

Letter

Reflections on off hour admissions to ICU

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Published: 25 September 2009

This article is online at <http://ccforum.com/content/13/5/418>

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Critical Care 2009, **13**:418 (doi:10.1186/cc8030)

In the June issue of this journal, Meynaar and colleagues [1] report that there was no excess mortality observed for off hours admissions to ICU once an adjustment was made for acute illness severity [1]. We have previously described a 50% relative risk reduction in all cause mortality pursuant to the establishment of an acute medical admission unit [2].

In our study, only 3.9% of 23,172 emergency medical admissions were admitted to the ICU. For all patients admitted between 2002 and 2008, we observed (Table 1) an increased mortality for evening admissions (admissions between 16.00 and 00.00 hours), with an odds ratio (OR) of 1.39 (95% confidence interval (CI) 1.15; 1.67). The 'out of hours' effect on 30-day mortality was independently predictive, despite adjustment for other major outcome predictors, including acute illness severity, Charlson index (OR 1.32, 95% CI 1.23; 1.42) and an ICU admission (OR 8.88, 95% CI 6.39; 12.2). The evening effect remained constant over 7 years. For the subset of 894 patients

admitted to our ICU there was no 'out of hours' effect. This could be explained by lack of power to detect such an effect in the subgroup, or perhaps patient selection factors for ICU level care.

We could hypothesize that the increased mortality risk of evening admissions reflected factors including congestion, staff fatigue or 'out of hours' resource deficit. However, although the implementation of our acute medical admission unit lowered mortality by 50%, the 'out of hours effect' was completely unaltered. The literature evidence is of marked variations in circadian, weekly and seasonal mortality for major cardiopulmonary and neurological disease - factors implicated have included endogenous rhythms and external factors like climatic conditions [3]. Advocacy for increased resources to compensate for the increased 'out of hours' mortality risk may be reasonable. Evidence that underlying mortality rhythms can be impacted by such measures would be of great interest.

Table 1**Logistic regression predicting an in-hospital death (versus survival) by 30 days in acute medical patients admitted between 2002 and 2008**

Admission type	Odds ratio	Lower CI	Upper CI	P-value
Respiratory (MDC 4)	2.13	1.69	2.67	<0.01
Circulatory (MDC 5)	1.96	1.49	2.57	<0.01
Nervous (MDC 1)	2.55	1.88	3.44	<0.01
Charlson Co-morbidity Index	1.32	1.23	1.42	<0.01
ICU stay	8.88	6.39	12.16	<0.01
Evening admission	1.39	1.15	1.67	<0.01

Unit odds ratio adjusted for acute illness score; higher odds ratios indicate a higher likelihood of death; evening admission 16:00 to 00:00 (odds ratio versus 00:00 to 16:00).

CI = confidence interval; OR = odds ratio.

Competing interests

The authors declare that they have no competing interests.

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