Off-Peak Nurse Staffing
Critical-Care Nurses Speak

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The off-peak work environment is important to understand because the risk for mortality increases for patients at night and on the weekend in hospitals. Because critical-care nurses are on duty in hospitals 24 hours a day, 7 days a week, they are excellent sources of information regarding what happens on a unit during off-peak times. Inadequate nurse staffing on off-peak shifts was described as a major problem by the nurses we interviewed. The study reported here contributes the type of information needed to better understand the organization of nursing units and nurse staffing on outcomes.

Keywords: Errors, Nurse staffing, Off-peak staffing, Staffing

Kane and colleagues 1 reviewed 16 years of published research and in 2007 concluded that evidence suggests that increased nurse staffing is linked to improved outcomes 1 However, they conceded that this link may not be causal and that it varies across measures of staffing and across nursing environments. They recommended additional studies considering factors that affect outcomes, including the organization of nursing units and staffs.

The study reported here contributes the type of information needed to better understand the organization of nursing units and nurse staffing on outcomes. This study is based on secondary analysis of data collected using institutional ethnographic methods to study the organizational effects of off-peak (weekend and night shift) environments on the work that nurses do. 2 Data for the primary study were collected from hospitals in 3 Texas cities. Readers interested in the primary institutional ethnography are directed elsewhere. 2

The off-peak work environment is important to understand because the risk for mortality increases for patients at night and on the weekend in hospitals. 3-6 Remember night shifts could start at 7 pm or 11 pm. Because nurses are on duty in hospitals 24 hours a day, 7 days a week, we believe they are excellent sources of information regarding what happens on a unit during off-peak times. 2 Undoubtedly, their knowledge can shed light on the causes of increased off-peak risk for patients. We also believe that organizations produce what they are organized to produce. Therefore, if patient risk increases in off-peak periods, we should look for ways the organization of hospital care may contribute to lessening that risk.

In the primary study, 2 an interdisciplinary team, made up of nurses, a health care administrator, an economist, and a sociologist, interviewed critical-care nurses employed by 3 hospitals in the southwestern United States. The majority of the 38 nurses interviewed worked at night or on weekends as staff nurses, charge nurses, or nurse managers of adult or pediatric critical-care units. The interviews took place from December 2008 through April 2010.

Inadequate nurse staffing on off-peak shifts was described as a major problem by the nurses we interviewed. To extend our knowledge of this problem, we also reviewed nurse staffing literature and focused primarily on studies published after the 2007 report by Kane and colleagues. 1 We sought to determine whether the statements of the critical-care nurses from the interviews echoed the literature or if critical-care nurses reported
nurse staffing problems not yet captured in this type of mainstream information.

We reviewed literature related to nurse staffing from 2007 through 2009. Ovid MEDLINE, Nursing@Ovid, and EBSCOhost’s MEDLINE and Health Source: Nursing/Academic Edition were searched using the keyword “nurse staffing.” There were a total of 203 articles found. Articles that were excluded included those that were not in English, as well as those that were conducted in nursing areas (eg, long-term care) or units (psychiatric) that we were not studying. This resulted in a total of 132 appropriate articles. For purposes of brevity, the most suitable articles pertaining to each category or subcategory are cited.

We identified 3 main categories of literature. These categories included (1) antecedents and consequents of staffing levels, (2) institutional effects on staffing, and (3) methodological considerations for studying nurse staffing and its effects on outcomes. (See the Table for a list of the categories and the subcategories included in the literature we examined.) Some of the articles covered information relating to more than 1 category of information.

To carry out the secondary analysis of the interviews, we used the lexical search tool in the MAXQDA 2007 software package designed for analyzing qualitative data. We entered the term “staffing” in our search of the interview transcripts and obtained 126 text segments in which off-peak staffing is mentioned. What follows is a description of the categories of recent staffing literature along with analysis of the critical-care nurse interview excerpts, which intersected with, and at times went beyond, these categories.

