

# To Survive the Hospital, Make Sure Your Heart Stops on a Weekday



By *Jamie Wells, M.D.* — November 7, 2016

*With more data identifying poorer outcomes of in-hospital cardiac arrest on nights and weekends, as opposed to weekday daytimes, here are further causes and ways to advocate for yourself or a loved one.*



A study by the UK National Cardiac Arrest Audit (NCAA) echoes previous global data that hospital survival is reduced for those admitted on weekends and at night. (1)

Specifically, it concludes “IHCAs (in-hospital cardiac arrest) attended by the hospital-based resuscitation team during nights and weekends have substantially worse outcomes than during weekday daytimes. Organizational or care differences at night and weekends, rather than patient case mix, appear to be responsible.”

Translation: The skeleton crew available during these shifts is being stretched thin and cardiovascular and alternative monitoring or lack thereof is inconsistent dependent upon location within a facility and between institutions. Witnessed versus unwitnessed events are directly related to swift access to appropriate management and care. Eliminating delays is of critical import with respect to survival in these instances.

It is a complex problem with multi-factorial causes. Among them, the combination of poor nurse-to-patient ratios — which vary between hospitals— which impacts the early identification of a worrisome heart rhythm to lack of onsite experienced attendings and specialists at those vital moments. The frequent use of hospitals staffing “mid-level providers” (aka non-doctors) during

these hours who are often tasked to work beyond the scope of their training or less experienced staff is also a contributing factor. Discordant levels of training to handle a code are often not uniform between hospitals, regions or even locations within the same facility.

But, alas, money and the bottom line rears its ugly head when it comes to business school algorithms being employed by hospital administrations when weighing the highest quality of care with the cost of a human life.

The British Medical Journal (BMJ) Quality and Safety published information was obtained via prospective analysis (observational cohort) from 27,700 patients greater than or equal to 16 years who received chest compressions and/or defibrillation (aka shocking the heart with the paddles) and attended by the code team (aka caregivers assigned to the code service whose job that shift is to respond to cardiac arrests exclusively) in response to an emergent call in 146 UK acute hospitals. So, the data may even be an underestimation given that it centered solely around those cases prompting an emergent call for the code team.

The study references the United States and the caution for identical comparison given the different numbers of intensive care unit and monitored beds. However, it identifies the American Heart Association's (AHA) 'Get With The Guidelines —Resuscitation' (GWTG-R) national registry of "risk-adjusted outcomes of IHCA indicate that hospital survival was substantially lower at nights and weekends compared with weekday daytimes."

This further supports work also published in JAMA on the *Association between a Hospital's Rate of Cardiac Arrest Incidence and Cardiac Arrest Survival*. This research tackled an important distinction. It investigated the need to discern whether a hospital publicizing high-case survival rates does a poor job of preventing cardiac arrests in the first place. Raising the question of whether lauding high survival rates can even be properly evaluated without exploring cardiac arrest rates themselves.

Roughly 200,000 adults have hospitalizations in the United States that are complicated by cardiac arrest with less than 20% surviving to hospital discharge. The JAMA study opted to explore overall hospital performance as opposed to previous studies emphasis on identifying factors linked to improved survival. (2) Its findings suggest "that hospitals with high case-survival rates for in-hospital cardiac arrest also had lower cardiac arrest incidence rates, and hospitals with low case-survival rates had higher cardiac arrest incidence rates."

Though additional studies are needed, it reaffirmed higher nursing staffing may be associated with both decreased cardiac arrest and improved survival. While it found, in part, hospital factors influenced this relationship, the nurse-to-bed ratio was recognized as a possible modifiable trigger. Limited by the nature of the study design and its goal to better interpret hospital performance statistics it did not look into all of the distinguishing factors.

These, however, have been repeatedly explored in the literature. The take home message here is with the ever-increasing fragmentation of the health care system the need to be your own advocate in your care is essential. Though certain hospitals definitely do it better and will, hopefully, spread their lessons to others sooner rather than later, the challenges today and limitations of resources necessitate a proactive public.

I always caution the public not to swoon over world-renowned institutions—as any one of them is only as strong as its weakest link. My passion is empowering others to be advocates in their own care. To arm yourself with tools to champion these efforts for yourself or a loved one, please read my article [10 Ways to Save Your Life or the Life of a Loved One](#) <sup>[1]</sup> where I extensively write about tangible ways to improve continuity in your health care.

When possible, having a loved one or surrogate at all times at the hospital bedside (especially when dealing with significant disease combined with reduced or subpar monitoring) is a worthwhile endeavor.

#### SOURCES:

(1) Robinson, EJ et al. *Risk-adjusted survival for adults following in-hospital cardiac arrest by day of week and time of day: observational cohort study*. *BMJ Qual Saf* 2016 25: 832-841.

(2) Chen L et al. *Association Between a Hospital's Rate of Cardiac Arrest Incidence and Cardiac Arrest Survival*. *JAMA Intern Med*. 2013;173(13):1186-1194.

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[1] [http://www.huffingtonpost.com/jamie-leigh-wells-md-faap/10-ways-to-save-your-life\\_b\\_9824018.html](http://www.huffingtonpost.com/jamie-leigh-wells-md-faap/10-ways-to-save-your-life_b_9824018.html)