

# **FINAL REPORT**

## **TASMANIAN MEDICAL RETRIEVAL**

### **SERVICES**

### **EXTERNAL REVIEW**

**December 2007**

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## **EXECUTIVE SUMMARY AND KEY RECOMMENDATIONS**

*Future Health – Tasmania’s Health Plan*, released by the Tasmanian Government in May 2007, recommends a comprehensive review of the State’s ambulance, medical retrieval and patient transport services. It suggests consideration of a “statewide service for central coordination of the Patient Transport Service and medical retrieval services to enhance service quality, optimise appropriate resource utilisation and improve service efficiencies”.

This external review was commissioned as a result of this recommendation.

In this review, the term ‘Tasmanian medical retrieval services’ refers to both the Tasmanian Medical Retrieval Service (TMRS), which currently serves the adult and paediatric populations, and the Neonatal Emergency Transport Service (NETS). It is important to distinguish between the TMRS and overall representation of all retrieval services in the state.

### **Staffing issues**

Significant staffing difficulties in the TMRS precipitated this review.

TMRS medical staff for many years have been sourced from the Anaesthesia Department of the Launceston General Hospital (LGH). The level of medical retrieval staff funding that the Department of Health and Human Services (DHHS) has provided to the Anaesthesia Department has been inadequate to meet retrieval demands.

Staffing the TMRS with suitable registrars from the LGH is unsustainable in light of the latest recommendations of the ANZ College of Anaesthetists. The recommendation is that senior Level 4 registrars can work with less direct supervision and therefore be rostered as escorts in retrievals. The impost this places on LGH consultant staff - who have taken on retrieval coordinator duties, in addition to medical escort roles with only on call rates paid - has led to the current staffing crisis. Several LGH consultants have withdrawn their services from retrieval activities and others have threatened to do the same.

The current risk of system failure resulting in adverse patient outcome - including death - due to insufficient TMRS staff is real. The likelihood of adverse retrieval-related events is ‘almost certain’ and the consequence is ‘major’, resulting in the assessed potential DHHS risk exposure as ‘extreme’.<sup>1</sup>

The option of sourcing staff for the TMRS from the Royal Hobart Hospital (RHH) has been raised. Sourcing appropriate TMRS registrar staff from the RHH would reduce the workload placed on consultant staff undertaking the coordinating role.

If the RHH is chosen as a base for the coordination of state wide medical retrieval services (see below), then ultimately medical retrieval coordinators should be based in

Hobart. Should the base be located in Hobart the DHHS, in transition, should endeavour to retain the few remaining dedicated experienced coordinators currently based at the LGH.

The Tasmanian Neonatal Emergency Transport Service (NETS) is staffed from the RHH. It is anticipated that this service will extend its role to include some paediatric retrievals given the hospital's newly combined Neonatal and Paediatric Intensive Care Unit.

### **Modes of transport**

The TMRS currently has use of one fixed-wing plane, based in Launceston, through a contract with the Royal Flying Doctor Service (RFDS). It also pays for use of a Tasmania Police contracted helicopter on a case-by-case basis. The helicopter is based at the Hobart Airport.

The dependence on one fixed-wing plane for retrieval operations reduces flexibility, increases system fragility and impairs the ability to rapidly respond to many locations in Tasmania.

It is appropriate for the TMRS to use a helicopter service based in Hobart. It is recommended that there be increased use of the Tasmania Police helicopter for retrieval activity. Currently the helicopter is underused, partly because it is based in Hobart while the TMRS team is based at the LGH.

Increased use of the existing helicopter would be cheaper than buying a second fixed-wing plane to be based in Hobart, or a second helicopter base in Launceston. Review of the existing helicopter contract should take into consideration the health needs of the whole state.

It is recommended that medical retrieval (NETS and TMRS) with patients originating at the LGH and Mersey Hospital and requiring medical retrieval to the RHH be undertaken by helicopter as the preferred mode of transport.

It is recommended that the fixed-wing plane remain in Launceston at this stage to service the larger requirement for non-retrieval air ambulance activity in the North. The location of the fixed-wing should be reviewed when the current RFDS contract expires.

Retrieval by road will always be needed as a back-up to aviation.

The North West Regional Hospital in Burnie and the LGH would still require the resources and the ability to occasionally support their local regions in terms of provision of retrieval services (e.g. road retrieval from Smithton to Burnie or from Scottsdale to Launceston). Unpredictable events such as severe weather conditions, surges in demand or the unavailability of the helicopter or plane may require coordinator creativity to problem-solve, resulting in responses appropriate to the situation - such as road rendezvous between the LGH and RHH.

### **Location of centralised service**

Tasmania requires a more rapidly responsive service than is the current practice. Not all retrieval missions are time critical, but the current slow retrieval response to support smaller rural hospitals is of particular concern. This reflects the current lack of suitable transport resources rather than the quality of the staff involved.

It is recommended that the coordination of statewide medical retrieval services by all modes of transport be centralised to the Tasmanian Ambulance Service (TAS) Communications Centre in Hobart. A senior, experienced, clinically-trained ambulance officer should be based at the TAS Communications Centre for at least 14 hours a day. Specialist Medical Retrieval Coordinator support will also be required to assist the TAS Communication Centre.

Colocation of the retrieval team and aviation assets is ideal. While the Tasmania Police helicopter is already based in Hobart, the fixed-wing plane is based in Launceston. The option of moving the plane to Hobart could be explored at the end of the current RFDS contract.

### **Financial management**

A State Medical Retrieval Cost Centre should be established. A more reliable reflection of fiscal responsibilities in terms of staffing, training, equipment and appropriate use of all retrieval resources is required. The State Medical Retrieval Cost Centre needs to sit with those charged with the responsibility of delivering a timely, high quality retrieval service.

### **Conclusion**

The preferred model is to locate TMRS and NETS staff at the RHH with the fixed-wing plane remaining in Launceston at present, and using the helicopter based in Hobart.

## ***KEY RECOMMENDATIONS***

### **Recommendation 1**

**DHHS to fund 3 FTE Senior Registrar positions at RHH for the TMRS. One registrar in the Anaesthesia Department, one in the Intensive Care Unit and one in Emergency Department is proposed.  
(1.0 Existing, 2.0 FTE new)**

### **Recommendation 2**

**RHH NETS receive DHHS funding for a Senior Registrar to assume the responsibilities of retrieval staffing, quality assurance, data collection and reporting demands.  
(1 FTE new)**

**Recommendation 3**

**DHHS fund the equivalent of 2 FTE Consultant positions for retrieval duties (1.5 FTE existing, 0.5 FTE new)**

**Recommendation 4**

**The Tasmanian Ambulance Service Clinical Advisory Committee review helicopter and fixed wing Flight Paramedic training and consider extending the scope of practice to embrace the role of retrieval paramedic in the Doctor/Paramedic retrieval team setting.**

**It is not recommended to increase independent paramedic activity in place of retrieval medical staff.**

**Recommendation 5**

**The use of hospital transport vehicles to support retrieval operations be investigated.**

**Recommendation 6**

**RFDS fixed wing to remain in Launceston for the duration of the current contract.**

**Recommendation 7**

**DHHS need to confirm adequate accident insurance coverage for staff working in retrieval medicine. Coverage specific to helicopter and fixed wing duties is required.**

**Recommendation 8**

**A service level agreement is negotiated with the Police department that will cover access, tasking, price, equipment and staffing. This will enable a more strategic use of the helicopter.**

**Once the current agreement has concluded, the Tasmanian Ambulance and the DHHS should be involved in the negotiations at the highest level. A whole of government helicopter contract is proposed.**

**Recommendation 9**

**RHH requires a helipad. Plans to rebuild RHH must include a helipad at its earliest stage of conception.**

**Recommendation 10**

**Development of a helipad at Mersey Hospital.**

**Recommendation 11**

**A rapidly responsive helicopter and road retrieval capability to be developed out of RHH.**

**Recommendation 12**

**An additional secure emergency oxygen supply source to be located in the BK 117 helicopter. An internal supply is preferred.**

**Recommendation 13**

**The medical equipment used in retrieval and air ambulance duties undertaken by helicopter and fixed wing must be standardised.**

**Recommendation 14**

**The TMRS medical equipment inventory requires an overhaul. The TMRS medical equipment should be located with the TMRS team.**

**Recommendation 15**

**Launceston General and Burnie Hospital's Emergency Departments require sufficient equipment, monitors and human resources to provide occasional safe local retrieval in their region.**

**Recommendation 16**

**A uniform retrieval charge to the region of referral should be considered. This should be independent of the mode of transport used.**

**Recommendation 17**

**The State Medical Retrieval Cost Centre (TMRS and NETS) be formed and be supported by the appropriate administrative and resource accountant expertise. This cost centre should be placed with those responsible for its management.**

**Recommendation 18**

**A senior Tasmanian NETS representative be confirmed on the Tasmanian Medical Retrieval Services Committee.**

**Recommendation 19**

**The fragmentation and duplication of fixed wing and helicopter clinical coordination should be eliminated through centralisation to TAS Communications.**

**Recommendation 20**

**A senior, experienced, clinically trained ambulance officer to be based in TAS Communications in Hobart for at least 14 hours a day.**

**Recommendation 21**

**A DHHS web site be developed to list policies, procedures and guidelines relevant to critical care retrieval including the NETS policies.**

**Recommendation 22**

**Databases with a common minimum data set complete with incident monitoring should be established for TAS Air Ambulance, TMRS and NETS missions.**

**Recommendation 23**

**Formation of a subcommittee of the DHHS Tasmanian Medical Retrieval Services Committee to identify risk exposures, system problems and potential solutions. The subcommittee should review data, problem cases, system issues and generate a risk register. Meetings should occur at least quarterly.**

