

Editorials

From neonate to teenager!

This *Journal* was born six years ago through the vision of Dr. L.I.G. (Tub) Worthley and a band of committed Intensive Care enthusiasts, based mostly in South Australia. Starting up a journal from scratch is no small feat, but keeping one going and growing for six years is an even greater feat. The *Journal* has become a useful resource in the education of trainees, as well as for the ongoing education of Intensivists. The *Journal* is very much alive, being kept so by original articles, case reports and review articles. Of particular importance in conveying the views of it's readers have been the editorials, 'point of view' papers and occasional essays. These latter sections are unique in the Australasian Intensive Care literature and contribute greatly to the feel and atmosphere of *Critical Care and Resuscitation* as a vehicle for expression of both academic topics as well as healthy debate.

By 2003 the infant journal had reached childhood, with an ever-increasing number of submissions to the journal. With this growth came an increased workload for the editor and editorial board. A strategic alliance was then proposed, which became reality in 2004 when the *Journal* became the official journal of the Joint Faculty of Intensive Care Medicine. This move provided access to an established journal for the Joint Faculty of Intensive Care Medicine, while providing an added cachet for the *Journal*, as well as much-needed administrative support. As part of this alliance the *Journal* is now provided to all Fellows of the Joint Faculty of Intensive Care Medicine and as from 2005 will also be provided to all trainees in the Joint Faculty of Intensive Care Medicine training program. The *Journal* in this way will now reach the vast majority of Intensivists in Australasia, as well as Fellows who practice abroad. Clearly the *Journal* is also available to anyone else who wishes to subscribe.

The *Journal* has now reached its teen years. It is THE journal of the Joint Faculty of Intensive Care Medicine, the training and accreditation body of Intensive Care medicine in Australasia. The teenager now has added responsibilities. The *Journal* is proud to represent this body that was the first in the world to formalise training and accreditation in Intensive Care medicine.

The *Journal* has come a long way, but it is still young and energetic. It is my great privilege to have been asked to take on the editorship of the *Journal* at this stage of it's development. It is with some trepid-

ation that I view the very large footprints left by Dr. Worthley in this particular task. However, with the support of Intensive Care colleagues and trainees (upon whom the *Journal* relies for submissions) and the editorial board (upon whom the editor relies for advice and practical support) this editor is firmly of the plan to nurture the *Journal* to adulthood.

One of the first tasks will be to seek National Library of Medicine indexation. Also, due to the alliance with the Joint Faculty of Intensive Care Medicine, the new website for the *Journal* is now hosted on the Joint Faculty of Intensive Care Medicine website (www.jficm.anzca.edu.au). The *Journal* contents will therefore be available to the world via the Internet providing an even wider readership for the authors contributing to the *Journal*.

The aims of the editor and the editorial board remain to provide a quality journal, which reflects the excellent practice of Intensive Care medicine in Australasia. Clear and concise writing and healthy open debate and opinion will be fostered by the *Journal*. The editorial team looks forward to your submissions and ongoing support.

May the teenager soon reach comfortable, mature, but not complacent, adulthood.

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The business of intensive care: the times, they are a-changin'

Around a decade ago, a scale of fees for intensive care was added to the Medicare Fee Schedule for the first time. The process was not without controversy. Intensive care medicine was a small, developing specialty with little political clout. There was a history of mistrust and resentment between the anaesthesia-based majority and those who trained via internal medicine, as the latter group had, up to this point, charged higher consultation fees. The few intensivists with substantial private practices were secretive about their charges, incomes and contractual arrangements, and there was widespread paranoia that the process of negotiating with government authorities would inevitably kill the goose that laid the golden egg. There were even those who believed that the proliferation of private practice would corrupt the academic and altruistic spirit that had forged the specialty, and should therefore be

discouraged altogether.

