Formulating a blueprint on retrieval

By Dr Blair J Munford*

A PERSON is admitted to a district hospital with multitrauma, including a major head injury. A postoperative patient in a small suburban hospital develops septic shock and ARDS. A primigravida presents to a country maternity hospital with severe pre-eclampsia. All these are patients who may require a retrieval.

Retrieval is the process whereby a specialised team is despatched to the critically ill or physiologically unstable patient for stabilisation and transfer to a facility. It is sometimes referred to as aeromedical evacuation[1], but this term is wrong. While retrieval inevitably involves transport, this is not exclusively by air. Some aeromedical transfers are retrievals, but most in Australia are not.

Patient needs

To develop a blueprint for retrieval, the most important consideration is the needs of the patient. The rising sophistication of medical care has been accompanied by increasing centralisation. Not every hospital possesses level III neonatal or intensive care units, neurosurgical and cardiothoracic facilities. The role of retrieval is to make such specialist services rapidly available to all, not just those near a major teaching hospital.

By definition, a patient requiring retrieval has a condition that the referring medical team lacks facilities or experience to fully manage. The paramount need of the referring doctor is for *a simple, rapid, reliable method of obtaining help. The last thing needed is to* have to make multiple 'phone calls trying to find an appropriate bed and organise retrieval while trying to manage a patient in crisis. Idealy, a single 'phone call should provide advice on interim management, initiate despatch of an appropriate retrieval team and locate an appropriate (ICU, CCU, spinal, cardiothoracic, etc) bed.

From the receiving hospital's viewpoint, the ideal retrieval service should be rapidly available on a 24-hour basis, without depleting staff from its own critical care areas. The retrieval team should have the skills to stabilise patients where possible, rapid transport to evacuate where stabilisation is not possible and the judgment and experience to differentiate between the two. The team's medical protocols should be compatible with those of the destination hospital.

Pilot

At least two different retrieval networks are required: neonatal and general critical care. There may also be need for obstetric and non-neonatal paediatric teams or the general team can be supplemented by additional expertise where required. It is universally accepted that specialist or registrar neonatologists carry out neonatal retrieval, yet a whole spectrum of staffing has been suggested for adult retrieval. It has even been suggested that retrieval is the domain of aviation medical practitioners who are also pilots.

With both aviation and medicine growing ever more complex, it is doubtful if any person could be both a professional pilot and a critical care specialist with adequate currency in both fields. Critical patient conditions requiring retrieval would scarcely permit the medical team to pass the flight in the cockpit, logging flying hours.

A disturbing aspect of proposals that medical staff should have pilot training is the potential this creates for aviation decisions to be distorted by perceived medical need. This is a factor strongly identified in surveys of US aeromedical accidents. It is specific policy of the Royal Flying Doctor Service[2], the US National Flight Nurses' Association[3] and the CareFlight/NSW Medical Retrieval Service organisation that medical staff do not attempt to influence pilot decision making.

The NSW Medical Retrieval Service has performed more than 1200 retrievals of the critically ill since mid 1986, 83% by rotary or fixed-wing aircraft. Of these, in only 11 cases would the patient's condition have been adversely affected by standard aeromedical evacuation. These cases were satisfactorily resolved by use of sea-level pressurisation or low-altitude transfer. Conversely, 84% of these retrievals required intensive care procedural or management skills (intubation, central line placement, mechanical ventilation, inotropic support, intracranial pressure control, invasive haemodynamic monitoring, etc).

To provide the best level of care, critical care team members should have extensive experience in critical care units in major hospitals. They should also be familiar with special problems likely to be encountered with retrievals (increased sedation requirements in ventilated patients, difficulty of BP estimation, altitude and acceleration problems, etc). Personnel should be used to working as

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a team and possess state-of-the-art mobile intensive care equipment. The team should include at least one specialist or senior registrar in intensive care or related disciplines (anaesthetics, emergency medicine), with a full range of procedural skills. Assistants may be nurses, other medical staff or ambulance officers, including paramedics, who meet these guidelines. The minimum complement of staff should be two for a single patient and three for a double-patient retrieval.

The retrieval service must be a network including all potential specialist units, an effective bed-finding system and dedicated retrieval teams on rapid callout. A retrieval service may be mounted by a single specialist unit or by several units in a region. Alternatively, it may be a stand-alone organisation that liaises closely with the receiving units.

The referral procedure should be well promulgated, simple and should minimise demands on the referring hospital. The receiving unit initially contacted can consult on whether retrieval is required, accept the patient or organise a bed elsewhere, and activate the retrieval process. Either this unit or the retrieval team can advise on interim management. A number of retrieval teams organised similarly to these guidelines operate in Australasia, including a Statewide service in SA[4], the NSW neonatal network[5] and regional services based in Nambour, Newcastle[6], Orange[7] and Hamilton in New Zealand.[8] (Unfortunately, no such integrated network exists, as yet, for non-neonatal patients in Sydney or Melbourne.)

The choice of the transport vehicle is of secondary importance compared to staffing and equipping it correctly. The speediest transport is of no value if it does not allow delivery of vital care en route or is not rapidly available when required. Two approaches are possible: the vehicles may be dedicated to the retrieval role and equipped appropriately. Alternatively, a module should exist to convert any vehicle of a fleet (eg air or road ambulances) to mobile intensive care unit standard. The latter is more versatile, provided availability of a base vehicle is guaranteed.

Helicopters

Between 25–50 years ago, the debate of using fixed-wing aircraft to transport patients generated more heat than light. Today, it is helicopters that are the contentious issue.

Helicopters are ideal for transports ranging from 50–200 km, although their point-to-point ability, smoothness and freedom from traffic congestion may make them effective over both shorter and longer distances.

Short distances are the domain of road transport, while over long distances the additional range and speed of fixed-wing aircraft appear to have the advantage. Fixed-wing aircraft used for retrieval should be pressurised and instrument-flight capable. The role of instrument-flight capability for rotary-wing transfers remains unclear — only a small proportion of flights unable to be performed visually would be able to be completed by instrument flight.

All vehicles used for retrieval should allow seating at the head, in the intubating position as well as alongside the patient. Total body access should be available and a full range of configurations including Trendellenberg, head up and lateral positioning should be possible.

In these days of limited health funding, retrieval networks enable fewer specialised units to service a larger population. Regrettably, the benefits the benefits of this have yet to come to public attention. It is ironical that flying a premature baby (in or ex utero) between centres to a definitive facility leads to a rash of adverse publicity, whereas the same baby admitted to a less specialised unit locally does not.

Only if retrieval is regarded as a medical issue, for integration into and direction by appropriate critical care specialties, can it come to serve the patient properly. Retrieval is not a new concept but, just maybe, it is an idea whose time has come.

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