descriptive statistics on the probability of being discharged on a weekend for an ALC patient. Our objective is to study the effect of each specific LHIN, controlling for
patient characteristics. The analytic method adopted is the same as in the analysis of determinants of ALC stays.

Table 3 confirms our univariate descriptions of the link between post-discharge setting and probability of being discharged on a weekend (hence, it is not a spurious composition effect resulting from the fact that patients discharged to different settings also have different clinical and demographic characteristics): compared with ALC patients discharged home, the odds of being discharged on a weekend decrease by 65% when ALC patients are discharged to a long-term care home, 55% when they are discharged to a RCC facility, and 19% when they are discharged to the community with home care support. Discharging a patient to a more complex setting requiring professional staff decreases substantially the probability of a weekend discharge. The nature of the post-discharge setting explains 2% of the variance in the probability of being discharged on weekends, but that is 2 thirds of the variance explained by the model. A striking finding is that our logistic analysis explains 3% of the individual variance in the probability to be discharged on a weekend. It is clear that more detailed information is needed to better understand the determinants of discharges of ALC patients on weekends, such as characteristics of the post-discharge facility (staffing levels on weekends, occupancy rates, size, etc.). This linkage is complex and, goes beyond the scope of the present analysis.

Toronto Central is the LHIN with the lowest probability that a discharge will take place on weekends. Other LHINs with low probabilities are Waterloo-Wellington (3503), Champlain (3511, Ottawa), and North Simcoe Muskoka (3512). LHINs with comparatively high probabilities are North West (3514, Thunder Bay), Central West (3505, Brampton), and Central (3508, Markham).
### APPENDIX C:

**Table 2: Logistic regression on assigning an ALC status, 2004-2011**

<table>
<thead>
<tr>
<th>ALC</th>
<th>Odds Ratio</th>
<th>z</th>
<th>%</th>
<th>%StdX</th>
<th>SDofX</th>
<th>variance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age and Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.08%</td>
</tr>
<tr>
<td>Age</td>
<td>1.017***</td>
<td>14.82</td>
<td>1.7</td>
<td>35.8</td>
<td>18.6341</td>
<td></td>
</tr>
<tr>
<td>Age^2</td>
<td>1***</td>
<td>15.57</td>
<td>0</td>
<td>32.5</td>
<td>2188.8361</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.909***</td>
<td>-19.36</td>
<td>-9.1</td>
<td>-4.7</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td><strong>Complexity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22.36%</td>
</tr>
<tr>
<td>Trauma, injury, Poisoning and Toxic effects of drugs</td>
<td>1.816***</td>
<td>70.41</td>
<td>81.6</td>
<td>17.4</td>
<td>0.2689</td>
<td></td>
</tr>
<tr>
<td>Nervous system</td>
<td>2.553***</td>
<td>112.86</td>
<td>155.3</td>
<td>23.2</td>
<td>0.2225</td>
<td></td>
</tr>
<tr>
<td>Other reasons</td>
<td>4.93***</td>
<td>152.1</td>
<td>393</td>
<td>31.1</td>
<td>0.1696</td>
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<td>Circulatory system</td>
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<td>-11.6</td>
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<td>Respiratory system</td>
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<td>123.02</td>
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<td>All other MCCs(ref.)</td>
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<td># of diagnostic codes</td>
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<td>11.9</td>
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<tr>
<td># of providers</td>
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<td>338.29</td>
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<tr>
<td><strong>Post Discharge care</strong></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Long term care</td>
<td>9.921***</td>
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<tr>
<td>rehabilitation hosp.</td>
<td>21.764***</td>
<td>404.36</td>
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<tr>
<td>home care</td>
<td>3.467***</td>
<td>163.82</td>
<td>246.7</td>
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<td>Home (ref.)</td>
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<tr>
<td>Others</td>
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<td>72.67</td>
<td>125.1</td>
<td>22.6</td>
<td>0.2514</td>
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<td><strong>LHIN</strong></td>
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<td></td>
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<td></td>
<td>0.81%</td>
</tr>
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<td>LHIN: 3501</td>
<td>0.728***</td>
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<td>-27.2</td>
<td>-6.8</td>
<td>0.2199</td>
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<td>LHIN: 3502</td>
<td>1.178***</td>
<td>14.77</td>
<td>17.8</td>
<td>4.9</td>
<td>0.2917</td>
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<tr>
<td>LHIN: 3503</td>
<td>1.219***</td>
<td>16.07</td>
<td>21.9</td>
<td>4.2</td>
<td>0.2074</td>
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<td>LHIN: 3504</td>
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<td>39.26</td>
<td>44</td>
<td>12.7</td>
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<tr>
<td>LHIN: 3505</td>
<td>1.282***</td>
<td>17.5</td>
<td>28.2</td>
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<td>-35.5</td>
<td>-9.9</td>
<td>0.2382</td>
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<td>LHIN: 3508</td>
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<td>13.23</td>
<td>15</td>
<td>4</td>
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<tr>
<td>LHIN: 3509</td>
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<td>-8.84</td>
<td>-9</td>
<td>-2.6</td>
<td>0.2844</td>
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</tr>
<tr>
<td>LHIN: 3510</td>
<td>1.551***</td>
<td>32.65</td>
<td>55.1</td>
<td>9</td>
<td>0.1974</td>
<td></td>
</tr>
<tr>
<td>LHIN: 3511</td>
<td>0.564***</td>
<td>-49.76</td>
<td>-43.6</td>
<td>-15.1</td>
<td>0.2863</td>
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</tr>
<tr>
<td>LHIN: 3512</td>
<td>0.816***</td>
<td>-14.15</td>
<td>-18.4</td>
<td>-3.7</td>
<td>0.1867</td>
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<td>LHIN: 3513</td>
<td>1.852***</td>
<td>54.95</td>
<td>85.2</td>
<td>17.5</td>
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<td>LHIN: 3514</td>
<td>1.108***</td>
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<td>10.8</td>
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<tr>
<td><strong>Fiscal Year</strong></td>
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<td>0.07%</td>
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</tr>
<tr>
<td>Pseudo R2</td>
<td>43.2%</td>
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</tbody>
</table>