**ANTECEDENTS AND CONSEQUENTS OF STAFFING LEVELS**

Antecedents and consequents of staffing levels are those aspects that precede and follow the process of staffing units in hospitals. These include subcategories of nursing shortage, rationing of nursing care, and planning for nursing staffing (long term and short term).

**Nursing Shortage**

One intensive care unit (ICU) charge nurse explained:

The charge nurse can take patients. In fact, our policy or our standard is, you know, a charge nurse can be in charge of the unit and have 1 patient. That’s okay. The ideal situation is for her or him to be open, to be charge, to be able to function fully in that role. But, you know, with cutbacks and the nursing shortage, you know, people are sick, things happen, that’s not always the case.

**Rationing of Nursing Care**

Difficulties on the night shift are related by another nurse:

The other thing I would probably say about night shift is the fact that we don’t have the resources, but we’re
used to not having the resource. We know it’s not going to ever change. We know there’s a 9:00-to-5:00 world. People get up, you know, at 7 o’clock in the morning, go to bed at 7:00. We know that there’s a 9:00-to-5:00 world. That’s part of the beast that you sign up for when you work night shift. It’s not going to change. Financially, there’s not the resources for it. And there is—is it, you know, prudent to have someone in patient supply? Yes. At night. Are we okay? Patients okay? Yeah, they’re fine.

Planning for Nurse Staffing

Long Term
The use of foreign nurses is a long-term staffing strategy discussed by a pediatric ICU (PICU) nurse:

…that was kind of a strategy that a lot of hospitals, not just here, but a lot of hospitals have used to help with staffing because, you know, there’s a nursing shortage throughout the United States, and in Texas especially, we have a very high percentage of nursing shortage. So that is something, one of their strategies that they use because you can get some really, really good, very knowledgeable, very dedicated nurses, you know, from outside the US. And so that was something that they did. So about 2 years ago, we—that was the first time that we started participating in that. And we’ve always felt like we were very, I mean, we had international nurses, we just didn’t bring them here. They came on their own, and we hired them.

Short Term
A short-term strategy of pulling a nurse from another unit is described by a medical ICU charge nurse:

…I thought one person might call in sick. I had a warning because she was called in sick Sunday. And today, being December 31st, everybody had planned everything. And, you know, it’s at the last moment when you find that out, it makes you mad. You know, how are you going to do? You know, I cannot come and work tonight because I have plans made. I have people coming. And so, you know. So I looked at the schedule, it was—I couldn’t find anybody to ask. So I checked with another ICU, asked them how their staffing is. So they were well staffed, so…

INSTITUTIONAL FACTORS AFFECTING NURSE STAFFING

Institutional factors are those characteristics of hospitals that affect the way in which nurse staffing is designed. These include subcategories of policy/legislation (safe staffing,13,14 health care financing,15 and increasing funding for nursing education8,11,16), practice environment/organizational attributes/hospital characteristics (nurse skill mix17-19 evidence-based practice20 for-profit vs not-for-profit21 manager/supervisor support22 and Magnet status23), nursing economics (reimbursement24 production function,25-27 and cost/savings28,29), and technology/informatics (use in staffing/scheduling30 and supports nursing functions31).

Policy/Legislation

Safe Staffing
One ICU nurse suggested what she believes is safe staffing in her unit:

Safe staffing in the ICU usually means a 2-to-1 nurse-to-patient ratio, 2 patients per nurse. But we’ll have 3. And the charge nurse will have 2, which means we don’t really have a charge nurse because she’s busy with her own patients. It’s really bad. One time we did—one time, it was like that, and somebody coded. A nurse got in trouble for not doing something that he had really done, but it was so confusing that they didn’t think it had been done.

