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The Role of Physician-Assistants in Critical Care Units*

Basim A. Dubaybo, M.D.,† Michael K. Samson, M.D.;‡ and Richard W. Carlson, M.D., Ph.D., F.C.C.P.§

We evaluated the feasibility of utilizing physician assistants as providers of primary care in a medical ICU. After a three-month period of rigorous training, two PAs were assigned to the ICU. Their performance as well as the operation of the ICU over a two-year period was evaluated and compared to two preceding years when it was operated by house officers. There were no changes in occupancy, mortality or the rate of complications. Evidence for more careful evaluation of patients prior to admission and discharging for foreign graduates is more difficult to obtain and Medicare funds to programs hiring FMGs may be cut.

For these reasons, house staff officers for the primary care of inpatients may not be available in large numbers in the future. Alternative staffing will have to be implemented. Many hospitals already have hired non-physician health providers to fill the gap. Nurse practitioners and PAs, whose job was originally designed to serve outpatients in rural communities, are now being employed to perform inpatient duties on surgical and medical floors as well as in emergency rooms. Lately, new curricula in critical care education for PAs have been developed. Many PAs are being trained in the management of acutely ill patients with multiorgan failure. Hospitals, however, may be reluctant to allow physician assistants to take care of such delicate patients. In this study, we evaluated the feasibility and outcome of utilizing PAs in a medical ICU. The period of study ranged for four years, during the initial two of which only residents were assigned to the unit. During the latter two, residents were replaced by PAs.

MATERIALS AND METHODS

The Medical Intensive Care Unit

The medical intensive care unit at this hospital consists of eight fully monitored beds. The patient population is derived from direct admissions through the emergency department or from transfers from other medical inpatient floors. The spectrum of admitting diagnoses is similar to what is encountered in other medical intensive care units and includes, among others, respiratory insufficiency, hepatic failure, cardiac decompensation and shock, massive bleeding, hyperglycemic and hypoglycemic emergencies, seizure disorders, stroke, and uremia. Approximately one half of the patients are ventilator-dependent at some point during their hospitalization. No surgical or postoperative patients are normally admitted to this unit. Two physicians alternate on a monthly basis in providing

Hospital-based health care delivery in the United States traditionally has relied on the services of physicians in training, commonly referred to as house staff or house officers. The existence of large numbers of house staff to provide inpatient care may, however, decline. The reasons for this are varied. First, the Graduate Medical Education National Advisory Report estimated that the United States will have a surplus of 70,000 by the year 1990 and 145,000 by the year 2000. It recommended freezing the number of trainees in internal medicine and reducing subspecialty trainee positions by up to 20 percent and medical students by 17 percent. Based on this, many medical schools already have decreased the size of their classes and residency programs. Second, funding for house officers is becoming less readily available. Congressional committees are considering budget cuts for postgraduate medical training. Congress recently enacted the Consolidated Omnibus Budget Reconciliation Act of 1986 in which Medicare reimbursement for the indirect costs of medical education were reduced. Many hospitals are now relying on revenues from patient care to compensate for these losses. However, with the implementation of the DRGs in 1983, this source of revenue may be curtailed. Finally, the supply of FMGs willing to fill the gap left by the decreasing number of US trainees may decline. Fundings

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They were certified, licensed and had passed the certifying exam. The number of nurses per shift varies with the number of patients admitted for intensive therapy. In both situations, the PAs performed numerous invasive procedures, record keeping and family and patient counseling. They also analyzed hemodynamic data and initiated changes in therapy accordingly. Whether elective or emergency, is usually performed by anesthetists. Endotracheal intubation, reversal of life-threatening episodes of arrhythmia. The PAs inserted central lines and monitoring equipment of the unit during this period. Guidelines for the management of critically ill patients were determined by the affiliated university program. Consequently, no major changes in approaches to patient care were implemented during the study period. The following factors were evaluated: (a) number of monthly admissions, (b) occupancy, (c) APACHE II score as an index of intensity of disease, (d) duration of stay, (e) mortality, (f) number of invasive procedures, (g) number of complications, (h) utilization of laboratory resources, and (i) quality of charting. These factors were obtained on a monthly basis. Differences between the two periods were compared using the Wilcoxon rank sum nonparametric test with a p<0.05 considered statistically significant.