**Recommendation 24**

**The preferred model for the Tasmanian Medical Retrieval Services is to have TMRS and NETS staff based in RHH. The fixed wing would remain based in Launceston (for the present) with the helicopter to remain based in Hobart.**

## **STAKEHOLDER MEETINGS BY EXTERNAL REVIEWER**

Stakeholder meetings were arranged in several sites including Hobart, Launceston and Burnie with the organisational support of;

Ms Amanda McAully,  
Acute Care Strategy and Reform,  
Dept. of Health and Human Services,  
Tasmanian Government

Site: Hobart

Mr Michael Pervan,  
Director, Acute Care Strategy and Reform,  
Dept of Health and Human Services.  
(with Amanda McAully, Julie Crowe)

Mr Grant Lennox (CEO), Mr Wolfi Rechberger, Mr Andrew O'Brien (South), Mr Paul Templer (North West), Nick Chapman ( Flight Paramedic).  
Tasmanian Ambulance Service  
(with Dr Andrew Hughes Medical Director of the Tasmanian Medical Retrieval Service)

Dr Shelby Jarrell  
Director, Obstetrics and Gynaecology Dept  
RHH

Dr Stephen Reid  
Director, Anaesthesia Dept  
RHH

Dr Tony Lawler  
Director, Emergency Dept  
RHH  
(telephone interview)

Dr Andrew Climie  
Emergency Physician  
RHH

Dr Simon Parsons  
Paediatric Intensivist  
RHH

Dr Tony Bell  
Intensive Care Director (Admin)  
RHH

Mr Stuart Walker  
Director of Surgery  
RHH

Dr Jo Kippax  
Senior Registrar  
Emergency Medicine  
RHH

Mr Dave Smith  
Chief Pilot / Operations Manager  
Rotor Lift Aviation

Ms Jane Stebbins  
Clinical Nurse Manager  
Neonatal Intensive Care RHH  
(phone interview)

Launceston

Dr Scott Parkes  
Director, Intensive Care  
LGH

Dr Amanda Dennis  
Director Women's and Children's Services  
LGH  
(with the 2 Nurse Managers of the Paediatric and Obstetric Units)

Dr Michael Grubb  
Anaesthetist  
LGH

Dr Colin Chilvers  
Anaesthetist  
LGH  
(written submission)

Dr Martin Russnak  
Anaesthetist  
LGH

Dr Chris Reid  
Anaesthetist  
LGH

Dr Paul Pileage  
Director, Emergency Dept  
LGH

Dr Tim Strong  
Anaesthetist  
LGH

Dr George Merridew  
Director, Anaesthesia Dept.  
LGH

Dr Andrew Hughes  
Director TMRS  
Based at Launceston

Mr Bob Houlton  
Northern Operations Manager. Ambulance  
(with 3 Flight Paramedics)

Burnie

Dr Tom McDonagh  
Emergency Medicine Specialist  
Burnie

Mr Andrew Todd  
Nurse Manager Emergency Dept  
Burnie

Dr Brian Doyle  
Director, Emergency Dept  
Burnie  
(written submission)

Dr Alan Rouse  
Intensivist  
Burnie

Dr Mark Reeves  
Anaesthetist  
Burnie

Dr Marcus Skinner  
Director Critical Care Services  
Burnie  
(phone interview)

Rural

Dr George Cerchez  
Senior Medical Advisor  
Primary Health  
Evandale

Ms Francine Douce  
ADON Midwifery  
Mersey

Ms Karen Schnitzerling  
DON  
Health West Queenstown  
(phone interview)

Ms Miriam Deacon  
DON  
St Helens  
(phone interview)

## **BACKGROUND**

The DHHS Clinical Services Plan (May 2007) includes a recommendation for a review of statewide transport services.

There is a desire for statewide central coordination of the Patient Transport Service, Tasmanian Ambulance Service and Medical Retrieval Services to enhance service quality, appropriateness and efficiency.

This external review follows on from the internal Review of Medical Retrieval Services Final Report (August 2003).<sup>2</sup>

Due to distinctive characteristics, such as variable and potentially hazardous working environments, the subspecialty of Retrieval Medicine is different from other fields of medicine. Retrieval Medicine requires interface with expensive transport assets, has special communication needs and delivers critical care medicine to patients who may be unstable and without established diagnoses. Special considerations are required to ensure excellence in patient care and appropriate staff safety. These factors and more require solutions appropriate to Tasmania.

There is no doubt that the personal dedication and endurance of a few committed individuals has held the retrieval system together for many years in Tasmania. Dr George Merridew, Dr Andrew Hughes, Dr Marcus Skinner, Dr Paul Pileage, Dr Eve Merfield, Mr Bob Houlton, Mr Wolfi Rechberger and others should be formally acknowledged for their dedication and excellent work over many years in the field of retrieval medicine.

Sustainability of retrieval staffing has been an issue for many years. Recently the staffing problems have raised the issue to crisis point. Currently there is real potential for failure to deliver an adult and paediatric retrieval service in Tasmania.

## **DEFINITION OF A RETRIEVAL**

The definition of a critical care retrieval varies around the world. A widely accepted definition is ‘the provision of critical care liaison and subsequent deployment of specialist level medical care to support those patients in need of transfer to a level of specialist care not available at the originating location’.

For the purposes of Tasmania the deployment of specialist level nursing staff from specialist institutions should be included in the group of experts providing retrieval services. In addition all missions requiring a medical escort should be included, in order to capture local and regional medical retrieval missions.

This Tasmanian definition allows separation from those cases undertaken by flight paramedics by air or road ambulance that do not require specialist level care.

Retrievals may be categorised as Primary or Secondary. A Primary Retrieval originates from outside of a hospital setting, but returns the patient to a hospital (such as a scene response for a motor vehicle crash patient). A Secondary Retrieval takes place between health facilities, such as Launceston General Hospital (LGH) to Royal Hobart Hospital (RHH).

As stated in the Minimum Standards for Transport of Critically Ill Patients, “clinical management during transport must aim to at least equal management at the point of referral and must prepare the patient for admission to the receiving service.”<sup>3</sup>

It must also be recognised that safe transport of the critically ill patient ideally requires accurate assessment and stabilisation of the patient prior to transport. Effective communications between referring, transporting and receiving staff at a senior clinical level is crucial to effective coordination and optimal patient outcome. Any retrieval of a patient must be of benefit to the patient and be a part of appropriate medical care for that patient.

Those patients likely to be retrieved include those requiring;

- General anaesthesia for vehicle extrication or surgical procedures such as amputations.
- Intervention for a threatened airway
- Ventilation or those at risk of requiring ventilation
- Cardiovascular support for a shocked patient or one with unstable haemodynamics such as those requiring inotropes, intra aortic balloon pump or ongoing blood product requirement for active bleeding.
- Intervention, or possible intervention, for poor neurological state, such as intubation and ventilation
- Medical interventions outside of the Tasmanian Ambulance Service (TAS) protocols or scope of practice

Medical Retrieval may also be initiated at the request of the Retrieval Medical Coordinator due to concern for patient welfare or where there is possibility of patient deterioration in transit.

## **RELEVANT DOCUMENTS EXAMINED BY REVIEWER**

- DHHS Clinical Services Plan 2007
- DHHS Primary Health Services 2007
- Review of Tasmanian Medical Retrieval Services Final Report August 2003
- Recent Tasmanian Medical Retrieval Service monthly activity reports
- Tasmanian Medical Retrieval Committee “1 300 XXXXXX Retrieval Advice Policy” in draft form.
- The Tasmanian Medical Retrieval Annual Report 2006
- The Tasmanian Medical Retrieval Annual Report 2001
- RFDS Contract with the Tasmanian Ambulance Service
- Personal submissions from stakeholders included in the stakeholder list

## **REVIEWER’S PRINCIPLES FOR APPLICATION TO THE TASMANIAN MEDICAL RETRIEVAL SERVICES**

- Patient outcome focused
- Rapidly responsive when indicated
- Appropriate
- Efficient
- Effective
- Safe for patients and staff
- Adequately resourced, particularly in terms of staffing, such that there is a robust and sustainable service for reasonable operational demands.
- Uniform high quality service with provision of supporting data
- Statewide clinical coordination with dynamic flexibility
- Clearly defined clinical governance
- Accessible to the population regardless of location or diagnosis

## **DEFINED SCOPE OF EXTERNAL REVIEW**

The objective of this project is to provide a set of recommendations on how the service can be structured, involving staff, transport and procedures that will enable sustainability of the Tasmanian medical retrieval services into the future.

The scope includes the following issues;

- Is the Medical Retrieval Service sustainable at LGH into the future?
- If sustainable, what components need to be addressed?
- If not sustainable, what are the alternatives?
- Can the service be sustainable at RHH as the main tertiary hospital of the state?
- Are the existing modes of transport all that are needed for a sustainable service?
- Is training for all staff including ambulance paramedics adequate?
- Is there a role for an increased scope of practice for intensive care flight paramedics (ICP) in the retrieval service?
- Is the current documentation satisfactory in the sense of policy and procedures, quality processes, data, etc

Criteria for sustainability as defined in Department of Health and Human Services (DHHS) documentation include;

- Sufficient patient volume to support and maintain the competence of health care professionals.
- Staffing infrastructure that can withstand temporary shortages without excessive cost or operational burden.
- Quality equipment and facilities
- Appropriate access to necessary clinical and non-clinical support services
- Costs that are reasonable in the context of competing demands for resources and
- Transparent and predictable funding allocations.

## **DISCUSSION**

### **1. STAFFING**

#### **A. Medical Retrieval Service Registrar staffing**

A stand alone retrieval service for TMRS or NETS is not justifiable due to the low volume of work. The TMRS currently performs around three retrievals per week and the NETS performs around one retrieval per week. Recruiting for a Tasmanian retrieval service as a stand alone unit would be futile.