Health Care Financing
Thinking about financial matters related to nursing work in the unit, a nurse manager related:

And way back when, we used to—we never worried about how many 4 × 4’s we used or tried to save this or how come we couldn’t get that because of the budget or whatever. But now nurses are having to look at that a little bit more, and they’re having to kind of, you know, understand why this patient isn’t going to—isn’t getting this drug and is going to get this drug because, you know, we’re going to have to save money on this, or their insurance doesn’t pay for this. They’re having to dip their fingers a little bit more into the business aspect of health care. The nonprofits aren’t out there like they used to be. They’ve been swallowed up for the for-profits. And unfortunately, we’re a business.

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Increasing Funding for Nursing Education
Regarding how to increase the number of nurses available to work, a PICU nurse conjectured:

You know, I don’t know any way around to get more dollars for education to open up these schools to get more nurses, you know.

Practice Environment/Organizational Attributes/Hospital Characteristics

Nurse Skill Mix
Generally, skill mix in the literature refers to the level of preparation of the nursing staff including registered nurses, licensed practice nurses, and personal care assistants. Our
interviewees told us that it is also important to consider the experience and performance of individual nurses when planning staffing schedules and making patient assignments. The critical-care nurses told us that competence varies across individual nurses with whom they work. One stated:

On any given day, like today, for example... there were eight of us working. Probably three I would feel were highly competent, could manage anything...two were very competent, and ...one I was sure was incompetent. And the other one was a traveler and just—I just didn’t know. I had no basis to compare. So it’s the whole gamut. And that’s pretty representative.

Evidence-Based Practice
Evidence-based practice was mentioned by an ICU nurse who explained:

And, you know, most places now that, you know, from the research I’ve read and from what we did when we changed our visiting hours, the research shows that most everybody has a pretty open policy about visiting, which is okay. But then you get a lot of well-meaning people who come, and it’s really not appropriate when the patient is as sick as some of our patients.

For-Profit Versus Not-for-Profit
A surgical ICU (SICU) nurse at a not-for-profit hospital compared (resources at her hospital to the modern technology of the for-profit institution to her own, “We are kind of behind in our institution.” Yet, we heard about tight budgets and the use of a business model from nurses in all 3 of the hospitals.

Manager/Supervisor Support
A PICU nurse elaborated on how nurses and managers work as a team:

I work very closely with the managers on the pediatric floor. And when we are in a crisis situation like that, myself as well as the manager on the floor, if it’s something that happens when we’re here, obviously we go up, and we are making sure that everything that needs to be in place is in place, and we are both checking on the patient. And you know, most of the time, their manager will not leave that room. They will stay put because they know it’s, you know, a high-acuity kind of patient. But definitely, if there’s a problem, either one of us, you know, would be addressing that issue and helping support the staff.

Magnet Status
The importance of Magnet status is reflected in the words of a PICU nurse:

You know, we know that there’s a lot of things that we have to improve upon. But I think that goes back, too, to being a Magnet facility and really being invested in your nurses and making it a good place, not only for your nurses, but for your physicians, your patients, and your commitment to them. I’m very proud to work here, very, very proud.

Nursing Economics
Cost/Savings
Cost considerations are divulged by an ICU nurse in relation to experienced nurses who are paid at a higher rate than new hires:

I’m pretty sure the CFO [chief financial officer] looks at cost. But the productivity is really based on hours and not cost. In my world, when I came here, I looked at cost. I mean, I got a bucketful of money to manage to decide how many full-time equivalents are out of that. So if I had less experienced nurses, then I’m going to have more nurses. Well, that doesn’t drive here. It’s all about hours. And which I tell them, I said, if you switch over, you know, and really look at cost, there could be a possibility we could have more staff because of our tenure. But it is, I mean, it’s a high tenure here.

