During the past decade, ENA has worked to address the need for defining what constitutes safe and effective ED nurse staffing. ED nurse managers, administrators, physicians, and, more recently, government officials have attempted to identify a method to determine the optimum number of nurses required to care for the patient population of individual emergency departments. Traditionally, staffing has been based on annual patient census alone. More recently, consideration has been given to patient acuity and/or nurse-to-patient ratios when determining ED nurse staffing.

ED nurse staffing systems

Based on a review of the literature, the most frequently mentioned system for determining nurse staffing in the emergency department was the calculation of hours per patient visit (HPPV). By using this method, the number of staff hours are calculated per year based on the actual paid hours and divided by the total number of ED visits to yield a number in hours per patient visit. However, the use of this type of system to determine staffing poses problems; it does not take into consideration critical factors such as patient acuity, length of stay (LOS), or nursing workload (interventions and activities). In this system an ED patient is counted as a single visit whether he or she has a sore throat or a myocardial infarction and remains in the emergency department 20 minutes or 20 hours. Benchmarking and comparing emergency departments is difficult in this system because of the variability in patient acuity and LOS, both of which have a dramatic impact on nursing resources.

The Work Group considered it essential to focus on “safe and effective” staffing for emergency departments. To address
the concept of safe and effective staffing, it is important to understand the difference between benchmark staffing data and best practice staffing data. Benchmarking has been used extensively in health care institutions to compare performance between facilities. Benchmarking is the continual and collaborative discipline of measuring and comparing the results of key work processes with those of the best performers in a group. Being the best performer in a group does not necessarily indicate best practice; it simply compares a performance indicator between one institution and others. Best practice is defined as a service, function, or process that has been fine-tuned, improved, and implemented to produce optimal outcomes. The Work Group has adapted that definition to define best practice staffing as that which provides timely and effective patient care while providing a safe environment for both patients and staff, as well as promoting an atmosphere of professional nursing satisfaction. Best practice staffing must account for variability in the number of ED visits, census patterns, acuity of patients, nursing interventions and activities, and LOS in the emergency department. All of these factors have an impact on the workload of nursing and safe and effective staffing over a given period.

**Background**

In July 2002, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) implemented the monitoring of staffing indicators that assess staffing effectiveness for inpatients. JCAHO soon will expand those indicators to include emergency departments. Safe, appropriate, and effective staffing in the ED setting is a primary concern of ED nurses. In the ENA 2002 Delphi Study that was conducted to identify priorities for emergency nursing research, 11 of the top 20 research priorities concerned ED nurse staffing.

ENA’s position statement, Staffing Productivity in the Emergency Care Setting, states “Staffing based solely on nurse to patient ratios or medical diagnoses is neither reliable nor practical without consideration of the variables which affect the consumption of resources. Likewise, productivity measures that only address paid hours per [patient] visit are limited in scope. Additional variables must be examined.” The position statement goes on to state that “…staffing and productivity should be reviewed and adjusted regularly to ensure delivery of quality, safe, and cost-efficient emergency care based upon current patient acuity, length of stay, patient mix and census.” In keeping with the Work Group’s interpretation of best practice staffing, ENA Staffing Guidelines for Emergency Department Nursing and an ED Nurse Staffing Tool have been developed. Table 1 shows the 6 primary components of ENA’s new staffing guidelines.

**Patient census**

Patient census is important in 2 ways. First, the number of patients is directly proportional to the number of nurses needed for patient care. The same is true for the number of patients triaged. The seasonal, monthly, daily, and hourly fluctuations in patient census in the emergency department also will affect the distribution of nursing resources in order to appropriately staff for the predicted patient census. Matching these fluctuations may require the utilization of nontraditional staffing patterns.

**Patient acuity**

In considering a standardized method of determining patient acuity for use in the guidelines, the Work Group reviewed Evaluation and Management (E & M) codes, CPT and Facility Level coding, Ambulatory Payment Classifications (APCs), and triage acuity systems. Current CPT coding was found by the Work Group to be the most universal system across the United States that captures patient acuity through both nursing and physician documentation of procedures, interventions, and activities in relation to patient
Because all emergency departments in the United States utilize either Facility Levels, which are correlated to CPT codes, and/or APCs, which also correlate to CPT codes, this becomes the most accurate and standardized method for determining patient acuity during the ED encounter. Table 2 illustrates how Facility Levels, CPT codes, and APCs are related. In CPT coding terminology, 99281 is the lowest level of acuity and 99291 is the highest level of patient acuity. It is important to note that an emergency department may use Facility Levels in reverse order from what is illustrated here, but the important point is that the correct CPT code/level is utilized for the staffing guidelines.