While medical staff performing retrieval duties need to be defined, they will also need to remain engaged in their medical specialty professional development and training program. This mandates hospital placement for medical staff for Tasmanian retrieval services.

Multiple decentralised retrieval services would involve hospitals being responsible for their own retrieval staffing, and such fragmentation would be a retrograde step.

The current registrar DHHS funding of one Anaesthesia registrar position to LGH Anaesthesia Department is inadequate to provide retrieval registrar coverage.

The LGH Anaesthesia Department has correctly identified that junior medical staff should not be undertaking retrieval duties and this is supported by the Australian and New Zealand College of Anaesthetists (ANZCA) policy.<sup>5</sup> The International Society of Aeromedical Services also supports this position stating that critical care missions should be undertaken by specialists or advanced trainees.<sup>6</sup>

Registrar training in their medical specialty must reach the level of safe independent practice to care for the critically ill or injured in an unfamiliar environment such as is required in retrieval medicine.

Retrieval registrar staffing has been a recurrent issue primarily due to the paucity of adequately experienced registrars in the LGH Anaesthesia Department. This situation is not rectified by including the small number of suitable registrars of the LGH Emergency Medicine Department and the Intensive Care Unit. The retrieval dispatch of a suitably qualified registrar from any Department at LGH encroaches on the relevant unit's ability to continue to function. If the unit does continue to provide adequate patient care it usually results in significant financial cost due to consultant callback payment. The lifestyle cost of the consultant staff also needs to be considered.

It is unlikely that a suitable number of quality registrars can be attracted to LGH to perform retrieval duties. Any registrar training position must be primarily based around their appropriate level of specialty training requirements and not based around retrieval requirements. This situation applies to the LGH Anaesthesia Department.

The RHH is likely to have greater success in attracting suitably experienced registrars. RHH already has a greater depth of registrar staffing that could cater for short term variations in activity, staff sickness etc.

A proposed model of a registrar staffing across the 3 RHH Departments of Anaesthesia, Intensive Care and Emergency Medicine has significant advantages. These positions may backfill those who are already employed and are interested in retrieval medicine. Such a broad base will reduce the burden on any one department and provide opportunity to all of those in the hospital with an interest in retrieval medicine.

The provision of three registrars (3 FTE) at RHH would enable a hospital based retrieval day shift (while engaged in their home medical specialty) that would enable rapid retrieval deployment for an urgent mission during day light hours either by road, helicopter or fixed wing. The retrieval registrar would then be on remote call overnight with a 30 minute response time consistent with other aviation requirements. The registrars would be required to have, as a minimum, 8 hours sleep prior to returning to other hospital duties the next day. Their potential absence for both their retrieval duty day and the next day must be catered for and rostered for, as this is included in the calculation of the FTE payment. It would not be ideal for any retrieval registrar to be on retrieval duties having been on call for any service the night before. The low number of retrievals performed by an individual registrar would not interfere with these additional positions being accredited for their home specialist college medical training.

The three relevant departments of RHH would need documentation of agreed DHHS expectations in exchange for funding of these positions. If there are more than one interested and suitable registrars from that department then they could share this retrieval commitment. The specified registrars, or those registrars fractionally sharing the FTE arrangement, also require written expectations of their duties, training etc. The minimum expectation from each department should be the availability of one suitably trained Senior Registrar for 4 or 5 day shifts a fortnight (while they are based in their home units). The retrieval coordinator would have immediate control over the rostered retrieval registrar and TMRS demands would be given priority over unit rostering preferences. This FTE funding would also encompass all leave and retrieval training requirements such that there should be no deficit in the retrieval roster.

This proposal is more cost effective than the current combination of retrieval locums and consultant callouts for prolonged periods. The retrieval locum payments currently made considerably exceed this funding proposal.

### **Recommendation 1**

**DHHS to fund 3 FTE Senior Registrar positions at RHH for the TMRS. One registrar in the Anaesthesia Department, one in the Intensive Care Unit and one in Emergency Department is proposed.  
(1.0 Existing, 2.0 FTE new)**

Data indicates that 70 % of retrieval missions in Tasmania involve after hours work and unpredictable surge demand may rarely lead to excessive hours of duty. The system must have capacity to prevent this occurrence due to fatigue and occupational health and safety (OHS) concerns. Thus some depth to the quality and quantity of retrieval medical staff is required. However, this has to be balanced with adequate concentration of experience to be safe in the specialty, especially if the transport mode is helicopter. With predicted low activity it is reasonable for a registrar to be on 24 hour call while engaging in retrieval duties as long as the total number of trained staff exists for the occasional “emergency call up when not on call” for surge demand, major incident or other reasons.

A rapidly responsive retrieval service using all available modes of transport would also be attractive and further assist staff recruitment and retention. Improved job satisfaction due to the proposed rapidly responsive service is a part of this attraction.

While activity in retrieval medicine is not high in Tasmania, the cost of staff safety training per individual is similar to other busier services. The industry safety standard is not negotiable. Safety training around transport airframes is mandatory for retrieval staff and this is a clear duty of care of the employer under OHS legislation. An aviation incident or crash may expose DHHS to criticism unless this safety training is evidenced.

Registrar training in retrieval medicine currently appears to be mainly a case by case discussion from the medical retrieval coordinator. With an increasing number of registrars, options are available to use teaching resources available interstate. The Careflight NSW Pre Hospital Trauma Course is an example. This two day program in Sydney is standard for NSW Retrieval Registrars and involves safety components. Retrieval Registrars of Mediflight in SA are also required to undertake this course, and do so before their first day of retrieval duty.

Orientation programs for staff need to be formalised and safety competency records kept on file. This is an area of need in Tasmania as the system moves forward.

Helicopter teams that are rapidly responsive (‘hot loads’ with engines running) must reach a high level of safe competency prior to the mission. Helicopter teams not required to be rapidly responsive (‘cold loads’ with engine off) may suffice with a brief recheck of safety issues prior to the flight having previously received basic safety training. Policies need to be developed around all potential mission variations and the safety training required by all staff as standard.

Fixed wing safety orientation can be undertaken on a case by case basis although experience shows that, in reality, this is often shortened as much as possible. Ideally yearly credentialing of retrieval staff should be undertaken to evidence competency in emergency procedures as opposed to simply attending a lecture on the subject.

Similar credentialing is more important around helicopters, as helicopters are inherently more dangerous to work in and around. Biennial helicopter underwater safety training (HUET) is recommended for staff likely to be deployed over water (greater than 500m from shore) at a frequency of more than 3 times a year. Medical

staff in Tasmania are unlikely to require HUET whereas rescue paramedics, police and pilots would be.

Crew Resource Management training courses for helicopter teams usually consist of a two day course and are of benefit for regular members of a retrieval team. Although such training is not essential, clear expectations of safety among all staff in a helicopter team is the ideal. Such issues may cross the traditional medical / aviation divide.

The number of registrars involved in retrieval is low compared with number of registrars from other medical specialties, and thus retrieval education is often difficult to formalise. Careflight QLD have started extending some remote educational sessions that use teleconference facilities and this may present opportunities for retrieval education in Tasmania.

NETS senior registrars or consultants form the medical component of the NETS team. The NICU Nurse completes a day shift and then is on call overnight for NETS retrievals for 24 hours. This occasionally leads to a prolonged shift. The NETS RN is responsible for the daily equipment checking for retrieval.

It has been proposed that neonatal critical care nurses assist the medical staff when the patient is less than one year of age and that flight paramedics assist when the patient is older than one year of age. This is acceptable, assuming that the flight paramedic is able to assist with the medical equipment and medical interventions. This adds weight to the need for increased training and formalisation of the proposed retrieval paramedic role (see later).

NETS perform, on average, one retrieval per week but still require the staffing depth to have a team dispatched in the field for a prolonged period. Retrieval medical staffing must not compromise the RHH NICU function and the medical staff need to have a sustainable quality of professional and personal life. Funding for this NICU retrieval staffing role is difficult to quantify. Time provision for medical and nursing staff to undertake aviation training is required. It is recommended that an extra DHHS funded NETS Senior Registrar position be created in acknowledgement of these commitments. This may blend in with the proposed combined NICU and PICU at RHH and its staffing requirements. Funding would need to be dependent upon formalised documented acceptance of the need to staff all missions, train all staff, provide medical input into quality assurance activities, and undertake relevant data collection and reporting.

Rapid response retrieval for paediatric road trauma would normally be catered for by the TMRS team.

## **Recommendation 2**

**RHH NETS receive DHHS funding for a Senior Registrar to assume the responsibilities of retrieval staffing, quality assurance, data collection and reporting demands.**

**(1 FTE new)**

## **B Medical Retrieval Service Consultant staffing**

Many consultants in the TMRS perceive they receive little recognition in terms of payment or otherwise. There is no doubt that staff at LGH have performed above their contractual requirements for many years without recognition from the DHHS. With decreasing registrar numbers, the burden carried by consultants has increased. Several LGH consultants have withdrawn from the TMRS and others have threatened to do the same. Those remaining in a voluntary fashion as a short term solution should be acknowledged.

It is doubtful that suitable additional consultants to assist with retrieval duties can be attracted to LGH. This is especially so with ongoing retrieval registrar staffing difficulties. It has been reported that employing additional non-retrieval consultants to backfill may also propose a challenge to LGH.

Consultants who are on call for other hospital units and departments while also fielding retrieval calls can have competing demands, especially in the setting of a Consultant Anaesthetist with pressing theatre commitments. This has been reported as unsatisfactory from both the provider and the recipient of some retrieval coordinator phone consultations. Most retrievals involve a large number of calls to confirm that all the fragments are put together appropriately, and it is noteworthy that most retrievals occur after hours.