The fear and suspicion were not entirely without foundation. Items needed to be drafted and amended to minimise 'sharp' practices, which were carefully monitored by the Health Insurance Commission. A handful of practitioners required discreet counselling in this regard. Standards needed to be set to determine what constituted intensive care and what did not. Perhaps hardest of all, the question of who exactly was, and who was not, an intensive care specialist had to be confronted and difficult compromises made.

Ten years on, the ANZICS Fees Committee, recently revamped and rather whimsically re-badged as the **Practices and Economics Committee (PricE)**, has begun the first major review of the intensive care Fee Schedule. Underpinning this has been an attempt to catalogue some of the changes in the patterns of Australian intensive care practice, especially private practice, since the original negotiations began in the early 1990's.

The advancing age of patients is the most obvious change, affecting everyone practising acute medicine. According to one NSW estimate,¹ the proportion of Intensive Care Unit (ICU) hours devoted to patients aged over 80 is rising at 15% per annum. Between 2000 and 2004, the proportion of ICU patients in NSW over 70 years old rose from 32.3% to 37.2%. One teaching hospital emergency department reported a 17% increase in presentations of patients over 80 years old in a single year.²

Equally obvious is that our patients are sicker and their expectations are greater, in some cases unrealistically so. In a North American study, the proportion of patients admitted to ICU within one month of their death from breast, lung or gastrointestinal cancer rose from 7.1% in 1993 to 9.4% in 1996.³ For patients in tertiary hospital ICUs in NSW, the mean APACHE II score in 2000 was 15.9; by 2004 it was 17.2.⁴ In one teaching hospital, mean APACHE II scores rose from 17.7 in 1997 to 24.5 in 2004.²

This increase in acuity is not confined to the ICU, nor is its impact on the intensivist. In many hospitals, intensivists are being required to expand their role in the general areas of the hospital, taking responsibility for ICU outreach services,⁵ including medical emergency teams,⁶ high dependency units and 'hot floors'.

In the private hospital sector, intensive care facilities have become increasingly available. Fifty six percent of all surgery is now done in private hospitals, including 46% of cardiac surgery and 64% of spinal surgery.⁷ The advent of co-located public and private hospitals, some with private emergency departments, has been a major influence on this development. In one large Sydney private hospital, 40% of ICU admissions now come from the emergency department.

Although the overall mortality of ICU patients

remains around 20%,⁸ numerically more patients die in ICU than any other area of the hospital.⁹ As a result intensivists have become much more involved in end-of-life discussion and decision-making. These activities are labour and time intensive, and stressful.

Compounding all of this, intensivists now work in an increasingly hostile medicolegal environment. NSW is reputed to have one of the highest rates of medical litigation in the world. Highly publicised events, such as the Camden/Campbelltown 'crisis', and the Northridge and Messiah cases,^{10,11} have only served to inflame this, reinforcing the growing emphasis on protocols, guidelines, quality assurance and other 'risk management' activities. The increasing prominence of 'clinical governance' also partly reflects the desire of health managers to distance themselves from the medicolegal firing line and places a further administrative burden on intensivists.

It is little wonder that, in the perception of our trainees, working in intensive care impacts significantly on our quality of life, increasing the risk of anxiety, depression, mental fatigue and social isolation.¹²

Despite this, only 10% of intensivists charge over the Medical Benefits Schedule fee in their private practices and fewer than 20% have gross earnings of over \$175,000 per annum.¹³ By comparison, 90% of specialist anaesthetists earn over \$175,000. Medicare payments for intensivists averaged \$101,000 in comparison to \$586,000 for cardiologists, \$391,000 for gastroenterologists and \$983,000 for nuclear medicine.¹⁴ As a consequence of their continuing altruism, intensivists have been penalised in Health Fund no-gap arrangements and the AMA schedule.

Further changes are just around the corner. The biggest will be the impact of safe hours legislation and the demand for consultant presence in-house 24 hours a day. These are likely to result in the introduction of shift work to replace on-call, a system already well established among our emergency physician colleagues and one recognised in industry as having significant effects on health and lifestyle.

