

Research letter

Risk of death or readmission among people discharged from hospital on Fridays

Carl van Walraven, Chaim M. Bell

The timing of patient interventions can significantly affect outcomes. A study in the United Kingdom showed that patients discharged from intensive care units at night had a higher hospital mortality than those discharged during the day.¹ In a study of acute care admissions from emergency departments in Ontario, patients with some serious medical conditions were more likely to die in hospital if they were admitted on a weekend than if they were admitted on a weekday.²

Do patients discharged on Fridays have worse outcomes than those discharged on other days? Friday is the most common hospital discharge day.³ More discharges could result in patients receiving fewer discharge instructions from hospital staff.⁴ Perhaps because of decreased staffing on

weekends⁵ and physician cross-coverage, patients may be preferentially discharged on Fridays rather than on subsequent weekend days. Some patients discharged on Fridays could therefore leave hospital before they are fully stable. Also, new home health and social support services for weekend discharges often are not initiated until the following Monday. Such a delay may result in poor outcomes for patients discharged on Fridays who need these services initiated immediately.

For this study we used anonymous data from population-based administrative databases for Ontario. Data for all adults discharged from hospital to the community between Mar. 1, 1990, and Mar. 1, 2000, were extracted from the Discharge Abstract Database (DAD), which records all discharges from Ontario hospitals. For patients with 2 or more admissions, we randomly chose 1 admission for each patient using a random-number generator. Only nonelective admissions were included in the study.

We used proportional hazards modelling to determine the association between discharge day and nonelective readmission to hospital (measured using the DAD) or death (measured using the Registered Patient Database) within 30 days after discharge while controlling for potential confounders. These confounders were determined from the DAD and included age, sex, comorbidities (measured using the Charlson–Deyo score⁶), nonelective hospital admission during the 6 months before the index admission, length of stay, whether a procedure was performed and whether a complication occurred. In the proportional hazards model, patients were observed for 30 days after discharge or until the occurrence of an event (nonelective readmission or death). Databases were linked using common patient identifiers. The study was approved by the Sunnybrook & Women's College Health Sciences Centre Research Ethics Board.

A total of 2 403 181 patients met our inclusion criteria. Friday was the most common discharge day (Fig. 1). Overall, 7.1% of the pa-

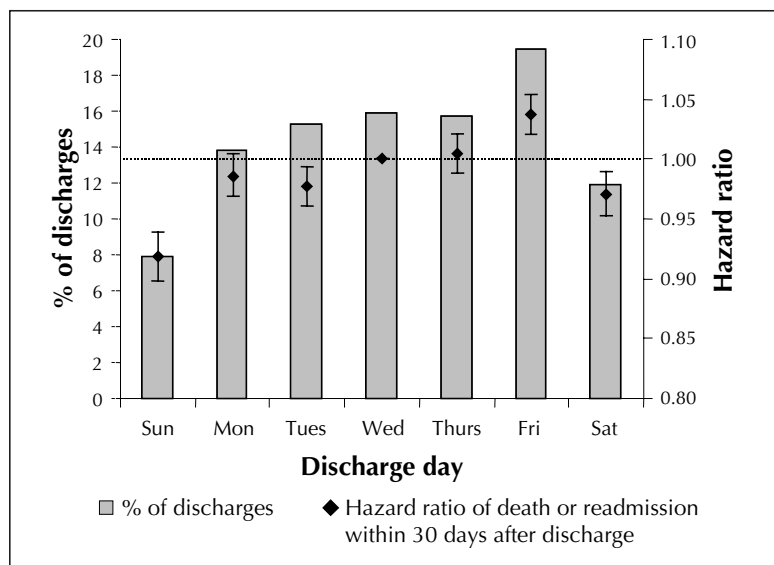


Fig. 1: Risk of death or nonelective hospital readmission within 30 days after discharge from hospital, by day of discharge. Bars represent proportion of discharges by day of the week. Hazard ratios (HRs) of death or readmission within 30 days (diamonds) and 95% confidence intervals (error bars) are relative to Wednesday discharges. The HRs are independent of patient factors (e.g., age, sex, comorbidities and previous hospital admission) and hospital admission factors (e.g., length of stay, presence of complication or procedure, and teaching status of hospital) but are not independent of the volume of discharges on that day.

tients had an event (5.4% were readmitted, 1.7% died) in the 30 days following discharge. Compared with the reference group (people discharged on Wednesdays), those discharged on Fridays were significantly more likely to have an event (hazard ratio 1.04, 95% confidence interval 1.02–1.05) (Fig. 1). This effect was independent of patient and hospital admission factors (Table 1).

Patients discharged from hospital on Fridays had an increased independent risk of death or nonelective hospital readmission within 30 days after discharge. This may have been because these patients were less medically stable than those discharged on other days or because the discharge

preparation was incomplete owing to competing demands on clinicians' and hospital staff's time from multiple discharges on Fridays. It could also be due to a delay in implementing social services. Until further research clarifies why Friday discharges are associated with worse outcomes than are discharges on other days, we suggest that clinicians keep this observation in mind if they consider pushing to get patients home for the weekend.

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Table 1: Risk of readmission or death within 30 days after discharge among adult patients discharged from Ontario hospitals between Mar. 1, 1990, and Mar. 1, 2000, by patient and hospital admission factors

Factor	% of patients*	Adjusted hazard ratio (and 95% CI)†
Patient		
Mean age (and SD), yr	53 (20)	1.14§ (1.14–1.14)
Female sex	54.5	0.92 (0.91–0.93)
Charlson–Deyo comorbidity score ⁶ of 0‡	78.7	1.26¶ (1.26–1.26)
Nonelective hospital admission within 6 mo preceding index admission	11.3	2.41 (2.39–2.44)
Hospital admission		
Mean length of stay (and SD), d	7.3 (27)	1.00** (1.00–1.00)
Complication during stay	5.7	1.25 (1.23–1.28)
Procedure during stay	51.0	0.76 (0.75–0.77)
Admission to teaching hospital	23.4	1.05 (1.04–1.07)

Note: CI = confidence interval.

*Unless otherwise stated.

†The hazard ratio indicates the association of each factor with time to death or readmission within 30 days after discharge after adjustment for all other factors in the table. Factors with an adjusted hazard ratio exceeding 1 are associated with an increased risk of death or readmission. If the 95% CI excludes 1, the hazard ratio is significant at the 5% level.

‡A score of 0 indicates that the person does not have major comorbidities (e.g., cancer, chronic renal failure, heart failure).

§Adjusted change in risk when age increased by 10 yr.

¶Adjusted change in risk when Charlson–Deyo score increased by 1.

**Adjusted change in risk when length of stay increased by 1 d.

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