RESULTS

As shown in Table 1, since the introduction of PAs, the following factors were evaluated:

<table>
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<tr>
<th>Factors</th>
<th>Residents</th>
<th>PAs</th>
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<tr>
<td>Admissions per month</td>
<td>37.0 ± 5.7</td>
<td>30.4 ± 8.9*</td>
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<tr>
<td>Duration of stay (days)</td>
<td>3.96 ± 0.92</td>
<td>4.62 ± 1.91*</td>
</tr>
<tr>
<td>Monthly mortality (%)</td>
<td>41.8 ± 15.2</td>
<td>41.2 ± 13.3</td>
</tr>
<tr>
<td>Monthly occupancy (%)</td>
<td>70.2 ± 9.6</td>
<td>76.7 ± 13.0</td>
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<tr>
<td>APACHE II score</td>
<td>15.2 ± 6.5</td>
<td>16.3 ± 7.2</td>
</tr>
<tr>
<td>Procedures per patient</td>
<td>2.1 ± 0.2</td>
<td>2.8 ± 0.9</td>
</tr>
<tr>
<td>Complications (2 yr)</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Blood studies per patient</td>
<td>21.2 ± 6.8</td>
<td>31.6 ± 10.3*</td>
</tr>
<tr>
<td>Cultures per patient</td>
<td>7.1 ± 1.2</td>
<td>6.4 ± 1.8</td>
</tr>
<tr>
<td>Incomplete charts (%)</td>
<td>0.22 ± 0.01</td>
<td>0.18 ± 0.02</td>
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* = p<0.05.
into the medical ICU, there has been a slight reduction in the number of patients admitted and a slight increase in the duration of their stay. However, the occupancy rate, the mortality, the number of complications and the adequacy of charting remained unchanged. Although the utilization of laboratory studies was increased, the total number of studies requested remained within the acceptable averages for patients in an intensive care setting.

DISCUSSION

In the past two decades, PAs have functioned under supervision at newly developed satellite health centers in rural areas of the nation. These health providers were accepted by the physicians and their patients, and their performance was good. Studies comparing their aptitude to that of medical students showed minimal if any differences. In addition to their traditional role in primary care, PAs now are being utilized in place of house officers in surgical, medical, pediatric and emergency room departments. For example, in 1981, Perry et al reported that out of 522 surgical departments surveyed, 165 employed at least one PA. Thirty-three percent of department chairs felt that PAs had improved surgical patient care.

In this study, we demonstrated the feasibility of utilizing non-physician health care providers for the delivery of medical care in an intensive care setting. Specifically, we have shown that the concept is acceptable to the medical and nursing establishment and that care of critically ill patients will not be compromised. Successful utilization of PAs in an intensive care setting, however, depends on a number of factors. First, highly qualified individuals should be sought. In this study, we utilized only PAs with formal university-based education and college degrees. The intention was to select individuals who have had adequate exposure to inpatient care and were familiar with hospital-based medical care. Second, prior experience in a hospital setting is desirable. The PAs employed in this study had experience in surgical, anesthesia or cardiology services and were capable of recognizing emergencies and dealing with them. Third, formal training in the delivery of intensive care should be offered. This is best accomplished by inviting the PAs to participate in rounds in an intensive care unit under the supervision of qualified physicians. After a period of observation, they may be assigned patient care duties, starting with simple histories, physical examinations and chart reviews and gradually increasing to performance of invasive procedures under direct supervision.

As shown in Table 1, some reduction in the number of admissions and a slight increase in the duration of stay may occur. In our study, these alterations remained within what is expected in an intensive care setting. In any case, the results indicate that the supervising physicians were being more cautious in admitting and discharging patients. Such caution is probably among the more favorable outcomes of utilizing PAs in the medical intensive care unit.

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