# Emergency medicine network for rural Tasmania

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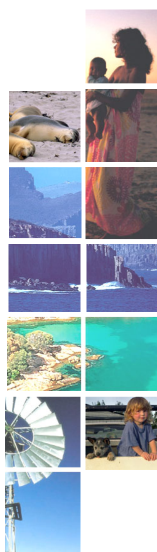
## INTRODUCTION

The professional isolation for rural and remote medical practitioners is well known. The stresses this can produce are perhaps greatest in the field of Emergency Medicine [1] which still constitutes an important part of rural general practice. [1,2] Every doctor working in a district hospital has stories to tell about the difficulties in obtaining advice and transferring seriously unwell or unstable patients to larger institutions in the city. In the worst case scenario, a bad clinical outcome leads to criticism from the receiving hospital, unhappy relatives, and occasionally, unwelcome attention from the media, the legal profession or the Coroner. The end result can be low morale amongst the staff at the district hospital leading to resignations or early retirements from the Health professions.



## Emergency medicine health services in north-west Tasmania

The North West Regional Hospital, Burnie (NWRH) is a 160 bed rural general hospital providing specialist medical services to a population of approximately 100 000 on the north-west and west coasts of Tasmania. The nearest tertiary or sub speciality hospital services are located in Hobart (330 km), Launceston (160 km) or, at times, Melbourne (1.5 hours by air + road transfers). District hospitals at Smithton (80 km), Rosebery (110 km), Queenstown (170 km), King Island (1 hour by air + road transfers) and a small general hospital at Latrobe (60 km) refer to NWRH as does a remote nursing clinic at Strahan (150 km) and a medical centre at Zeehan (130 km) (Fig. 1). Patient transfers by air to and from all these centres can be affected by severe weather conditions. In common with many small communities in rural Australia, these towns have seen a reduction in many services in recent years and suffer a perennial problem in trying to recruit and retain health professionals.

The NWRH Emergency Department is a small, well equipped Department seeing approximately 20 000 patients per annum. There are three senior doctors attached to the Department (the authors) with five junior medical staff and a number of casual general practitioners. The Department is accredited by the Australasian College for Emergency Medicine and the Royal Australian College of General Practitioners for registrar training.

The Tasmanian Ambulance Service (TAS) has paramedic road ambulances based in the urban areas of Burnie and Devonport. Paramedics supported by Volunteers are based in Smithton and Zeehan. Other towns rely on Volunteer crews for initial response. A fixed wing air ambulance operated by the Royal Flying Doctor Service (RFDS) with TAS paramedics is based in Launceston. A twin engine helicopter operated by Tasmania Police is based in Hobart and can be configured for medical transport if required.

## Recurring problems

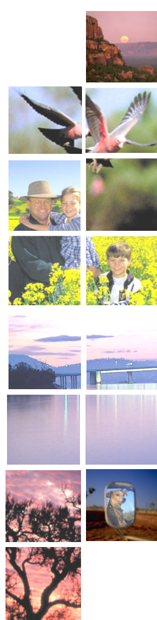
From our own experiences and observations, we identified the following recurring problems for rural and remote medical staff when dealing with serious cases. This is consistent with reports published elsewhere.[3, 4, 5, 6]

- low caseload of serious emergency medicine cases
- difficulty recognising "potentially serious" problems
- lack of education in emergency medicine
- lack of practice in emergency medicine skills
- limited local resources and lack of peer support at the district hospital
- difficulty accessing timely advice and assistance from tertiary hospitals
- lack of "local knowledge" by retrieval co-ordinators at tertiary hospitals
- long delays waiting for tertiary hospital-based retrieval services.

# ONE SOLUTION—THE EMERGENCY MEDICINE NETWORK

Over the past three years, the Emergency Department at North West Regional Hospital, Burnie, Tasmania, has established an Emergency Medicine Network with the district hospitals of the local region that consists of the following elements:

- an **Advice Service** from the Emergency Department for use by general practitioners, registered nurses at remote sites, and ambulance paramedics
- a visiting **Education Service** to the district hospitals for both medical and nursing staff
- a road-based **Retrieval Service** in conjunction with the Tasmanian Ambulance Service to assist with stabilisation at the district hospital or at the scene, and where appropriate, to provide medical escort for patients returning to our hospital.