Recruitment and retention of quality retrieval coordinators is paramount. Consultant staff that choose to take on retrieval coordinator duties will generally provide a higher level of service than those who may be coerced to do so. However, the times of relying on medical goodwill for unattractive, unpaid duties have long gone.

Retrieval consultant financial inducements or differential payments to perform retrieval activities can create inequalities and disharmony within a hospital or within departments. Unique loadings for retrieval coordinator duties will create tensions and have flow on effects for DHHS in other 'difficult-to-staff' areas.

The most transparent and fair option would be to reduce on call from other hospital duties and backfill those departments to ensure there is no resultant extra call penalty for all involved. This must be income (total package) neutral for all involved.

The lack of sufficient retrieval consultant numbers at LGH is not resolved with the addition of the Dept of Emergency Medicine and the Intensive Care Unit providing extra call. RHH will have a greater chance of backfilling these fractional retrieval appointments due to greater staff numbers (especially if retrieval registrar staffing is in place).

The TMRS coordinators should know the capabilities of each of the medical retrieval escorts. The ability to travel with, or in place of the retrieval escort, can be an advantage when registrar orientation or supervision is required, or a particularly challenging case presents itself. Direct discussion of the case between the coordinator and the retrieval escort is also consistent with policies relating to Specialist College

supervision and support of trainees. Consequently co-location of coordinators and escorts, although not essential, may be of benefit.

The current Medical Retrieval Consultant funding is a 0.5 FTE Director and 1.0 FTE Staff Specialist position to the LGH Anaesthesia Department. This is inadequate to cover the 24 hour, 7 days a week, retrieval demands. Of note, a further 0.5 FTE is provided for the Director's professional maintenance in his home specialty and this is supported.

Eight separate 0.13 FTE Retrieval Consultant and a Deputy Director position of .23 FTE are recommended to support the TMRS Director. It is recommended that the State Director 0.5 FTE position is continued, but it is proposed that this position be supported by a Deputy State Retrieval Director (based at the RHH, if RHH is the TMRS base chosen).

These secondment contracts have the advantage of specification of retrieval duties as well as performance appraisal on a regular basis. One to two year secondment with tenure remaining to their substantive hospital appointment is suggested.

The proposed consultant retrieval contracts would involve retrieval duties of one day a fortnight (Mon to Fri) with after hours on call frequency of 1.5 nights on call per fortnight. This on call rate is assessed as sustainable in the longer term if other hospital call is reduced accordingly. The on call may be allocated on the night before the staff member's retrieval duty day such that the retrieval service does not interfere with other hospital departmental commitments. On the retrieval duty day there is a range of retrieval duties that could be undertaken by the consultant.

Together with annual leave, professional development, sickness leave etc the FTE consultant total equates to approximately 2.0 FTE, inclusive of the Director. The TMRS Director and the Deputy Director may require more attractive packages offered by DHHS to recruit and retain their invaluable core knowledge, experience and leadership. The Director package will require appropriate employment in their home medical specialty to be continued.

The ideal number of 10 Retrieval Coordinators is important in that training and concentration of experience is balanced with an acceptable lifestyle, with call that is sustainable for the possible 30 years of public employment. Medical retrieval coordinator duties can be demanding. They require a depth of critical care knowledge that holds respect around the state. If not undertaken by a senior experienced clinician, then insight to seek assistance is required. The position carries enormous responsibility and is an essential state role. There are usually many more consultations than actually result in a retrieval. Assisting and supporting the rural practitioner with a patient that eventuates in a non-retrieval can often take a lot longer than setting up a retrieval to actually occur. Such consultations require excellent communications skills, understanding, empathy, and yet the strength to deny requests when appropriate.

The retrieval coordinator requires the authority over transport assets, human resources and the ability to determine final patient destination if under dispute. The coordinator

must have the support of DHHS with state policy development to resolve difficulties should they arise.

Coordinators will need a broad understanding of Tasmania, the geography, the capabilities of hospitals and individuals, the capabilities of the aviation resources and awareness of the training levels of all those involved in the system, especially the skill set of the Flight Paramedics.

If the chosen model is based at RHH, then ultimately these positions should be based at RHH. In the interim LGH experienced consultant members should be encouraged, attracted and supported to remain involved in the retrieval service.

I recommend that the retrieval coordinators remain competent in retrieval operations to assist with surge activity, supervise registrars, select appropriate "consultant only" missions and to remain in touch with front line issues. Closer contact with TAS Communications room is encouraged.

The SA medical award has recently introduced a payment for all medical specialists for telephone calls that do not result in a call back to the hospital. Such calls, if in excess of 3 in number, result in 15 minutes of call back payment. This has been exceptionally well received by retrieval coordinators, and more so than any other specialty.

Failure to attract sufficient coordinators as outlined above, would precipitate the next option of appointing a department as responsible for the remaining coordinator positions. Formalised sharing of responsibility between multiple departments is the next option as is a smaller number of consultant staff undertaking .26 FTE secondment retrieval contracts.

The RHH ICU alone does not have the quantum of consultants to share the load by itself even if increased by the retrieval consultant FTEs. The RHH Anaesthesia Dept does have greater capacity, but already has multiple on call rosters. The RHH Emergency Department has 12 Consultants and, with a retrieval FTE, the number may increase to 13. A Senior Registrar with an interest in retrieval medicine currently working at the RHH ED could be considered for such a consultant position in Emergency Medicine at RHH in 2008. Thus the RHH Emergency Department would be a logical first choice to be offered involvement in such a departmental proposal.

The current arrangement with NETS Consultants being in charge of NETS activation and their resources is supported. Should there be competing demands on resources, or disputes then the state retrieval coordinator should lead negotiations. Dispute resolution should go to the state retrieval director or his nominee.

NETS Consultants currently take neonatal consults direct as a part of their state call responsibilities. RHH NETS reportedly take on the NICU bed state management and the task of alternate bed finding on the mainland if required. This is what the customers desire and I have been presented with a copy of policy documents on this subject (RHH Perinatal bed finding and transfer guidelines). If these are not already

available on a website then they are recommended to be so and be linked to the proposed state retrieval web site.

### **Recommendation 3**

**DHHS fund the equivalent of 2 FTE Consultant positions for retrieval duties (1.5 FTE existing & 0.5 FTE new)**

### **C Locum or Casual Medical Officer Service staffing**

The current medical retrieval locums of medical staff for retrieval are an expensive and generally unsustainable long term option. Locums, however, are currently providing some staffing and may be useful in any transition planning.

### **D Flight Paramedic Staffing - Fixed Wing**

There are 12 flight paramedics currently in service. The flight paramedics rotate with road duties but the rostering is largely separate. Rotation to road duties broadens their clinical exposure as flight duty clinical exposure is limited. The flight paramedics are not exposed to a large volume of critical case workload even with rotation to road duties.

Training includes the Victorian Monash Flight Paramedic Course, maritime sea survival training and intensive care paramedic training with skill maintenance annually. The flight paramedics are credentialed by Royal Flying Doctor Service (RFDS) to undertake the rear of cabin crew responsibilities. Critical care retrieval training is gained by the experience of participation in an ad hoc fashion.

Increased training and education in the specialty of critical care for flight paramedics is supported such that they will be more able to assist the medical staff. This may involve flight paramedics achieving competencies in the hospital setting where these skills are used on a continuous basis and the quantum of critical care medicine exists. Monash University has introduced the Graduate Certificate in Aeromedical Retrieval as a step in this direction. The benefit of flight paramedics working with the retrieval doctors who they will work with in the field is clear. Team function is of paramount importance in retrieval medicine. Conversely a team of a doctor and a flight paramedic who do not know each other and are unfamiliar with each others skills are unlikely to function at an optimal level in the field especially under times of duress. Increased incidents with patient consequence are more likely in this situation. However, any proposal to increase the independent scope of practice for flight paramedics is not supported as the quantum of critical care retrieval medicine is inadequate to justify the occasional exposure of flight paramedics to these critical care patients.

Fight Paramedics being more involved in critical care medicine in the team setting with the clinical management responsibility held by medical staff is a different situation to a Flight Paramedic providing critical care at a remote distance and without

medical support. The proposal for increased scope of practice for Flight Paramedics is inconsistent with the ANZ College of Anaesthetists and the International Society of Aeromedical Services policies.<sup>3,6</sup> These policies recommend junior registrars do not participate in critical care retrievals as they need closer supervision in these unfamiliar environments. Some of these “inexperienced” registrars may have already intubated and ventilated many hundreds, if not a thousand, patients, and in comparison, greatly exceeds paramedic experience. The medical retrieval roster would still need to be medically staffed and this remains a core retrieval service requirement such that any potential cost saving by undertaking missions without medical staff, would be small.

There is no convincing evidence of benefit of independent extended critical care Flight Paramedic practice in Tasmanian retrievals, and the potential risk exposure for DHHS is not warranted. However, it is clear that there exists a need to improve the speed of medical response such that the medical requirement does not in itself lead to delay of a time critical mission.

## **E Flight Paramedic Staffing – Helicopter (Rotor Wing)**

There are seven flight paramedics in service. They are rostered to road ambulance duties and are called up for helicopter missions when activated. This inevitably causes delays such that rapid response is rarely possible.

The flight paramedics have completed clinical training similar to fixed wing paramedics but undertake rescue and helicopter safety training in addition (such as helicopter underwater escape training instead of RFDS safety training). They are helicopter crew and rescue trained.