**Notes:**
- % = percent change in odds for unit increase in X;
- %StdX = percent change in odds for SD increase in X;
- SDofX = standard deviation of X;
- *** = Statistically significant at the 1% critical level.
Table 3: Logistic regression on assigning an ALC status, 2004-2011

<table>
<thead>
<tr>
<th>ALC</th>
<th>Odds Ratio</th>
<th>z</th>
<th>%</th>
<th>%StdX</th>
<th>SDofX</th>
<th>variance</th>
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<td><strong>Age and Gender</strong></td>
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<tr>
<td>Age</td>
<td>1.017***</td>
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<td>1.7</td>
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<td>18.6341</td>
<td>10.08%</td>
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<tr>
<td>Age^2</td>
<td>1***</td>
<td>15.57</td>
<td>0</td>
<td>32.5</td>
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<td>Male</td>
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<td>0.5</td>
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<tr>
<td><strong>Complexity</strong></td>
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<td></td>
<td></td>
<td></td>
<td>22.36%</td>
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<tr>
<td>Trauma, injury, Poisoning and Toxic effects of drugs</td>
<td>1.816***</td>
<td>70.41</td>
<td>81.6</td>
<td>17.4</td>
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<tr>
<td>Nervous system</td>
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<td>155.3</td>
<td>23.2</td>
<td>0.2225</td>
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<td>Other reasons</td>
<td>4.93***</td>
<td>152.1</td>
<td>393</td>
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<tr>
<td>Circulatory system</td>
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<td>-26.7</td>
<td>-11.6</td>
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<td>10.34</td>
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<td>123.02</td>
<td>350</td>
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<td>0.1333</td>
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<tr>
<td>All other MCCs(ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td># of diagnostic codes</td>
<td>1.119***</td>
<td>163.21</td>
<td>11.9</td>
<td>41.2</td>
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<tr>
<td># of providers</td>
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<td>338.29</td>
<td>56.2</td>
<td>101.4</td>
<td>1.5695</td>
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<tr>
<td><strong>Post Discharge care</strong></td>
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<td></td>
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<tr>
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<td>892.1</td>
<td>61.9</td>
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<td>rehabilitation hosp.</td>
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<td>404.36</td>
<td>2076.4</td>
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<td>0.2429</td>
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<td>246.7</td>
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<td>72.67</td>
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<td><strong>LHIN</strong></td>
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<tr>
<td>LHIN: 3507(ref.)</td>
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<td>13.23</td>
<td>15</td>
<td>4</td>
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<td>LHIN: 3508</td>
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<td>Pseudo R2</td>
<td>43.2%</td>
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Notes: % = percent change in odds for unit increase in X; %StdX = percent change in odds for SD increase in X; SDofX = standard deviation of X; *** = Statistically significant at the 1% critical level.
CONCLUSION

