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The New York Times

Wednesday, February 20, 2008

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February 20, 2008, 10:15 am

Dying on the Night Shift



When is

the best time to check into the hospital? (Lee Celano/Reuters)

Hospital patients who suffer cardiac arrest at night are more likely to die than patients whose hearts stop on the day shift, a new study shows.

The [study](#), published today in The Journal of the American Medical Association, is the latest to show that patient care and survival appears to be profoundly affected by hospital timing and staffing issues. Other [studies](#) have shown that patients who receive hospital care on weekends do worse than patients treated during the regular workweek.

Cardiac arrest occurs when the heart stops beating suddenly, and it can be triggered by a heart attack or

other emergencies like blood loss or respiratory problems. When a patient suffers cardiac arrest in a hospital, a “Code Blue” is typically called, and a team of doctors and nurses rushes to the bedside with a “crash cart” equipped with a defibrillator, drugs and other tools used to restart a stopped heart.

The current study examined cardiac arrests among 86,748 adult hospital patients at 507 hospitals during a seven-year period ending last February. The researchers compared survival rates by the time of day and day of the week that cardiac arrest occurred. Among patients who had cardiac arrest between 11 p. m. and 7 a.m., only 15 percent survived long enough to be discharged. That compares to about 20 percent of day-shift cardiac arrest patients who were discharged. Other measures, including 24-hour survival and favorable neurological outcomes, also were worse if the patient had a heart attack at night. The study also confirmed earlier research showing that weekday cardiac arrest survival was better than if cardiac arrest occurred on weekends.

The reality is that a patient whose heart stops in the hospital is typically very sick, and even among patients who have cardiac arrest during the day shift, survival rates are low. However, the data suggest that something changes at night that makes it less likely a stopped heart will be restarted. It may be that patients aren’t checked as often or that there aren’t as many staffers in the hospital to respond quickly to emergencies. Or it may suggest the skill and experience level of night hospital workers is lower than that of workers on the day shift.

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1.
February 20th,
2008
[10:36 am](#)

Also not a good idea to have cardiac arrest, or an acute life threatening illness, in the last weeks of June or first part of July when the most experienced residents and fellows leave and the new residents just out of med school start.

— *Posted by MARK KLEIN, M.D.*

•
2.
February 20th,
2008
[10:57 am](#)

“It may be that patients aren’t checked as often or that there aren’t as many staffers in the hospital to respond quickly to emergencies. Or it may suggest the skill and experience level of night hospital workers is lower than that of workers on the day shift.”

Couldn’t it also be possible that people do not function as well at night, due to tiredness or circadian rhythms? And it’s common for hospital workers to be scheduled for grueling 12 to 24 hour shifts with insufficient sleep.

— *Posted by hdavis*

•
3.
February 20th,
2008
[11:14 am](#)

working in a full service hospital for approx. 10 yrs., it amazes me that monies would be spent on a study that basically has common sense results

— *Posted by martin*

•
4.
February 20th,

2008

[11:18 am](#)

It may also suggest that in the quiet times, patients are more resigned to their fate. Sometimes people slip away when we give them the peace to do it.

— *Posted by David Fitzsimmons*

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5.

February 20th,

2008

[11:29 am](#)

I have worked night and day shifts in the hospital as a technician/nursing assistant. I have also worked weekends. Staff is lower at night and on weekends. Many workers with seniority do not want to work nights and/or weekends. So you are on the right track that there are fewer and less experienced workers on nights and weekends.

I had thought I would change from a high-tech marketing career to nursing (I had been part of a massive layoff due to globalization). I completed a year's worth of prereqs and was waiting to enter school (long waiting lists for nursing school). The working conditions in two hospitals that I worked at were appalling: understaffing, apathetic nurses, lack of handwashing, flouting contact precautions (relative to MRSA, C-diff.) I worked at hospitals with top reputations.

Another thing to note: stroke patients often go undiagnosed on nights and weekends as no one is there to run the diagnostic equipment needed to identify strokes. Very few hospitals staff this equipment 24-7 as it is just too costly. It disgusts me that hospitals that only staff the diagnostic in the day have the gall to call themselves a stroke center. The NY Times did an excellent piece on that about a year ago.

Healthcare in this country needs some fixing. It truly frightens me.

— *Posted by Phoenix Resident*

•

6.

