

# Adventure and Travel

## Helicopter Medical Retrieval in Sydney, New South Wales

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### Introduction

There are two retrieval services in Sydney staffed with doctors and ambulance paramedics. These organisations provide a transfer service between district hospitals and tertiary referral centres and scene response to remote areas or as back up to ambulance paramedics. "Careflight" operates a helicopter and road ambulance covering western Sydney and is based at Westmead hospital whilst Sydney Aeromedical Retrieval Service (SARS) operates out of Prince Henry hospital in the east of the city.

Sydney has a large number of small district hospitals and approximately 12 teaching hospitals; the latter provide support for the district hospitals for facilities such as neurosurgery, cardiac surgery and tertiary intensive care. Outside Sydney the population concentration drops dramatically and "country" hospitals provide care. These centres are limited in staff and resources and refer critically ill, and patients requiring specialist care to the major centres. New South Wales covers a vast area and hence transport of these patients requires the use of road, rotary and fixed wing ambulances.

This introduction is a general overview of New South Wales retrieval services but highlights my involvement in working for "Careflight" from January to July 2000.

### Careflight

Careflight is a non-profit making company funded in part from State government and part by charitable work; it employs doctors as part of its medical arm (the NSW Medical Retrieval Service). Both trainees and specialists are employed, the group of 15 doctors includes 4 full time registrars. The organisation has accreditation from the colleges of Intensive Care, Anaesthetics and Emergency Medicine for the registrar positions. An ambulance paramedic is always available, funded by NSW Ambulance.

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There is a roster for a pilot and crewman for helicopter operations and two paramedic doctor teams ensuring that the helicopter is always manned for an immediate response.

### The Job

Tasking for Careflight is provided via the Medical Retrieval Unit (MRU), an administrative centre coordinating interhospital and scene responses for both Careflight and SARS. Approximately 60% of jobs are by road and most others by helicopter with occasional fixed wing transfers (SARS perform more fixed wing transfers). Primaries (i.e. a primary response to an incident) are tasked through MRU at the request of the ambulance team on the scene or ambulance coordination centre. The helicopter is more likely to be used for motor vehicle accidents (MVA) in remote areas, incidents with entrapment or spinal injuries. The helicopter is equipped with a winch and not infrequently is requested for search and rescue operations especially in the Blue Mountains. Statistically there is one primary every second day and a total of 75 missions are performed in an average month. Obviously the nature of the job is that the workload is very variable, one individual managed to carry out 50 road jobs before his first helicopter mission!

Training takes the first two weeks of a six-month job. This is comprehensive and includes company and helicopter operating procedures, winch training and aeromedical teaching. The roster is a complicated affair due to the number of part time doctors. At any one time there are two duty doctors ("first and second on"). From 0800 to 1800 both first and second are on base, 1800 to 0800 the second can be at home but needs to be on the base to be available for helicopter primaries should the first on leave on a road transfer. The average week is about 45 hours but this varies from 20 one week to 96 the next! Four days per month are spent at a teaching hospital in theatre, ICU or emergency.

	Ventilated		Non Ventilated	
	Primary	Secondary	Primary	Secondary
<b>Road</b>	1	20	0	3
<b>Helicopter</b>	2	10	6	6
<b>Other</b>	0	2	0	1

*Table 1. Personal Experience. Numbers are number of patients transported. Primary is a sure response, secondary an interhospital transfer. Others include journeys where a significant distance was travelled in both helicopter and road or fixed wing retrievals.*

### The Transport

*The Bridge* – All transfers are performed with a standard equipment Thomas pack and bridge. The Thomas pack consists of a suitable range of equipment to deal with most eventualities and a good selection of drugs. The Bridge is a custom designed piece of equipment that fits over the patient's feet and secures to the stretcher. Equipment on the Bridge consists of an oxylog ventilator with disconnect alarm, oxygen and suction, Propaq monitor, capnograph and two syringe drivers.

