

What's New in the Patient Safety World

August 2014

The Weekend Effect in Pediatric Surgery

The “**weekend effect**” in which mortality and complications occur more frequently in patients admitted on weekends or operated upon on weekends compared to weekdays has been reported for multiple conditions. Various studies have demonstrated higher mortality rates for patients admitted on weekends with strokes, atrial fibrillation, diverticulosis surgery, a variety of other surgical procedures, head trauma, COPD, CHF, perinatal events, ICU admissions, ESRD, and other conditions. Note that we sometimes use the term “**after hours effect**” since some of the same issues occur in patients admitted at night.

Now a new study demonstrates the “**weekend effect**” also affects children undergoing surgery ([Goldstein 2014](#)). The researchers analyzed data over a 22 year period and noted that children who underwent urgent or emergency surgery on weekends were 63% more likely to die and 40% more likely to have complications than comparable patients operated upon on weekdays. They were also 15% more likely to receive blood transfusions. The surgeries analyzed were common surgeries (abscess drainage, appendectomy, inguinal hernia repair, open fracture reduction with internal fixation, or placement/revision of ventricular shunt) and the above findings were found even after adjustment for patient characteristics. While the absolute numbers of death were actually quite small the study does suggest that many of the same factors which come into play in adults also impact children.

The study did not determine which specific factors were responsible for the “weekend effect”. Our November 2013 What's New in the Patient Safety World column “[The Weekend Effect: Not One Simple Answer](#)” highlighted a study from Australia ([Concha 2013](#)) which showed that for most of the DRG's showing excess mortality with weekend admission there are **both patient-related factors and care-related factors** in play.

We've discussed many of the contributory factors in our many columns related to the weekend effect (see list at the end of today's column). Our healthcare systems clearly do not deliver uniform care 24x7. The differences between the hospital during weekday daytime hours and the hospital at night and on weekends is striking. 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. But we've also argued that often it is a difference in non-clinical staffing that is a root cause. 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 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. 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. Nurses even end up doing some housekeeping chores. 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](#)").

For surgery there are even other considerations. Not only might the surgeon and anesthesiologist be called in from other activities but the OR team of nurses and techs are also often called in from other activities. Often the surgeries are performed by teams that are not used to working together. Though we are unaware of any published studies on environmental issues that might impact the weekend effect, we suspect that there might be factors related to equipment, sterilization procedures, overall cleanliness, OR temperature and humidity, and others that conceivably might differ on weekends.

To fix many of the above potential contributing factors would obviously require considerable resources, both financial and human. In our November 2013 What's New in the Patient Safety World column "[The Weekend Effect: Not One Simple Answer](#)" we made a business case that cases prone to the weekend effect are likely more costly to hospitals (eg. complications are usually associated with increased lengths of stay and utilization of more tests, medications, etc.). So there is likely a return on investment (ROI) for resources spent alleviating some of these factors.

The "weekend effect" is a complex one, not easily amenable to one solution.

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”](#)

References:

Goldstein SD, Papandria DJ, Aboagye J, Salazar JH, et al. The “weekend effect” in pediatric surgery — increased mortality for children undergoing urgent surgery during the weekend. *Journal of Pediatric Surgery* 2014; 49(7): 1087-1091 July 2014
<http://www.jpedsurg.org/article/S0022-3468%2814%2900005-0/abstract>

Concha OP, Gallego B, Hillman K, et al. Do variations in hospital mortality patterns after weekend admission reflect reduced quality of care or different patient cohorts? A population-based study. *BMJ Qual Saf* 2013; published online 25 October 2013
 doi:10.1136/bmjqs-2013-002218
<http://qualitysafety.bmj.com/content/early/2013/10/22/bmjqs-2013-002218.full.pdf+html>



The
Truax
Group
Healthcare Consulting
www.patientsafetyolutions.com

<http://www.patientsafetyolutions.com/>

[Home](#)

[Tip of the Week Archive](#)

[What’s New in the Patient Safety World Archive](#)