
**Staffing ICUs**

**The Good News and the Not-So-Good News**

The terms “downsizing” and “management re-engineering” are buzz words employed by administrators to reduce the single largest expense for hospitals: labor. ICUs, with their dependence on both technology and the extensive use of nurses, are targets for these budget reductions. The study by Moreno and Miranda in this issue of *CHEST* (see page 752) has both good news and bad news for those physicians who disdain administrative or consultant-directed slashes in nursing care. The good news is that administrators poorly predict the nursing requirements for ICUs (vs actual care rendered). The bad news is that they actually overpredict the amount of nursing care required!

The study itself has important implications for physicians who treat or refer ICU patients. Before considering these, it is critical to review the findings. Applied nursing resources varied significantly between the ICUs studied. The efficiency of the use of nursing labor resources also varied significantly. These differences were not explained by the severity of patient illness. Most impressive was the large mismatch between the planned and operative utilization of nurses. As a matter of fact, 73% of the ICUs actually performed at a lower level of nursing care than actually was planned. Finally, this mismatch between planned and operative levels of care was actually greatest in the group of ICUs with the highest levels of severity of illness in patients.

Before these results can be applied, particularly in the United States, certain limitations of the investigation should be noted. First, the ICUs were not selected on a random basis. Thus, certain areas, such as Spain, may be overrepresented, while other countries, such as the United Kingdom and France, have fewer patients entered into the study. This may have affected results regarding patient acuity and nursing utilization. For example, the United Kingdom, which may have ICUs more representative of those in the United States, had one of the highest percentages of patients receiving mechanical ventilation, multiple vasoactive infusions, and dialysis. Second, although a large number of ICU admissions and patient days were evaluated, this study represented only 4 months of data collection. Would the results have been different if an entire calendar year had been employed? Third, the planned level of care for nursing was set to three 8-h shifts, with an ICU occupancy rate of 85%. Can we extrapolate these data to ICUs where nurses work 12- to 14-h shifts with greater numbers of patients? Further, would the appearance of non-nurse care providers (patient care associates) in ICUs alter the results of the study? In this regard, significant variations in the use of support personnel (respiratory therapists, pharmacists, dieticians, etc) may have existed, thus creating an important bias regarding nurse utilization.

The classic method for allocating resources to an ICU is based upon both technologic and human resources (medical coverage and patient/nurse ratio). In contrast, the current study utilizing the European Society of Intensive Care Medicine guidelines is based solely on patient to nurse ratios. The methodology of Moreno and Miranda reflects this classification. In other words, is the amount or the complexity of work the limiting factor in nurse staffing for ICUs? The authors use a sophisticated scale to convert the complexity of work into a time-equivalent quantity of work. However, the complexity of the task may be the limiting factor in certain staffing situations (eg, extracorporeal membrane oxygenation), and thus the conversion formula.
may be excessively simple. One can argue that although nurse costs are the dominant expense, an ICU is in reality an amalgamation of personnel (including nurses, physicians, and other providers) as well as technological inputs, such as monitoring, circulatory support devices, etc. Thus, evaluation instruments that account for both of these concepts will be more reflective of nursing requirements. Havill and colleagues\(^2\) confirmed that “the use of direct nursing hours applied to an individual patient is directly proportional to patient cost.” They caution, however, that the use of such methodology must match nurse staffing to patient needs.

Finally, the ICU mortality rate (12.6%) and overall hospital mortality rate (18.1%) are given. More detailed information regarding outcomes, particularly between the geographic areas (countries), is not supplied. For example, we do not know whether the mismatch between planned and operative practice resulted in poorer or better patient care.

The study design was rigorous. Site visits were made to each of the ICUs. Test instruments evaluated interobserver reliability. However, a word of caution is necessary regarding large data bases that are examined for clinical as well as administrative purposes. Studies, particularly healthcare report cards, have documented the limitations of the use of these databases: lack of data accuracy, the need for standardization and verification of data collection, and risk stratification.\(^3\)\(^4\) More recently, Weissman reported in two studies\(^5\)\(^6\) that actual data derived from ICUs is at significant variance from those recorded in databases. For example, ICU length of stay data are markedly skewed to the right. Therefore, traditional parametric statistical methods may be inadequate for analysis. He also observed that administrative databases may not reflect the quality of care rendered. He has suggested the use of a database specifically developed for the ICU. It would appear that the database used in the present investigation, EURICUS-I, addresses these concerns. However, whether EURICUS-I requires further modification will be documented by this and other studies utilizing this database.

In conclusion, Moreno and Miranda are to be congratulated for addressing such an important issue. Studies similar to theirs should be undertaken so that we may better match increasingly limited resources to patient needs.

\textit{Paul G. Barash, MD, FCCP}  
\textit{Stanley H. Rosenbaum, MD}  
\textit{New Haven, Connecticut}

Dr. Barash is Professor, Department of Anesthesiology and Dr. Rosenbaum is Professor, Departments of Anesthesiology, Medicine, and Surgery, Yale University School of Medicine.

\textbf{REFERENCES}

5. Weissman C. Can hospital discharge diagnoses be used for intensive care unit administrative and quality management functions? Crit Care Med 1997; 25:1320-23