Flight of fancy or necessity, Aeromedical Services in the Western Cape

Dr. Cleeve Robertson
The first aeromedical services in the Western Cape were launched in 1966, some 46 years ago.
Old Cape Province

The service covered the boundaries of the old Cape Province which stretched from Cape Town to Upington in the West and East London in the East.

The service was run by a single flight coordinator who dispatched a twin engine aircraft with a single cot from a base at Cape Town airport.

The program was primarily there to bring referred patients to the academic hospitals in Cape Town.

It was staffed by volunteer pilots and doctors and paramedics from the City of Cape Town and funded by the Health Department and Donor Funding from the Red Cross.

First aircraft were:

- Cessna 205 1966
- Piper Aztec 1971
- Pier Chieftain 1982
- Cessna Citation 1988
FOR hundreds of isolated farming communities, the Air Mercy Service of the Red Cross is a passport to life.

More than 2,000 people owe their lives to this dedicated band of selfless men and women. Desperate people from Gobabis to Hermanus and from Kroonstad to Maclear have called on them in their hour of greatest need — and the service has never failed them.

The three aircraft of the Air Mercy Service cover the whole of South Africa, SWA/Namibia and Botswana.

"Most of our work, however, is done in the Cape Province and SWA/Namibia," says regional Red Cross chairman Mr Norman Patterson, a retired wine farmer who has been flying for 25 years. "One of our main ports of call is Upington, because it serves such a vast, isolated area."

**Road landings**

Like the country itself, the service is tough and ready to improvise. At the small plateland town of Sutherland the flying ambulances used to land on the road before they built the airstrip.

Patterson wryly, "They come in heaps."

In the nature of Red Cross, many of the flights are as much compassionate as medical.

An Air Mercy Service flight brought a child whose family had been killed in an accident back from Vereeniging. One of the service's aircraft brought a heart back from Port Elizabeth for a transplant at Groote Schuur.

A Keetmanshoop man was flown out to save him the agony of a 20-hour drive, and Mr Patterson himself took a terminal cancer patient to die with his family in Nelspruit.

It takes about 90 minutes for an aircraft to be airborne from the time an emergency call is received.

At the emergency number is the co-ordinator, usually Air Mercy Service director Sister Nikki la Grange. She sets the wheels in motion with calls to the duty officer and one of the panel of doctors in the service.

The weather is checked, fuel laid on, landing parties organized. The medical officer decides what equipment and personnel are needed to cope with the situation.

Mr Norman Patterson, regional chairman of the Red Cross and Air Mercy Service pilot, with the service's Piper Aztec.

The only voluntarily-manned service in the country, the Air Mercy Service was started in 1966 with a Cessna single.

"We went through two or three bigger singles before Rotary District 935, which covers roughly the same territory as the Cape Region of the SA Red Cross Society, bought us the Piper Aztec in 1971," says regional director Miss Bertha Pienaar.

**Chiefian**

A 10-seater Piper Chiefian followed 11 years later, and was converted to carry four stretchers to become the service's main ambulance.

"We got the registration RCS (Red Cross Society) for the first, and wanted RKV (the Afrikaans equivalent) for the Chiefian, but by that time computer had come in, and you can't talk to a computer," Miss Pienaar said.

Since the new Chiefian — KTU — went into service two days before Christmas in 1982, she has taken part of the burden, doing 150 mercy journeys to date and carrying a total of 250 passengers.

Sometimes both aircraft are used on a job. In January we got a call from Upington, a family had a combi and all five were seriously injured," Mr Patterson recalls. "We took both planes. One little girl died on the apron and we brought four back."

Both aircraft are not only ready to go at a moment's notice, but can be diverted if needed a crisis elsewhere.

"We were flying an administrative meeting in Springbok once when we were diverted to Virginia, where a young woman had a stroke," said Mr Patterson. "We picked her up and one of the passengers had to help with drip on the flight back."

Being a pilot with Mercy Air Service is an exhausting business, with fingers counting thousands of miles in a day in an emergency far from the airport base at De Malanport.

"But we feel our job is a necessary one, just to know that we have saved a life is reward enough," says Patterson.
System Evolution

1966 to 1987 Volunteer Pilot Structure with Medical Staff from the Department of Health flying fixed wing missions to recover acute patients from rural towns to referral centres in Cape Town.

1987 Provincial Government partners with the Red Cross Air Mercy Service by procuring a Cessna Citation Jet thereby improving the pay load to three stretcher patients, the speed and comfort of transfers. 1988 Commences service.

