Acuity-based
ED Nurse Staffing: A Successful
5-year Experience

I have discovered that staffing an emergency department with emergency nurses on the basis of patient acuity is more than a regulatory necessity—it is pivotal to successful leadership. The initial setup of this system required time, effort, data, and collaboration with the Management Information System (MIS) department. However, since the data collection format was created, I have been able to obtain accurate staffing information readily by inserting updated patient volume statistics into the formulated worksheet. I have used this staffing method successfully since 1998, and even with a change of positions, the formula easily adapted to the data I obtained at the second hospital. This article outlines the steps I took to implement a staffing acuity system.

Step 1: acuity report

First, I arranged a meeting with MIS administrators to discuss the possibility of developing an ad hoc report that would supply me with an acuity level breakdown and the number of patients registered within each acuity level. (Note: the ability of MIS to supply such a report varies among institutions; fortunately, the formula is flexible enough to accommodate this variance. Some MIS departments are able to run reports by using 5-level ambulatory patient classification [APC] data, whereas others, particularly those with an electronic log, might use triage levels.) Although I knew I could negotiate regarding the type of acuity data supplied and the number of acuity levels (ie, 3 or 5 triage levels), I knew it was essential to request date parameters. The date parameter feature allows me to analyze any period upon demand—a single day, a particularly
busy week, perhaps a seasonal change, or the entire year. Annual reports are invaluable in validating current staffing levels and proposing an increase of full-time equivalent (FTE) positions.

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**Step 2: calculating emergency nurse hours**

My second step quantifies the time it takes for an emergency nurse to care for one patient in each level. With little effort, the basic criteria for a 5-level acuity system, as presented at the 1996 ENA Scientific Assembly, can be used:

- Level 1 = 20 minutes
- Level 2 = 40 minutes
- Level 3 = 60 minutes
- Level 4 = 120 minutes
- Level 5 = 180 minutes

Because every institution can have mild variations in their emergency nurse hours (ENH), I calculate my own ENH. These variations, caused by processes such as registration, laboratory, and radiology as well as staffing mix, scope of practice, environment, and architectural design, can each affect the number of ENH necessary to care for a patient. Calculating my own ENH is a valuable exercise because the effort places the emergency department in perspective of the proposed time/level standards and also stimulates ideas for performance improvement. When determining my own ENH, I re-evaluate for volume changes of greater than 25% or for any drastic change to the ED environment.

I request from MIS the top 3 diagnoses or chief complaints of each acuity level. Then, through direct observation, I record the amount of time it takes the emergency nurses to care for that patient from door to disposition decision. (The time spent caring for admitted patients is determined by a separate calculation.) I observe a cross section among the different shifts because they have their own variables affecting outcome. In addition, if 2 or 3 nurses are simultaneously providing care, I double or triple the time, respectively.

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For example, 48% of our level I triage diagnoses are chest pain, congestive heart failure, or shortness of breath. I prospectively monitor the amount of nursing time provided to these patients. Observing approximately 5% of the total volume provides an adequate sample group. I then calculate the mean ENH for each acuity level to be applied to the formula.

**Step 3: productive hours**

Productive hours are the number of hours annually that an employee provides direct patient care; this number will vary among institutions based on vacation time, personal time, holiday time, and the amount of break time in each shift. I give consideration to sick time (which is optional) and deduct it from the summary to maximize the accuracy of my productive time results (Table 1).

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**TABLE 1**

<table>
<thead>
<tr>
<th>Activity</th>
<th>No. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hours paid</td>
<td>1950</td>
</tr>
<tr>
<td>4 Weeks vacation</td>
<td>150</td>
</tr>
<tr>
<td>4 Personal days</td>
<td>30</td>
</tr>
<tr>
<td>8 Holidays</td>
<td>60</td>
</tr>
<tr>
<td>9 Sick days</td>
<td>67.5</td>
</tr>
<tr>
<td>½ Break per shift worked</td>
<td>109.5</td>
</tr>
<tr>
<td>Total productive hours</td>
<td>1533.00</td>
</tr>
</tbody>
</table>

FTE, Full-time equivalent.
Step 4: staffing by acuity

My data elements are now ready to insert into the worksheet. With use of computer software that has the ability to handle mathematical formulas, such as Microsoft Excel, I set up the data as illustrated in Table 2, using the fourth column for my formulas. The “triage” and “charge” assignments do not provide direct patient care and are not included in the “hours per patient care.” I add them to the formula as a constant. They, of course, can be adjusted according to a facility’s practice.

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Voilà…the formula calculates that I need 30.64 emergency nurse FTEs to adequately staff an emergency department treating 30,397 patients according to our acuity mix. With this information, I can then distribute emergency nurses over a 24-hour period based on patient flow. Management of FTE distribution is simplified if the MIS department provides me with the acuity report by hourly parameters in addition to the date parameters.

Optional step: staffing for admission holds

Depending on the individual facility, admitted patients who are held in the emergency department require an additional ENH calculation. I gather the following data: the number of medical/surgical admissions per year, the number of ICU admissions per year, and the average length of stay (LOS) for these 2 types of patients. My definition of “admit LOS” is the time from the “decision to admit” to “transfer to unit.” An admitted medical/surgical patient requires 0.13 ENH for every hour held in the emergency department, whereas an ICU patient requires 0.66 ENH per hour. The data in Table 3 indicate an emergency department that requires an extra 3.0 FTEs to care for admission holds.

Conclusion

Although the initial calculations may seem time-consuming, I find having a good grasp of these data is my single most valuable tool with which to validate staffing levels.

REFERENCE