

## **Briefing Sheet**

### **Sicker patients account for the weekend mortality effect amongst adult emergency admissions to a large hospital trust**

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#### **Synopsis**

Analysing anonymised data from more than 163,000 patient admissions, the study set out to determine whether higher mortality rates associated with weekend hospital admissions (the 'weekend effect') could be explained by patients being sicker at weekends. Uniquely, we link differences in referrals, admissions, case mix, severity of illness and outcome to test this theory.

Findings suggest that a combination of sicker patients and fewer admissions contributed to so-called 'weekend effect'. The study goes on to look at these factors in detail and suggest reasons why this should be the case.

#### **Key findings**

- This research strongly indicates that patients admitted to hospital at weekends are sicker than those admitted on weekdays.
- This is despite there being no clinically important differences amongst weekend/weekday admissions relating to age, gender or pre-existing health factors (comorbidities).
- Patients with the same severity of illness are no more likely to die at weekends. Higher mortality at weekends is consistent with the finding that weekend admissions are more severely ill. We speculate this could be compounded by a reduction in weekend primary care services causing delayed presentation of sicker patients and more palliative care admissions for patients who would otherwise have received care at home.
- Added to this, fewer patients are admitted at weekends despite a consistent daily emergency department attendance rate; this is mainly attributable to a reduction in community referrals from GPs.
- There is no evidence to suggest that in-hospital patient care is lower at weekends; observations suggest that emergency admissions are processed more efficiently at weekends than weekdays.
- This strongly suggests that the search for a cause for the weekend effect should be broadened to include the WHOLE patient pathway rather than focus on hospital staffing levels.
- The authors suggest additional areas for future research should include community factors and hospital admission policies.

The study analysed patient admissions from January 2012 – December 2015 at the Queen Elizabeth Hospital, Birmingham.

This research forms part of a larger five-year study - HiSLAC ('High-intensity Specialist Led Acute Care') – an independent project designed to investigate the weekend effect and evaluate the roll-out of seven-day NHS services.

## **Background**

Studies around the world have shown the so-called 'weekend effect' with the phenomenon observed in both emergency and elective admissions in different healthcare systems. For many years causation was attributed to suboptimal staffing at weekends, particularly senior medical staffing, and this has been used to support government policies such as 'seven-day services'.

Previous studies have examined the differences between weekend and weekday emergency admissions indicating that fewer patients are admitted and those who are, are more severely ill. Existing research in this area has been limited either by size or the use of 'static' indicators of illness severity such as demographic characteristics or initial diagnosis.

The strength of this study lies in the size of the dataset, duration and evaluation using a dynamic measure of severity of illness - National Early Warning Score (NEWS).

## **Methods in Brief**

We analysed four years of anonymised data from the electronic clinical databases of the Queen Elizabeth Hospital Birmingham (January 2012- December 2015). During this time 163,134 emergency admissions were recorded of which 163,128 were included for analysis.

In addition to outcomes the data also gave us demographic information such as age, sex, deprivation based on postcode and pre-existing illnesses (comorbidities). We supplemented this 'static' information with two more indicators on severity of illness: whether patients had to be moved to intensive care and the status of the National Early Warning Score (NEWS) in the first 24 hours of admission.

NEWS is endorsed by NHS England as effective early warning system for identifying acutely ill patients. The scoring system uses a range of vital signs – including respiratory rate, blood pressure and temperature – to alert clinicians to life threatening conditions, including sepsis.

The study also looked at additional information such as mortality, admission patterns and length of stay.

## **What is HiSLAC?**

These findings are from the final phase of a five-year study. HiSLAC ('High-intensity Specialist Led Acute Care') is an independent research collaboration funded by the National Institute of Health Research Health Service and Delivery Research Programme (NIHR HS&DR) and based at the University of Birmingham. HiSLAC is supported or endorsed by NHS England, NHS Confederation, Academy of Medical Royal Colleges, College of Emergency Medicine, Society of Acute Medicine, Royal College of Physicians, Faculty of Intensive Care Medicine, Royal College of Anaesthetists, University Hospitals Birmingham NHS Foundation Trust, the Universities of Birmingham, Leicester and Warwick and by the leadership of 127 NHS Trusts in England.

## **Additional Information**

- For the full findings and methodology, please read the paper in full by following the link at the head of this document.

- For more information and updates on HiSLAC visit the website [www.hislac.org](http://www.hislac.org) or follow us on Twitter [@HiSLACProject](https://twitter.com/HiSLACProject).