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## Does Intermediate Care Improve Patient Outcomes and Reduce Costs?

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In an era of rapidly progressing intensive care medicine, along with rising demand and growing concern on the bottom line, hospital managers are increasingly introducing intermediate care facilities in a move to solve the problem of overcrowded ICUs in an efficient manner; but controversy exists on whether these units really provide all the answers.

### Introduction

Intensive care medicine has developed rapidly over the past 60 years or so, making the intensive care unit (ICU) an essential component of all modern hospitals and one of the most costly hospital departments. High nurse:patient ratios and a frequent need for invasive monitoring and life-support equipment make operating costs high, and as ICUs get busier and demands for the very latest tests, equipment and interventions increase, managers are faced with ever more difficult decisions regarding how best to distribute the increasingly limited finances for healthcare without reducing standards of care and negatively influencing patient outcomes.

One approach that has been proposed to reduce ICU costs and improve efficiency is the creation of intermediate care units, also called high-dependency or step-up/down units. Some hospitals may have both a high-dependency unit as an immediate step down from intensive care and then a separate intermediate care unit. For the sake of this article, however, we will use these terms interchangeably unless specified.

Intermediate care units are used for patients who need more care than a general ward can provide but do not really need the expertise or equipment, or both, of an intensive care unit. General intermediate care units have been adopted by some hospitals, while others have created intermediate care units for specific patient groups, such as cardiac, neurosurgical, or respiratory patients. But do these units really provide the intended benefits?

### Can Intermediate Care Units Improve Outcomes?

Perhaps the key argument in favour of the intermediate care unit is related to the fact that many patients who are admitted to the ICU do not really need full intensive care. The presence of an alternative facility for such patients could liberate ICU beds for those patients who would benefit most from ICU access at a time when many ICUs around the world are faced with bed shortages and demand has never been greater. Indeed, 20-30% of all general ICU admissions are considered of low severity and are admitted largely for routine surveillance or monitoring for less than 24 hours; this percentage may be considerably higher on surgical ICUs than on medical or mixed units. These low severity patients generally have good outcomes and are unlikely to require any intensivist input during their ICU stay, making them good candidates for admission to an intermediate care unit rather than to an ICU, without any negative consequences on the course of their recovery being incurred. The provision of this alternative site could result in improved outcomes across the service by enabling more of the most severely critically ill patients to benefit from appropriate ICU access instead of having to be managed on general wards with inadequate equipment and staff who are not specifically trained to care for the critically ill.

Patients across the spectrum could benefit from these alternative sites. In addition to providing intermediate care to directly admitted low-risk patients requiring short-term intensive monitoring, these units are used as a step-down facility for patients who no longer need intensive therapy, but are perhaps not ready to return to the general ward. Without the presence of an intermediate care unit, such patients would, perhaps unnecessarily, be kept on the ICU, thus occupying a bed and preventing its use by a patient who may benefit more from it.

An intermediate care unit may also limit the risks of premature ICU discharge to the ward: the change in degree of monitoring from an ICU to an intermediate facility will be smaller than if the patient is discharged straight to a general ward. Via this transition, any residual problems will theoretically be detected and managed appropriately in a timely manner. However, a potential downfall is that availability of an intermediate care facility may give a false sense of security and actually result in more premature discharges, putting patients at risk of needing readmission to the ICU, which has been associated with worse outcomes.

### Can Intermediate Care Units Reduce Costs?

Intermediate care units have higher staff:patient ratios and more specialised equipment, notably for monitoring, than on the general ward but less than on the ICU. Theoretically, this makes these units a more cost-effective option for certain patients, for example, patients needing routine postoperative surveillance who are at low risk of developing complications and hence unlikely to require invasive therapy during an ICU stay. However, such patients are generally low-risk and account for a relatively low proportion of total ICU costs, so the impact on overall costs is likely to be relatively limited. Moreover, as intermediate care is more costly than general ward care, and as some patients would be managed on the general ward if no intermediate care unit were available, total hospital costs may in fact increase with introduction of such a facility. In addition, although intermediate care units have lower staff:patient ratios and possibly less invasive monitoring equipment, potentially making them less expensive to run than the ICU, overall department expenses may be increased as certain equipment will need to be duplicated on the intermediate care unit and on the ICU if these are in separate parts of the hospital. Also, staff costs may increase as both units will need to have a full allocation of personnel.

### Is There an Alternative Solution?

General intermediate care units have been introduced in many hospitals, particularly in Europe, but there is actually very little evidence that they improve patient outcomes or reduce costs. Indeed, rather than solving the problem of overcrowded ICUs and helping reduce costs, creation of intermediate care units may simply act to shift the dilemma to another site. Combining intermediate care with intensive care in one unit may actually represent a more efficient solution than having separate units for several reasons. Firstly, expensive monitoring and interventional equipment is concentrated in one area rather than needing to be duplicated. In addition, a larger combined unit provides increased flexibility of bed use and staffing than do separate units. A large unit can adapt more easily to a sudden increase in demand for beds and to changes in the types of patients admitted, such that beds and nursing staff can be used flexibly for patients with varying acuities of illness. The nursing and medical staff can also benefit from the heterogeneous nature of the patients, which make working conditions more varied and interesting. Mortality rates in larger, high volume ICUs may also be lower than in smaller units with fewer annual admission rates.

Clearly the optimal approach will vary according to local demand and available facilities, but intermediate care units should not be opened for the sole aim of improving efficiency and reducing costs, because there is little evidence that this is achieved. Rather, the way in which the available ICU beds are used should be carefully evaluated and optimised. Introduction of an intermediate care unit cannot replace the need for strict admission and discharge criteria to ensure that only patients who can truly benefit are admitted to the ICU. Many patients with no reasonable chance of survival, who will not benefit from intensive care, are still admitted to ICUs. Reducing these and other unnecessary admissions must remain a priority to ensure adequate availability of ICU beds for all those who need them, and to improve the cost-effectiveness and efficiency of our ICUs.

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