Air Ambulance
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Publisher: Ian Cameron
Copy editors: Sarah Lee

Mandy Aitchison
James Wallis

Eli Butler
Steve Annette

Production manager: Helen Watts

Sales: David Fitzpatrick
James Miller

editorial: +44 (0)117 9294636
advertising: +44 (0)117 925 5151

fax editorial: +44 (0)117 925 2040
fax advertising: +44 (0)117 929 2023
email: mail@itij.co.uk
web: www.itij.co.uk

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When Experience Matters...
On 14 September 2006, a 71-year-old Taiwanese man suffered a stroke while visiting relatives in Guangdong Province, mainland China. Within a few hours, a medical team from the International SOS Beijing Alarm Centre arrived at the man’s hospital bedside in a Hawker 800XP air ambulance to escort him home across the straits that had separated the two countries – politically, as well as geographically – for over half a century. The evacuation, which was done with the cooperation of The People’s Republic of China (mainland), and the Republic of China (Taiwan), was facilitated by an agreement carved out earlier that year allowing direct air access by chartered flights for emergency medical rescue. It’s an agreement that allows doctors in PRC and Taiwan to work together to make possible emergency air ambulance medical rescues across the straits – an inconceivable idea a decade ago.

The rescue from Guangdong was the first time since 1949 that any flight like this had been possible – except that in 1949 the technology to allow such a transfer would not have been available. Now, it is becoming so in even the most distant reaches of the globe.

According to International SOS, the Hawker 800XP used in this evacuation is capable of providing services anywhere in China and as far afield as Korea, Japan, Mongolia and Singapore. It is this kind of distance that is allowing penetration into such populous markets.

Dr Charles Van Reenen, medical director for the air ambulance company’s North Asia region, said this patient previously would have had to be transported by road to Macau (a short hydrofoil ride from Hong Kong) then transported by commercial flight or charter to Taiwan: “In this particular case, the travel time is reduced by three to four hours because we no longer have to do a stopover, go through customs clearance and transfer the patient from the road ambulance to the air ambulance.”

Given China’s immense, remote spaces and the wide scattering of its population, air ambulance rescue seems better-suited to this ancient, yet still developing country than it does to any other nation on earth. Thus it is quickly attracting young, aggressive international companies into its marketplace. Just in March, AirMed International, based in Birmingham, Alabama, opened its first base in Hong Kong with satellite offices in Shanghai, Singapore and Beijing. Others will follow.

But China is only one of the expanding frontiers now being served by an air ambulance technology that no longer serves as an adjunct to mainstream healthcare, but an integral part of it – no matter which nation or hemisphere we look to.

India rises to the challenge

It has been almost a hundred years since the air ambulance first began conveying the ill or injured from the battlefield – where its need was first established – and where it now serves front and centre in danger zones such as Iraq and Afghanistan. In Africa, (where the first civil air ambulance service was started, in Morocco in 1934, a full decade before it was introduced in North America), Australia (home to the fabled Royal Flying Doctor Service), South America, the Middle East, North America and Europe, the Indian subcontinent and Asia, air ambulance companies are extending not only their market reach, but their technological and professional capabilities.

In India, a massively complex country with a primitive transportation infrastructure, air ambulances are making steady inroads into the healthcare culture. Just last December, the All India Institute of Medical Sciences (AIIMS) announced that it was becoming the first government hospital in the country to get a helipad and to start an air ambulance service delivering urgent medical attention to critically ill patients. Senior doctors at the institute say close...
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to 50 per cent of critical patients in India die on their way to hospital. And in India’s private sector, the growth of air ambulance services has been

the competitive advantage of being judged in the top tier has made accreditation … not just for the elite anymore.

rapid and aggressive. Just last year, Asia’s largest private healthcare enterprise, Apollo Hospitals Group – with 8,000 beds in more than 41 hospitals – signed a deal with Deccan Aviation to expand air ambulance services to its centres in Bangalore, Delhi, Bhubaneswar and Kolkata, where it has either roof helipads and/or other landing facilities. Deccan has a fleet of 10 helicopters and two fixed-wing aircraft to bring to the operation. Ms Sangita Reddy, executive director of operations at Apollo Hospitals, says up to 10 cases a day across the country could require emergency air lifts. Captain G.R. Gopinath, executive chairman of Deccan, said talks with health insurance companies were underway to get air lifts covered. “The time has come for insurance companies to step forth and provide medical insurance which covers air ambulance services, on the lines of Western countries,” he said.