An increase in charges for intensivists' services not only seems justifiable on the basis of work value, but, given the realities of human nature, may be one of the few ways in which the attractiveness of the specialty can be maintained. Market forces, as every economist knows, will prevail. Our incomes will ultimately depend on the response of each intensivist to the challenges that await us all. How much are YOU worth?

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Do HDU's improve patient outcomes?

High dependency units (HDU's) may exist separate from an intensive care unit (ICU), managed by specialties other than Intensive Care medicine and are often geographically associated with their general wards. These include respiratory, oncology and neurology/stroke units. The Joint Faculty of Intensive care Medicine (JFICM) recommends that an HDU be geographically and operationally associated with the ICU of that hospital, operating as part of a "closed" ICU complex where medical care is adopted by the ICU in consultation with primary medical teams. The HDU is a section of an intensive care complex which provides a level of care intermediate between intensive care and general ward care, which should be capable of immediate resuscitation and management of short-term emergencies and critically ill patients.¹

Patients in an HDU typically have single-system failure, with a high risk of developing complications, and a reasonable chance of recovery. Most patients are post-operative surgical patients, admitted for monitoring

and detection of actual or potential complications, and for more intensive management than available on general wards. In providing a level of care between that of the ICU and the general wards, an HDU caters for patients sicker than those on general wards but not requiring specific ICU interventions such as invasive ventilation, high-dose inotropes or renal replacement therapy.

An HDU should provide a means by which the ICU can monitor and be involved in the care of potential or recently discharged ICU patients (i.e "step-down care"), while not incurring the costs and use of resources involved with actual ICU admission. This may represent an alternative to admitting patients who do not need expensive ICU care but may do if complications develop. Closer monitoring may theoretically reduce the incidence of complications and so ICU admissions, and the HDU may also provide ongoing "step-down" care of recently discharged ICU patients.

It would seem logical that the presence of an HDU in a hospital, with more constant monitoring, nursing care and medical attention would be in an ideal position to identify complications or critical illness at an earlier stage. This may reduce critical incidents and complications, decrease ICU admissions, reduce mortality in some groups, and reduce costs associated with all of these factors.

Are these beliefs unfounded? Bellomo *et al*,² in this edition, present the findings of a prospective audit of serious adverse events (SAE's), mortality and length of hospital stay before and after opening a 4-bed HDU. They demonstrate no decrease in specifically listed SAE's, and showed an increase in the incidence of acute pulmonary oedema and respiratory failure requiring reintubation. They also showed no decrease in inpatient mortality or length of hospital stay, and note an increase in unscheduled, presumably emergency, after-hours surgery. The findings do not support the belief that the addition of an HDU reduces post-operative morbidity and mortality in surgical patients, and raises the possibility that it could be associated with adverse effects.

The number of admissions and potential beneficial effects of the presence of an HDU may vary between institutions, with acuity and severity of illness, and number of surgical admissions. It is therefore difficult to generalise the results from a single-centre trial to apply to a broad range of patients and centres. However, similar results have been found by others. Some previous papers have reported benefits to post-operative surgical patients with introduction of an HDU.³⁻⁵ Chest infections, arrhythmias and hypotension have been observed more frequently in post-operative surgical patients where HDU care is not available,⁴ and increased mortality has been shown in post-operative

patients where ICU/HDU care was considered necessary by the surgeon and anaesthetist involved, but was not available.⁶ In medical patients, Franklin *et al.*,³ showed a decrease in the incidence of cardiac arrests by 39% with the introduction of an HDU.

In contrast to these positive findings, some have also shown that the introduction of an HDU produced no change or an increase in inpatient mortality of post-operative surgical patients, along with increases in unscheduled surgery and the use of critical care resources.^{7,8} Dhond *et al.*,⁷ showed an increase in the total number of admissions to an ICU complex with the addition of an HDU, with more frequent admission of elderly patients post elective surgery. However, fewer patients were admitted directly to ICU from general wards, and those admitted to ICU had decreased initial illness severity and duration of ICU admission.

