

Correspondence

High dependency units

We have read with interest a recent publication in the Journal by Bellomo and colleagues that questions the benefits of establishing a High Dependency Unit (HDU).¹ The article raises further questions to which the authors may be able to provide answers.

HDU bed occupancy, length of stay, total patient throughput and number of HDU admission-refusals are not mentioned. This information has considerable importance. On the one hand, if the HDU was frequently full, with a high demand for few beds, and potential HDU patients were often triaged away, the implication would be that there was insufficient intermediate care resource. The authors' findings could then be reinterpreted as an indication that the HDU was simply too small to allow the true effect to be seen. Indeed a 4-bedded HDU seems appreciably undersized for a population of 4 million.² On the other hand, if there were low occupancy or refusal rates and the HDU was under-utilised, it is difficult to envisage how its presence could be linked to an absence of improvement in serious adverse events (SAEs). Additionally, any suggestion that the presence of an HDU 'encouraged' emergent surgery would be supported by evidence of the subsequent postoperative admission of such patients to the ICU.

The observed increase in unscheduled surgery following the establishment of an HDU is intriguing. Perhaps there is a causal link, but given that the majority of SAEs did not increase, the effect may well have been beneficial rather than neutral. It is possible to consider that, measured relative to the incidence of higher-risk unscheduled cases, the absence of an increase in SAEs is actually a positive observation. Further, if the presence of an HDU has indeed encouraged these acute surgical interventions, one wonders what morbidity has been prevented by not waiting to schedule these cases for a later time.

It is interesting to speculate what effects may have been observed if the 'HDU period' of data collection occurred at a time later than immediately after establishment of the HDU. A 'run-in period' to establish the profile and functionality of the HDU would have allowed a fairer representation of its effects on postoperative outcomes. An interim period of development and establishment may be considered vital to the success or failure of an HDU.³

The authors acknowledge that the 'one centre' nature of their study limits extrapolation of their find-

ings. Two alternative strategies to deal with expanding critical care need appear to be either utilisation of an intermediate care facility (i.e. HDU), or the 'critical care without walls' concept. It is noteworthy that a Medical Emergency Team (MET) was being developed at the Austin Hospital in close temporal relationship to the period of this HDU study.^{4,5} The chances of success for a 'new' HDU established in an environment clearly very supportive of the concept of a MET and 'critical care without walls', are likely to be limited. We would be interested to know if the HDU has remained open subsequent to these published findings.

The clinical effects and usefulness of HDUs are as yet undefined, but the concept warrants further robust investigation. Issues of optimal size, staffing and configuration remain to be resolved.

G. J. McHugh

Intensive Care Unit, Palmerston North Hospital, Palmerston North, New Zealand

R. C. Freebairn

Intensive Care Unit, Hawkes Bay Memorial Hospital, Hastings, New Zealand

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In reply

We thank Drs. McHugh and Freebairn for their thoughtful comments on our manuscript.¹ We agree that information on HDU activity would be important in

better understanding the process of care. However, the focus of our study was not on process but rather on whether the opening of a 4-bed HDU in our hospital had a detectable beneficial effect on patient outcomes. Furthermore, there are no objective criteria by which one can judge whether a given HD is under or over-utilised. Accordingly, we did not collect the specific information requested.

We also note that although the city of Melbourne has 4 million inhabitants, the HDU served the part of the city which uses the Austin Hospital as its main medical care centre (approximately 0.5 million inhabitants). Other HDU beds exist in other hospitals within the city. We also have no data to suggest an increase in emergency surgery. Our data indicate a significant increase in unscheduled surgery (surgery occurring out of hours and following a booking issued on the day of surgery). There is no objective way of ascertaining whether such surgery was "emergency surgery". We are also, of course, in no position to confirm or deny the correspondents' speculations on whether the HDU was beneficial by preventing the complications one might have expected from more unscheduled surgery or whether the HDU would have been found more effective had it been tested after a run-in period. Finally, we note that the HDU was assessed prior to the introduction of the Medical Emergency Team (MET).^{2,3}

The HDU has remained open despite our findings because the clinical and administrative judgement was and remains that it offers flexibility, decreases the cost of care for several patients, allows more surgery to

proceed and eases the pressure on ICU beds and overburdened wards where the introduction of another high-care patient is often problematic. These effects are impossible to measure accurately in a single centre where patient characteristics change dynamically and where a truly suitable control population cannot be generated. Unlike, the testing of new drugs, the testing of new approaches to health care (HDUs, METs, liaison ICU nurses, outreach services etc) is complex. Further, the techniques for assessment are poorly developed and unable to be easily fitted into current investigational paradigms. We agree with the correspondents that much work needs to be done in this field.

R. Bellomo

Department of Intensive Care and Department of Medicine, Austin Hospital, Melbourne, VICTORIA

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