Another leading Indian private healthcare provider, Escort Hospitals group in New Delhi, has signed with Deccan to provide emergency services to its hospitals, and it is installing helipads at several of its hospitals throughout the country. Escorts is a prominent international provider of heart care services, especially in the medical tourism field. The expansion of air ambulance services in Africa, India, China, the Middle East, and elsewhere in the still developing world reflects a growing desire to emulate the best of the West. But it begs the fact that western developed nations have not quite solved the problem of how to totally and most efficiently integrate the advancements of aeromedical technology into the mainstream of healthcare. There is more to it than building helipads, or adding a second Learjet 35, or Dornier 328, or Citation or Cessna.

### Beyond boundaries

Air ambulance services have been around now for almost 100 years and their technological development has been nothing short of astounding. And it’s not just how far and how fast medical crews can get to any given location, but how well they do what they do. Look at any air ambulance directory or website and the appropriate accreditation insignia is up front alongside the corporate logo. Validation by peers, authentication that the quality of services has been tested; the competitive advantage of being judged in the top tier has made accreditation by EURAMI (European Aero Medical Institute) or CAMTS (Commission for Accreditation of Medical Transport Systems) not just for the elite anymore. These accreditations, and the press releases that go with them, are becoming a necessity for doing business. And as crews and their medical supports become more proficient, so do the numbers and the kinds of patients they can transport. The medical literature shows that more than 80 per cent of adult patient transfers can be considered medically stable, and the thresholds of what can be considered stable for purposes of safe transport are constantly shifting. What may have been considered high risk a decade ago is now considered quite manageable.

One study, published in Aviation, Space, and Environmental Medicine, in 2001, suggested that elective air ambulance transport after heart attack is safe three to seven days after admission or 48 to 72 hours after resolution of chest pain, given an appropriate level of technological support in an air ambulance. That is a moving threshold, and it opens up more and more opportunity for the validity of air transport of critically ill patients to facilities best suited for their continuing and follow-up care.

**But who pays?**

What aeromedical transportation needs to truly integrate into mainstream healthcare, is a clear rationalization for funding, a backup of economic support. In short, somebody has to pay. And if that responsibility is left to the patient, the threshold is not very moveable. Any way you cut it, aeromedicine is expensive (see sidebar).

In most western or developed charitable organizations, health trusts or even hospitals. In the UK, air ambulance services are funded largely by 16 regional air ambulance charities that annually raise more than GB£25 million from private donations, corporate gifts, lotteries and the like. The Association of Air Ambulance Charities says that level of funding supports some 17,500 missions a year. On the continent, Switzerland, France, Austria, Italy, Scandinavia and Germany, and other nations, have developed highly effective air emergency medical systems (EMS). Germany’s EMS air ambulance system, using a combination of helicopter and fixed-wing aircraft, now covers every region of the country.

In the US there are some 200 air ambulance operations using a blend of helicopter or fixed-wing craft whose services are paid for primarily by the patients and their insurance companies. In Canada, every province has some form of civil air ambulance service, most modeled on the pioneer service established in Saskatchewan in 1946. One of the fastest growing privately funded EMS models in the US is the membership-based air evacuation plan by American families, particularly those in rural areas, can buy annual coverage that gives them access to a fully equipped air ambulance pickup and delivery to a nearby hospital in case of emergency. Forget time consuming road travel, get the helo and make the trip in minutes instead of a couple of hours. The largest of these companies, Air Evac Lifeteam, now has half a million members served countries, where aeromedical transport is widespread, there is a broad mélange of payment patterns. In Europe, where health systems are primarily sponsored or regulated by governments, there are well-developed intramural air ambulance systems linking most communities to hospitals or other care systems. Many of these are run and paid for by district or national governments, charitable organizations, health trusts or even hospitals.