The desire to improve helicopter responsiveness will impinge on the ability of the flight paramedic to be involved in other road ambulance duties during the day. This will have flow on implications to backfill the road duties of the helicopter paramedics to service Hobart. Opportunity may exist for a combined Doctor/Paramedic team equipment check at the hospital at the beginning of the day. Checking involving two staff is faster, more accurate and would improve team dynamics. The Helicopter Paramedic clinical expertise could then be used in the TAS communications room, training of other paramedics or in a hospital placement as part of a proposed retrieval paramedic training.

The Tasmanian Ambulance Service Clinical Advisory Committee is responsible for changes to scope of practice for paramedics and would be responsible for reviewing any recommendations relating to changes.

### **Recommendation 4**

**The Tasmanian Ambulance Service Clinical Advisory Committee review helicopter and fixed wing Flight Paramedic training and consider extending the scope of practice to embrace the role of retrieval paramedic in the Doctor/Paramedic retrieval team setting. It is not recommended to increase independent paramedic activity in place of retrieval medical staff.**

## **2. TRANSPORT ASSETS**

### **A Road Vehicles**

Road retrieval will always be required as a backup to aviation especially with the variable weather conditions of Tasmania.

Local catchment retrieval for the regional hospitals will also require reliable resourcing of road assets. Road missions or rendezvous between Burnie and Launceston or between Launceston and RHH remain as options such as in bad weather, when there is lack of state team availability or when there is no available air asset. The limited number of road ambulances is a problem.

Driving long distances or taking the only road ambulance out of a region to transport a retrieval team for a prolonged period is less than ideal. Hospital owned patient transport vehicles are noted to be in use but appear to be inaccessible for retrieval activities. This may enable emergency vehicles to stay on duty or, conversely, not be called away for another emergency leaving teams waiting during a retrieval mission. There appears to be fragmentation of road transport assets and incorporation of all road assets may allow logistic opportunities currently not open to retrieval activities.

#### **Recommendation 5**

**The use of hospital transport vehicles to support retrieval operations be investigated.**

### **B Fixed wing**

Fixed wing transport is the current mainstay of nearly all of Tasmanian retrieval missions. Tasmania is dependent on the one fixed wing asset. The aircraft was on task during the reviewer's visit and thus could not be inspected. The RFDS King Air twin stretcher pressurized turbo prop has a long history of excellent service in the aeromedical industry. The RFDS contract also involves the provision of a RFDS pilot with the Ambulance Flight Paramedic undergoing yearly credentialing with the RFDS pilot to provide aircrew safety duties in the rear of the aircraft.

The current RFDS / Tasmanian Government contract states that the aircraft is to be based at Launceston. The construction of a new extensive hangar at that airport was noted.

For scheduled maintenance a replacement aircraft is flown in from the mainland but this creates compatibility problems with stretchers. Unscheduled maintenance may create significant delays in retrieval response. Difficulties created by this reliance on one fixed wing include lower priority air movements being significantly delayed or

postponed, inability to respond, urgent mission delays and retrieval teams being marooned when the aircraft is removed midway through one mission to perform another mission. This has resulted in retrieval teams being left behind in Melbourne overnight. Industry regulations on pilot hours limit some missions with no other options or assets being available.

Failure to respond to an urgent situation is reported to occur only rarely in practice but there appears to be a general acceptance of long response times with the given resources. This is not a reflection on the desire of staff to provide an optimal service however.

Common complaints concerning fixed wing retrieval from stakeholders include the delay in response, the delivery time of patients and the protracted duration of many retrieval missions. From the TMRS 2006 report the average duration of a mission in the “immediate” category was reported to be 7 hours and for “urgent” missions, 8 hours. Compared to interstate services these mission durations are excessive for comparable distances. These excessive times can lead to a demoralised workforce and also have the potential to contribute to adverse patient outcomes. The average response times for all missions (time from activation to team arrival) of 2 to 3 hours and long empty legs of return to base of between 2 and 3 hours are the main areas of operation that are inconsistent with other Australian services. The average response time for “immediate” and “urgent” cases approximates 2 hours despite the team and the plane being placed in the north of the state adjacent to the majority of referral locations. This may be partially the result of competition of missions for the only available plane.

Reported in the 2006 TMRS Annual Report were 107 logistic problems out of the total of 179 adult missions. These were principally delays. 37 logistic problems were classified as ‘major’. Some of these were not preventable, due to circumstances such as weather, but the number of response problems must prompt serious review of the available retrieval transport resources. This must be a focal point for service reform.

The RFDS aircraft is reported to be on task for approximately 8 hours a day on average (829 cases including both NETS and TMRS for 2006-2007 year) and is predominantly used for TAS flight paramedic escorts from northern referral centers. These flight paramedic escorts are mostly destined for northern destinations. However, TMRS and NETS patient movements trend from northern referral sources to the RHH in the south. During 2006, 100 of the 150 TMRS operations remaining in Tasmania were destined to return to Hobart (29 missions were received by Victorian hospitals). Most of the NETS retrievals also returned to RHH.

During 2006 for TMRS retrieval the main referral sites were;

- Burnie 34
- Mersey 40
- Launceston 49

In summary, 123 of the 179 referrals for TMRS retrieval operations were from these 3 hospitals.

Moving the fixed wing to Hobart with both the TMRS teams and NETS based at RHH would lead to a significant saving over current air miles for retrieval. However, the overall air mile benefit is lost by the larger requirement for TAS air ambulance air miles in the north of the state.

Colocation of the retrieval team and aviation assets is ideal. Data supplied by Dr George Merridew (1995-6) comparing a TMRS retrieval team based at RHH with a TMRS retrieval team based at LGH while the RFDS remained in Launceston revealed an increase in total air miles flown by the RFDS fixed wing with the TMRS based at RHH.<sup>4</sup>

It has also been reported that currently it would be faster to transport a time critical neurosurgical patient to a RHH operating room from Burnie by road rather than by fixed wing mode of transport. With the current location of resources at LGH, the rare but valuable option of transporting a neurosurgeon from RHH to Burnie in an emergency or elsewhere, is unlikely to be explored.

Increase in helicopter activity out of RHH for retrievals would increase the cost effectiveness (on air miles terms) of the fixed wing remaining in Launceston. The air mile study should be repeated on completion of the current RFDS contract when data on utilisation of the helicopter may allow better predictions on the changes in RFDS air miles.

The location of NETS base at RHH currently adds a significant cost penalty to air miles flown with the aircraft being placed in Launceston, because an empty aircraft is required to fly two extra legs (from Launceston to Hobart to collect the NETS team and from Hobart to Launceston after delivering the patient and NETS team to Hobart).

If the TMRS team was based in Hobart, life threatening time critical retrieval emergencies to King Island may require the cooperation of Victorian medical retrieval services to retrieve to Victoria but these missions are rare fortunately.

Using a charter aircraft to fly a retrieval team out of RHH to be collected by the RFDS plane for the return leg has some merit but would not save money, because of the inherent duplication of aircraft services. It may only save a small amount of time and the temptation for the RFDS aircraft to engage in another operation is real due to work load pressure. This may then delay the return leg.

Accurate NETS retrieval data was not available, which in itself is of concern, but all internal Tasmanian missions were destined for RHH and there are around 50 such missions per year. This may increase to 60 in number with the expected expansion of the state PICU development and thus greater responsibility for some children aged up to 14 years.

### **Recommendation 6**

**RFDS fixed wing to remain in Launceston for the duration of the current contract.**

## **C Helicopter (Rotor Wing)**

“Rotor Lift” currently hold the helicopter contract with Tasmanian Police. This service is based at Hobart Airport and it is most unlikely that Tasmanian Police would consider relocating out of Hobart. The helicopter contract was not viewed by the reviewer.

The BK 117 B has a long history of aeromedical use around the world. The BK 117s are reaching the latter stages of their aviation careers. This particular helicopter was reported as not having an autopilot and thus requires 2 pilot operation for instrument operation. It also does not have “de icing” rotor capability or night vision capability and these features should be reviewed in future contracts. (South Australia and Queensland have helicopter night vision capability for civilian aeromedical operations to improve the safety of missions). The helicopter operator contractual obligations should also include the required safety training for health and ambulance staff.

A Police Officer and a Flight Paramedic travel in the rear as standard for rescue or routine ambulance use. If a retrieval doctor is added to the aircraft for a medical mission it is understood that the police officer stays on board. Thus this can lead to a crew of 5 persons on board (POB) which may restrict the performance and range of the aircraft when fully fuelled.

Adequate safety instruction and staff credentialing should enable the standard medical retrieval to be 4 POB (1 pilot, 1 police crew, 1 Doctor, 1 paramedic for visual flying or 2 pilots, 1 Doctor and 1 Paramedic for instrument flying in the BK 117). This reduction in number makes for a more ideal working environment in the rear of the aircraft with the improved performance and range of the helicopter.

The helicopter stretcher is compatible with TAS vehicles and the medical equipment is secured. Two stretcher patient configuration is possible but is less than ideal. Reconfiguration of the helicopter for medical missions is relatively rapid.

The backup rotorcraft is a Squirrel suitable for 1 patient. This has autopilot and 1 pilot instrument flying abilities. Stretcher loading is more difficult and the limited space makes care for the critically ill or injured a challenge.

Both helicopters are winch capable with the winch placed on the BK 117 as standard. If the BK is out on a health mission, it is unclear whether a second pilot is available for a police mission should that be required.

The status of accident insurance for staff undertaking duties in a helicopter or fixed wing is unclear. Aviation personal insurance coverage is required by the DHHS for their staff. Personal insurance policies often have exclusions for non fare paying aviation duties and staff should be reminded of this.

Without documentation of adequate DHHS personal insurance no staff should fly on any aviation mode of retrieval.