TABLE 2

The relationships between Facility Level, CPT, and APC coding

<table>
<thead>
<tr>
<th>Facility level</th>
<th>CPT Code</th>
<th>APC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>99281</td>
<td>610</td>
</tr>
<tr>
<td>2</td>
<td>99282</td>
<td>610</td>
</tr>
<tr>
<td>3</td>
<td>99283</td>
<td>611</td>
</tr>
<tr>
<td>4</td>
<td>99284</td>
<td>612</td>
</tr>
<tr>
<td>5</td>
<td>99285</td>
<td>612</td>
</tr>
<tr>
<td>6</td>
<td>99291</td>
<td>620</td>
</tr>
</tbody>
</table>

To determine the amount of nursing time spent with each patient based on his or her acuity, the Work Group searched for the most current research on nursing interventions and activities. In 2001, the Center for Nursing Classification at the University of Iowa College of Nursing published the “Estimated time and educational requirements to perform 486 different nursing interventions.”” This research was based on the work of the Iowa Intervention Team and the Nursing Interventions Classification System (NIC), which was published in 2000. It provided a research-based foundation for the Work Group to map nursing interventions and activities to CPT/Facility Levels. Because the research methodology of expert judgment was utilized in determining both the relative value units in CPT coding as well as the estimated time to perform nursing interventions in the Center for Nursing Classification research, it was most appropriate for the Work Group to utilize these 2 bodies of research to determine nursing time by patient acuity. It helped the Work Group in determining not only required nursing time at each level but also appropriate registered nurse (RN) and non-RN skill mix for direct patient care.

Table 2 illustrates how Facility Levels, CPT codes, and APCs are related. In CPT coding terminology, 99281 is the lowest level of acuity and 99291 is the highest level of patient acuity. It is important to note that an emergency department may use Facility Levels in reverse order from what is illustrated here, but the important point is that the correct CPT code/level is utilized for the staffing guidelines.

Determining nursing time for interventions and activities by patient acuity

To determine the amount of nursing time spent with each patient based on his or her acuity, the Work Group searched for the most current research on nursing interventions and activities. In 2001, the Center for Nursing Classification at the University of Iowa College of Nursing published the “Estimated time and educational requirements to perform 486 different nursing interventions.” This research was based on the work of the Iowa Intervention Team and the Nursing Interventions Classification System (NIC), which was published in 2000. It provided a research-based foundation for the Work Group to map nursing interventions and activities to CPT/Facility Levels. Because the research methodology of expert judgment was utilized in determining both the relative value units in CPT coding as well as the estimated time to perform nursing interventions in the Center for Nursing Classification research, it was most appropriate for the Work Group to utilize these 2 bodies of research to determine nursing time by patient acuity. It helped the Work Group in determining not only required nursing time at each level but also appropriate registered nurse (RN) and non-RN skill mix for direct patient care.

Total direct patient care nursing time must be determined by both patient acuity and patient LOS in the emergency department because nursing care is a continuous process for the duration of the patient’s stay in the emergency department. This means that nursing resources, both numbers of nurses as well as the patient care interventions and activities performed, are proportional to the patient’s LOS. The longer a patient remains in the emergency department, the more nursing time will be required in the care of the patient. We also recognize that the first hour of care in the emergency department is generally more intensive than subsequent hours after the patient has been assessed and stabilized and treatment and interventions have begun. All these considerations have been incorporated into the appropriate acuity levels in the guidelines.

Average nursing times by acuity level were determined by the work group in the following manner. First, a single CPT level was taken and the typical patient problems as defined by CPT coding at that level were listed. Then, using the interventions in the NIC classification system, all typical nursing interventions performed for each patient problem at each CPT level were listed. Finally, the average times for each intervention at each CPT level were listed. This became the framework for the Work Group to determine the average nursing time for each CPT (acuity) level.

Length of stay

Accurate LOS is critical when calculating staffing needs, and the start and end times used in calculating LOS must be correct. ED LOS begins when the patient presents to the emergency department and ends when the patient leaves the emergency department, either to go home or to go to an inpatient bed.