Given China’s immense, remote spaces and the wide scattering of its population, air ambulance rescue seems better-suited to this ancient … country than it does to any other nation on earth.
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by 64 bases located across 11 states. For as little as $60 per year, a family can get instant medevac services that cover anything their primary health insurance does not. When set up in 1985 in Missouri, Air Evac Lifetime was modeled on Rega, the Swiss air ambulance system. Now there are dozens of similar, though smaller, membership programmes nationwide.

But to give credit where it’s due, Air Evac and Rega too, owe much to one of the real pioneers of air EMS plans—Africa’s AMREF—The African Medical and Research Foundation, the precursor of the famed African Flying Doctors Service, which was established almost 50 years ago by three surgeons, Sir Michael Wood, Archibald Mclnroe and Thomas Rees. The AMREF plan is available to people living, working or travelling in East Africa (Kenya, Uganda, Tanzania), Rwanda and Burundi. For a small fee (as low as $50 for an adult per year) full-time medical staff and aircrew are on standby to respond to emergencies, and in case an evacuation is necessary, an AMREF member can be evacuated to a hospital in Nairobi. The fee covers transportation only, not hospital costs. There is no way to do that by road in most of Africa.

What aeromedical transportation needs to truly integrate into mainstream healthcare, is a clear rationalization for funding, a backup of economic support.

Nothing less will do

As aeromedical technology has evolved, it is long distance, international, even intercontinental transport and repatriation that has benefited most. Being able to maintain critically ill patients in hospital-standard ICU environments over thousands of miles and many hours has made it possible to pick up a stricken tourist in Patagonia and fly him to Houston, or transport a wounded soldier from Kabul and get him into surgery in Germany with minimal risk.

Modern travel insurance would be relatively impotent today without access to this long distance repatriation capability. And any international travel insurance plan that does not have a specified air repatriation feature is simply inadequate.

In Europe, Canada, and Asia, the repatriation feature is taken for granted. In the United States, only a minority of travellers even think about it, and this has given rise to a stand-alone ambulance plan model that provides air ambulance repatriation benefits for single trips or annual periods to vacationers, expatriates, students, international workers and foreign postings for a broad range of fees. These plans are no subsidies for travel health insurance, but when one considers the prospect of a broken hip while exploring Machu Picchu, they are a sound alternative; just as they might be for growing numbers of travellers who are becoming uninsured by tightening requirements for medical underwriting.

Will Klein, president of Scottsdale, Arizona-based SkyMed, which offers single trip or annual air ambulance repatriation plans, says that even among Canadians, who have comprehensive out-of-country travel health insurance (as do most Europeans), there are people whose claims for emergency treatment and repatriation are denied because of pre-existing conditions or other ‘nuances’ in their policy coverages. This leaves them facing the problem of getting themselves home on their own, or remaining in a foreign hospital at several thousand dollars a day. ‘For as little as $1 a day (on an annual membership) they can gain SkyMed services,’ says Klein. ‘Why would anybody in their right mind not consider that a worthwhile investment?’

The growing coterie of stand-alone air ambulance plan providers can say the same thing. And compared to the cost and emotional disruption of leaving a critically ill patient in a foreign environment, far from the comfort and solace of friends and family, maybe the economic costs of aeromedical transportation are not so severe after all. They have developed because they have a purpose and a demand.