1987 METRO EMS Paramedics crew traffic helicopters and respond to accidents during peak traffic times.

1991 Medical Rescue International with sponsorship from IGI Insurance offered EMS a single engine Bell Jet Ranger which was used to provide primary rotor wing response and inter-facility transfers between peripheral hospitals within 200km and Cape Town

Netcare, Europ-Assistance, John Rolfe followed with a similar offer after 1997 running a similar sponsored program with EMS.
Metro takes to the air with intensive care

By JOHN VILJOEN
Weekend Argus Reporter

THE Metro rescue service has acquired a “flying life support system” which will enable it to give immediate intensive care to patients on the way to hospital.

The new airborne ambulance came into service on Tuesday.

The helicopter, a Bell Long, tower valued at more than R2-million, is sponsored and Metro has been able to improve its rescue service without further cost.

The helicopter has advanced life-support equipment, giving the patient the best care and attention possible. It can reach patients 250km away in little more than an hour. It is equipped to deal with virtually any situation.

“It’s no use rescuing someone if he is going to die anyway. Now we have the equipment to keep him alive,” said pilot John Lawson.

Gadgetry on board includes mechanical jaws, a cardiac monitor, a vital signs and oxygen saturation monitor, a ventilator, a drip infusion pump and an incubator.

Carrying babies

“One of the main functions of the helicopter could be transporting premature and sick babies from country towns to hospital,” said Metro paramedic Barbara Willson.

The team in the helicopter will consist of a pilot, a paramedic and a rescue medic. One patient would be accommodated.

The “ambulance” will also be lighted up to deal with victims of diving accidents, a portable, collapsible decompression chamber is to be added to the list of onboard features.

Another plus will be the aircraft’s ability to transport patients with spinal injuries to Concadie Hospital without a humpy ambulance journey by road.

Metro chief Dr Alan MacMahon said the new aircraft would provide patients with immediate care and would act as “a force multiplier”.

“It will help us with availability of personnel for the next call. We can send out the copter and its team instead of putting a crew on the road,” he said.

“We can also reach hospitals directly with the helicopter. With these people and the equipment on board we can provide a life support system for a far bigger area than before.”

One possible drawback is that the helicopter is single-engined, which restricts it from flying at night or in bad weather.

Dr MacMahon said Metro would still co-operate with the Air Force and other organisations where necessary.
It soon became evident that sponsored programs were not sustainable because private sector funding was erratic and linked to marketing and flag waving rather than the true needs of the citizenry.
Mountain rescue systems for many years depended on the South African Air Force which provided Allouette and Puma (later Oryx) helicopters staffed by Mountain Club of South Africa Volunteers and METRO Rescue personnel.
In April 2000 EMS consolidated its aeromedical services within the Red Cross Air Mercy Service and added a rotor wing program in Cape Town to provide for primary response and inter-facility transfers.
System Evolution

In 2002 EMS met with the South African Air Force to discuss in shore Medical Rescue of fishermen (60 fishermen had been lost along the Western Cape Coast Line in six months).

SAAF indicated that they could not provide EMS with the response times required to effect life saving rescue.

The South African Police Services were also approached because they were running a program with a BO 105 but they also indicated that they could not support a rescue program.
System Evolution

So in 2003 EMS added a Medical Rescue helicopter to the Red Cross Air Mercy Service suite in the form of an Allouette with winch in order to effect Wilderness Search and Rescue and inshore rescues along the coast line.
The Cessna Citation was eventually sold in 2001 making way for a Pilatus PC XII which has provided services in the Western Cape since then. The Western Cape province had shrunk geographically and aircraft were required to land on very short gravel runways.
System Evolution

The Rotor Wing rescue program was eventually consolidated into a single platform in a B2 Squirrel with full medical and rescue suite and later into the Augusta 119 KE.
In 2004 the Chairman of the European HEMS Committee visited the Western Cape to do a review of EMS Systems and recommended a second Rotor Wing Aircraft be deployed in the Eastern Sector of the Western Cape to cover the Central Karoo and Eden.

A second helicopter was commissioned in Oudtshoorn because of favourable climate and geographic centrality. The primary referral route s to George Hospital a specialist led hospital.

The Helicopter Emergency Medical Service (HEMS) currently provided by the Red Cross Air Mercy Service, represents a cost effective and cost efficient service. Although predominantly utilised on a ‘tertiary’ mission role, it accounts for the majority of long distance critical care transfers, and is essential to the operational effectiveness of the Service.

The Service has three aircraft available (one fixed wing and two rotor wings) and consideration should be given to a more frequent application in respect of primary and secondary responses.

