

The Weekend Effect in Cardiology: Is It Real? If So, Can It Be Fixed?

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Perspective

A stark fact: Patients presenting with time-sensitive medical emergencies experience worse outcomes when their emergency arises during the weekend. Significant effort has gone into trying to explain why. Although many hospitals offer emergency care on weekends, studies have shown that the level of expertise is reduced, and fewer staff are available.⁽¹⁾ Most of the weekend effect has been attributed to this decreased on-site staffing, which leads to delays in certain life-saving procedures.⁽²⁾ Subspecialists, as well as specialized support staff, are usually not on-site on the weekends. As a result, patients cared for on weekends experience an increased door-to-procedure time, which can have disastrous results.⁽³⁻⁷⁾ Although this staffing issue is usually used to explain the weekend effect, some researchers believe that the effect can be explained by case mix. Namely, that patients admitted on the weekend have more comorbidities and chronic conditions, leading to a higher chance of adverse outcomes.⁽⁷⁾

Cardiovascular emergencies are the most common cause of acute hospital admissions. One study, using data from Nationwide Inpatient Sample (a 20% representative sample of all nonfederal United States hospitals), compared outcomes of patients admitted with a principal diagnosis of acute coronary syndrome (ACS) on the weekends and weekdays. Looking at 11 years of data, the researchers found significantly better outcomes on weekdays.⁽⁸⁾ The effect appeared to be explained by timelier revascularization. An analysis of these more than 11 million admissions has shown statistically significant differences in treatment, length of stay, in-hospital mortality, and major procedural complications in patients admitted with ACS on weekends. This difference remains after adjusting for patient demographics, comorbidities, and hospital characteristics. The 11-year overall odds ratio for hospital mortality for weekend admissions was shown to be 1.04 and 1.43 for ST-elevation myocardial infarction (STEMI) and non ST-elevation acute coronary syndrome (NSTEMI), respectively. It appears that the increased mortality observed for patients with ACS during the weekend owes to a combination of a lower rate of invasive interventions (predominantly in NSTEMI patients) and fewer available human and mechanical resources.

You may have noted a marked difference between the STEMI and NSTEMI-ACS odds ratios, a statistically significant difference. This result may initially appear counterintuitive—if the weekend difference is due to less available revascularization procedures, one might expect to see a larger difference for the STEMI patients, for whom acute revascularization is critical and often life saving. However, the study shows that patients admitted with NSTEMI-ACS on the weekday were more likely to get a procedural intervention than those admitted on the weekend. Moreover, the patient admitted over the weekend with NSTEMI-ACS was less likely to undergo a cardiac procedure on the first day of admission (odds ratio, 0.42). Although current American College of Cardiology Foundation and American Heart Association guidelines for treatment of NSTEMI-ACS call for an "early invasive strategy" (Class I recommendation) for several classes of patients (including those at high risk of clinical events, those with refractory angina, and those with electrical or hemodynamic insufficiency), studies have shown that many hospitals limit the activation of a cardiac catheterization lab only for patients presenting with STEMI.⁽⁹⁾ It seems likely that this decision to withhold invasive management for NSTEMI patients on weekends may explain the poorer outcomes in this group.

The widespread adoption of guideline-recommended swift percutaneous coronary intervention, regardless of the day of admission, may well explain that relatively small weekend effect in these patients over the last decade.⁽¹⁰⁾ In addition to providing resources to allow these patients to receive rapid interventions, the continued weekend effect in NSTEMI patients argues that these resources should be made available to this group as well.

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