

REVIEW ARTICLE / PREGLEDNI ČLANAK

THE AIR MERCY SERVICE OF THE SOUTH AFRICAN RED CROSS THE FLYING DOCTORS AND NURSES OF SOUTHERN AFRICA

ZRAČNA HUMANITARNA SLUŽBA JUŽNOAFRIČKOG CRVENOG KRIŽA – “LETEĆI” LIJEČNICI I MEDICINSKE SESTRE JUŽNE AFRIKE

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Abstract

Starting with a single flight from Oudtshoorn to Cape Town in 1966, the South African Air Mercy Service (AMS) evolved into a comprehensive aeromedical organisation serving South Africa. Today AMS has a fleet of fixed-wing and rotor-wing (helicopter) aircrafts with several bases around the country covering over 300,000 km² of land area. AMS has emerged as a vital response to provide essential medical care in remote and underserved areas of South Africa and to enable swift assistance to emergency rescue missions on both land and sea. This article outlines the main features of the AMS' history, operations, and highlights how it helps address the country's healthcare challenges afflicted with limited access to medical facilities, socioeconomic disparities, and a high burden of communicable and non-communicable diseases.

Keywords: air ambulance; flying doctors; air mercy service; red cross; south africa; rescue; healthcare

Sažetak

Počevši s jednim letom iz Oudtshoorna u Cape Town 1966. godine, južnoafrička Zračna humanitarna služba (engl. *Air Mercy Service*, AMS) razvila se u sveobuhvatnu zrakoplovno-medicinsku organizaciju koja djeluje širom Južnoafričke Republike. Danas AMS raspolaže flotom zrakoplova s fiksnim i rotirajućim krilima (helikopterima), s nekoliko baza diljem zemlje koje pokrivaju više od 300.000 km² kopnenog područja. AMS je postao ključna služba za pružanje osnovne medicinske skrbi u udaljenim i nedovoljno opskrbljenim područjima Južnoafričke Republike, kao i za brzo reagiranje u hitnim spasilačkim misijama na kopnu i moru. Ovaj članak prikazuje glavne značajke povijesti i djelovanja AMS-a te naglašava kako ova služba doprinosi rješavanju zdravstvenih izazova u zemlji pogođenoj ograničenim pristupom zdravstvenim ustanovama, socioekonomskim nejednakostima i visokim opterećenjem zaraznim i nezaraznim bolestima.

Ključne riječi: zračni hitni prijevoz; leteći doktori; zračna humanitarna služba; Crveni križ; Južna Afrika; spašavanje; zdravstvena skrb

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Introduction

How it all began

The history of air ambulances dates back to the early 20th century, when airplanes and helicopters were first utilised during World War I, and the French and British military experimented with aircraft to transport wounded soldiers. After World War II, air ambulances were increasingly adopted for civilians - particularly in remote and rural communities (1).

It was in 1966, that the first air ambulance flew in South Africa, when a civilian patient was transported with a small single engine Cessna 205 aircraft from Oudtshoorn to Cape Town, a distance of 420 km by road (2).

As South Africa is a vast country, it was evident that aviation could potentially provide essential medical help in remote areas, particularly after disasters. In response to this need, the Air Mercy Service (AMS) of the South African Red Cross was initiated and developed as an aeromedical organisation within the South African Red Cross Society (SARCS). This collaboration has enabled AMS to update and expand their fleet and medical services. Since then, AMS has become a beacon of hope, as a non-profit organisation providing medical care and transportation from poorly accessible areas across the entire country - as well as providing outreach and rescue services. The seven fundamental principles of the International Red Cross and Red Crescent Movement are to exhibit humanity, impartiality, neutrality, independence, voluntary service, unity and universality and these principles have been instrumental in shaping the ethos and operations of the work of AMS (2,3)

Due to its rapid growth, the AMS was formed into an independent trust fund in 1994 and has since worked closely with the Departments of Health of the provinces of South Africa (4).

Since it began, AMS has helped people in hard-to-reach places by bringing them medical care and transport.

Healthcare Challenges in South Africa

South Africa faces a multitude of healthcare challenges. The most notable of these are the limited access to medical facilities and specialised medicine, as well as inadequate infrastructure, socioeconomic disparities, and the burden of communicable and non-communicable diseases.

In fact, South Africa has the world's largest population of HIV-positive people - of about 7.1 million - and one of the highest incidences in the world of multi-drug resistant tuberculosis. Furthermore, there is a high burden of trauma that can be correlated with severe violence, road traffic injuries and substance abuse (5,6).

These challenges are exacerbated by the vast geographic landscape of the country. Even though health services are



Figure 1: Pilatus PC12 fixed-wing aircraft of The South African Red Cross Air Mercy Service.

provided largely free of charge, the monetary and time costs of travel to a clinic continue to pose a significant barrier to access (7). Additionally, there is a very uneven distribution of tertiary hospitals as higher level care is limited to the major cities.

The healthcare system consists of a poorly funded public sector serving an overwhelmingly large portion of the population, with inadequate infrastructure, staffing and medication. Approximately 84 % of the population rely on the public system. The remaining 16 % have access to the private sector with significantly more resources (5).

South Africa's healthcare shows stark inequality: 84 % rely on an underfunded public sector, while 16 % use a well-equipped private sector.