In 1957, AMREF co-founder Dr Wood consulted D. Albert Schweitzer at his Leprosy Mission Hospital in Lambarene, West Africa. He asked how best to serve the 80 per cent of Africans who then clearly beyond the reach of medical facilities. Dr Schweitzer told him: “Use the tools of our time.” To Dr Wood that meant the airplane and the radio. That became the framework for AMREF. It’s now clearly the guiding principle for the burgeoning field of aeromedicine and the array of air ambulances and all they carry—little Cessnas to big Hueys, Lear to Dorniers.
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The McDonnell Douglas Helicopters MD902 Explorer is a light, twin-utility helicopter. Originally designed in the early 1990s by McDonnell Douglas Helicopter System, it is currently produced by MD Helicopters, Inc. There have been two models, the original MD900 and its successor, the MD902. The MD Explorer was the first design to incorporate the unique NOTAR system, with the benefits including increased safety, lower noise levels, and performance and controllability enhancements. Instead of an anti-torque tail rotor, a fan exhaust is directed through slots in the tail boom, using the Coanda effect for yaw control. Boeing retains the design rights to the NOTAR system, despite selling the former McDonnell Douglas civil helicopter line to MD Helicopters in 1999. The helicopter also features an advanced bearingless five-blade main rotor with composite blades, carbon fibre tail and fuselage. The MD902 is used by air ambulance and police forces around the world, the Mexican Navy, and the US Coastguard.

Specifications
- Crew: 2
- Length: 30 ft 10 in – 32 ft 2 in (9.4 m to 9.8 m)
- Rotor diameter: 33 ft 10 in (10.3 m)
- Height: 8 ft 6 in – 11 ft 2 in (2.6 m – 3.4 m)
- Empty weight: 1,975 lb (896 kg)
- Max take-off weight: 6,250 lb (or 6,500 lb with tailboom ext) (2,835 kg)
- Powerplant: 2 Pratt & Whitney Canada PW207E turboshafts, 477 kW (640 shp) each

Performance
- Maximum speed: 152 knots (175 mph, 282 km/h)
- Cruise speed: 135 knots (155 mph, 250 km/h)
- Range: 267 miles (430 km)
- Service ceiling: 15,994 ft (4,875 m)
- Rate of climb: 2,067 ft/min (10.5 m/s)

ITIJ spoke to Paul Scott, nominated postholder of maintenance at Luxembourg Air Rescue, about the MD902. According to him, certifying staff prefer to work on the Explorer as it is ‘easier to access the components during maintenance activities’, having been designed with maintenance costs in mind. He also agreed that the NOTAR system generates less noise, meaning there is less disturbance than some other helicopters would cause to the community surrounding the destination neighbourhood or hospital. It is also safer, said Scott: “Landing in highly congested areas [is fine because] the NOTAR system will not cause injuries.”
The P180 is, say Piaggio, the company’s flagship product and the world’s fastest turboprop aircraft. It offers the speed of a light jet aircraft, a large, quiet, mid-size cabin and fuel savings that are nearly 40 per cent higher than most business jets and 25 per cent more efficient than the best turboprops.

The P180 Avanti II is the culmination of efforts by engineers to design, without compromise, an aircraft to meet the objectives of jet-like speed, a wide body, stand-up cabin and turboprop efficiency. Following wind tunnel testing, Piaggio’s engineers concluded that the P180 design should include a patented three-lifting-surface configuration, which permits a 34-per-cent reduction in total wing area over conventional designs, together with a non-cylindrical, low-drag fuselage shape.

And while the aircraft’s surface appearance may be different to what the industry is accustomed to, Piaggio has been quick to assure users that both pilots and maintenance engineers will find much onboard that is familiar, including well-known and widely used control systems, 95 per cent aluminium construction and conventional flight controls.

It is equipped with a fully digital, automatic flight control and has the latest generation Rockwell Collins ‘Pro Line 21’ avionics system, the most advanced on the market today. This integrated digital avionics package provides the pilot with better situational awareness, resulting in even higher levels of safety, efficiency, flexibility and reliability.

Performance

The P180 is powered by two Pratt & Whitney PT6-66B engines, rated at 1630 thermodynamic HP, although they have been de-rated to 850 SHP. Together, the engines take the plane to a certified altitude of 41,000 feet and speed of 402 knots at 30,000 feet with a maximum operating mach of 0.7. With a maximum range of 1,800 nautical miles, the Avanti II can complete many missions non-stop that would take other turboprops one or two stops, while its ability to take off and land at smaller airfields allows greater flexibility in destination.

The Avanti II was selected by the Polish Air Medical Rescue Company to be added to its current fleet of P180s in 2007.