Older and sicker patients are populating our hospitals, receiving surgery and requiring increasingly scarce critical care resources. They have a greater number and complexity of medical problems, and are at a greater risk of perioperative morbidity and mortality, some of which may be preventable. Cost-effective optimisation of outcomes after both elective and non-elective surgery is becoming increasingly important.

Intensive care is an expensive specialty, with scarce resources and necessary rationing of services becoming more common. Admission to intensive care should therefore be restricted to those likely to benefit from ICU admission. This excludes both those who will clearly die regardless of interventions provided, and those who should survive without ICU care. Patients post elective high-risk surgery may never need expensive ICU interventions, but are at risk of significant complications, so monitoring in an HDU may achieve risk-reduction in a cost-effective manner.

Detectable physiologic abnormalities in post-operative patients have been identified which predict the occurrence of adverse events, cardiac arrest or death.⁹⁻¹¹ The most common antecedents to such events are hypotension and decreased conscious state.¹¹ Appropriate and timely detection and response to such abnormalities may improve outcomes, and this has been the basis for the creation of Medical Emergency (MET) teams, called in response to identification of predefined abnormalities. In an HDU setting, early identification of patients at risk, both before and after admission to ICU, may allow interventions that also reduce mortality, although this has not been shown.^{12,13}

No properly conducted cost-benefit analysis for post-operative HDU use has been performed.¹³ The costs of care in an HDU are thought to be less than those in ICU for equivalent patients, largely because of the difference in nurse to patient ratios, but the cost of equivalent care in a general ward are not as well

defined. Use of an HDU may reduce the number and duration of ICU admissions of post-operative patients, and so increase ICU bed availability and decrease cancellations of elective surgery.¹³ The magnitude of this effect probably depends on the individual institution – those ICU's catering for large numbers of high-risk elective surgery patients receiving most benefit. Centralising HDU services with ICU may also reduce duplication of services, and so costs.

Some ICU patients die despite having a low predicted risk of death, and many ICU patients die after ICU discharge. Wallis *et al.*,¹⁴ showed that 31% of deaths in ICU patients occurred after discharge from ICU. While 25% of deaths were anticipated, over 20% occurred in patients expected to survive, and some deaths were thought to have been preventable. In the United Kingdom, Goldhill *et al.*,¹² showed a disproportionate incidence of death in patients with a low predicted risk of death after successful discharge from ICU. Over 25% of deaths of ICU patients occurred after discharge from ICU, while around 50% of patients with a low predicted risk of death died after ICU discharge, many after elective high-risk surgery. Minimising early ICU discharges and increasing follow-up/step-down care may reduce such deaths,¹² and this may be one area where HDU care would be of real benefit.

The benefit, or lack of benefit, of establishment of an HDU remains uncertain. Although a single centre study, Bellomo *et al.*'s results raise a number of concerns regarding the overall benefit of HDU's. While it may be logical that closer monitoring and medical care of "at risk" patients should reduce complications and mortality, this remains to be proven and other questions remain unanswered. The use of an HDU as a "step-down" unit for ICU discharges may reduce post-ICU mortality, and the benefits of HDU care in specific patient groups need to be addressed. In addition, the benefit of an HDU run by intensivists should be established compared with those controlled by subspecialties. The question of cost-effectiveness of establishment of HDU care can only be answered once clinical benefits have been defined. Other concerns include the "de-skilling" of ward medical and nursing staff, if the care of sicker patients is moved towards critical care areas, leaving these staff less able to acquire and maintain skills in care of these patients.¹³

The importance of publishing a paper such as that by Bellomo *et al* should also be recognised. Publication bias and the tendency to predominantly publish studies with positive outcomes is well recognised. The publication of results that question the efficacy of interventions I believe are beneficial, and even raises the possibility of adverse effects, promotes a balanced view and critical re-appraisal of such topics.

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