February 20th,

2008

[11:48 am](#)

It's likely response time. As I recall, survival rate is about 80% if the heart is restarted by defibrillator in the first two minutes. But it declines 10% for every minute delay. A 20% survival suggests an 8 minute delay.

— *Posted by William H Calvin*

•

7.
February 20th,
2008
[12:04 pm](#)

My wife's aunt called one Sunday AM and said she was weak on the right side, her lips were drooping and she was slurring her speech, classic stroke symptoms. We told her to get to the ER, they did a scan told her she was ok and sent her home. By the next day she was totally paralyzed on the right side, where she remains 10 years later. Later during the week someone else read the scan and saw the stroke. Oops!

— *Posted by Rich*

•

8.
February 20th,
2008
[12:20 pm](#)

I'd be interested to know if anyone was held i the least accountable for your Aunt's mistreatment, Rich. I am furious at the stuff I hear that happens, not just on the night watch, in these places. Then the Supreme Court does its best to keep us from seeking damages or getting these fruitcakes they hire for the low wages they now pay, fired. I could write a book about my own experiences alone, and am convinced it's the fault of not only downsizing of staff, but low wages. That means that the pool that Human Resources now hire from is so less competent, but more willing to accept the lower wages, and guess who suffers? Many act like they don't care if they're at the Convenient food store on the corner or a medical facility. They took whatever job they could get first. Health "Care"? Who are they kidding? Guess who loses? We do; our health; our families. And while I'm on this rant, I've been wondering why so many nurses are obese slobs who inspire zero confidence in me as a patient? Now they wear their street clothes and I even wonder about their hygiene.

— *Posted by polarbear*

•

9.
February 20th,
2008
[12:22 pm](#)

My wife is an ICU nurse who use to work the night shift until recently. She use to come home, wake me up, and complain to me about her co workers. She said many night nurses were more interested in goofing off or sleeping than working. Also,the only doctors in the hospital were in the ER, and not always available to go up to her floor. When she was required to phone the on-call doctors at home, some would yell at her for disturbing them, and then order meds or a scan, without going in. I also heard postive comments about her shifts, but not as many.

— *Posted by David Arms*

- 10.
February 20th,
2008
[12:31 pm](#)

Theres a 150,000 accidental deaths in hospitals each year, that number dosn't include the people injured or made worse by the care they get. this is what happens when Medicine is for profit, patients become Chattle for Corporate Greed.

— *Posted by curt*

- 11.
February 20th,
2008
[12:31 pm](#)

Several points of clarification:

Patients in critical care units are universally electronically monitored for their heart rate and rhythm, and most often, “codes” aren’t called for these patients since most, if not all, of the members of the resusciation team are already physically present in the unit. Sometimes this is referenced as an internal code or a silent code.

Also, patients’ circadian rhythms and metabolic rates also come into play, and generally, they are at lowest ebb between two and five in the morning. Since nurses do not awaken all patients during each check, and not all patients are being monitored for heart rate and rhythm, it is

possible that patients die without awakening or calling out in distress.

There are many variables in resuscitation success rates. The time of day, staffing, qualifications of staff, tenure of staff, degree of instability of patients, the presence of resuscitation teams, presence of board certified intensivists, hospitalists and emergency medicine physicians, the policy for the summoning and use of those teams, the adherence to AHA and IHI resuscitation standards, the presence of rapid response teams, and the overall institutional culture of root cause analysis and process improvement versus employee sanction and punishment for errors and process failures/weaknesses are all important pieces. And one more - the policy and aggressiveness of using do not resuscitate protocols. In institutions where these are weak or are not used by key high volume/high acuity admitting physicians, there may be more attempted resuscitations of patients with illnesses and injuries which are systemically overwhelming.

No single variable will account, in most cases, for the success or failure of cardiac resuscitation in any given facility.

From TPP — this is all very useful. thanks for adding to the discussion.

— *Posted by Annie*

•

12.

February 20th,
2008

[12:55 pm](#)

To Rich-

The reason your aunt was not diagnosed the first day is because the stroke is not “seen” on CT scan until the tissue is infarcted, and this lags behind the first symptoms. If she was nonetheless still having symptoms, the ER doctor has to decide whether the risk of the medicines outweighs the risk, or degree of handicap, of the stroke. You can imagine how difficult this decision is if the patient’s symptoms have gone away at the time of the first visit, as is often the case. In spite of all the publicity about stroke centers, there is still very limited intervention, and it depends a lot on the timing. If the clot-dissolving medicines are given more than a few hours after the onset of the blockage, they dramatically increase the risk of bleeding in the brain. So if a person wakes up with a stroke, and has not been awake and symptom-free within the last three to four hours, the person will not get the clot-dissolvers.