## Advice service

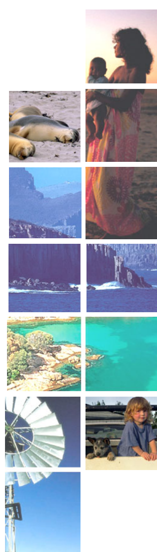
A **Priority Telephone line** was introduced into the Emergency Department in 2000 as part of the Tasmanian Medical Emergency Service Plan.[6] The telephone utilises a toll free 1800 number that is provided to rural and remote doctors, nurses working in remote clinics, and rural ambulance paramedics. A laminated poster with this information is provided to all the district hospitals (Fig. 2).

The telephone is answered as a priority by the Senior Emergency Medicine doctor if on duty. If this doctor is not "on the floor" at the time, the caller is only asked to identify themselves and their telephone number, then the Senior Emergency Medicine doctor is urgently paged to return the call. This avoids the "Chinese whispers" problem of relaying complicated clinical information through multiple people, or the

frustration of being shunted from one hospital extension to another while at the same time trying to stabilise a seriously unwell patient.

The Emergency Department **Fax machine** is used to receive Electrocardiographs (ECGs) from the district hospitals. While technology exists to transmit ECGs by email or telemetry from remote sites, the infrequent need for such a service makes it difficult for staff at remote sites to be familiar with such expensive technology. Facsimile transmission is cheap and "user friendly" and we encourage its use. We have reservations about the use of "diagnostic" ECG machines and encourage fax transmission and discussion rather than reliance on machine programmed interpretation.

The Emergency Department also has access to a **Video Conference Facility.** This is widely used for education sessions and clinical audit for our own staff, but is also of value for assisting in Xray interpretation and diagnosis from district hospitals.



We firmly believe that the Senior Emergency Medicine Staff are best placed to offer advice and immediate assistance for urgent clinical problems. The Emergency Department by its very nature, has well established lines of communication to other organisations, hospital departments and sub specialty staff and can therefore easily bring other individuals "into the loop" when planning the most appropriate response for a particular situation.

## Education services

With the aid of a generous grant from the Tasmanian Motor Vehicle Accident Insurance Board (MAIB), we have purchased a number of training mannequins. We visit the district hospitals as least twice per annum to conduct practical training sessions with the local staff. Sessions include basic and difficult airway management, difficult intravenous access, respiratory support and advanced cardiac life support. Specific "one off" sessions are held by request on topics such as envenomation and poisoning. These sessions complement and reinforce the principles taught on Emergency Life Support (ELS), Early Management of Severe Trauma (EMST) and Advanced Paediatric Life Support (APLS) courses.

Not only are these educational sessions, they also enable all of us to meet face to face where we would otherwise only be a "voice on the telephone". The additional benefit for us is to better understand the capabilities and resources at the district hospital—the invaluable "local knowledge" when it comes to providing support and assistance for a difficult case.

## Retrieval services

Tasmania has a state-wide retrieval service based in Launceston that utilises medical staff from the Launceston General Hospital, Ambulance paramedics, and fixed wing aircraft of the Royal Flying Doctor Service (RFDS). This service exists primarily to provide interhospital transfers to tertiary hospitals of patients requiring a high level of medical support en route. There is also a Neonatal Emergency Transport Service (NETS) from the Royal Hobart Hospital. From time to time, Tasmania also utilises the services of the Victorian Air Ambulance.

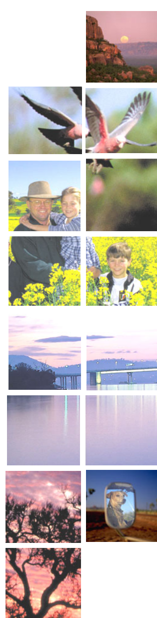
These services are limited by weather restrictions on flying, the availability of suitable airstrips, the tasking of the aircraft for other intra and inter state transfers, the call out time for medical staff, restrictions on pilot hours and refuelling requirements for the aircraft. Unavoidably, such centrally co-ordinated services lack local knowledge of small communities and institutions as well as often having lengthy response times due to operational restrictions.

Our Emergency Department has attempted to fill the gaps in existing services by providing a road-based medical assistance and retrieval service to the district hospitals within our catchment area. There are four main components to this:

- medical retrieval to NWRH of patients with conditions suitable to be managed at NWRH
- medical retrieval to NWRH of patients requiring additional investigation or treatment to determine further transfer to tertiary hospitals
- support for staff at district hospitals prior to the arrival of other specialised retrieval services such as NETS
- providing medical retrieval to other major hospitals when the state-wide service is unavailable.