Production Function
One manager explains how open-heart surgery performed on elderly patients impacts nurses’ productivity and workload (as regulated by the unit’s staffing grid):

I mean, that’s—10 years ago that was unheard of to even—past 75 [years old]. And they survive it, and they’re doing well. You know? It’s amazing. So our population is getting a little bit more intense. Our acuity’s higher. Back 10 years ago, sure, we could handle it on the grid. But we are constantly having to change that grid. And that grid hasn’t been changed for several years. So my battle right now is to change that grid so I can make my productivity, so I can validate getting extra nurses. And they say, how come you’re not—how come you’re not meeting your productivity? What is wrong with the process? And what I do is I have to justify. Oh, okay, for this day I had 3 one-to-ones because I had 3 patients who had 2 devices and were on 9 drips, which justifies a one-to-one patient. This has no one-to-one patients in it. So if I—and what I have to do then is I have to go back, and I have to justify every hour that I went over. We have to go into what we call our productivity spreadsheet, which kind of breaks it down to how many hours I’ve used as far as overtime and stuff like that, and if I go over, which will eventually go into this, my productivity, meeting my goal.

Reimbursement
Regarding reimbursement for (hospitalists’) services, one ICU nurse maintains:

Well, if you think of one physician who does all their rounding at night and not during the day, then I think financially it probably would impact that person because, well, I don’t know if it would because I don’t think they would change their rounding patterns. So
they get, you know, funded or get the Medicare charge if they see the patient. But if they round daily like is expected to do in the policy, they still would get that, you know, that reimbursement. But when it comes to putting it in lines or procedures, and it’s the person who’s on call, well, he’s/she’s going to get majority of that. But if you, you know, think about Medicare and how the payers are paying, and, you know, they should benefit for. But once physicians go to pay-for-performance, then I think that’s what’s really going to drive a lot of it.

Technology/Informatics

Use in Staffing/Scheduling
The use of online self-scheduling is elucidated by a PICU nurse:

They have their own schedule in the computer system, it’s on the Internet that you have to have access, you have to be invited to participate in it. So no one can mess with anybody’s schedule or anything like that. So we have designated nurses in the units who they try to help balance the schedule before our supervisors actually pick the schedule up.

Supports Nursing Functions
A trauma unit nurse says physician orders can be entered into a computer by a unit technician or nurse:

Because since we are working on this computer program, trying to become completely computerized, we really are capable of putting our own orders in. But they (unit clerks) pretty much do that for us. I mean, I stop and do mine sometimes. But they do it. And then we just check and make sure it’s done before we approve it. But we had that. But once you get below 7 patients, there’s not a tech or anyone at the desk. Everyone’s responsible for doing all their orders.

METHODOLOGICAL CONSIDERATIONS FOR STUDYING NURSE STAFFING AND ITS EFFECT ON OUTCOMES
This category describes the ways in which nurse staffing and its effect on patient and nurse outcomes are examined. The subcategories are International application/sharing of nurse staffing research findings, measurement/instrumentation challenges (patient outcomes/quality of care, nurse outcomes, staffing/assigning patients) and need to connect individual nurse data with patient data.

International Application/Sharing of Nurse Staffing Research Findings
A PICU nurse conveys her enthusiasm for sharing research in this statement:

I think this is a wonderful research study. I am just really excited. I hope that there’s really some good data that gets brought out of this and will help everybody, not just our hospital, but everybody.

Her feelings are echoed by an SICU nurse, who states:

I think it’s important for nurses to participate in the research because I think maybe it can make a difference and open our eyes on certain things.

Measurement/Instrumentation Challenges

Patient Outcomes/Quality of Care
The importance of documentation to show nursing care and patient outcomes was provided in a statement by an SICU nurse:

Documentation has gotten, like, really lengthy. You know, different core measure things and paperwork that goes with that and did you give them the quit-smoking handout, and, you know what I mean, it’s just document it, document it, because if you didn’t document it, you didn’t do it.

Nurse Outcomes (for Example, Burnout, Satisfaction, Turnover, and so on)
When disturbances occur on a nursing unit, it can create tension and disharmony, with resulting dissatisfaction and nurse turnover. One ICU nurse explains how a tension-producing situation was addressed by creation of a new policy:

And you want satisfaction among your nurses, and you want cohesiveness. And when it’s just one, then it needs to be addressed. And it was quickly addressed. It was quietly addressed. And then the policy came out, and everybody must adhere to the policy, regardless.

