

Patient Safety Tip of the Week

February 23, 2016 Weekend Effect Solutions?

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 previous columns on this issue are listed at the end of today’s column. Several more studies on the phenomenon have been published since our last column.

While the “weekend effect” has been demonstrated for a variety of medical conditions, it is not universal. One recent study showed that children admitted to Scottish hospitals on the weekend were **not** more likely to die than those admitted on weekdays ([MNT 2015](#)). Those admitted on weekends were even less likely to be readmitted than those admitted on weekdays.

But several other studies demonstrated the “weekend effect” for other conditions. A recent study from the UK ([Robinson 2015](#)) found that in-hospital cardiac arrests attended by the hospital-based resuscitation team during nights and weekends have substantially worse outcomes than during weekday daytimes. The authors concluded that organizational or care differences at night and weekends, rather than patient case mix, appear to be responsible. Those results from the UK are quite similar to those from a study in the US ([Peberdy 2008](#)).

A recent large study in the UK ([Palmer 2015](#)) suggested that babies born at the weekend had an increased risk of being stillborn or dying in hospital within the first seven days and that there were also increases in the rates of other complications for both women admitted and babies born at weekends, with higher rates of puerperal infection, injury to neonate, and three day neonatal emergency readmissions. However, numerous rapid responses ([rapid responses 2015](#)) submitted after the publication have challenged the methodologies used in the study.

And yet another Scottish study demonstrated that stroke patients admitted on weeknights or weekends/holidays missed more guideline-recommended interventions and had higher mortality rates and fewer discharges to home ([Turner 2016](#)). Though those admitted on weeknights or weekends/holidays had comparable rates of early cerebral scanning and thrombolysis (after adjustments), they were less likely to receive swallow screening on the day of admission or be admitted to a stroke unit on day 0 or day 1. Mortality rates at 7 and 30 days were higher in those admitted on weekends.

And a paper presented at the American Society of Nephrology Kidney Week 2015 conference found that kidneys that would normally be made available for transplantation were less likely to be procured from donors over the weekend, and organs procured during the weekend were more likely to be discarded than kidneys procured on other days ([ASN 2015](#)).

One recent study suggested that specific hospital resources might be used to overcome the “weekend effect” seen in urgent general surgical procedures ([Kothari 2015](#)). Researchers identified emergent/urgent surgeries (appendectomies, cholecystectomies, and hernia repairs) in the HCUP database for Florida from 2007 to 2011 and used as a surrogate for the weekend effect an extended median length of stay on the weekend compared to weekdays. They identified 17 out of 166 hospitals that did not exhibit the “weekend effect” and looked to see how these hospitals differed from the others. Patient level factors like socioeconomic status did affect the occurrence of the weekend effect but hospital characteristics had more important associations with the weekend effect. They found that **hospitals not having the weekend effect were more likely to have higher nurse-to-patient ratios, full adoption of electronic medical records, home health programs, pain management programs, and inpatient physical rehabilitation**. The authors hypothesize that the improvement in the weekend effect at some hospitals is a result of “the ability of the identified components of perioperative infrastructure to assist patients with increased discharge needs, improve transitional care, and ensure care continuity from the week to the weekend”.

The study, of course, is limited by its use of administrative data and use of a proxy for the weekend effect. Also, the nurse staffing ratios were averages and did not specify whether such differed on weekends. Also questioned is why 3 procedures that typically have very low mortalities were chosen. Also, these are associations and may not play a causal role. But are they plausible contributory factors? They certainly could be. Previous work shows that the weekend effect is complex and involves both patient-related factors and quality of care factors (see our November 2013 What's New in the Patient Safety World column “[The Weekend Effect: Not One Simple Answer](#)”) While we may not be able to do much about the patient-related factors, there remains much we can do about the organizational and quality of care factors.

In our many previous columns on the weekend effect or after-hours effect we have pointed out how hospitals differ during these more vulnerable times. Staffing patterns (both in terms of volume and experience) are the most obvious difference but there are many others as well. Many diagnostic tests are not as readily available during these times. Physician and consultant 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.

We’ve often said the use of the simple nurse:patient staffing ratio on weekends may be misleading. That is because there is often a significant difference in 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. 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](#)”). We thus think that simply addressing nurse:patient staffing ratios without addressing nurse workload issues may be short-sighted.

It is clear we have not yet achieved the desired state in which our systems of hospital care are equivalent all hours of the day or all days of the week. Add to this the increase in acuity or severity for patient requiring weekend or after-hours admission and it is not surprising that we see less desirable outcomes in those situations.

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](#)”

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