

# What's New in the Patient Safety World

October 2014

## What Time of Day Do You Want Your Surgery?

We've done a number of columns that seem to indicate the day of the week or the time of day may impact outcomes for some surgeries and other procedures. Most of those columns have been on the "weekend effect", in which patients admitted on weekends tend to have worse outcomes than those admitted during "normal" daytime hours. We also often use the term "**after hours effect**" since some of the same issues occur in patients admitted at night.

The reasons for the phenomena are multifactorial and include both patient-related factors, which we can't do much about, and system-related factors, which offer considerable opportunity for improvement (see our November 2013 What's New in the Patient Safety World column "[The Weekend Effect: Not One Simple Answer](#)" and the list of our other prior columns at the end of today's column).

In our September 2009 What's New in the Patient Safety World column "[After-Hours Surgery – Is There a Downside?](#)" we discussed an article on adverse outcomes associated with doing certain types of orthopedic surgery after hours ([Ricci 2009](#)). We think the issues raised are significant to almost every type of surgery, not just orthopedic surgery. Surgery in the "after hours" group was associated with an increased need for reoperations for removal of painful fracture hardware.

Now a new study has looked at laparoscopic cholecystectomies done at night compared to daytime ([Wu 2014](#)). The authors note that there has long been debate about the urgency of laparoscopic cholecystectomy for acute cholecystitis. They hypothesized that doing such surgeries urgently at night would result in a decreased length of stay. But they found that the length of stay and complication rates were no different between those done at night and those done during daytime hours. However, nighttime cholecystectomy was associated with a higher conversion rate to open cholecystectomy (11% vs 6%). They discuss potential contributory issues but conclude that laparoscopic cholecystectomy for acute cholecystitis should be delayed until normal working hours.

Previous studies by Kelz and colleagues have shown increased morbidity in non-emergent surgical cases done "after hours", one in the VA system ([Kelz 2008](#)) and another in a private hospital setting ([Kelz 2009](#)).

Why should nighttime surgery be more prone to adverse outcomes than daytime surgery? When you think about it, there are many reasons aside from the fact that patients needing emergency nighttime surgery are generally sicker. You are operating with a team that is likely different from your daytime team. All members of that team (physicians, nurses, anesthesiologists, techs, etc.) may not have the same level of expertise as your regular daytime team and the team dynamics between members is likely to be different. The post-surgery recovery unit is likely to be staffed much differently after-hours as well. The staff may be more likely to be unfamiliar with things like location of equipment. And some of the other hospital support services (eg. radiology, laboratory) may have lesser staffing after-hours. Just as importantly, many or all of the “on-call” staff that make up the after-hours surgical team have likely worked a full daytime shift that day so fatigue enters as a potential contributory factor. And there are always time pressures after hours as well. Our February 26, 2008 Patient Safety Tip of the Week “[Nightmares...The Hospital at Night](#)” discussed other adverse events occurring after hours in hospitals as well as in other industries and talked about the many potential contributory factors.

However, one of the most compelling reasons surgery is done at night rather than deferred to the next morning is the surgeon’s schedule for that next morning (either in surgery or his/her office). Because the surgeon does not want to disrupt that next day schedule, he/she often prefers to go ahead with the current case at night. Similarly, many hospitals run very tight OR schedules and adding a case from the previous night can disrupt the schedule of many other cases.

We highly recommend hospitals take a hard look at surgical cases done “after hours”. In particular, you need to determine which cases truly needed to be done after hours and, perhaps more importantly, which ones could have and should have been done during “regular hours”. If the latter are significant, you need to consider system changes such as reserving some “regular hours” for such cases to be done the following morning. You may have to alter the scheduling of cases for individual surgeons as well. For example, perhaps the surgeon on-call tonight should not have elective cases scheduled tomorrow morning. That way, if a case comes in tonight that should be done tomorrow morning you will have both a “free” OR room and a “free” surgeon. And you would need to develop a list of criteria to help you triage cases into “regular” or “after-hours” time slots.

When we reviewed the Ricci paper we said we hoped that other researchers would take the lead and do similar studies for other types of surgery (and help develop the criteria for which cases could be delayed to daytime hours). Wu and colleagues have done just that. We need to keep in mind that the studies by Ricci, Wu, and Kelz were not randomized controlled trials but rather retrospective reviews. Lacking randomized controlled trials that demonstrate improved outcomes by deferring such cases to the next morning means we can’t apply a solid evidence-based approach at this time. But sometimes common sense needs to be applied while waiting for such studies to be done. At least take a look at the experience at your own hospital. We bet you’ll be surprised by the findings.

**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](#)”

**References:**

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<http://www.ejbs.org/cgi/content/abstract/91/9/2067>

Wu JX, Nguyen AT, de Virgilio C, et al. Can it wait until morning? A comparison of nighttime versus daytime cholecystectomy for acute cholecystitis. Amer J Surg 2014; published online first September 20, 2014  
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<http://www.ncbi.nlm.nih.gov/pubmed/18376202?dopt=Abstract>

Kelz RR, Tran TT, Hosokawa P, et al. Time-of-day effects on surgical outcomes in the private sector: a retrospective cohort study. J Am Coll Surg 2009; 209(4): 434-445.e2.  
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