SHORT COMMUNICATIONS

The postanaesthesia care unit as a temporary admission location due to intensive care and ward overflow
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Background. With the increasing number of critically ill patients, and shortage of intensive care unit and ward beds, some postoperative patients stay for an unnecessarily long period in the postanaesthesia care unit (PACU), until a suitable bed is available.

Methods. We prospectively studied this patient overflow admission to the PACU over 33 months. Four hundred patients with a mean age of 53.1 yr (range 0.2–94) were studied. Two hundred and eighty one (70.3%) patients were mechanically ventilated on admission to the PACU and 311 (77.8%) had invasive monitoring. Mean length of stay in the PACU was 12.9 (SD 10.6) h.

Results. The busiest hours of admission were 01–11 am. Eighteen (4.5%) patients died in the PACU, while waiting for an intensive care unit bed. The main problems were insufficient medical and nursing coverage, and inadequate communication and visiting facilities for patient’s families.

Conclusion. Patient overflow to the PACU is a common problem that requires attention. Guidelines for medical and nursing coverage, patient triage, and communication with relatives need to be outlined.

Br J Anaesth 2002; 88: 577–9

Keywords: postanaesthesia care; postanaesthesia care, audit

Accepted for publication: October 22, 2001

For several years, there has been an increased demand to treat critically ill patients in the intensive care unit (ICU). Yet, due to budget constraints, the number of ICU beds is limited. To the same extent, several hospital wards are fully occupied, due to a discrepancy between the number of patients and the number of available beds. We have recently admitted several patients into the postanaesthesia care unit (PACU), because they did not have a bed available in one of the hospital’s ICUs or wards. A study was therefore conducted to quantitate the number of these patients and evaluate the various problems associated with this practice.

Methods and Results
The study database included: patients who remained in the PACU after surgery due to the lack of an available bed in an ICU or in the regular ward; patients who were triaged to the PACU from the emergency room for weaning from mechanical ventilation (usually trauma patients with negative radiology studies); patients who needed preoperative preparation for emergency surgery; and patients who remained in the PACU for extended observation. Extended observation was indicated by the attending anaesthetist and surgeon for patients who were in a stable postoperative condition, but because of their general medical status, or the extent of surgery, it seemed prudent to monitor them overnight in the PACU. An intermediate (high dependency) care area is not available in our hospital. We excluded all patients who had a bed available in their postoperative destination location, and patients who had only a short period (up to a few hours) of postoperative mechanical ventilation.

¹This article is accompanied by Editorial III.
²This manuscript was presented in part, at the 12th World Congress of Anaesthesiologists, June 4–9, 2000, Montreal, Canada.

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Our 10 bed PACU is staffed 24 h a day, 7 days a week. The nurse to patient ratio varies over 24 h from 1:1 to 1:4, depending on nurse staffing and patient load. A resident or a staff anesthetist, who is covering both the operating room and the PACU, is available at any time.

The data were collected from April 1998 to December 2000. During the study period, 23 787 patients were admitted to our PACU, of whom 400 (1.7%) were recorded in the study database. There were 250 (62.5%) males and 150 (37.5%) females, with a mean age of 53.1 years (range 0.2–94, median 58 yr). Seventeen patients (4.2%) were under the age of 10 years. Two hundred and thirty-one patients (57.8%) were admitted directly from the emergency room, either after surgery or to the PACU without needing surgery. The most common surgical procedures were: neurosurgery (108 patients (27.0%)); abdominal surgery (79 (19.8%)); and trauma/orthopaedic surgery (61 (15.2%)). Fifty (12.5%) patients had no surgery before or after PACU admission. On admission to the PACU, 281 patients (70.3%) were mechanically ventilated and 311 (77.8%) had invasive monitoring. The mean length of stay in the PACU was 12.9 (SD 10.6) h (range 0.5–68, median 10.8 h). Forty-one patients (10.3%) stayed in the PACU longer than 24 h. Figure 1 shows the number of hours all the patients had been in the PACU (patient-hours) at any hour of the day. The busiest hours were 01–11 am, suggesting that many patients were admitted to the PACU during the night, and were discharged the next day.

