

What's New in the Patient Safety World

June 2016

Weekend Effect Challenged

The “weekend effect” (sometimes also known as the “after hours effect” since many of the same results apply to patients admitted at night as well as on weekends) in which increases in mortality, complications or adverse events are seen for patients admitted on weekends has been demonstrated for a wide range of both surgical and medical conditions. Our numerous columns on the “weekend effect” have stressed that there are likely both patient-related and system-related factors underlying the phenomenon (see, for example, our November 2013 What's New in the Patient Safety World column “[The Weekend Effect: Not One Simple Answer](#)”).

Several recent articles have challenged the concept of the “weekend effect” and pointed out deficiencies in case identification methodologies that may give rise to inaccurate conclusions.

Stroke is one of the many conditions previously identified as prone to the weekend effect. One new analysis from the UK ([Li 2016](#)), however, looks at how use of administrative coding to identify stroke cases may erroneously lead to this conclusion. The authors looked at stroke cases from the Oxford Vascular Study and found that many patients admitted with a stroke diagnosis may not, in fact, have had a **new** stroke. Rather many had a previous stroke and were admitted for other reason yet administrative coding made them appear to have had new strokes. Such patients obviously have a lower likelihood of mortality during that admission and they are disproportionately admitted on weekdays (often for procedures). Thus, it is not surprising that patients admitted on weekends (who have new strokes) would appear to have higher mortality rates. When the authors looked just at those patients with acute (new) strokes they found no imbalance in baseline stroke severity for weekends vs. weekdays and no difference in the 30-day mortality rates.

A second UK study on stroke ([Bray 2016](#)) focused on the impact of not only day of the week but also time of day of admission. They analyzed data from the Sentinel Stroke National Audit Programme with over 74,000 stroke patients. They found variation from day to day and time of day for several measures of stroke care measures. Overall, they found no difference in 30 day survival between weekends and weekdays but patients admitted overnight on weekdays had lower odds of survival.

Another very interesting study looked at patients presenting to emergency rooms ([Meacock 2016](#)). They postulated that restricted service availability at weekends on the

outpatient side may lead to selection of patients with greater average severity of illness for admission. They found that similar numbers of patients attended emergency rooms on weekends and weekdays and there were similar numbers of deaths amongst patients attending emergency rooms on weekend days compared with weekdays. Attending emergency rooms at the weekend overall was not associated with a significantly higher probability of death. Higher mortality rates at weekends are found only amongst the subset of patients who are admitted. They conclude that reduced availability of primary care services and the higher admission threshold at weekends mean fewer and sicker patients are admitted at weekends than during the week.

And a fourth study, again from the UK, challenged previous studies that had suggested lack of availability of specialists on weekends was responsible for higher mortality rates for patients admitted on weekends. Aldridge and colleagues ([Aldridge 2016](#)) found that substantially fewer specialists were present providing care to emergency admissions on Sunday than on Wednesday (11% vs. 42%) but specialists present on Sunday spent 40% more time caring for emergency patients than did those present on Wednesday. Moreover, the median specialist intensity on Sunday was only 48% of that on Wednesday. Thus, their analysis did not detect a correlation between weekend staffing of hospital specialists and mortality risk for emergency admissions.

Our own opinion is that the “weekend effect” and “after-hours effect” are real phenomena but that the causes are multifactorial, including both patient-based and system-based contributing factors. We suspect that, yes, patients admitted at these times are likely sicker and have a higher severity of illness and therefore are likely to have a higher mortality rate. However, as we’ve pointed out over and over, hospitals do not provide the same levels of service 24 hours a day, seven days a week. Staffing patterns, in terms of volume and even more so in terms of experience, are the most obvious difference but there are many others as well. Many diagnostic tests are not as readily available during these times. On-site physician availability may be different and cross-coverage by physicians who lack detailed knowledge about individual patients is common. You also see more verbal orders, which of course are error-prone, at night and on weekends. But the most significant difference is nurse workload on weekends. We’ve described the tremendous increase in nurse responsibilities on weekends due to lack of other staff (no clerical staff, delayed imaging, physicians not on site) that add additional responsibilities to their jobs. Our December 15, 2009 Patient Safety Tip of the Week “[The Weekend Effect](#)” discussed how adding non-clinical administrative tasks to already overburdened nursing staff on weekends may be detrimental to patient care. Just do rounds on one of your med/surg floors or ICU’s on a weekend. You’ll see nurses answering phones all day long, causing interruptions in some attention-critical nursing activities. Calls from radiology and the lab that might go directly to physicians now often go first to the nurse on the floor, who then has to try to track down the physician. They end up filing lab and radiology reports or faxing medication orders down to pharmacy, activities often done by clerical staff during daytime hours. Even in those facilities that have CPOE, nurses off-hours often end up entering those orders into the computer because the physicians are off-site and are phoning in verbal orders and this may soon get worse as The Joint Commission is now allowing orders to be texted in (see our May 24,

2016 Patient Safety Tip of the Week “[Texting Orders – Is It Really Safe?](#)”). You’ll also see nurses giving directions to the increased numbers of visitors typically seen on weekends. They may even end up doing some housekeeping chores and delivering food trays. All of these interruptions and distractions obviously interfere with nurses’ ability to attend to their clinically important tasks (see our Patient Safety Tips of the Week for August 25, 2009 “[Interruptions, Distractions, Inattention...Oops!](#)” and May 4, 2010 “[More on the Impact of Interruptions](#)”). That is why we think that simply addressing nurse:patient staffing ratios without addressing nurse workload issues may be short-sighted.

So while the recent articles may dilute the weekend effect for some conditions, all you have to do is spend some time in your hospital on weekends and you’ll readily see that things are different on weekends.

Some of our previous columns on the “weekend effect”:

- February 26, 2008 “[Nightmares....The Hospital at Night](#)”
- December 15, 2009 “[The Weekend Effect](#)”
- July 20, 2010 “[More on the Weekend Effect/After-Hours Effect](#)”
- October 2008 “[Hospital at Night Project](#)”
- September 2009 “[After-Hours Surgery – Is There a Downside?](#)”
- December 21, 2010 “[More Bad News About Off-Hours Care](#)”
- June 2011 “[Another Study on Dangers of Weekend Admissions](#)”
- September 2011 “[Add COPD to Perilous Weekends](#)”
- August 2012 “[More on the Weekend Effect](#)”
- June 2013 “[Oh No! Not Fridays Too!](#)”
- November 2013 “[The Weekend Effect: Not One Simple Answer](#)”
- August 2014 “[The Weekend Effect in Pediatric Surgery](#)”
- October 2014 “[What Time of Day Do You Want Your Surgery?](#)”
- December 2014 “[Another Procedure to Avoid Late in the Day or on Weekends](#)”
- January 2015 “[Emergency Surgery Also Very Costly](#)”
- May 2015 “[HAC’s and the Weekend Effect](#)”
- August 2015 “[More Stats on the Weekend Effect](#)”
- September 2015 “[Surgery Previous Night Does Not Impact Attending Surgeon Next Day](#)”
- February 23, 2016 “[Weekend Effect Solutions?](#)”

References:

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