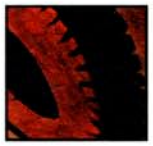

Ideas at Work

Are Longer Hospital Stays Beneficial for the Elderly?

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Utilization review is a way to manage healthcare costs and is widespread in Canada, as managers attempt to use available acute care beds in a best-practice manner (Flintoff et al. 1998; Kalant et al. 2000). As we reduce beds and decrease length of stay, we often wonder if the outcomes for patients are affected (Tu 2000), particularly if the patients are elderly. Are we pushing them out too fast? On the other hand, if we keep them in acute care for extra days, is there any benefit for the patient? Information from a province-wide study conducted by a Saskatchewan government review agency (Health Services Utilization and Research Commission [HSURC] 1998) suggested that about half of all medical and surgical patients could be discharged an average of two days sooner without changing health outcomes. However, that study provided little or no information on the population of interest to us – the elderly and especially those with cognitive impairment. It was questions such as these that led us to apply to the Health Transition Fund for funds to do this study.

Our first goal was to determine if elderly patients were spending days in hospital during which they did not require acute care hospital services. These days are termed alternate level of care days or ALC days. We also wanted to compare the health outcomes of patients with ALC days to the outcomes of those who did not receive them in order to determine if ALC days provided any benefits to health status or influenced readmission rates. We wished to know the reasons patients received ALC days and the characteristics of those patients who received them.

As managers in the health system, we think we know how the system works but often we are making educated guesses. It is extremely important to have data that accurately describe both the health status of our population and what is occurring in healthcare. Data on sufficient numbers of patients ensure that a focus on particular individuals does not obscure trends.

Conducting the Study

In order to conduct the study we formed a panel with representatives from Saskatoon District Health, the University of Saskatchewan and the Health Services Utilization and Research Commission. The research was designed as an observational study, with data collected on patients as they were admitted to acute care in hospital, as well as follow-up data collected by telephone interview. Data collection occurred from October 1999 to June 2000, with follow-up extending until August 2001. Ethical approval was obtained from the University of Saskatchewan Advisory Committee on Ethics in Behavioural Science Research.

We approached all medical and surgical patients (age 75 and over) who resided in Saskatoon and were admitted to acute care at one of the three hospitals in Saskatoon. We excluded those who resided in a long-term care facility as they

were not eligible for home care, those who were in severely compromised health status and expected to expire and those who were already part of the study. In order to include patients with cognitive impairment, we asked family members of these patients to participate in the study on behalf of the patient. Patients were identified as cognitively impaired by a short mental status questionnaire, the Standardized Mini-Mental State Exam (Folstein et al. 1975) that has been used with the elderly (Patterson 1994).

While patients were in hospital (usually on day two of their stay), research assistants collected basic demographic information and information on the patients' health status and functional abilities during the month before their hospital admission. We used two standardized measures, the Medical Outcomes Study General Health Survey Short Form (SF-12; Ware et al. 1995) and the Stanford Health Assessment Questionnaire (HAQ). The rationale for using these measures was that the SF-12 gives a good description of the sample's overall health status while the HAQ gives a numerical measure of disability (0-3, higher values indicating more disability) (Fries et al.1980). Values shown are Mean + Standard Deviation.

A major piece of this study was to identify whether or not the elderly patients were receiving acute care hospital days when, in fact, they could have been provided with non-acute type care in an alternate setting. In order to determine this, we conducted retrospective reviews of all study patients' hospital charts for each day of their stay, using the 2000 ISD-A Criteria InterQual®. This tool determines whether the patient is acute or non-acute, and if non-acute, what the appropriate Alternative Level of Care is (e.g., home care, respite, outpatient services). Physicians were asked to identify reasons for admission as well as delays in discharge for the patients. This was done to compare their opinion on the potential delays in discharge from hospital with InterQual® findings. A recent review of tools (Kalant et al. 2000) indicates the InterQual® may underestimate the number of appropriate (acute) days compared to physician experts.

The Participants

Over the nine-month data collection period, 1,319 patients met the criteria for the study and were asked to participate; of these, 967 patients gave consent and were enrolled in the study (73%) and follow-up data was collected for 673 of these (69%) at two weeks and 601 (62%) at 13 weeks. Figure 1 shows characteristics of the sample. There were 393 people aged 75–79, 311 aged 80–84 and 263 aged 85+; 561 were women and 406 were men. Medical patients comprised 62% of the sample while surgical admissions were 38%. (Normative data for PCS and MCS is from the age adjusted from Canadian population, age 75+, for the SF-36 PCS and MCS subscales; Hopman et al. 2000).

Figure 1. Participant Description

Gender	Female: 58%	Male: 42%
Cognitive Assessment	No Impairment: 68.5%	Impaired: 31.5%
Age	mean: 81.7 years	median: 81 range: 75-101
Length of Stay	mean: 11.7 ± 11.9 days	median: 8 days mode: 5 days
SF-12 Physical	mean: 33.2 ± 11.5	norm = 42.0
Component Summary (PCS)	median: 31.9	
SF-12 Mental Component Summary (MCS)	mean: 51.2 ± 10.1 median: 60.7	norm = 54.5
Health Assessment Questionnaire (HAQ)	mean: 1.28 ± 0.81	median: 1.25

The majority of patients were diagnosed with cardiovascular, musculoskeletal or gastrointestinal concerns but there were a variety of diagnoses of which the top six are shown in Figure 2.

Figure 2. Confirmed Primary Diagnosis (n=946)

Cardiovascular	22.7% (n=215)
Musculoskeletal	17.4% (n=165)
Gastrointestinal	16.0% (n=151)
Respiratory	14.7% (n=139)
Genito-Urinary	10.7% (n=101)
Central Nervous System	6.2% (n=59)

What We Found

Were Patient Stays Appropriate?

