

# INTERFACILITY TRANSFER OF PATIENTS IN SOUTH AFRICA — WHAT YOU NEED TO KNOW AND HOW TO MAKE IT HAPPEN

*It is an unfortunate reality of our health system that the resources in terms of reliable and appropriate transport of medical patients are very limited.*



## FRASER LAMOND

MB BCh

### Regional Medical Director

International SOS

Southern Africa

*Fraser Lamond is regional medical director of International SOS. He trained in medicine at the University of the Witwatersrand and then in emergency trauma at Johannesburg Hospital. He is also involved with the STAR Flight for Life helicopter service, and is in charge of all aeromedical evacuations for International SOS.*

Transport can be very expensive yet usually forms less than 2% of medical costs in terms of overall cost per incident. Many people have medical aids to cover these costs, others are reliant on government services. What follows is a description of what it takes to arrange and carry out a medical transport, the pitfalls and some ideas of how medical professionals can manage these patient movements to the maximum benefit of the patient.

## WHY AND WHEN IS TRANSPORT REQUIRED?



Patient transportation usually takes place when patients require expertise or infrastructure that is lacking in their current location. This does not necessarily have to be the final destination of the patient as it may turn out that the patient has other requirements and will require further referral. The key issue is appropriate movement by appropriate transport teams so that the patient's level of care constantly increases. Central to all of this is early recognition of conditions that have a high complication rate and very often require later upgrades in care. It is important to

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understand and accept that transportation may be requested by the patient and family members or by the company the patient works for. In these cases very often the transport may not be medically justified but may well take place simply because someone is paying for the transport.

Assistance companies are obliged to follow certain client requests and do

not do this because the treating medical staff are not capable. They are simply providing a service to their client. Many doctors do not realise that this is becoming a more regular occurrence and struggle to understand its justification. It is however a reality that one must keep in mind and when there is doubt, ask the assistance company involved.

#### CHOICE OF RECEIVING FACILITY



Receiving facilities can be a contentious issue. On occasion opinion of what is the most appropriate referral pattern for the patient may differ. The final decision rests with the treating doctor. However, from time to time this referral pattern does not fit with what is best for the patient. The most common errors are polytrauma patients being referred to a neurosurgeon rather than to a multidisciplinary team/centre, or patients being referred to hospitals that do not have the full spectrum of specialists required to deal with the patient's condition. In essence the referring doctor must take into account logistics, transport infrastructure and the receiving facilities' ability to deal with the scenario. All patients requiring immediate upgrade of care should be referred to the closest facility capable of dealing with the condition.

#### MODE OF TRANSPORT AND COMPOSITION OF TRANSPORT TEAMS

It is vital that doctors understand the transport systems available to them, and the staffing structures of these systems. In South Africa the most common modes of patient transport are road ambulance, fixed-wing air ambulance, helicopter air ambulance, and commercial airline. The choice depends on the patient's medical condition, the urgency of the transport, the distance to be covered and the infrastructure available and in some cases the financial means of the patient.

As a general rule the following modes of transport should be accessed based on distances and urgency:

- 0 - 200 km: road ambulance or helicopter if urgent
- 200 - 300 km: road ambulance, helicopter or fixed-wing air ambulance depending on condition
- > 300 km: fixed-wing air ambulance
- scheduled (commercial) service for stable patients only.

For distances over 300 km, fixed-wing transfer is the most cost effective because the overall time line to definitive care is usually faster, and the actual transport time for the patient is reduced significantly. Over long distance, road transport can still occur but only for very stable elective cases. A helicopter may be used if it is the only resource available but this is often less than ideal due to confined space in the aircraft, noise level, and an uncontrolled cabin environment.

Transport teams often differ with the referring doctor regarding the interventions necessary for transport, owing to a failure to understand the transport environment. Many 'prophylactic' interventions have to be performed because of the aircraft size and an inability to perform these in-flight should the need arise. Good examples of this are additional intravenous lines, intubation for potential airway problems and use of prophylactic intercostal drains for small pneu-

mothoraces. A patient with a 10% or less pneumothorax who could be safely transported by ground without a drain will require a drain if transported by air. Equipment such as inflatable splints need to be deflated or they may cause a compartment syndrome, and as with fixed wing transports, endotracheal tube cuffs may require inflation with water rather than air to reduce the risk of pressure necrosis to the airway.

### ROAD AMBULANCE

South Africa is fortunate compared with the rest of Africa in that we have good road ambulance infrastructure; this, however, decreases the further one moves from the larger cities and towns. Ambulance transport teams usually comprise staff trained to one of three levels of care: basic, intermediate and advanced life support (BLS, ILS and ALS). It is relatively rare for a paramedic (an ALS professional qualification registered with the HPCSA) to form part of the transport staff, and it is unfortunate that a number of providers in the marketplace play on the belief that all ambulance personnel are paramedics. Each level of provider is restricted in the level of care he or she can provide; for example only paramedics (ALS) are qualified to intubate patients and a BLS provider is not qualified to drip a patient. It follows that those patients with airway problems or potential airway problems must be transported by an ALS. A patient receiving simple IV medications needs an ILS just in case the drip needs to be re-sited. Those patients who require no more than simple oxygen administration can be transported by a BLS.

### FIXED-WING AIR AMBULANCE

There are approximately 10 dedicated fixed-wing air ambulance aircraft in South Africa. Having access to dedicated aircraft allows for more rapid dispatch and in terms of medical care and safety is the ideal. Under no circumstances should doctors accept patients being strapped to seats on spine boards or scoop stretchers or makeshift stretcher units for transporta-



tion. This is however not illegal, but operators must comply with the requirements of the local civil aviation authority (CAA) legislation (G7 licence and CAT 138). Fixed-wing air ambulances usually take 60 - 90 minutes to launch. Costs vary according to the aircraft type used.