Our Emergency Department undertakes 12–18 episodes of such medical assistance per year. Of the fourteen cases during 2001, thirteen survived to be discharged from hospital with a good clinical outcome. One case died shortly after admission from cardiogenic shock—a condition for which there is often a very high mortality.

All cases are reviewed as part of our monthly "Category 1 clinical audit" which involves medical, nursing and ambulance staff from our region and independent advice from the state Ambulance Service Medical Officer.



## CONCLUSION

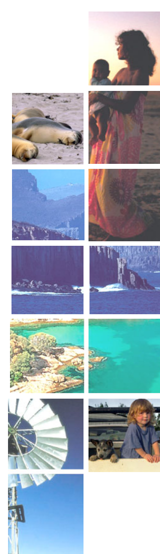
Although not originally planned as such, the essential elements of this network have evolved based on our observations of deficiencies in the management and transfer of seriously unwell patients. We are also grateful for the overwhelming positive feedback from colleagues working in the district hospitals that has encouraged further refinement and additional support from our Emergency Department. We have now been approached by medical and nursing colleagues at district hospitals to undertake clinical attachments in our Emergency Department. We are hopeful that the support we provide will help improve the stability and professional satisfaction of medical and nursing staff at the district hospitals.

### Future plans

We still experience cases where poor outcomes may have been avoided by better communication and medical intervention. The high turnover of medical and nursing staff at district hospitals makes it difficult to keep all staff members familiar with the necessary emergency skills and knowledge. The establishment costs to date have been minimal and the ongoing costs are largely absorbed within the operating budgets of

the various hospitals and other organisations involved but this may be an issue in the future. In the coming years, we would like to achieve the following:

- inclusion of nursing staff on retrieval team
- increased frequency of visits to district hospitals
- medical and nursing attachments from the district hospitals to our hospital
- introduction of satellite telephone technology for communication with remote areas and during transfer
- computerised data collection and outcome evaluation
- financial assistance to achieve these aims.



## Recommendations

Our network has been established with the goodwill of the individuals involved and at minimal cost. It is essentially an extension of our day to day function in the Emergency Department. It has not required committee meetings, formulation of policies or legislation. We recommend the following;

- All rural Regional Hospitals of sufficient size to have specialist inpatient services and dedicated full time Emergency Department staffing, develop and define an Emergency Medicine Network with the district hospitals within their region and specific to their local needs.
- Tertiary Hospital advice and retrieval services utilise the resources and "local knowledge" of the rural Regional Hospital services.
- The relevant Health Departments provide the necessary financial assistance and operational support to achieve this.

## REFERENCES


1. Tolhurst H, Dickinson J, Ireland M. Severe Emergencies in Rural General Practice. *Australian Journal of Rural Health* 1995; 3: 25–33.
2. Somers G. GP-based Emergency Response in Rural Areas: Is there a need? *Australian Journal of Rural Health* 1999; 7: 104–108.
3. Tolhurst H, McMillan J, McInerney P, Bernasconi J. The Emergency Medicine Training Needs of Rural General Practitioners. *Australian Journal of Rural Health* 1999; 7: 90–96.
4. O'Meara P, Burley M, Kelly H. Rural Urgent Care Models: What are they made of? *Australian Journal of Rural Health* 2002; 10: 45–50.
5. Hungerford P. Rural Emergency Medicine: The Final Frontier. *Emergency Medicine* 1998; 10: 208–9.
6. Dept of Human and Health Services, Tasmania. *Tasmanian Medical Emergency Services Plan for Rural and Remote Areas*. 1999.

## Figure 1

## Figure 2

FOR ADVICE AND ASSISTANCE IN STABILISING URGENT CASES AND ARRANGING MEDICAL RETRIEVAL TO NORTH WEST REGIONAL HOSPITAL, BURNIE

PHONE NWRH EMERGENCY DEPARTMENT ***PRIORITY LINE***

# 1800 888 207

ASK FOR THE "EMERGENCY MEDICINE ON-CALL DOCTOR"

- If the doctor is not immediately available, give your name and telephone number and the doctor will be urgently paged to return your call.
- For General Advice and Non-urgent referrals, telephone the Department on 64306628, 64306629 or 64306630.
- ECGs can be faxed to Emergency Department Fax 64306691 and Xrays can be sent via video link to 64323725

Emergency Department NWRH
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