Recognising the resource implications and operational challenges within the rural districts, consideration should also be given to evaluating the introduction of a HEMS application positioned within the Eastern sector of the Western Cape to provide:

i) Primary cover in respect of those areas that geographically challenge an effective response performance, and

ii) Provide a secondary transfer service within the Eastern sector in order to minimise the loss of local ground ambulance cover.
The Air Mercy Service (AMS) which provides for the transfer of acutely ill or injured patients to referral hospitals. This service performed 1 520 missions in 2011/12, transporting 1 405 patients to secondary and tertiary care facilities. The rotor wing programme transported 469 patients through the Cape Town operation and 315 patients via the Oudtshoorn operation. Seventy-eight rescue missions resulted in 83 patients being rescued from the wilderness areas or the sea with a combined flight time of 90.2 hours. This is the highest number of rescues performed in the Province in the history of EMS. December 2011 accounted for 23 per cent of these hours and coincides with the peak tourist season. The AMS travelled 316 006 kilometres by fixed-wing and flew 1 307 hours by helicopter. The service makes an essential contribution to maintaining rural response times, as not only does it ensure equitable access for critically ill patients to higher levels of care in specialist hospitals, but it frees up rural ambulances to remain in their area which is particularly important in small towns with only one ambulance.
Factors contributing to the success of the program

• Focus on patient experience and safety
• Partnership between Government and Service Provider
• People relationships over time
• Continuity and consistency
• Long term vision
• Adaptability and flexibility
• Listening and hearing partners
• Focus on core business, quality and ethic
• Expertise in functional management
• Research and Science
• Management Support
• Volunteerism
• Stakeholder communication
• Hard lessons
So how did we take a R400 000 a year program to a R37 million program and why?
So how did we take a R400 000 a year program to a R37 million program and why?

The Western Cape is a very geographically distributed Province with a radius of about 500km.

Sparsely populated rural areas are at the extreme ends of the Province.

Referral hospitals are in Cape Town, Worcester and George.

Equity of access to Health Services is a must.
So how did we take a R400 000 a year program to a R37 million program and why?

The first issue is **Equity of Access** to Specialist Care in the context of Emergency Medicine.

An aeromedical system provides such access so that e.g. a patient injured in Beaufort West in a traffic accident can be properly **resuscitated** in the local hospital and **transported** to Groote Schuur hospital within hours of their injury.

The service has the human resource and technical capacity to provide a high quality of emergency care within short time frames (response times) and transfer to appropriate care within short mission times.

In mass casualty incidents the service can fly in resources, triage, resuscitate and then transfer according to priority.
So how did we take a R400 000 a year program to a R37 million program and why?

The second issue is *Equity of Access* to Emergency Care in the context of a local area or District.

The Emergency Medical Services through their Ambulance and Rescue Service *provide immediate access* so that the patient injured in Beaufort West gets an ambulance within 15 minutes and get transferred for resuscitation in a local hospital within the shortest mission time.

They can only do that if they have available local capacity within 15 minutes drive time.

The aeromedical system *maintains local capacity* by preventing time consuming long distance patient transfers.
So how did we take a R400 000 a year program to a R37 million program and why?

The resource cover over the same geographic area for ambulances verses aircraft is 50:1.

It costs EMS R3.5 million to have one ambulance available each hour.

We have 52 stations in 49 geographic locations throughout the Western Cape.

To have an ambulance available in each just to do a transfer in order to maintain local capacity would cost R168 million a year.
So how did we take a R400 000 a year program to a R37 million program and why?

The Western Cape is a tourism growth area.

Much of the tourism is adventure related because of the wonderful natural environment and in order to support tourism we need medical rescue services.

Table Mountain is the busiest rescue venue in South Africa! We’ve rescued more people on Table Mountain in the last year than any year in the history of rescue on Table Mountain.

Mostly ……………………… with helicopters! The environment is a form of entrapment which delays access by conventional means and retards recovery in appropriate time frames.
SUMMARY

• Aero-medical services in the Western Cape provide;
  ✓ Access the emergency care in remote hospitals and environments
  ✓ Transfer to appropriate care in short time frames
  ✓ Quality Care

• The services maintain local capacity and response times of ground ambulance services

• The hub and spoke model is efficient for Inter Hospital Transfers

• The system is flexible and provides both advanced medical care and rescue through a single platform
CONCLUSION

The Aero-medical System in the Western Cape is an absolutely necessary component of the EMS System.

The only ‘Fancy’ is the Quality of Personnel and Equipment applied in the System in the interest of patient safety.
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