International standards clearly dictate that a pressurised cabin is the ideal as the transportation environment can be controlled, thereby reducing the environmental impact on the patient. This however may not always be practical and shorter distance transports in an unpressurised cabin are perfectly acceptable for some patients. These aircraft generally fly at 10 000 - 12 000 feet above sea level so patients are exposed to a relative hypoxia and those with air in organs and body cavities will have significant expansion of this air (by up to 40%) as one gains altitude. Pressurised aircraft can control the cabin altitude so the altitude experienced by the patient as well as other parameters such as temperature can be regulated in order to reduce the impact on the patient.

### HELICOPTER AIR AMBULANCE

There are currently only five dedicated helicopter air ambulances in South Africa. They are based in Johannesburg, Pretoria, Polokwane, Durban and Cape Town. The Johannesburg helicopter is the only 24-hour service in the country.

Medical crews are either doctor- or paramedic-based and the cabin is unpressurised. They are ideal for door-to-door transports but only if the receiving facility has a helicopter pad. Helicopters are best suited to primary (i.e. scene) response. Dispatch of helicopter emergency medical services (HEMS) is usual when the following criteria are met.

#### Medical criteria

- A Glasgow coma scale of no less than 6 and no more than 12 out of 15.
- A revised trauma score of between 3 and 10 out of 12.
- A systolic blood pressure of 80 mmHg or less despite resuscitation.
- Where major spinal injury is suspected and road transportation is impossible or beyond 20 minutes.
- Patients with respiratory difficulty despite full oxygenation.
- Any serious amputations involving long bones, or threatened limbs. Below-knee injuries beyond the proximal third do not constitute threatened limbs.
- Where specialised equipment or expertise (other than routine ALS) carried on the helicopter is required on scene.
- A child under 12 struck by a motor vehicle.
- Severe penetrating trauma to the head, neck, thorax or abdomen with possible involvement of underlying organs or vascular structures.
- Near drowning.

- Electrocutation with arrhythmia.
- Hypothermia (core temperature < 33°C).
- Hyperthermia (core temperature > 40°C).
- Burns — the helicopter should not be dispatched to patients with greater than 70% burns unless other indications are present:
  - children 20 - 70%
  - adults 30 - 70%
  - burns of the face with inhalation injury.
- Medical patients where the medical expertise of the crew is required, e.g. post resuscitation MI, unstable acute MI, and unstable arrhythmia.
- Extreme terrain precludes the use of road transport.

Dispatch should not occur to a patient with CPR in progress. These criteria do not necessarily apply to secondary transports. However, helicopter service providers may have to seek financial authorisation for transfers before they can perform them. This often becomes a frustrating process for the referring doctor.

Helicopters in general fly no higher than 1 500 feet above ground level, so interventions required for fixed-wing aircraft may not be required for a helicopter transportation. However the routing must be taken into account as the helicopter may have to fly over mountains and thus gain significant altitude. Helicopter air ambulances cost approximately R12 000 - 15 000 per hour.

### COMMERCIAL AIRCRAFT TRANSPORTS

Although an extremely cost effective means of transporting stable suitable patients, commercial transport can be complex to arrange. In one recent case a death resulted and in another a known cardiac patient was advised by a specialist to travel by air rather than by road because of time, and the

relative hypoxia of the aircraft cabin precipitated a myocardial infarction. Commercial aircraft cabins are pressurised to about 6 000 feet, and thus there is a relative hypoxia that has little effect for the average healthy traveller, but can have dire consequences for patients with respiratory or cardiovascular disease. Patients can be transported with seating upgrades or even as stretcher cases, if required, but should always be in a stable and well-prepared condition. Medical teams are usually nurse-based but doctor-based teams are also used. One has to consider bowel preparation on longer trips and be wary of patients with psychiatric disorders who may be unsuitable, even if fairly well. The external stimuli experienced by such patients when exposed to the airport environment and a commercial aircraft cabin, customs and passport control can be disastrous for the patient and lead to a rapid deterioration in their behaviour patterns.

All patients should be declared to the airline well in advance and the appropriate documentation completed and submitted. Oxygen requirements must be submitted and approved by the airline.

### SUMMARY

All transportation costs money. It is critical that doctors minimise their risk and that of the patient by using appropriate resources and those professional transport services that have the ability to accept the liability and transfer the responsibility of care in an appropriate manner. Just because a patient is a member of a medical aid does not mean that they have the funding for often expensive transportation and a compromise may have to be considered. There is unfortunately a very limited state-funded transport service other than road, which may be even more limited in rural areas.

### IN A NUTSHELL

Appropriate choice of patient and appropriate choice of receiving facility is of the utmost importance. The patient must be moved to the nearest appropriate facility for the existing condition or the expected complications to be managed.

Helicopter transport is primarily suited for urgent cases, where road transport is not appropriate, within about a 200 km radius.

Fixed-wing transport is appropriate for longer distances, requiring more controlled conditions.

Where possible, dedicated, pressurised aircraft, operated by reputable, experienced air ambulance staff should be used.

Scheduled services should only be used for the transport of stable patients. The airline involved should be fully appraised of the circumstances and requirements.

## SINGLE SUTURE

### TESTOSTERONE FOR HIV-POSITIVE WOMEN

A recent report in the *Archives of Internal Medicine* suggests that testosterone replacement could be good for women with HIV.

Researchers gave testosterone patches to HIV-infected women who had low concentrations of the hormone. After 6 months, compared with controls, the women had improved muscle strength and function. They reported no adverse side-effects. Researchers suggest that the treatment be tried in women suffering weight loss as a result of HIV infection.

*Lancet* 2004; **363**: 1449.