Spotlight on the P180 Avanti II

ITIJ spoke to Pawel Ambrzykowski of Polish Medical Air Rescue about his company’s experience using the Piaggio Avanti II:

“For the kind of missions we generally take part in – secondary and some primary – the Avanti II fits the bill very well, as its range means it can fly from one end of the country to the other without refuelling. It is extremely spacious, with a convenient width and height, making it a great choice compared to other types of aircraft in its class. The Avanti II is also very quiet, yet has low fuel consumption. Not only can the Avanti II fly within Poland without refuelling, but its range means it can also reach any other European country without a stop.

From a pilot’s point of view, the Avanti II, with its Proline 21 Avionics, is easier to fly than its predecessor, as it provides better autopilot functions, PMS and so forth. It also has a glass cockpit, making visibility much better. Likewise, from the medical crew’s point of view, the cabin, which can be pressurised up to FL 410, makes for a very comfortable and safe environment for the patient. There is plenty of room for equipment and crew, as well as various stretcher and seat configurations, making it possible to transport everyone from a newborn in a Drager IT 5400 incubator as well as family members, to two stretchers using the LifePort system. Altogether, this aircraft is extremely suitable for air ambulance usage, providing a substantial and flexible environment for both the pilot, as well as the medical crew and patient.”

Specifications

- Max. cruise speed: 402 Knots at 28,000 feet
- Take-off distance: 869 m
- Landing distance: 872 m
- Rate of climb: 899 m/min
- Wing span: 14.03 m
- Length: 14.41 m
- Height: 3.98 m
- Max. take-off weight: 5,488 kg
- Max. payload: 907 kg
- Stretchers: Two
- Cabin height: 1.75 m
ITJ caught up with CAMTS executive director Eileen Frazer to chat about the associations actions over 2007, and looking ahead, what she thinks 2008 will bring

Several trends distinguished the year of 2007: for one we received more requests for consult visits than in previous years, some of which came from new applicants who wanted to have their service go through a mock site visit. Other consultation requests came from services that were preparing for re-accreditation and wanted to make sure they were interpreting the new standards (7th edition) appropriately. We also continued to see a trend towards more complicated and complex services. In many cases, our site survey coordinator worked closely with companies for several weeks to schedule a site visit that would meet the needs of the programme and the process.

There are also more specialty teams applying for accreditation. These neonatal and paediatric teams often use transport vehicles from other medical transport programmes but have their own identity as a children’s team from a specific hospital, for example. Therefore, they are eligible and have been applying for accreditation.

In June, we also accredited our first service outside of the North American continent: SOS Air Rescue Africa. This is a critical care fixed-wing service with physician and flight nurse teams, located near Johannesburg in South Africa. Many of the patients flown by SOS are arranged through contracts with Fortune 500 companies, the US Department of Defence and major universities. They are also the only ‘Alarm Center’ for International SOS, a worldwide travel assistance company that handled over 780,000 assistance cases, including more than 14,000 medical evacuations last year.

The way forward
CAMTS is to provide two workshops at the Air Medical Transport Conference in 2008: the ‘Preparing for Accreditation’ workshop, which includes how to interpret the accreditation standards and prepare for accreditation including instructions on completing the Program Information Form (PIF); and the new workshop, entitled ‘Creating a Culture of Quality and Safety’, which includes information on how to structure a quality management programme and integrate the risk and safety processes to address all activities of a medical transport service including operations, communications and patient care.

CAMTS was awarded two FARE grants in 2007. One grant was given in order to develop a teaching tool for pre-hospital and emergency department personnel about the hazards of helicopter shopping. A small committee has been working on this, representing many of the member organisations of CAMTS. To this end, we are in a second draft phase of a video production and hope to have it ready for mass distribution in the Spring of 2008. The second grant is to tie two databases together to track and trend accidents and incidents.

CAMTS collects this information from every programme that applies for accreditation and the CONCERN network has been collecting this information for years. The task is to sanitise the information and combine the information into one database to see if there are hazardous trends we have overlooked. We also need to verify known hazards, although work has just begun on this project.