Staffing/Assigning Patients
The intricacies of nurse staffing are explicated by a PICU nurse:

Just because we go by a staffing ratio that tells us, okay, if you’ve got this number of patients, you can use this number of nurses, it is always patient safety is first. And if we feel like that that child is really sick and unstable and the nurse is, you know, having to do lots of tasks and trying to go up and down on drips, you know, to help stabilize that patient, then we do what is best for the patient. We will go staff outside that grid to provide the safest patient care that we possibly can. You still are going to have various levels of nurses. You’re going to have some[one] who may be stronger; a nurse who can take a really sick septic shock kid who is on multiple drips and on the vent and just really, really sick. And I have some nurses who do team leader, some nurses who have not done team leader yet because they may have only been a nurse for a year, 2 years, and I feel like that they really need to get strong in their critical thinking and their ability to take care of a really sick kid because they have to be a strong resource for the entire unit.
Need to Connect Individual Nurse Data With Patient Data
A need to connect individual nurse data with patient data, rather than unit-level or hospital-level analysis, is the only area where information found in the literature was not represented by something said by a critical-care nurse interviewed in the study. This need to connect nurse and patient data on an individual level was a concluding recommendation made in March 2007 AHRQ report mentioned in the first paragraph of this article.1 The closest statement regarding data is presented by a charge nurse. The quote indicates that data are entered by nurses into computers. Thus, there appear to be ways in which software can be developed so that individual nurse information can be connected to patient data. The nurse related:

My job is to get all that data and then put it in the computer, all these things again, saying that, you know, this patient has, in each day’s thing, that it’s all done, the chart, the, you know, the order is signed in 24 hours, least restraints are used and, you know.

DISCUSSION
The literature on nurse staffing, especially in critical-care units, tells only a part of the story. Critical-care nurses at the bedside describe details that remain to be explored. They commented on most of the areas found in recent staffing literature with exceptions primarily in the area of documenting and doing research on nurse staffing and its influence on outcomes.

The critical-care nurses we interviewed provided information about problem areas not fully examined in the recent literature on nurse staffing. This information holds promise for better understanding off-peak risks and for making more informed plans to address staffing issues.

To date, literature concerning state laws, union initiatives, and hospital policies related to nurse staffing has focused almost exclusively on the number of patients cared for by each nurse or the ratio of registered nurses to other nursing staff. What ICU nurses told us in interviews, but was less well-described in the literature, is that support services and nonnurse staff are greatly diminished on off-peak shifts. In response to being asked to describe barriers to care when working off-peak shifts, one nurse informed us:

The biggest thing is staffing, just staffing in general. But one of the big—the other problems that we have is ancillary people, like physical therapy, respiratory therapy. They’re very—and pharmacy, especially pharmacy—very barebones staffed.

We heard such comments from many of the critical-care nurses. When describing off-peak work with fewer nonnurse staff, one nurse gave this account:

And they do have a social worker on the weekend, but one on call that may do half the hospital. And if you have transfers out, anything, you’ve got to wait for all this to—everybody to get there to do their part. And just like we had a lady on a Saturday, I guess, had to be flown out. And, you know, and when I call, and when I get her (the social worker), well, she’s in the emergency room. And she normally never works ICU. Well, she said, I’ll get there when I can, you know. Well, we’re thinking this lady is going to go down and be put on a list for a heart transplant. We can’t hold her up here all day long.

Critical-care nurses who work off-peak told us some people assume nights and weekends are slower and require fewer staff. As one nurse put it:

…it is frustrating. And I think that people need to understand, patients don’t just go on autopilot, you know, on the night shift and weekends. They’re still just as sick then as they are during the day. And you need to have that same, same standard, same level of care, same level of service, 24/7.