**Recommendation 7**

**DHHS need to confirm adequate accident insurance coverage for staff working in retrieval medicine. Coverage specific to helicopter and fixed wing duties is required.**

Some TAS staff reported the perception of difficulty in rapid helicopter utilisation. Some others mentioned the charges by Police were prohibitive to increased TAS utilisation, with reports of police charges of the order of \$3,000 per hour for the use of the BK 117, which appears high. Police recharge TAS for their usage.

If the current police helicopter is to be utilised more efficiently for retrievals during the current life of the existing contract, a service level agreement could be negotiated between the Police Department and DHHS that will cover access, tasking, price, equipment and staffing.

**Recommendation 8**

**A service level agreement is negotiated with the Police department that will cover access, tasking, price, equipment and staffing. This will enable a more strategic use of the helicopter.**

**Once the current agreement has concluded, the Tasmanian Ambulance and the DHHS should be involved in the negotiations at the highest level. A whole of government helicopter contract is proposed.**

While data has been presented on the number of TMRS missions undertaken per year, it is likely that potential retrieval missions have been missed. TAS data was not inspected as part of this review but anecdotes were presented where a rapidly responsive medical retrieval system would have been of definite benefit to the patient. A study and evaluation of the prehospital management of road traffic fatalities in Victoria revealed a high prevalence of prehospital deficiencies and a similar review in Tasmania may be fruitful.<sup>11</sup> Tasmania, while having the appropriate assets, currently does not provide a rapid response service as many other Australian states do. The reasons provided include lack of readily available medical staff (due to the fact they are remote from the helicopter) and system resistance come together to deny appropriate use of the helicopter for retrieval missions.

The distance of fixed wing airstrips from regional hospitals is not insignificant with NWRH at Burnie being a 30 minute drive from Wynyard Airport and RHH in Hobart requiring a 30 minute drive from Hobart Airport. There is a 45 minute driving time from Queenstown to the nearest lighted airstrip at Strahan and this can add 2 hours for a fixed wing retrieval out of Queenstown. LGH in Launceston is the closest regional hospital to an airport with a 20 minutes drive. Helicopter usage has obvious time advantages over these delays particularly with the presence of a hospital helipad. For example Queenstown to Hobart is a 54 minute helicopter flight, weather permitting.

The RHH does not have a helipad on site and, although no feasibility assessment on the current site was provided to the reviewer, placement on the top of existing buildings may present engineering and cost challenges. If RHH were to remain in its present site for many years and the difficulties of construction were not significant then developing a helipad on site may be an option. Any plans for rebuilding the RHH should involve helipad planning at its earliest phase.

Current missions may depart from the Hobart airport but only after the flight paramedic has been removed from road duties. This may prevent rapid response for time critical missions. The Domain is 5 minutes drive from RHH and is often the location of the landing site when the helicopter returns with a patient. The Domain would be the most likely site of rapid response departure at present. This requires road transport for the team from the RHH and a hospital vehicle or the rescue paramedic vehicle would be suitable for such journeys. An ambulance would be required for the return leg when a patient is onboard. A model that involves a rapidly responsive team out of RHH should have a doctor and paramedic team airborne out of the Domain in 15 minutes during daylight hours with weather permitting. Thus the response times for “immediate missions” should be dramatically improved to most parts of the state for primary and secondary retrieval missions.

### **Recommendation 9**

**RHH requires a helipad. Plans to rebuild RHH must include a helipad at its earliest stage of conception.**

The LGH has a helipad and is 48 minutes helicopter flying time from Hobart and would not require refueling for a return mission.

Mersey does not have a helipad and usually uses the local airfield to land a helicopter. Refueling is possibly required for a return mission. Mersey is the second most common referral site for TMRS retrievals. Mersey Hospital is located at an appropriate distance with a helicopter travel time to Hobart of 61 minutes. Helicopter usage and requirement for critical care retrieval from Mersey is predicted to increase in the future. The site next to the staff carpark is within walking distance of the Mersey Emergency Department and may be an appropriate helipad location. The site would need formal assessment and approval by a helipad aviation specialist. Secure location of refueling drums on site would be of added benefit. Commonwealth funding may be able to assist with this project.

### **Recommendation 10**

**Development of a helipad at Mersey Hospital.**

Queenstown is 54 minutes helicopter flying time and St Helens is 53 minutes from Hobart. All such missions deserve consideration for appropriate use of the helicopter with weather permitting. These times and operational use of helicopters are consistent with current industry operations in most states of Australia.

Burnie has a helipad and is 71 minutes flying time from Hobart. I understand that helicopter travel across the mountain ranges is problematic for several months of the year due to weather. Refueling is likely to be required for a return helicopter mission to Hobart. This is a long mission in a BK 117 but if the mission was urgent would still provide significant time benefits over fixed wing transport. Alternately medical retrieval from Burnie could use the fixed wing asset with the RFDS traveling to Hobart to collect the retrieval team as its first leg (or the less preferred team travel via charter aircraft outbound to then be returned by the RFDS aircraft with the patient).

TAS Ambulance currently utilise the helicopter for approximately 40 non police missions per year (as separate from the approximate 70 Search and Rescue Police missions). The regular Doctor/Paramedic team is recommended to be used for these “non search and rescue” missions to encourage team function and add to the currency of working together as a team on the helicopter.

The current response times for ‘paramedic only’ helicopter missions appear to provide an opportunity for improvement and with a more rapid system involving the standard Doctor/Paramedic team for all eventualities is more ideal. With a more rapid activation system early information is often unclear and the scope of clinical demands needs to be catered for with the team approach. The addition of a doctor comes at no real extra financial cost and should not add an extra time cost. The formation of a doctor paramedic team has benefits above paramedic only for the outcome of blunt trauma patients in the Australian setting.<sup>8,9</sup> All of these primary missions would also fall under the medical retrieval coordinator authority with costs from the State Retrieval Cost Centre (see later). A TAS Communications protocol for rapid activation is appropriate such that delays are reduced. The cases requiring a considered opinion regarding activation should have a decision made by the proposed TAS Communications Senior Ambulance Clinician in consultation with the Medical Retrieval Coordinator. (refer recommendation 19 page 35).

It is of concern that primary trauma is under serviced in Tasmania and it is predicted that retrieval numbers will be increased by the provision of a more rapid service. This will need to be catered for in cost projections (see later).

### **Recommendation 11**

#### **A rapidly responsive helicopter and road retrieval capability to be developed out of RHH.**

An approximation (without firm data) at the number of helicopter missions out of Hobart in a responsive system;

2 extra missions per month for road trauma within helicopter range	= 24
40 current Ambulance missions using the helicopter	= 40
40 retrievals to the North (mainly to Launceston)	= 40
40 retrievals to the North West (mainly to Mersey)	= 40
30 NETS retrievals to similar destinations	= 30
<b>Total</b>	<b>174 /yr</b>

This may allow some very approximate cost calculations but the main reason is to assess the critical mass of system activity in the helicopter. This level of activity would allow the necessary maturity around helicopter operations to develop with health staff so long as these health operators were well defined.

If the average helicopter mission involved 2 hours flying time (approximate without firm data) by the above projected 174 missions by \$1500/ hour (approximate charge associated with increased helicopter activity) = \$522,000/yr.

Cost offsets include;

- The primary missions may attract motor crash insurance payments
- Mersey Hospital may attract Commonwealth retrieval payments
- Regional uniform payment for retrieval
- Reduction of 110 fixed wing mission costs and associated pilot flying time.
- Staff overtime costs diminished due to shorter missions.
- Ambulance charges for current ambulance helicopter missions

The major benefit of increased helicopter use is that the fixed wing is relieved of its solo burden and the demand is then shared between the two assets. This is more economical than procurement of a second fixed wing asset for Tasmania at present.

Only 1 D size oxygen cylinder was located external the aircraft. No internal supply was evident. This is considered to be inadequate.

### **Recommendation 12**

**An additional secure emergency oxygen supply source to be located in the BK 117 helicopter. An internal supply is preferred.**

## **3. MEDICAL RETRIEVAL EQUIPMENT**

All retrieval staff must wear appropriate footwear and wear appropriate protective clothing. This is particularly important in helicopter transport. Helmets available for DHHS staff on the helicopter should be standard.

The medical equipment issues appear to be fragmented and poorly understood across many sectors, especially with respect to ownership of equipment and responsibility for maintenance and for future replacement.

Medical equipment for NETS is easier to define in that NETS at RHH is responsible for all the specialist equipment, maintenance and replacement. This should be identifiable in the RHH Neonatal Intensive Care cost centre and accounted for in the state retrieval cost centre. This equipment should be located in the RHH Neonatal Unit and responsibility for maintenance lie with the RHH.

Adult medical retrieval equipment is stored at Launceston Ambulance station and is primarily checked by the flight paramedics. Disposable medical replacements often

originate informally from Ambulance supplies and the LGH retrieval cost centre is used for servicing of the equipment.

At least one of the “Propaq” monitors used for retrievals is aging and may require replacement soon. Information provided suggested that some of the Braun infusion pumps are reaching replacement age. There is an oxylog 2000 on the RFDS plane. The one oxylog 1000 in use on the helicopter may be due for replacement in the near future. The defibrillators were not viewed.

Ideally the monitor, ventilator, infusion pumps, should be portable and be available for use on the patient in all forms of transport such as the road transport leg to the airport for a fixed wing retrieval. This monitoring equipment then should travel into the destination hospital until handover onto hospital equipment is complete. All of this equipment should be appropriately restrained to meet the safety standards and during transport in the all the different modes available.

With the evolution of identified retrieval staff the responsibility for their own equipment and its state of readiness is ideal. There are benefits in specialised medical equipment being placed with the hospital based team for daily checking and resupply.