Yes, for three-quarters of the patients. However, approximately one in four patients (28.5%) received some non-acute (ALC) days in hospital, usually about two days (median: 2.0, mean: 4.0, range: 1–35), right before their discharge. Data gathered from the physicians corroborated the ALC data, as in 23% of cases they felt there was a delay in discharge. In cases in which physicians identified a delay, patients had more than double the average LOS (17.6 days versus 8.9 days) and an average of 4.7 ALC days. If all of the patients had been discharged without accruing ALC days, the total number of hospital days would have been reduced by 12%.

For the participants who had ALC days, most were in need of some form of healthcare. Only 18% of people with ALC days could have gone home without any services. The most common service that the ALC classification recommended was home care (35%). Other services that were needed were subacute or convalescent care (15%), long-term care (10%), geriatric/rehabilitation (10%) or outpatient services (8%). Of the patients who had the ALC classification "home care," 46% did receive HC after an average wait of 2.8 days.

Who Stayed Too Long?

Older patients, female patients and the cognitively impaired were more likely to receive ALC days. Approximately one in three female patients (33%) received ALC days compared to one in five male patients (22%). Two of five patients (40%) aged 85 or older received ALC days. One of three cognitively-impaired patients (34%) received ALC days compared to one of four non-impaired. The patients who received ALC days were more disabled (baseline HAQ disability scores, mean 1.38+.84 v. 1.23+.79, p<0.01), and received more home care previous to their hospital admission (mean of 5.6+23.3 v. 2.8+11.8, p<.01). ALC days were not affected by factors such as number of acute days in hospital, baseline physical health or baseline mental health scores.

Analyses were conducted to determine which patient characteristics predicted the receipt of ALC days. When taking into account the influence of other factors through logistic regression, gender and age were both independent predictors for receipt of ALC days but cognitive status was not. Women were significantly more likely than men to receive ALC days, regardless of other health factors (OR=1.74, 95% CI 1.23-2.46, p<.001). Patients in the oldest age group were significantly more likely than patients age 70–74 to receive ALC days (OR=1.88, 95% CI 1.27-2.80, p<.001).

Do Extra Days in Hospital Make a Difference?

We think not. To determine differences between groups, we made the sample as comparable as possible by adjusting for other factors that affect health status that are known to influence outcomes. We collected baseline scores on physical health, mental health and activities of daily living to control for the health status of the participants before their acute care episode. After adjusting for these factors, we did not show a significant difference in any health outcomes for people who received ALC days compared to those who did not (Table 3).

Figure 3. Outcomes Adjusted for Baseline Status

Alternate Level Of Care Days	YES N=276	NO N=691
Physical Health Score 2 or 4 weeks	32.4	31.9
Activities of Daily Living (HAQ) 2 or 4 weeks	1.47	1.46
Mental Health Score 2 or 4 weeks	51.9	52.1
Physical Health Score 13 weeks	34.3	36.0
Mental Health Score 13 weeks	52.5	53.2
Activities of Daily Living (HAQ) 13 weeks	1.25	1.20
Readmission to Hospital Within 30 days	9.5%	9.6%

We wondered if the extra days might decrease the readmission rates but found that they did not. Readmission rates (30 days post-discharge) were the same whether or not people received ALC days in hospital. Physical and mental health scores after discharge were similar for patients who did and did not receive ALC days. Our data did show that patients who received ALC days had significantly higher disability levels (unadjusted for baseline health status).

Do Cognitive Impairment or Age Have Any Implications for Hospital Care?

We found that participants who had cognitive impairment had significantly longer LOS (15.6+14.5 v. 9.9+10.0 days, p<.001). Two to four weeks after discharge, their physical health and mental health status scores were significantly lower (PCS: 29.5 +7.8 v. 32.7+10.1, p<.001; MCS: 48.7+12.0 v. 53.0+10.0, p<.001) and their average disability score was higher (HAQ: 1.87 +0.73 v. 1.33+0.80).

The oldest category of participants (85+) had significantly longer LOS (14.5 + 14.7 compared to 10.5 + 10.3 days, p<.001). The ALC percentage of stay was higher (15%) for the oldest patients who also had significantly more disability than the youngest patients (HAQ: 1.7 + 0.8 v. 1.3 + 0.8), and lower PCS scores (31.0 + 9.3 v. 33.4 + 10.3).

What We Concluded

- One in four elderly people stay extra days in hospital, especially women and the cognitively impaired. Most stay an additional two days in which they do not require hospital services.
- The older they are, the longer people stay and the more extra days they have.
- These additional hospital days do not reduce readmission rates (within 30 days) and do not change health status.
- Of the patients who stay additional days, 80% require other services in order to be discharged. These range from home care to types of rehabilitation, convalescent or outpatient services.

It is very important to have more than hunches about our healthcare system. We might have suspected that the oldest old stay longer in hospital, but we would not necessarily have suspected that women stay more extra days than men when we controlled for other factors. We might have suspected that the extra days affected the readmission rates but they did not, within the timeframe that was studied here.

How can this study help? Our data show that a variety of post-acute hospital care is needed – community-based care and different types of institutional care, such as rehabilitation or convalescent care. Delays in discharge are not necessarily due to lack of the appropriate programs but may be due to the lag in the system that impedes transfer of the patient into the program. We recommend that a simple algorithm be developed to screen admissions – using age, gender and, if possible,

cognitive impairment. Flagging two of these criteria should automatically trigger discharge planning. There are still savings of acute hospital days to be made, and saving these days will not adversely affect patient outcomes.

Finally, we must recognize that the elderly who are admitted to hospital have poor health status. It is sobering to realize that 13 weeks after discharge, they remain in poor health.

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