The South African Air Mercy Service

Due to the significant inequality gap within South Africa's healthcare system, there has been an increasing need for medical assistance in remote and underserved areas. As an air-ambulance, AMS complements ground-transportation of critically ill or injured patients from rural areas. The AMS extended their fleet with helicopters in 2000, and could then also participate in primary responses and provide both air-sea and air-mountain rescue. Today AMS operates from the Western Cape (Cape Town and Oudtshoorn), KwaZulu-Natal (Durban), Eastern Cape (Mthatha, East London, Gqeberha) and from supportive infrastructure in the Northern Cape and Free State Provinces. It covers an area of 392,789 km² and a population of about 25 million people - which is comparable to the population of Australia (8).

The AMS operates with fixed-wing as well as rotor-wing aircraft. The choice of aircraft varies upon distance, basic airport infrastructure on-site, and the patients' clinic. The medical team consists of at least one paramedic for advanced life support (ALS) and one paramedic for Intermediate life support (ILS), both with wide practical experience.



Figure 2: Mountain Rescue Mission with Leonardo AgustaWestland Helicopter AW119.

Because of healthcare inequality in South Africa, AMS is crucial for reaching rural and remote areas, covering a population and territory similar to Australia's.

The Fleet

The fleet consists of fixed-wing Pilatus PC-12 aircraft and rotor-wing Leonardo AgustaWestland AW119 helicopters. Both are specifically designed and equipped for intensive care transportation.

The Pilatus PC-12 aircraft, manufactured in Switzerland, is a single-engine aircraft with a nine-seater cabin with capacity for three patient stretchers. The PC-12 can reach a top speed of up to 450 km/h and is ideally dispatched for operations at a distance of more than 250 km. The aircraft thus allows efficient long-range medical evacuations and transfers. These aircraft require only a short takeoff and can land on small airstrips of up to 500 - 800 m. They are therefore suitable for operations in areas with very limited infrastructure (9,10).

The Leonardo AgustaWestland AW119 helicopter is a single-engine helicopter with an ideal operating radius of 200 kilometres and a maximum cruise speed of 250 km/h. It has full hoist, sling and winch capabilities, so that rescue missions are possible. As these aircraft can access inaccessible locations, they can assure a rapid response to emergencies on land and on water (9,1).

Flying Doctor Outreach Program

One notable initiative of AMS is the KwaZulu-Natal (KZN) outreach program. This initiative targets rural communities in the KwaZulu-Natal province. Through this program, AMS dispatches medical specialists, including many

volunteers, to rural healthcare facilities. In local hospitals, they offer specialised treatments on site and even perform minor surgery and interventions (11). There is also a huge element of skills development and capacity building for all healthcare professionals at these rural facilities. Given that it could take up to two days by road to access tertiary care, this program not only reduces referrals to distant facilities, but also alleviates the lack of specialists and infrastructure in district hospitals (12).

AMS's KwaZulu-Natal outreach program delivers specialized care to rural communities, reducing long hospital trips, and supports local healthcare training.

Facts and Statistics

In 2022, AMS carried out a total of 1131 missions in the Western Cape from the bases in Cape Town and Oudtshoorn – including 687 rotor wing and 444 fixed wing missions. During these missions, they provided medical care to a total of 1207 patients. For the entire year, a distance of 310,699 km was covered by fixed-wing aircraft, and 195,959 km by rotor wing, giving a combined airtime of 1685 hours (9).

The largest share of rotor-wing missions (47 %) was for general medical cases, followed by trauma at 20 % and neonatal care at 22 %. Nearly 30 % of all patients were transported in intubation. Interfacility transfers accounted for 75 % of all rotor-wing missions, whereas 20 % involved rescue missions. Of the rescue missions, 88 were performed on land and 14 at sea (9).

Challenges and Outlooks

The AMS service operates throughout the year. While flights are able to take off on most days, there may be restrictions due to adverse weather conditions, such as high winds, fog, and ice. Rural and remote communities often face infrastructural problems, such as missing air landing strips or unlit runway due to lack of maintenance, vandalism or



Figure 3: Pilatus PC 12 fix-wing aircraft



Figure 4: MD Caroline Egger visiting AMS at Cape Town Base.

the so-called “loadshedding”. Loadshedding results in hour-long power cuts in South Africa, which means that existing runway strips are unusable at night. Such restrictions severely limit missions in the dark, especially for fixed-wing aircrafts.

In any of those cases, AMS closely coordinates with ground transportation. Given the very limited number of ambulances serving in remote regions, this results in additional depletion of local resources (12).

In the future, the AMS would like to expand their medical services. One area in which they are attempting to provide additional support is to start a new programme to address the shortage of surfactant for premature infants in rural areas. Emergency transportation of surfactant to the rural doctors is currently under discussion.

Despite weather and infrastructure challenges, AMS coordinates with ground transport to access remote areas and aims to resolve surfactant shortages for premature infants in rural communities.

Conclusion

The South African Air Mercy Service exemplifies the humanitarian ideals of the Red Cross/ Red Crescent Movement, by addressing healthcare challenges and bridging gaps in South Africa’s healthcare system. AMS continues to save lives, provide relief during emergencies, and empower communities with valuable healthcare services. As South Africa moves forward, the work of AMS remains crucial in ensuring equitable access to healthcare.

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