

Mortality rate 'weekend effect' not a reliable measure of care quality in hospitals

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The higher mortality rate for weekend hospital admissions should not be used as an indicator of quality of care due to the lack of data preceding patient admission and on the severity of their illness, a new study conducted at the University of Warwick Medical School has concluded.

The study was undertaken as part of the High-intensity Specialist-Led Acute Care (HiSLAC) project, which is a collaboration led by the University of Birmingham and funded by the National Institute for Health Research (NIHR) and brings together a collaboration of patients, clinicians, researchers and policy-makers across the NHS in England to contribute to the evaluation of aspects of NHS England's 7-Day Service programme.

In this largest review of the scientific literature on the 'weekend effect' to date, a team led by researchers from Warwick Medical School and Birmingham examined 68 studies covering data from over 640 million [hospital admissions](#) across the world and concluded that, contrary to

commonly held assumptions, the higher death rates amongst patients admitted to hospital at weekends are unlikely to reflect in-hospital quality of care, and may be attributed to differential criteria for admitting patients and other factors in the community preceding hospital [admission](#).

Dr. Yen-Fu Chen, lead author of the literature review and an Associate Professor from the University of Warwick, explained: "We have some evidence that the higher mortality associated with weekend admissions is because weekend patients are sicker when they are admitted into the hospital; but evidence regarding whether these patients receive inferior care following admission compared with those admitted on weekdays is sparse and somewhat conflicting."

While hospital mortality was found to be 16% higher for weekend admissions compared with weekday admissions on average, they noticed that such a 'weekend effect' varied by type of admissions, with the effect being most pronounced for elective admissions and almost absent for maternity admissions.

More importantly, they found that the urgency and frailty of patients at the time of admission, which can influence their risk of death, has not been adequately taken into account in most studies that they reviewed. In a small number of studies where these factors were better controlled for, the apparent weekend effect tends to diminish.

The study is published today (5 June) in the journal *BMJ Open*.

Recent years have seen a focus on increased staffing as a solution to the 'weekend effect'. The researchers found little association between weekend-weekday differences in staffing level and weekend-weekday differences in hospital mortality in the small number of studies that looked into this, and suggest that there are other factors affecting

the mortality that should be investigated further.

Dr. Chen added: "The estimated death rate following hospital admission can be influenced by many different factors, such as patient's condition when admitted, the quality of care he or she received during hospital stay, as well as issues related to discharge arrangement and how data surrounding the admission were recorded. This means that the 'signal' of hospital mortality rate is obscured by 'noise' from other factors and is unlikely to be an accurate measure of quality of care during the admission.

"More evidence from objective measurement of the care quality and processes, along with patients' and carers' accounts of the care that they experienced, are also crucial. We are collecting and analysing additional data on these issues as part of the HiSLAC project."

University of Birmingham Professor Julian Bion, Principal Investigator of the HiSLAC project, stated: "Fewer patients are admitted to hospital at weekends, and their profiles are different from those admitted during weekdays: they are sicker, and more of them require admission directly to intensive care.

"It is also likely that elective admissions, usually for surgical operations, at weekends are those with more urgent problems and more complicated issues, which will contribute to the higher mortality. These factors seem to explain much of the higher [mortality](#) risk among weekend admissions.

"This means that the search for the cause of the weekend effect should include examination of the whole patient pathway, particularly health services in the community. For example, we know that at weekends [patients](#) are much less likely to be referred by a general practitioner before coming to [hospital](#).

"The bottom line is, do not be deterred or delayed by the apparent '[weekend effect](#)' if you need health care at weekends; and provide feedback on your care experience to the staff or the NHS whether positive or negative, at weekdays or weekends."

More information: 'The magnitude and modifiers of the weekend effect in hospital admissions: a systematic review and meta-analysis' *BMJ Open*, DOI: [10.1136/bmjopen-2018-025764](https://doi.org/10.1136/bmjopen-2018-025764)

Provided by University of Warwick

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