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## Is there a 'weekend effect' for ICU mortality?

# Weekend

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The risk of dying in the intensive care unit (ICU) is higher for patients admitted at the weekend compared to a weekday, according to a study published in *Critical Care*. On the other hand the risk of dying in the ICU on a weekend was found to be lower than on a weekday, highlighting the complexity of the so-called 'weekend effect'. While the causes are not proven, the researchers suggest that their findings require a careful evaluation of quality of care being provided at weekends.

In their study, which used data on 167,425 patients collected from 119 ICUs across Austria between 2012 and 2015, the researchers took into account the severity of illness at admission (SAPS), the reason for admission, the chance of discharge from the ICU to the hospital or home and risk of death following discharge to the hospital. Data was obtained from the Austrian Centre for Documentation in Quality Assurance in Intensive Care.

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Lead author Dr. Paul Zajic, from Medical University Graz, Austria, commented in a media release: "Our study demonstrates that patients admitted to ICUs at weekends are at increased risk of death. This effect requires thoughtful considerations both by clinicians and policymakers because in the 21st century, the day of admission should not influence patient outcomes. While one must avoid jumping to conclusions based upon retrospective studies, our findings may guide further research, and ultimately lead to systematic improvements that aim to eradicate the 'weekend effect'."

Dr Zajic added: "Contrary to what one might expect, weekend admissions do not alter patient outcomes immediately but are felt further down the line, potentially explaining why risk of death in the week was actually higher than the weekend. We noticed that several key interventions in the ICU were less likely to be performed at the weekend, suggesting that the increased mortality in the week is not due to an increased rate of something that would increase mortality immediately, but is more likely to be caused by systematic issues that prevent optimum provision of care for critically ill patients at weekends and so raises their risk of dying in the days following a weekend admission".

The researchers found that severity of illness varied noticeably between weekends and weekdays, with more patients with a higher severity of illness being admitted on a Saturday or Sunday. The casemix was also different at the weekends, with more patients being admitted for 'medical' purposes as opposed to 'scheduled surgery'. The chance of being discharged to the hospital from the ICU on a weekend was lower than on a weekday.

The authors caution that their findings are not necessarily generalisable to other health systems in other countries, and their data may be limited by its retrospective nature. However, they say that their study provides strong evidence for the presence of the 'weekend effect' and allows for a more nuanced description of the implications of weekend admission of patients to ICUs.

Previous studies conducted on data from the NHS in the UK have suggested that there is increased risk of death if admitted at the weekend but findings from different studies have been inconsistent.

Dr. Amy Mason, incoming Applied Statistician in the Department of Public Health and Primary Care, University of Cambridge, commented on the apparent contradiction that admission on the weekend has a higher death rate than admission on a weekday, while simply being in intensive care unit (ICU) at the weekend has a lower death rate than during the week. She said: "This 'contradiction' is common in weekend effect studies and appears in other papers, including the well-known Freemantle study on emergency admission mortality rates in UK hospitals. It is still not known what causes this weekend effect. There are many possible reasons - patients are more ill when they arrive at the ICU on the weekend, proportionally fewer planned surgeries happen, and there are differences in care. The suggestion here that the lower death rate may be caused by not discharging less ill patients during the weekend would go some way to unravelling the apparent contradiction."

She added: "In Austria, some specific interventions were less likely to occur at the weekend, whereas interventions in general were happening at a higher rate. This is another apparent contradiction and it is unclear whether this difference in care is caused solely by differences in individual patient needs or instead by limited resources within the Austrian ICUs. However the paper doesn't directly show that changes in interventions at the weekend impacted patient mortality - without that causal link it is impossible to say that the higher death rates are conclusively caused by lower quality of care. This new study fits within a body of evidence that the weekend effect is observed in many countries and that it is unclear whether lower quality of care or patients being more ill at the weekend is the dominant cause of each effect."

Sources: [Biomed Central](#); Science Media Centre