In this case, “seeing the stroke” would not argue for giving the medicines- the area seen on the CT would be interpreted as an old stroke. You do not “see the stroke” until after it has happened. You do the CT at the outset to make sure the patient has not bled into his brain, in which case you would not be able to give the clot-dissolving medicine because it would increase the likelihood of more bleeding.

I'm writing this explanation because, 10 years after the fact, Rich is feeling bad because he thinks his aunt's case was mishandled. I think if he were to talk to an ER doctor, or a neurologist, he would learn that there is no way of predicting whether or not a patient with a TIA (mini stroke) will go on to have a complete stroke.

— *Posted by jim*

- 13.
February 20th,
2008
[1:23 pm](#)

The actual study presented in JAMA considered monitoring status and witnessing of the cardiac arrest as confounding factors, and there was still a difference in outcome between day/evening and night. It's quite premature to blame the hospitals for this. It's disappointing that the article really doesn't present anything new that hasn't been known for well over a decade regarding increased incidence of cardiovascular events in the late night/early morning hours.

There are well-established circadian variations in cardiovascular function (i.e., Am J Cardiol. 1997 May 1;79(9):1190-3 and Clin Cardiol. 1999 Feb;22(2):103-6), and this study provides no additional information to rule in or out the hypothesis that the progression of events leading to cardiac arrest is different in the late night hours due to circadian rhythms in cardiovascular physiology, and that this is the underlying cause of the higher death rates during those hours.

An interventional study in which patients are continuously monitored in-hospital during those late night/early morning hours would be required to determine if the higher rate of detection of patients in asystole rather than ventricular fibrillation really is due to insufficient monitoring/slow response times, or due to a more rapid or different order of progression of events leading to cardiac arrest during those hours.

— *Posted by Heather*

- 14.
February 20th,
2008
[1:27 pm](#)

Let's get to the heart of this, if you will.

I have worked in healthcare for 15 years in the ICU and the ER of many hospitals. I have also

worked as the “off-shift” supervisor or night supervisor. The realities are these folks:

1. There are not enough healthcare workers in the US to care for the numbers of patients we see daily. That goes for nurses, aids and physicians.
2. The for-profit insurance industry has one goal: to pay as little as possible for patient care regardless of what is necessary.
3. Underfunded state and federal insurance programs don’t pay anywhere near enough to cover costs a hospital incurs in treating patients.
4. Education is cost prohibitive for many people to enter medicine.
5. Last, but certainly not least is the basic underlying level of expectations of Americans that they have no responsibility for their own health and that the medical community is responsible for “fixing” them no matter how much they have damaged themselves. Take note smokers, alcoholics, morbidly obese and others: we can’t make you better if you won’t help yourselves.

So, here’s the point: Fund a realistic universal healthcare system so that all have access to most care; make sure there is enough money to pay for real healthcare; reduce the cost of medical education; increase reimbursements for primary care physicians; eat less, exercise, quit smoking and don’t show up in my ER complaining of difficulty breathing after having just finished a cigarette.

— *Posted by John*

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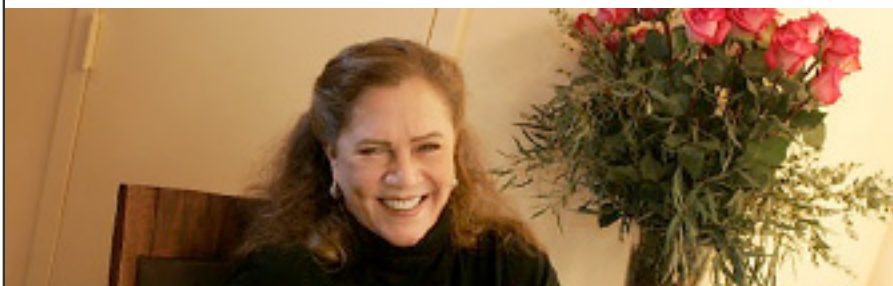
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