Patient care skill mix

The Work Group utilized the findings of the Center for Nursing Classification research, which showed that 13.9%
of all nursing interventions could be performed by a non-RN. This means that for 100% of all nursing interventions and activities involved in patient care, 86.1% must be performed by an RN, whereas the remaining 13.9% can be performed by a non-RN. Because the staffing guidelines predict the number of full-time equivalent positions (FTEs) required to provide all patient care, the same percentages (ratio) hold true for the skill mix of patient care staff. The Work Group rounded these to 86% RN and 14% non-RN to establish a skill mix of direct patient caregivers for the staffing guidelines. This ratio of RNs to non-RNs as a best practice standard is further supported by data from the American Nurses Credentialing Center, which revealed that from 1994 to 2001, the average percentage of direct care RNs in hospitals that have been awarded magnet status is 88.95%.\(^9\) ENA’s Position Statement on the use of non-RN caregivers in emergency care states that “It is the nursing profession that defines and supervises the education, training and utilization of any non-RN caregivers involved in providing delegated nursing care.”\(^10\) Utilizing the correct skill mix is important, and the 1998 ENA National Benchmark Guide\(^11\) found that patient waiting time to treatment increased as the number of available RNs decreased, even if the number of ancillary non-RN personnel was increased. It should be noted that some nonpatient care support activities can be performed by non-RNs to help support patient care. These additional non-RN FTEs perform functions such as supply management and clerical support. In addition, nonpatient care support roles are sometimes performed by RNs; for example, charge nurses do not have patient care assignments. Without adequate support staff, the RN direct patient care providers will be doing the work of a non-RN rather than focusing on the nursing interventions and activities that only they can provide.

**Nonpatient care time adjustment factor**

The ENA Staffing Guidelines calculate the total amount of nursing time required to provide patient care for all ED patients and are based on patient volume, acuity, nursing interventions and activities, LOS, and skill mix. The total FTEs required to provide nursing care must include an adjustment factor to account for the compensated (paid) nonpatient care time (also known as nonproductive time) that will occur for each FTE required to provide total patient care. This compensated nonpatient care time includes vacation, sick, and holiday time (benefit time), as well as meal and personal break time, plus education, training, and meeting times. To provide for the compensated nonpatient care time that each FTE includes, additional FTEs of patient care time must be added to provide for the total calculated patient care time required based on patient volume, acuity, nursing interventions and activities, LOS, and skill mix. The staffing tool used with the guidelines to calculate the FTEs required for patient care allows each emergency department to use its own benefit time in the calculation of the required FTEs for patient care.

The ongoing educational and departmental meeting requirements of emergency nursing are also an important factor to consider when calculating compensated nonpatient care time. Each emergency department may vary in its educational requirements based on department standards and state nurse practice acts. Based on a survey of 79 ED managers that was conducted by the staffing work group in October 2002, the average educational time per RN in departments responding was 67 hours per RN per year. The guidelines and tool for calculating FTE needs sets the minimum educational hours budgeted as 67 hours per RN or 3.2% per FTE but allows departments with higher numbers of educational hours to be factored into the calculations.

The additional component of compensated nonpatient care time takes into account other times when a nurse is not delivering patient care but is on a meal break or personal break (bathroom, coffee, etc). These are times when patient care FTEs must be supplemented with additional FTEs for coverage to maintain the level of patient care. This is an additional 8.33% of an FTE that is a component of compensated nonpatient care time. In calculating the number of FTEs required to deliver all patient care, an adjustment factor comprised of benefit time, educational time, and break time is used to add additional FTEs needed to provide care during the percentage of each FTE that is nonpatient care time. Because the staffing tool allows emergency departments to use their actual numbers for benefit and education time, this adjustment factor will vary slightly from emergency department to emergency department.
Determining minimum staffing levels

Based on feedback from low-volume emergency departments, the Work Group looked at the minimum number of staff necessary to safely and effectively perform the patient care functions in any emergency department, regardless of how small the patient volume might be. The elements of safety for both patients and nurses were considered, realizing that single nurse staffing was unsafe for both the patients and the staff. The Work Group determined that a continuous core staff of 2 RNs at all times was the minimum number of RNs that needed to be continuously present in order to function safely 24 hours a day, 7 days a
First, calculate the total amount of nursing time in minutes by acuity level.
Take the number of patients by acuity level multiplied by the average nursing time in minutes by acuity level multiplied by the average length of stay in minutes by acuity level = total amount of nursing time in minutes by acuity level.
Then, calculate the total number of FTEs needed to provide patient care.
Take the total amount of nursing time in minutes (for all acuity levels), divide by 60 minutes (ie, 1 hour), then divide by 2080 hours (ie, 1 FTE), then multiply by the nonpatient care time adjustment factor (*approximately 1.34 but will vary depending on the amount of benefit and education time at each facility) = the total number of FTEs needed to provide patient care.

Then, calculate the number of non-RN full-time equivalent positions required for patient care.
Take the total number of FTEs needed to provide patient care, multiply by the percentage of interventions that can be delegated to a non-RN (0.14) = number of non-RN FTEs required for patient care.