In respect of patient load related to nursing shifts, 38.8% of patient-hours were on the night shift, 36.7% on the morning shift and 24.5% on the evening shift. One hundred and seventy-one (42.8%) patients were admitted to the PACU during the night shift, 71 (17.7%) during the morning shift, and 158 (39.5%) patients during the evening shift.

Lack of available bed for discharge was the most common reason for PACU stay (342 patients, 85.5%). The planned patient assignment before PACU admission, and actual discharge destination are listed in Table 1. Two hundred and eighty-one patients (70.3%) were assigned to one of the seven medical, surgical or paediatric ICUs, which have a total of 70 beds. One hundred and nineteen (29.7%) patients were assigned to a regular hospital ward. One hundred and eighty-two patients (45.5%) were discharged to one of the hospital ICUs, and 181 (45.3%) were discharged to a regular ward. The main administrative problems included missing radiology files, missing surgical reports, and missing parts of the patient’s chart. Patients’ triage to an ICU, or a busy ward was more difficult during the evening and night shifts.

### Comment

The PACU is primarily established to minimize the incidence of complications immediately after anaesthesia.
and surgery, while providing the best quality of safe care. Our study demonstrates that the PACU at a busy major (900 bed) general hospital may function clinically as an ICU or as a temporary admission ward. The excellent nursing and anaesthesia coverage, the monitoring capabilities and the potential space, makes the PACU an attractive location to admit these patients. However, PACUs were neither designed, staffed nor equipped to serve as an ICU. The greatest patient load and number of admissions occurred in the night shift, the time of minimal nursing and medical coverage. At this time of day, iatrogenic incidents are more common. The American Society of Post Anesthesia Nursing recommends that two licensed nurses should be present in the PACU, even when only one patient is being recovered. In our experience, during the night shift, one PACU nurse cared for all the study patients, in addition to caring for ‘routine’ post-emergency surgery recovery patients. Medical coverage was also a common problem. The surgical team responsible was often unavailable for advice, or for medical/surgical follow-up of their patients. In many cases, the PACU patients were excluded from the surgical rounds. An updated electronic medical record may provide a solution to some of the various administrative problems.

The issue of PACU admission due to bed overflow is poorly reported in the medical literature. A nursing journal recently published two manuscripts on this topic. Physician coverage was the most challenging issue described in these reports. Other problems included; nurse staffing; patient safety and privacy; and documentation. Patients’ families were also a major concern in our study. The operating theatre is a protected area where a minimum number of people are expected to visit. On most occasions, patients met their family only after discharge to the ward. However, for critically ill and trauma patients who stay for a longer period of time in the PACU, we cannot ignore the family need to visit. This might become a major problem when the patient is not expected to survive beyond a few hours. At times, several family members insist on visiting their critically ill relative. In addition, the PACU is not the appropriate location to handle the process of organ donation. This situation of dying patients and bereaved families has a direct negative influence on other PACU patients and their families.

How do we deal with these problems? Appropriate allocation should be assigned to every patient on admission to hospital. The staff of the ICU, or the ward to which the patient is assigned, should make every effort to find an appropriate bed. This may necessitate moving other patients who are recovering, either within the same ward or ICU or to another location. Since our PACU is staffed 24 h a day, there is no need to use the expensive ICU for basic or even complex postoperative patient care. But if patient overflow occurs, the PACU undertakes the role of the ICU. A designated PACU space with appropriately trained nurse staffing and medical care should therefore be provided. The nurse staffing should be flexible, since patient overflow may occur at any time during the day or night. Social and other family services should be available. Guidelines should be outlined for family visiting and for communication with the physicians responsible for the patient. The PACU should be an integral part of the surgical round, and surgical consultation should be available any time. An anaesthetist should be available to care solely for PACU patients.

Patient overflow to the PACU is an institutional challenge. It can be managed successfully by a multidisciplinary approach.

References