The entire Board is now focused on how to create a more efficient site survey process beginning with accepting the Program Information Form (PIF). A site visit can be labour intensive for the site surveyors and reports to the full Board are also tedious. The Board will continue to work on refining the site survey process during 2008 with the formation of three new committees: Ms Frazer will chair the Process Committee, Dr Overton will chair the Risk Assessment Committee and Dr Holleran will chair the Outcomes Committee. The goals are to redefine the entire process and procedures for accreditation and create tools to help the applicants understand how to achieve a culture of quality, safety and accountability.

A strong start
In January 2008, CAMTS was part of the first ESM Subcommittee of the Transportation Research Board in Washington DC. During the meeting, a small task force dedicated to improving safety of ground ambulance transportation reported on a Position Paper they published, which requests the NTSB collects data on ambulance accidents involving serious and fatal injuries and substantially damaged and destroyed ground ambulances. There is no national entity currently collecting this information.

As 2008 continues, we welcome a new member organisation. The American College of Surgeons approved the recommendation of the Committee on Trauma, and appointed Alasdair Conn, MD, FACS, as their representative to the CAMTS Board of Directors. He and the American College of Surgeons are a welcome asset to our decision-making process. We continue to be thankful for the individuals and organizations that support CAMTS throughout the year and look forward to future growth and challenge in 2008.

We also continued to see a trend of more complicated and complex services.

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Breathing easy

Helping a patient to breathe is one of the most demanding aspects of an air ambulance crew member’s job. Dr Adrian Matioc introduces us to the procedures and devices involved.

Breathing is essential for human survival. Initiating artificial respiration in unresponsive patients is thus one of the most stressful, challenging and ultimately rewarding medical interventions.

The ‘upper airway’ is the anatomical space between the lips and the larynx (Adam’s apple) shaped by the tongue and a myriad of muscles. It links the surrounding atmosphere with the lungs. Animals have a ‘straight’ upper airway, while humans have a ‘kinked’ upper airway that allows specific functions, such as speaking and singing. A conscious individual will maintain the upper airway ‘open’, and move air during inspiration and expiration. In an unconscious individual, the upper airway collapses as the muscles lose their natural strength, creating an ‘airway obstruction’ and stopping oxygen from entering the lungs. If this happens, the patient’s life is in danger. Treating the airway obstruction in a timely manner – in between three and five minutes – with artificial respiration is, therefore, the rescuer’s first responsibility. In other words, ‘Airway’ is the ‘A’ in the ABC of resuscitation.

Artificial respiration is first initiated with a face mask: the ubiquitous resuscitation device. Although lifesaving, face mask ventilation is a temporizing measure till advanced equipment and help is summoned. The definitive treatment is the insertion of a breathing tube into the wind pipe (trachea) to bypass the upper airway obstruction and reconnect the atmosphere with the lungs. The breathing tube becomes a conduit for gases (‘oxygen in’ and ‘carbon dioxide out’), and will protect the lungs from regurgitated stomach content.

This manoeuvre comprises two steps: first the rescuer has to push aside all the obstructing upper airway tissues (e.g. tongue) to be able to see the larynx. This first step is called laryngoscopy hence the device: the laryngoscope. The second step – the intubation – is accomplished by inserting the ‘breathing’ tube along the laryngoscope into the visualized larynx. Failure or delay in implementing the face mask ventilation or inserting the breathing tube could mean the patient suffers brain damage, cardiac arrest, or even death.

The first step is accomplished routinely with a ‘direct’ laryngoscope which consists of a handle (with batteries) and a ‘blade’. The blade is inserted in the mouth and is used to manoeuvre the obstructing upper airway tissues and create a ‘direct’ viewing line between the rescuer’s eye and the larynx. The most popular blade is the Macintosh blade, which has been used since 1943. Once the larynx is in view, the breathing tube is inserted. One problem with direct intubation, however, is that it can be difficult or impossible to perform in obese patients or in patients with a short chin, large tongue, or a small mouth opening. It is, thus, generally agreed that significant training and skill is needed to stay proficient with direct laryngoscopy and intubation.