Discharges are much less likely to occur on weekends in Ontario than on weekdays: on average, 3.3% of discharges from ACHs take place on a Saturday or Sunday, versus 18.7% on a weekday. There is a surge of discharges on Fridays but no Monday blip.

Stakeholders agree that all components of the health care system (patients, families, providers, payers) would benefit from a better ability to discharge patients on weekends: this would reduce bed-blocking and ease tension in emergency rooms, help families accompany patients discharged to the community, provide appropriate level of care (reduce number of ALC days), and decrease work overload in hospitals and PDC facilities on weekdays. If the rate of discharges on weekends were the same as that for weekdays, it is approximated that 55,000 ALC days (6% of total ALC days) per year could be saved in Ontario.

The key issue though is to guarantee the safety of weekend discharges. There are no empirical results on the effects on outcomes (mortality, re-admission, and adverse events) of weekend discharges, except for in-hospital discharges from ICU. These show higher mortality and re-admission rates for discharges on weekends (even though the main issue is with discharges on night shifts). A first conclusion we can therefore draw from this study is the need to better understand weekend discharge outcomes in Ontario. This requires the ability to link stays in the DAD to a given patient (to measure re-admissions) as well as to his/her vital statistics (to measure 30 day mortality).

Interviews with stakeholders indicate that, even though a health care system functioning on a perfect 24-7 basis would represent a dramatic increase in costs to guarantee staffing levels comparable to what exists now on weekdays during day shifts, some less costly organizational changes could also be implemented that would increase the ability of ACHs to discharge safely on weekends. Prominent among these are:

- Better communication tools and standardized, electronic records following patients transiting from ACHs to PDC settings;

- Multi-disciplinary and inter-sectoral (including family doctors) teams managing discharges within ACHs (these teams could prepare transitions during weekdays, when staffing levels are adequate so that the transition can proceed smoothly even when staffing levels are lower);
• Clear accountability for patient safety (inter-sectoral) and centralized responsibility for matching patients to resources;

• Distribution of resources across regions on the basis of need (e.g., case-mix) rather than per capita.

Some of these solutions have been implemented in some LHINs in some years and it would be interesting to know whether their impact was felt on the ability of ACHs in these LHINs to discharge safely on weekends. A preliminary multivariate analysis does not suggest such strong effects (the LHIN at admission has almost no effect on the probability of being discharged on weekend) but more fine-grained analyses might reveal the impact of specific tools and programs implemented between 2004 and 2011. This would require extensive work on data to be able to link acute care stays in the DAD to characteristics of PDC settings where the patient was discharged.
REFERENCES

Arabi, Y., Alshimemeri, A., & Taher, S. (2006). Weekend and weeknight admissions have the same outcome of weekday admissions to an intensive care unit with onsite intensivist coverage. *Critical Care Medicine, 34*(3), 605-611.


intensive care increases the risk of readmission and death. *Anaesthesia and Intensive Care, 35*, 477-485.