*Road* – Careflight has a dedicated road ambulance, a Ford Transit van, designed to meet the needs of the organisation. It is worth noting that neither the road ambulance nor the helicopters have fixed medical equipment not available in a standard ambulance thus increasing flexibility.

*Helicopter* – A Bell 412 helicopter is operated from the Westmead helipad; this is a large helicopter and has the capability to transport three patients without major reconfiguration. It is also equipped with a winch. The range is about three hours flying or around 340 nautical miles without refuelling. Jobs involving over one hours flight each way are rare in practice.

*Fixed Wing* – Weather, distance or the need to pressurise the cabin may dictate the need for a fixed wing transfer. The air ambulance service operates a fleet of three King Air aircraft.

The choice of which mode of transport to use depends upon several variables such as urgency, distance or weather. With bad weather over the Blue Mountains, driving times in excess of 60 minutes to reach Katoomba or Lithgow are not uncommon. The helicopter can be ready and airborne within 10 minutes, whereas organising a fixed wing transfer takes considerably longer.

The bridge and stretcher set up allows

flexibility without relying on fixed equipment in any mode of transport. In this way a patient can easily be transported by ambulance and helicopter for different legs of one trip without the need to reconfigure the equipment.

Careflight also undertakes some international transfers using Learjet or Beechjet aircraft. This is a commercial venture that helps fund the organisation. Participation in international transfers is entirely voluntary.

### My Experience

I participated fully in the shift roster for 14 weeks of the six months I spent with Careflight. I was involved in the transport of 52 patients (Table 1). The time taken for each job varied between 1 and 19 hours and the ages of the patients from 12 to 93 years. For comparison, during a six month period the Royal Air Force Aeromed Cell would expect to transfer 15 patients requiring anaesthetic escort.

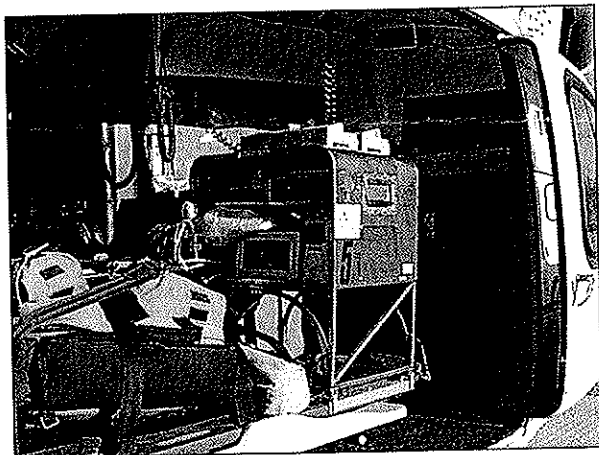
In general the most difficult decision was whether a patient could safely be transferred without the need to intubate. This was especially important with helicopter transfers as flying over the Blue Mountains required a minimum safe altitude of about 6,000 ft thus reducing ambient pressure and hence inspired oxygen partial pressure.

### Summary

Undoubtedly the main attraction of this job is the interest of never knowing what will happen next! Primary response to an MVA allows one to experience the atmosphere and deal with clinical situations in an alien setting. This broadens ones perspective and has taught me never to be tempted to criticise a paramedic bringing a patient into a resus room. The same is true of interhospital transfers where tact and diplomacy

can be tested as well as clinical skills. On the negative side the unpredictability can be difficult domestically (a primary at 17555 means you will be at least two hours late home) and there can be long and dull days when nothing happens. A lot of time is spent transporting post arrest patients from one hospital to another to find an ICU bed.

In military medicine it is difficult to envisage a future conflict when severely injured casualties would not require transport both locally and over long distances. This job provides an ideal opportunity to become confident with transporting critically ill patients.



1. The "bridge" and stretcher assembly onboard the Bell 412 helicopter



2. "Careflight One" landing at the Westmead helipad



3. "Careflight One" on the ground at Westmead



4. Stretcher winch rescue in the Blue Mountains