The fixed wing airframe may sit in ‘standard equipment’ configuration for flight paramedic missions with monitor, infusion pumps and defibrillator. The fixed wing paramedic is responsible for this equipment, its daily check and the LGH could support TAS in its maintenance. These costs should be charged to a proposed Air Ambulance cost centre. The RFDS contract may need to specify inclusion of this equipment with the required specifics of the desired equipment, a maintenance program with replacement responsibilities being clear and documented.

The rotor wing may sit in ‘search and rescue’ configuration with rescue paramedic equipment including monitor and defibrillator as standard. Biomedical servicing by RHH would be logical. Maintenance of the medical equipment on the helicopter has recently been exposed as a weakness such that the defibrillator battery was flat and not identified. The pilot was responsible for the charging protocol which was completed dutifully but without the unit actually being tested. The pilot should not be responsible for essential medical equipment but rather the rescue paramedic. These equipment costs should be passed to the TAS air ambulance cost centre. An improved helicopter contract may have this equipment included and responsibility for maintenance clear.

The specialised medical retrieval equipment, including specialist medical packs, a third monitor, extra infusion pumps, blood shipper, an intensive care capable ventilator and other specialty equipment sets such as burns or neurosurgical kits should be located with the TMRS. This may be best placed with, and responsibility given to, the hospital based TMRS such that it is rapidly accessible at all times and deployable by the team doctor for rotor wing, fixed wing or road transport retrievals. Biomedical support from the hospital is also logical. The TMRS medical equipment inventory needs to be a part of the state retrieval cost centre. The flight paramedic and duty retrieval doctor should cross check the equipment at the start of each day shift.

This would also contribute to team building between the flight paramedic and duty retrieval doctor.

Rapid access to transportable blood supplies can be lifesaving. This will be required more frequently if rapid response to road trauma is more adequately serviced in Tasmania. Blood shippers continue to improve to allow unused blood to return to the blood bank.<sup>10</sup>

### **Recommendation 13**

**The medical equipment used in retrieval and air ambulance duties undertaken by helicopter and fixed wing must be standardised.**

### **Recommendation 14**

**The TMRS medical equipment inventory requires an overhaul. The TMRS medical equipment should be located with the TMRS team.**

### **Recommendation 15**

**Launceston General and Burnie Hospital's Emergency Departments require sufficient equipment, monitors and human resources to provide occasional safe local retrieval in their region.**

## **4. COST TRANSPARENCY AND ACCOUNTABILITY**

The costs of the TMRS were not made available for this review. It is understood that the costs are not readily obtainable. Regular accounting and measurement of costs is fundamental to good management. NETS costs are understood to be a part of the RHH neonatal intensive care, but may not be readily identifiable.

It was reported to the reviewer that there were no charges involved in retrieval activities, nor in fact, as a result of road ambulance movements.

A logical proposal is to have dedicated cost centres for;

1. State medical retrieval activities including TMRS and NETS as two subsections to be individually managed.
2. TAS air ambulance operations
3. TAS road emergency ambulance
4. TAS road patient transport (non-emergency)

Partial cost recovery from the various regions in Tasmania should be explored. A charge set at a level independent of the mode of transport, may encourage the exploration of all options to accommodate a critical patient. Currently it is understood that a small number of retrievals are undertaken between regions for bed state reasons alone. Such activity should be discouraged whenever possible. Choice of transport should be based on clinical needs of the patient, weather conditions etc and not by cost of the mode of transport.

**Recommendation 16**

**A uniform retrieval charge to the region of referral should be considered. This should be independent of the mode of transport used.**

The state medical retrieval cost centre for the subsections (TMRS or NETS) should at least include;

- fixed wing transport costs of retrieval activity
- helicopter transport costs of retrieval activity
- road costs of retrieval activity
- medical and nursing retrieval staffing costs
- flight paramedic costs as pertaining to retrieval missions.
- retrieval medical equipment with its associated maintenance and replacement costs (NETS retrieval equipment costs via RHH neonatal intensive care)
- disposable retrieval equipment replacements
- staff safety training
- professional development
- data collection, retrieval reporting and other quality assurance activities
- web site construction and maintenance with the relevant policies, procedures and guidelines
- administrative and resource accountant costs.

Some of these costs may overlap with the air ambulance cost centre but there are significant benefits in being able to identify the costs separately.

The person responsible for this state medical retrieval cost centre may be an appropriate Senior Executive with the TMRS and NETS Directors as direct reports to that executive. There are distinct advantages in the responsibility for these specialist medical services being placed in the DHHS at a suitably high level, due to the inherent complexity of retrieval activities. Retrieval activities require authority over regional and ambulance issues. A cost centre of this complexity requires senior administrative and resource accountant support. This will need to be resourced.

**Recommendation 17**

**The State Medical Retrieval Cost Centre (TMRS and NETS) be formed and be supported by the appropriate administrative and resource accountant expertise. This cost centre should be placed with those responsible for its management.**

The recent formation of the Tasmanian Medical Retrieval Services Working Party and Committee in DHHS with Tasmanian Ambulance and other stakeholders listed is strongly supported. However there is uncertainty about whether a NETS senior manager representation is included. It is noted that this committee will report to the Acute Care Executive, DHHS. It is suggested that if the responsibility for the medical

retrieval services sits with the DHHS Acute Care Executive then the budget and cost centre should also be based with that officer to match the responsibility.

### **Recommendation 18**

**A senior Tasmanian NETS representative be confirmed on the Tasmanian Medical Retrieval Services Committee.**

## **5. RETRIEVAL CONSULTATION AND COMMUNICATION**

State wide clinical coordination requires integration of TMRS, NETS, TAS Air Ambulance, Helicopter usage and the activity of TAS Communications into the Tasmanian system.

### **Recommendation 19**

**The fragmentation and duplication of fixed wing and helicopter clinical coordination should be eliminated through centralisation to TAS Communications.**

### **Recommendation 20**

**A senior, experienced, clinically trained ambulance officer to be based in TAS Communications in Hobart for at least 14 hours a day.**

TAS Communications staff in Hobart are reportedly low on clinical experience. Concerns about inability to meet surge ambulance demand were also reported. Thus extra duties placed on this section will need to be adequately resourced. There would be broad benefits in having a clinical presence inside the TAS Communications Room.

Another benefit of clinical presence in TAS Communications would include clinical screening of ambulance activities statewide with early activation of the TMRS as appropriate from the pre hospital setting. A significant incident, with or without professional ambulance crew in attendance, should be clinically reviewed by TAS Communications and the retrieval system activated as appropriate. Policy development in this area is required including components pertaining to communication to those who might like to know or need to know what is occurring in their region, for example the local medical officer.

TAS Communications require immediate specialist medical retrieval backup and this should have no barriers or delays. It may be that one of the daily duties of the Medical Retrieval Coordinator is to visit TAS Communications and thus to be aware, and review as required, the flight paramedic air ambulance bookings for the day, the status of the fixed wing and helicopter resources and the rostered retrieval team and their level of experience. He or she is then better placed to respond to immediate stressors that may be placed on the system. This is consistent with the QLD Coronial

recommendation relating to appropriate statewide clinical coordination of aviation retrieval missions.<sup>7</sup> This recommendation resulted from the Cape Hillsborough helicopter crash which resulted in the death of all crew while attempting to undertake a mission that did not need to occur during the night.

Any change in logistic arrangements for a retrieval must involve the retrieval coordinator and, if NETS are involved, must also involve the NETS consultant at the RHH.

Support for the Rural GP with a crisis presents a vastly different situation to that of a specialist in a Regional Hospital seeking a routine retrieval. Frustrations were expressed by rural medical and nursing staff, particularly in smaller rural hospitals, arising from the slowness of response. Anecdotes of situations included the hand ventilation of a critical patient for 6 hours while awaiting the arrival of a retrieval team. Such activity is not in the patient's best interest if other options exist. Prolonged delays in retrieval team arrival were the broad major concern from most stakeholders. These delays are significant and are usually transport based.

Other frustrations expressed include fragmentation of clinical support such that there is often the need to "tell the story" more than once while simultaneously resuscitating a patient. Clearly this may adversely influence one's ability to resuscitate. After a telephone request there was a report of subsequent dependence on a faxed retrieval request form from the referral site to activate the system. This is inappropriate in an emergency situation.

While rural medical staff members are free to contact a doctor of choice for non urgent consultation, most would prefer a constant reliable contact for time critical clinical advice. There is a desire for a statewide "one stop shop" for critical care emergencies in the rural sector. This would include the identification of a suitable intensive care bed and ongoing clinical support until the arrival of a retrieval team which occurs without additional action by the rural GP. I note the drafting of a State Medical Retrieval Committee policy stating that GPs are not required to source an Intensive Care bed and I support this development. Currently a 1 300 phone number exists but it is not uniformly used with some medical staff contacting the Retrieval Coordinator at LGH directly. NETS assume activation responsibility for their missions. In the future this should be simplified with an increased TAS clinical and medical retrieval presence in TAS Communications such that the 1 300 number is uniformly used. It is suggested that declaration of a patient emergency by a rural GP enables bypass of most data collection or faxing of forms in order to rapidly connect with the medical retrieval coordinator or the neonatal coordinator as appropriate. TAS Communications should have direct and immediate contact with the retrieval coordinators to facilitate this. The roster of Retrieval Coordinator Consultants with all forms of contacts should be available to TAS Communications.

All faxed patient movement requests for flight paramedic transfers should receive a return phone call clinical consultation immediately prior to flight to individually assess the case as the faxed forms may miss key or new clinical information. This clinical assessment work may increase if patient transport vehicles were to become under the umbrella of TAS.

Development of statewide policies, procedures and guidelines is required. Once approved by the DHHS Medical Retrieval Committee, all policies and procedures and guidelines related to adult and NETS retrieval need to be available on a dedicated website. This website will need to be secure and restricted from general public access.

