Critically ill patients admitted in post-analgesia care units: a survey of current practices in France

Editor—Approximately 10% of all critically ill patients in the USA and in Europe are denied intensive care unit (ICU) admission because of bed shortage. Such a refusal may be associated with a modification of patient care objectives and increased mortality. The post-anesthesia care unit (PACU) is an alternative setting for the care of critically ill patients. However, caring for the critically ill in the PACU might jeopardize the overall quality of care given to patients after elective surgery. Indeed, PACUs are not designed, equipped, or staffed to serve as ICUs. Furthermore, there is no French recommendation regarding the organization of care for critically ill patients hospitalized in the PACU. To our knowledge, no data exist in France on the frequency of admissions of critically ill patients in the PACU, and on the level of care provided. We therefore conducted a cross-sectional survey to estimate the prevalence and conditions in which critically ill patients are cared for in the PACU. A questionnaire with 112 items was addressed to 175 heads of PACUs from the main hospitals registered in the ‘Fédération Hospitalière de France’ network. Questions were asked regarding hospital activities, the estimated prevalence and type of critically ill patients hospitalized in the PACU, and the perceived satisfaction of the respondents regarding the organization of the PACU. Critically ill patients were described as patients suffering, or at risk of suffering, from one or more life-threatening acute organ failures requiring the initiation of artificial life support. Only such patients hospitalized in the PACU for at least 4 h were taken into account.

We obtained 101 responses (response rate of 57.7%). 80.6% of the respondents were the heads of the anaesthesia departments, 25.7% worked in a tertiary academic hospital, and 14.9% were located in the Paris area. At least one critically ill patient was admitted per week to the PACU in 40.6% of the responding units. The organization of care provided and the main characteristics of the PACUs are summarized in Table 1. The supportive care administered to critically ill patients in the PACU were: central venous line/arterial line access (81.8% of the patients), non-invasive ventilation (66.7%), para-clinical examinations (CT scan, cardiac echography, bronchoscopy, gastrointestinal endoscopy; 51%), continuous haemodynamic monitoring (30%), or arterial embolization (29.3%).

The typical management of a critically ill patient in the PACU was, by order of frequency to remain in the PACU (68.4% of units reported being able to keep their critically ill patients), to be transferred to another hospital (56.5%), or to be exchanged for a lower acuity patient from the ICU (49.3%).

Less than half of the respondents were satisfied about the way the critically ill (41%) or their relatives (46%) are cared for, or about the way end of life decisions are handled (41.8%) in the PACU. Lastly, few respondents were satisfied about the way the fee-for-service policy reimburses the care of the critically ill provided in PACU (19%).

This descriptive study describes the current practices regarding the care of critically ill patients outlying in French PACUs. The reported number of critically ill patients admitted in the PACU is significant. Existing practices vary greatly from one unit to another. Although data regarding patients’ outcomes are lacking, our study underlines the lack of formal guidelines supporting a frequent practice and the inadequate resources allocated to these patients. Additional studies aimed at assessing morbidity rates in these patients are necessary. Lastly, both improved economic incentives and updates of French national guidelines dealing with the care of critically ill patients in the PACU are needed.

Declaration of interest

None declared.

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Table 1 Characteristics of PACUs and care of the critically ill.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total (n=101)</th>
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<tbody>
<tr>
<td>Number of beds in the PACU: daytime</td>
<td>10 (1–52)</td>
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<tr>
<td>Paramedical/bed ratio: daytime</td>
<td>0.25 (0.1–0.6)</td>
</tr>
<tr>
<td>Implementation of a protocol describing the way mechanically ventilated patients should be monitored</td>
<td>28 (30.8)</td>
</tr>
<tr>
<td>Implementation of a protocol describing the prevention of pressure ulcers in mechanically ventilated patients</td>
<td>18 (19.8)</td>
</tr>
<tr>
<td>Intermediate care unit in the same hospital</td>
<td>89 (89.9)</td>
</tr>
<tr>
<td>Critically ill patients remaining for &gt;24 h in the PACU</td>
<td>12 (14.5)</td>
</tr>
<tr>
<td>Relatives allowed to visit critically ill patients in the PACU</td>
<td>31 (32.6)</td>
</tr>
<tr>
<td>Waiting room in the PACU dedicated to relatives of the critically ill</td>
<td>28 (29.5)</td>
</tr>
<tr>
<td>Dedicated room to conduct interviews with relatives of the critically ill</td>
<td>18 (18.9)</td>
</tr>
<tr>
<td>Decision to forgo life-sustaining treatments</td>
<td>49 (55.7)</td>
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</table>
Acceptability of auricular vs frontal bispectral index values

Editor—Bispectral index (BIS) monitoring is a useful adjunct to monitoring depth of anaesthesia and reducing the risk of awareness for high-risk groups.\(^1\) Its placement is traditionally over the frontotemporal region which may not be possible for certain neurosurgical procedures. The only other alternative studied so far is an occipital placement of the BIS sensor which has produced conflicting results.\(^2\)\(^3\) This also requires the shaving of the scalp over the occiput. We therefore assessed the feasibility of an auricular approach compared with the values obtained from a frontotemporal approach in patients undergoing surgery.

After ethics approval, we consented patients aged 18–70 yr undergoing laparoscopic cholecystectomy to have BIS sensors applied in both the frontotemporal and auricular regions (Fig. 1). Anaesthesia was induced with propofol and fentanyl, and maintained with either sevoflurane or desflurane. Signal quality index (SQI) and BIS values were recorded continuously. Recordings were started after verifying an SQI more than 95% and electrode impedance of <5 kΩ. The averages were calculated over every 3 min and the two data sets were then compared using the Bland and Altman random effects model analysis. A clinically acceptable level of agreement would differ by <10 BIS units.

We collected 1812 paired readings from 16 patients. The 95% limits of agreement ranged between −17.6 and +33.1.

There was a 0.8% incidence of potential awareness (BIS >60) measured by the frontotemporal approach which was not picked up by the auricular approach.

The results of this study demonstrate that the limits of agreement are too wide for the auricular approach to be used in substitution of the frontotemporal approach. Using the auricular approach not only increases the risk of not detecting awareness, but also under-estimates the depth of anaesthesia by a larger margin. This could potentially lead to the anaesthetist increasing the depth of anaesthesia unnecessarily, which is then associated with an increased risk of morbidity and mortality.\(^4\)

Declaration of interest
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Ferric carboxymaltose increases epoetin–α response and prevents iron deficiency before elective orthopaedic surgery

Editor—Interest for ‘Patient Blood Management’ is increasing because of accumulating evidence that blood transfusion may be deleterious.\(^1\) Correction of preoperative anaemia is the first pillar of this management and is recommended before elective orthopaedic surgery.\(^2\) Different strategies are used across Europe to correct anaemia,\(^3\) epoetin–α (EPO)