Finally, calculate the number of RN FTEs required for patient care.
Take the total number of FTEs needed to provide patient care minus the number of non-RN full-time equivalent positions required for patient care = number of RN FTEs required for patient care.

FIGURE 2
Calculating the full-time equivalent positions needed for patient care

FTEs, Full-time equivalent positions; RN, registered nurse.

week. This means that based on staffing and skill mix, 11 RN FTEs and 2 non-RN patient care FTEs are needed as the minimum amount of FTEs required to staff the smallest and quietest of emergency departments on a 24-hour basis. Additional FTEs may be needed for support personnel based on the operational requirements of the emergency department.

Triage staffing

Triage RN staffing must be considered separately from RN staffing for patient care within the emergency department because comprehensive triage is performed by a dedicated triage nurse or nurses, prior to and separate from the patient assessment and treatment in the emergency department. According to the Standards of Emergency Nursing Practice, comprehensive triage should be performed by an RN on all patients who enter the emergency department. It is important to note that triage includes more than the initial triage assessment, because there are 29 unique nursing activities under the intervention of “triage” in the NIC system utilized by the staffing guidelines. In addition to the activities directly related to the assessment and triage classification of the patient, triage includes such activities as bandaging and splinting, initiating treatment protocols, reassessing and monitoring patients waiting to be seen, and communicating with and reassuring family members in the waiting room. The longer patients remain in the ED waiting room, the more activities and interventions the triage nurses will have with those patients.

The tool for determining patient care FTEs

Based on the primary components of the ENA’s new staffing guidelines, a tool was developed by the Work Group that would provide an easy way for ED managers and administrators to evaluate their staffing needs. Entering data unique to each emergency department in an automated Excel workbook (Figure 1) calculates the FTEs needed for safe and effective staffing. The required data elements include annual patient census and LOS at each of the CPT/Facility Level or APC groups, as well as the number of patients triaged by a triage nurse. Utilizing the 6 primary components needed to calculate staffing, Figure 2 shows how the tool calculates the FTEs needed for patient care.

Testing the staffing guidelines

To test the new guidelines, the Staffing Work Group acquired data from 30 volunteer emergency departments throughout the United States with a range of patient volumes and facility types (academic, community, urban, rural, trauma centers, pediatric hospitals, and military facilities). The data were used to test the guidelines and tool to ensure that it functioned as designed and produced staffing predictions similar to the current staffing at sites that were considered best practice emergency departments. A best
practice emergency department was considered to be one where the current staffing was self-reported as excellent and staff satisfaction and retention were high. Two sites were identified as having best practice staffing from the 30 sites that submitted data. As expected, the guidelines and tool predicted the same level of staffing that already existed at these 2 facilities. Second, the additional sites were expected to yield varying results that would show some sites needed additional FTEs, others should need fewer FTEs, while some should need a change in either skill mix or numbers of FTEs dedicated to patient care rather than support. The data from the volunteer sites demonstrated this expected variability. One finding was that the number of additional FTEs that ED managers believed they needed was consistent with the number of additional FTEs the guidelines predicted. For sites where the guidelines showed that fewer FTEs were needed, the Work Group was able to obtain additional information on the sites to determine that they had significant process issues and barriers to efficient patient care that necessitated additional nursing and support staff to deliver patient care.

Figure 3 shows the difference in current, perceived, and projected number of patient care FTEs at 10 emergency departments with varied LOS times from the testing sample. Emergency departments No. 1 and No. 2 were considered to be “best practice” emergency departments by the Work Group. Both sites had superior nursing satisfaction and minimal nursing turnover. Skill mix also had an effect on the number of RN FTEs needed at some facilities. Emergency departments No. 3 and No. 6 were using a 60% RN to 40% non-RN skill mix for patient care, which gave them insufficient RNs to provide the needed patient care. ED No. 5 was an urban academic medical center with LOS for their higher acuity patients between 6 and 14 hours. These extended LOSs contributed to the situation of the emergency department being understaffed.

Data elements

Accurate LOS is crucial to accurate determination of staffing needs. The tool will calculate the FTEs required for patient care when all the accurate data are entered. The total number of patient care nursing FTEs is then broken down into RN and non-RN FTEs based on the 86% to 14% skill-mix ratio. Triage FTEs are calculated based on the total number of patients triaged in each emergency department. If an emergency department does not triage ambulance patients or does not triage at night, then the number of triage FTEs would be less than if all patients were triaged. Patients who leave without being seen are also counted in the triage numbers but usually do not receive Facility Levels or CPT codes.