The list of policies may include;

- Urgent critical care consultation
- Activation pathways
- Preparation for retrieval
- NETS clinical policies
- Clinical guidelines for critical care emergencies.
- Guideline on a “ready reckoner” for preferred mode of transport for a given mission profile.
- TAS Communications prehospital trauma retrieval response
- Retrieval destination according to specialty services required
- Orientation package
- Minimum staff training
- Minimum protective clothing standard

Mediflight in South Australia would be happy to provide some basis for these policies upon request.

### **Recommendation 21**

**A DHHS web site be developed to list policies, procedures and guidelines relevant to critical care retrieval including the NETS policies.**

The use of telemedicine in support of rural hospitals has been shown to improve efficiency and appropriate selection of those in need of critical care retrieval in SA. Mobile telehealth units that are used in other parts of the rural hospital for specialist consultation purposes may be more beneficial if converted to become mobile and thus available for use in the resuscitation area. This personal support to medical and nursing staff members who may be uncomfortable with critical care resuscitation is very well accepted. Broadband web access is the ideal infrastructure for telemedicine.

## **6. QUALITY PROCESS and DOCUMENTATION**

NETS data is sent to Victorian NETS as they have an established retrieval data base. Starting a data base from scratch is thus not required in Tasmania assuming full and timely reports are supplied without restriction.

TMRS data appears adequate for reporting purposes but several of the quality issues raised in the “Review of Tasmanian Medical Retrieval Services 2003” have not been addressed. There may be a range of reasons for this including inadequate provision of resources.

Data and case records of coordinator consultation is an area in need of development. Errors in this area may lead to system failure and patient consequences that are not currently reviewed in a formal fashion.

Further development of the database for air ambulance missions is essential and reported incidents here may highlight deficiencies in retrieval decision making.

Some compatibility of databases for TMRS, NETS, and TAS air ambulance is important to gain information about whole of system issues. The development of these databases can be linked to billing if that actually allows the development to take place.

### **Recommendation 22**

**Databases with a common minimum data set complete with incident monitoring should be established for TAS Air Ambulance, TMRS and NETS missions.**

Currently retrieval issues are reported on a case by case basis in an informal fashion to Dr Andrew Hughes or to TAS personnel. A formal documented quality process is required.

Risk management is not an obvious tool used in retrieval medicine in Tasmania. A quarterly meeting of a proposed subcommittee of the acute care medical retrieval group should review cases, system issues and develop a risk register and subsequent mitigation plans including allocation of responsibility for the identified problems.

Suggested risk management exercises for this group include;

- “Failure of Tasmania to provide a medical retrieval service to a time-critical patient requiring retrieval to a tertiary institution.”
- “A plane or helicopter crash with a medical retrieval team on board.”
- “A major incident such as a tourist bus crash with multiple critical patients on the east or west coasts of Tasmania in the current aeromedical system.”

### **Recommendation 23**

**Formation of a subcommittee of the DHHS Tasmanian Medical Retrieval Services Committee to identify risk exposures, system problems and potential solutions. The subcommittee should review data, problem cases, system issues and generate a risk register. Meetings should occur at least quarterly.**

## CONCLUSION

### **POTENTIAL MODELS of the TASMANIAN MEDICAL RETRIEVAL SERVICES**

There are seven potential models for the Tasmanian Medical Retrieval Services recommended for consideration. All models include the NETS retrieval staff remaining at RHH NICU.

#### **Model A.**

The preferred model is to locate TMRS staff in RHH with the fixed wing remaining at Launceston at present and the rotor wing remaining in Hobart.

- i. Retrieval medical staff sustainable at RHH
- ii. Ability to provide rapid response
- iii. Facilitates clinical coordination and integration with TAS Communications
- iv. Most economical use of the two available air transport assets

Other models for consideration and comments are as follows;

#### **Model B**

Locate TMRS staff at LGH with the fixed wing at Launceston and the rotor wing in Hobart (remain as is)

- i. Questionable sustainability of medical staffing at LGH
- ii. Lack of rapid response retrieval capability for the state of Tasmania
- iii. Dislocation from TAS Communications

#### **Model C**

Duplicate TMRS staff at both LGH and RHH with transport assets as in (a).

- i. Fragmentation issues
- ii. Duplication of resources
- iii. Lack of critical mass of retrieval activity inhibiting professionalism and raising safety concerns.

#### **Model D**

Locate TMRS staff in RHH with both fixed wing and rotor wing in Hobart

- i. Major activity of RFDS fixed wing is with non-retrieval activities in the north of the state. Thus increase in air miles would occur if fixed wing located in Hobart.
- ii. Existing contract has RFDS based with new hangar in Launceston
- iii. Second preference for a model

**Model E**

Locate TMRS staff at LGH with fixed wing and helicopter asset at Launceston

- i. LGH staffing concerns
- ii. Police unlikely to accommodate moving the helicopter operation and their staff to Launceston.
- iii. Majority of medical specialty services for Tasmania are located in Hobart.
- iv. TAS communications located in Hobart.

**Model F**

Locate TMRS staff at RHH with second fixed wing in Hobart, first fixed wing remaining in Launceston and helicopter in Hobart.

- i. Activity at present does not justify second fixed wing if helicopter readily available.
- ii. Less dependence on the current assets (helicopter and a single fixed wing asset)
- iii. very expensive model

**Model G**

Locate TMRS staff at LGH with second helicopter in Launceston with the fixed wing also in Launceston.

- i. Not economical for a second helicopter base at Launceston
- ii. Questionable sustainability of staffing at LGH
- iii. NETS currently located in RHH
- iv. Very expensive model

***COST ANALYSES of MODELS A & B with FIXED vs ROTOR WING***

Estimate of costs for four variations of a retrieval example are examined to assist with model analyses. A common retrieval from Mersey to RHH is used to illustrate the variations of costs in different locations of the fixed wing and rotor wing aircraft.

**MODEL A with FIXED WING: (TMRS team based at RHH with the fixed wing used and based in Launceston)**

Duration of air travel:

- 35 minutes duration of air travel Launceston to Hobart empty
- 43 minutes Hobart air travel to Devonport with team
- 43 minutes Devonport air travel to Hobart with patient
- 35 minutes Hobart air travel to Launceston empty

Total flying time = 156 minutes at the listed \$2,097 RFDS extra charge to TAS

Extra road costs at Launceston, Hobart, Devonport twice, Hobart and Launceston on return.

Comments;  
Patient time to retrieval attendance is prolonged++  
Patient time to tertiary hospital care is prolonged++  
Total mission time is prolonged +++  
Financial Cost +

**MODEL A with ROTOR WING: (TMRS Team based at RHH with the helicopter used and based in Hobart)**

Duration of air travel:  
5 minutes duration of air travel to the Domain  
61 minutes Hobart air travel to Mersey with team  
61 minutes Mersey air travel to Hobart with patient  
5 minutes from Domain air travel to Hobart empty  
Total flying time = 132 minutes or \$6,500 current helicopter charge.  
Were the charges of the order of \$1,500 per hour then the cost would approximate \$3,300. (\$1,500 charge possible with increased helicopter usage)  
Road costs to be added at Hobart twice and Mersey twice.

Comments;  
Patient time to retrieval attendance is the most rapid  
Patient time to tertiary hospital care is the most rapid +  
(improved significantly with helipads at both hospitals in the future)  
Total mission time is the most rapid  
Total cost ++

**MODEL B with FIXED WING: (TMRS team based at LGH and fixed wing used and based in Launceston)**

Duration of air travel  
26 minutes duration of air travel Launceston to Devonport empty  
43 minutes duration of air travel Devonport to Hobart with the patient  
35 minutes duration of air travel Hobart to Launceston empty  
Total flying time = 104 minutes listed as \$1,255 RFDS extra charge to TAS

Also need to add road costs at Launceston, Devonport twice, Hobart twice and at Launceston on return.

Comments;  
Patient time to retrieval attendance is prolonged+  
Patient time to deliver at tertiary hospital care is prolonged + (mainly due to road transport components)  
Total mission time is prolonged++  
Financial Cost +

## **MODEL B with ROTOR WING: TMRS team based at LGH and the helicopter based in Hobart**

Duration of air travel:

48 minutes duration of air travel Hobart to LGH empty

30 minutes Launceston air travel to Mersey with team

61 minutes Mersey air travel to Domain with patient

5 minutes Domain air travel to Airport in Hobart empty

48 minutes Hobart air travel to Launceston empty

Total flying time = 192 minutes or over \$ 9,000 with current helicopter charges. Were the charges of the order of \$1,500 per hour the cost would approximate over \$4,500. (\$1,500 charge possible with increased helicopter usage)

Extra road costs at Hobart and Devonport.

Comments;

Patient time to retrieval attendance is prolonged+

Patient time to tertiary hospital care is prolonged+

Total mission time including return of team to LGH is prolonged+++

Financial Cost +++++

These examples do not include estimations of the staff costs for the longer fixed wing missions. An 8 hour Visiting Medical Officer (VMO) escorted mission after hours that could have been safely undertaken by a registrar results in significant additional costs. 75% of TMRS retrieval missions involve after hours duties and the overtime staff payments for missions that currently average between 6 and 8 hours would be significantly less for missions that should take half this time. Other non financial costs such as the reduced job satisfaction or the potential adverse patient consequences for the system delay are harder to measure. The cost of demoralised staff involved with prolonged missions may be demonstrated by the difficulty in finding staff to perform such missions as is currently the situation.

### **Recommendation 24**

**The preferred model for the Tasmanian Medical Retrieval Services is to have TMRS and NETS staff based in RHH. The fixed wing would remain based in Launceston (for the present) with the helicopter to remain based in Hobart.**

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