One ICU nurse manager explained the dilemma she faced trying to stay within budget and still support the appropriate ratio of patients to staff on off-peak shifts. She described her struggle this way:

(We were “over” in hours)… But it doesn’t make sense for me to say during the day you can have 8 nurses, and at night you can have 7. To me that doesn’t… make sense. So the CNO says… then take away that personal care assistant, that clerk that’s here at 3:00… I’m in a medical unit that’s always full… we need someone at the desk answering these phones. So that’s a challenge in my philosophy because that’s not how I see my nurses at the bedside.

This comment raises an important point about nurse staffing by drawing attention to the fact that safe, high-quality care depends not only on the level of nurse staffing but also on the appropriate staffing and availability of support services throughout the hospital, 24 hours a day, 7 days a week.

Intensive care unit nurses also told us that staffing needs to fluctuate across, months, weeks, days, and even shifts. They described the “fancy footwork” required to fill holes in the schedule and adapt to unexpected admissions, discharges, and changes in patient acuity as the shift unfolds.

An area affecting staffing that was not found in the literature was the role of the charge nurse. Charge nurses described how they made patient care assignments. The decision making they described was complex and took into account the number of staff available, the physical layout of the unit, the acuity of the patient, the level of experience of the nurse, continuity of care, ancillary backup available, and other contextual factors. In addition, charge nurses described how they made rounds early in the shift and checked to see if the assignments were too heavy or too light and made adjustments where possible.
Off-Peak Nurse Staffing

One ICU nurse manager tells the story of a creative night charge nurse when dealing with physicians who did not like to be called and awakened:

I have a guy who’s a charge nurse, and he was my charge nurse when I started here. So the roles have reversed here. But he was absolutely amazing. He knew the doctors’ likes and dislikes. He knew everything that you needed to know to be autonomous at night and survive. Because a lot of times, that’s what it is. It’s survival. Because they have—it’s not all fluff and puff. There’s a lot of things that, you know, if you call the doctor at 2 o’clock in the morning, they yell at you, saying, “Why are you calling me,” you know, “Take care of it.” I mean, what does that mean, “Take care of it?” So they kind of go into a survival mode. They don’t—they try to stay within their scope of practice, but they know how to—and I hate to use the word “manipulate,” but probably manipulate is probably the most accurate to describe what they do. It’s amazing.

The best laid plans cannot prevent every problem, however. One nurse in a pediatric critical-care unit recalled this situation in which careful plans began to unravel even before the shift began:

And then right before 7:00 AM, they called and said another patient was coming. And so our charge nurse was going to have to do charge and do patient care. So that’s not an ideal situation. And then it’s, say that was 6:30 AM, so they’ve already called in their staffing to the house supervisor. So the day is set with the nurses who will be there. And then they’re scrambling on the phone, calling, you know, can someone come in, we just got all these admissions. And I think that that happens quite frequently. Or in our unit, you plan for a patient to improve and be transferred to the pediatric floor and maybe right when you’re about to transfer them they just go downhill for a minute, and you can’t move them. So that leaves you kind of in a bind with your staffing.

Critical-care nurses described off-peak staffing as having fewer and newer nurses. One critical-care nurse who, since graduating less than 1 year ago, had been working nights told us:

…that’s what they hire you for most, is if you’re a new grad they don’t have a spot for you on days. You know, you’re thrown to nights, and they don’t think about the ratio that, okay, well, how many new people do I have to old?

Failing to take into account the differences in competence among nurses and relying solely on prescribed staffing strategies such as nurse-to-patient ratios are to oversimplify the challenge of providing the right care to the right patient in the right way at the right time.

Research reports are accumulating that indicate nurse staffing has an important role to play in ensuring safe, high-quality patient care. Evidence exists indicating that staffing is not the same across days of the week and time of day. Critical-care nurses have special experiences with off-peak staffing and resulting barriers to doing their work. As researchers continue to search for evidence of causal links between nurse staffing and patient outcomes, we believe they would be wise to include qualitative investigations into those experiences.

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References

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