Support staff FTEs need to be added separately to the FTEs calculated for providing patient care. These FTEs include both RN (eg, charge nurses without patient care assignments) and non-RN (eg, clerical) support activities.
These support FTEs are based on staffing patterns and support needs rather than patient acuity and LOS. A total number of FTEs are provided at the end of the tool based on the number of patient care FTEs and support FTEs needed for the total patient population of the emergency department.

Using the ENA staffing guidelines and tool

Information from the ENA Staffing Guidelines and Tool can demonstrate a need to change staff mix (RN vs non-RN caregivers) or a need to increase or decrease FTEs based on patient volume, acuity, and LOS. The Work Group recognized that as patient volume increases, RN and non-RN caregiver FTE needs increase. The same holds true for LOS. Increased ED LOS can result from factors outside of the control of the emergency department, such as delays in getting patients admitted, inadequate numbers of inpatient beds, shortage of or unavailability of inpatient nursing staff, transport delays, lack of clean inpatient beds, and delays in performing and reporting laboratory and radiology procedures. As long as outside forces have a negative impact on ED LOS, more ED nursing resources will be required to deliver patient care. An emergency department will either need to increase their nursing staff or have the commitment from hospital administration to remove the barriers outside of the emergency department that increase ED LOS. By using the Staffing Guidelines and Tool, ED managers and administrators can use ED data to demonstrate the appropriate number of patient care FTEs needed, as well as re-evaluate and adjust FTEs periodically as patient LOS, acuity, or volume increases or decreases. Seasonal variations in these factors can also be tracked and planned for. Figure 4 illustrates the effect a decrease in LOS can have on necessary FTEs to care for a stable patient volume.

Distribution of nursing FTEs by time of day

Once the number of patient care FTEs has been determined, work shifts can be identified based on the times that specific volumes of patients enter the emergency department. This can be accomplished by analyzing the average number of ED patient registrations by hour of the day for a given period. You can look at these data by day of the week or as an average for a time period such as a month. The staffing tool that accompanies the staffing guidelines includes an automated graph to help analyze these data. You must be sure to take into consideration LOS as well as entry time when determining staff distribution.

FIGURE 4
The effect of decreased length of stay on direct patient care full-time equivalent positions for a single site with a census of 35,000 visits/year.

The Effect of Decreased Length of Stay on Direct Patient Care FTEs for a Single Site with a Census of 35,000 Visits/year
The importance of safe, effective, and appropriate staffing

In developing these guidelines, Work Group members recognized many variables related to staffing of emergency departments. There are other influences such as the availability of nurses or the costs associated with staffing. At a time when there is increased awareness of a nursing shortage, it becomes important to focus on retaining the nurses we have. Our goal should be to achieve the best patient care possible in every emergency department and strive for superior patient outcomes. To do this we must have the right staffing. When it is time to budget for the nurses needed in an emergency department, cost will certainly be a consideration; however, patient care should never be compromised for cost savings. A recent study from researchers at the University of Pennsylvania found that having too few nurses may actually cost more because of the high costs of replacing burnt-out nurses and higher costs of caring for patients with poor outcomes.13

Summary

The ENA Emergency Department Nurse Staffing Guidelines and Tool incorporate the key variables of patient volume, patient acuity, nursing interventions and activities, skill mix, and ED LOS to determine direct care staffing needs for an emergency department. Nonpatient care support needs are not automatically determined by the tool, so careful evaluation of the needs of each emergency department in supporting patient care must be looked at separately. The Staffing Guidelines and Tool have been developed for all emergency departments.

Many opportunities exist for nursing research associated with ED staffing that can be undertaken as emergency departments implement these new staffing guidelines. Not only can the work of nursing be better quantified, but nurse satisfaction, retention, and patient outcomes also can be evaluated. ENA’s Guidelines for Emergency Department Nurse Staffing give ED managers a new tool for determining the staffing needs for their departments, as well as a tool for monitoring key staffing indicators.

Acknowledgments

We thank the ENA Board of Directors and the ENA staff for their commitment and support for this project, along with FreemanWhite Architects of Charlotte, NC, for their financial support for Work Group meetings and Susan MacLean, RN, PhD, ENA Group Director for Research, Education, Professional Services, and Injury Prevention/EN CARE, for her assistance and guidance in the publication of the guidelines.

REFERENCES

6. Center for Nursing Classification. Estimated time and education requirements to perform 486 nursing interventions. Iowa City: Center for Nursing Classification, The University of Iowa College of Nursing; 2001.