Nevertheless, technology has finally caught up with intubation, and now ‘indirect’ laryngoscopes are available on the market. These devices have an optical system at the tip of the blade allowing the rescuer an ‘indirect’ view of the larynx on a screen or a viewfinder. Needless to say, this type of laryngoscopy and intubation is easier for both unskilled and skilled personnel. The Airtraq® (Prodol Meditec S.A., Vizcaya, Spain) is a disposable indirect laryngoscope that has some attractive features and does not resemble the traditional laryngoscope. For a start, its shape follows the natural anatomical curvature of the upper airway. It is a compact device with no external screen attached, as the optical system projects the image on a viewfinder incorporated in the laryngoscope, and it has a side channel along the optical system that accepts the breathing tube. The Airtraq® and the breathing tube are advanced simultaneously in the upper airway toward the larynx. The skill involved lies in maneuvering the laryngoscope to obtain an optimal view of the larynx. Once this view is achieved the breathing tube is easily advanced into the trachea.

In an unconscious individual, the upper airway collapses as the muscles lose their natural strength. All airway management devices are initially tested by experts in an operating room environment, where conditions are fairly straightforward. In comparison, the use of a laryngoscope in an emergency situation by an air ambulance medical crew member often takes place under much more strenuous circumstances. The patient may have multiple medical problems, may be vomiting, there is minimal qualified help, and there is only a short amount of time in which the procedure needs to be prepared and accomplished. In such situations, it is fair to say that indirect laryngoscopes are easier to use. In my opinion, the Airtraq® is a good option as it is the only disposable, compact, anatomical indirect laryngoscope with a high success rate with novice users.
Several new suppliers have recently entered the aeromedical market, providing products that could greatly increase onboard comfort and safety. Patrick Shomaker has the latest.

German medical supplies specialist Tempur-Med® has recently been providing custom-made versions of its innovative anti-bed sore mattress to the local air ambulance sector. According to the company, the invention developed from the fact that no other supplier was manufacturing mattresses specially designed to eliminate or minimise bed sore problems – not even specialist suppliers of stretcher systems such as Lifeport or Aerolite.

The innovative characteristics of the Tempur-Med® mattress include a sensory detection system that calculates the patient’s temperature and body weight and adjusts the mattress accordingly to provide optimum comfort. This can help prevent bed sores, especially on long flights and for patients who are particularly susceptible to sores and ulcers. The mattress has a two-centimetre polyurethane foam foundation to provide additional comfort, particularly welcomed by patients in the confined space of an air ambulance. It is also designed to maximise blood circulation and is fitted with a waterproof, active-breathing incontinent cover that is easy to disinfect after use. German air ambulance operator, DRF, has been using a custom-made Tempur-Med® mattresses for some four years and its experience has been nothing but positive.

The beginning of 2008 has also seen a new specialist disinfectant for medical aircraft use launched onto the market. A combination disinfection solution consisting of Wofasteril (based on peracetic acid) and Alcapur (a cleaner and buffer additive), the disinfectant has several advantages over more traditional products. For a start, it is fast acting, taking around five minutes to have an effect, compared to the one hour required by formaldehyde-based disinfecting agents. It is also more effective, killing off all germs and with no known resistance. Furthermore, Wofasteril is environmentally friendly and thorough testing has found no damaging side-effects to health.

