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Interhospital and emergency transfers in New Zealand

New Zealand's geography and unique population distribution provides a barrier to the provision of tertiary health care services. Over 1.5 million or well over a third of the population reside more than 1 hour from a tertiary hospital and the "home to tertiary hospital" transit time for the average New Zealander is 89.5 minutes.[1]

For many, hospital care is provided by local primary and secondary hospitals and although the Ministry of Health has prioritised the bringing of health services closer to home, the interhospital transfer of the acute and semi-acute patients to gain the benefit of centralised tertiary facilities will an unfortunate necessity into the foreseeable future.[2]

Myers and colleagues in this issue of the *NZMJ* describe the Wellington Hospital Flight Team experience in providing these interhospital transfers, noting the absence of other consistent and reliable data on the subject.[3]

The transport of an in-hospital patient, particularly of the critically ill patient, is a rapacious consumer of health resources. In the current environment, transports need to be as cost efficient as possible. Efficiency can be created by the total volume and by organisational structure. Backloads, utilising the otherwise wasted "dead leg" of flight have risen to now comprise 25% of the Wellington workload, suggesting that there has been a growth in organisational efficiency, and contrasts favourably to the situation described by Flabouris at the end of the last century.[4] However the subset of critically ill and ventilated patients transported by the Wellington team also experienced a greater than 50% relative increase over the 5 years.

Two previous studies of clinical outcomes of critically ill patients transferred to tertiary Intensive Care Units in New Zealand suggested that transported patients had a different case mix, a higher severity of illness, mortality, length of ICU stay and associated costs than the non transported patients.[4,5] Increases numbers of critically ill patients being transferred are likely to incur more cost, offsetting any total gains made by the efficiency of transport system.

In contra-distinction to the previous New Zealand studies, the bulk of the transports described by Myers and colleagues are of less critically ill patients, for which little New Zealand data has been available. The Wellington transport team's risk stratification is based on actual severity and likely complications to determine staffing, resulting in a doctor being present for only a third of the flights.

This model of care, and workload distribution is not dissimilar to that in other district health boards (DHBs) offering higher volume co-ordinated transport systems, and offers a high quality but cost and resource efficient service. Their data is important, but while increased understanding of the workload may help in future planning, prediction of future health systems transport demands is a complex and fickle business.

Subtle changes in in recommended best practice, or changes in available local resources may significantly influence utilization of transports.

A obvious example is the provision of therapy for acute coronary syndromes. In New Zealand percutaneous coronary intervention PCI is traditionally performed in tertiary centres with onsite cardiac surgery.[6] The revascularisation with PCI rate in acute coronary syndrome rose from 7% in 2002, to 19% in 2007.[7]

A quarter of the Wellington transports are for either cardiology or cardiothoracic patients, and the increased PCI rates have certainly affected demand for acute cardiology transfers from non cardiac intervention centres to Wellington.

The median waiting time for cardiac angiography for patients at non-intervention centres a twice as long as those admitted to an intervention centre.[6]

In response to the delays, access block and additional cost, from 2007 the Nelson Marlborough DHB began trialing onsite access to PCI. Since then several hundred PCI have been carried out in Nelson, without significant problems. Not only has the need to transfer these Nelson patients to Wellington largely disappeared, patient satisfaction has increased and the cost incurred by the DHB significantly reduced. The impact of the PCI service, initiated half way through the period studied, on Wellington's overall transport volumes, is not clear.

What impact future developments in recommended standard of care or options for invasive intervention will have upon the transport system will never be entirely clear, but when planning for development, curtailing or reconfiguring any hospital services the cost and resource implications for transport need to be identified and provided.

Transports services need to efficient enough to meet acute demand, robust enough to adapt to the changes in clinical need over time, and able to maintain the very highest patient care. While neither clinical outcomes nor the adverse events were reported in the Myers paper, the increased experience within a high volume and organised transport teams such as theirs is likely to enhance patient safety.

The majority of long-distance patient transports are done in aircraft. Irrespective of the risk to clinical safety to the patients, the aviation environment exposes to both patients and the attending staff to additional hazards.

An Australian study quantified the risk of aeromedical transport accident rate was 4.38 per 100,000 flying hours, or one accident per 16,721 missions.[8] This accident rate is similar to rates from other countries. However the current New Zealand fatality or serious injury rate for non-public commercial aircraft is 10.8 for helicopter and 6.03 for fixed wing aircraft per 100,000 hours.[9]

Fortunately to date New Zealand has not suffered a fatal aeromedical accident, although there have been some very near misses.[10] The Wellington experience of the need for after-hours and overnight transfer, would be common to all NZ aeromedical transport services and is driven by both the urgency and duration of the transfers. Providing the service in the hours of darkness in New Zealand's frequently inclement weather and over our challenging topography can only add increased risk when compared to Australia.

To mitigate this risk it is essential therefore that the only operators that can provide to the highest standard of flight and patient safety that is reasonably possible, are engaged in providing these service, and that patient transports are screened as being clinically essential.

Interhospital transport is the single most expensive nontherapeutic intervention available to hospital clinicians, with potential to bedevil both patient and staff safety, as well as health funders. Although there is insufficient relevant data to draw firm conclusions regarding the mortality, morbidity, or risk factors associated with the transport of patients, consensus opinions recommend transport by establishing an organised, efficient process supported by appropriate equipment and personnel.[11] This is best achieved by eschewing historical ad hoc bargain-basement solutions and supporting the further development of well resourced, properly trained and organised transport services, that are dedicated to the provision of interhospital retrievals and transfers.

Support for a co-ordinated model of transport care similar to that described in Wellington, and that have also been developed in several other DHBs, will permit safe ongoing access to tertiary care for the many of us that live some distance from the madding crowd.

Competing interest: The author has an association with this topic as Trustee and Medical Advisor for the Hawke's Bay Rescue Helicopter Trust.

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