But what has really made the difference is that the disinfectant is far simpler to use than a lot of other disinfectants. This is a particular advantage for crews who have to use disinfectants after each flight. A simple turn of the nozzle and the disinfectant spray can be ejected – there is no need for complicated mixing and measuring of the ingredient substances. However, the system does allow for dosage strength to be adapted according to requirements, though DRF has found that a solution of 0.5 per cent is sufficient.
The Inuit plane handler greeted us wearing black outside with howling winds and -40°C. Capital, Iqaluit. When we landed, it was pitch dark. One February night in 1990, we left for Baffin’s Island. During our first six months, we began to see the potential for an air ambulance operation. I was chief of the Emergency Department at one of the McGill University teaching hospitals, where we were experiencing significant staffing issues, and I thought that a new operation might help with retention. Since no formal training in aviation medicine existed in Quebec at the time, I also considered creating an academic curriculum at McGill. During our first six months, we began to fly regularly to Baffin Island in Northern Canada. A significant percentage of their needs were (and still are) neonatal transports. One February night in 1990, we left for Baffin’s capital, Iqaluit. When we landed, it was pitch black outside with howling winds and -40°C. The inuit plane handler greeted us wearing Nike running shoes while the rest of us were bundled up in outfits that would have made a polar bear jealous. We promptly turned the plane off and headed to the hospital. Two hours later, we returned, bringing the rear door of the ground ambulance right up against the aircraft for a fast transfer of the baby and incubator. To our surprise, however, the plane was frozen solid! Ten minutes later, the engine finally turned over but by this time, the damage was done. All of the medical tubing connected to the infant had cracked. Fortunately, we managed to replace all of it quickly and continued uneventfully to Montreal. Eighteen years later and hundreds of missions to the far north have given our entire organisation ongoing irreplaceable experiences.

This was the beginning of our story. We learned quickly that aviation medicine could be risky work. Transporting the sickest and most complex of patients taught us early on that careful organisation, fastidious preparation, and teamwork produced the best outcomes. We made many mistakes, most often only once, tried to make each experience count and then pass on our newfound knowledge to others. The diversity and challenges of the myriad types of repatriations that we were asked to perform was what I have found to be compelling and fascinating. It has kept my interest to this day.

Every company requires a medical director who should be a practising physician with flight physiology training, aviation medicine experience and management knowledge.

‘inside the aircraft’ needed to be of a higher standard finally started to gain some traction. As a consequence, there were two positive changes. Formal training courses for the medical crew became more widely available and an increasing number of medical specialists with aviation medicine experience begin to have an influence on the entire decision-making process involved in a repatriation. This in itself went a long way to achieving a better balance between the economic imperative and safe patient transports. Today, the modern, strong assistance companies have good medical representation within their organisations. They know what it takes to move a sick patient. Their own internal protocols are asking pertinent questions to air ambulance providers. They know that a sick patient can be transported safely by the right medical teams in properly equipped aircraft, as opposed to a hastily converted chartered aircraft with an untrained medical team assembled at the last moment.

Most of the medical directors convening at ITIC are from this generation and understand how aviation and medicine must work together in the best interests of the patient within an acceptable economic model. Along with this, doctors inherently want to do the best for their patients. As a group, we are making meaningful progress towards some common goals at the Medical Director’s Forum. We are gaining momentum and respect, which is emboldening us as a group to go further. However, the more substantive industry changes will come when there are internationally accepted standards enforced by an overarching entity such as the International Air Transport Association. Once in place, regional accrediting bodies will be able to legitimately evaluate each operator’s medical systems and procedures within a universally approved framework.

ITJ: From where does your interest in aviation medicine stem?

MCS: During the summer of 1989, the president of Skyservice asked if I would be interested in building the medical infrastructure for an air ambulance operation. I was chief of the Emergency Department at one of the McGill University teaching hospitals, where we were experiencing significant staffing issues, and I thought that a new operation might help with retention. Since no formal training in aviation medicine existed in Quebec at the time, I also considered creating an academic curriculum at McGill.

ITIJ: Why, in your opinion, is the Medical Directors’ Forum at ITIC so popular and have any industry changes been made as a result of it?

MCS: Originally, the principal drivers of the business emanated from the insurance and aviation side of the equation. Inadequate attention was being paid to the fact that an increasing volume and diversity of travellers were generating a higher incidence of medically complex repatriations that required a skill level that existed in only a few organisations. In the late 1980s, some heavy losses took place, leading to bad publicity, and the realisation that the practice of medicine requires a skill level that existed in only a few organisations. In the late 1980s, some heavy losses took place, leading to bad publicity, and the realisation that the practice of medicine requires a skill level that existed in only a few organisations.

ITIJ: What is your opinion on the efficacy of selling empty legs and do you condone it as a suitable method of repatriation?

MCS: If medical teams are properly trained and are operating in an aircraft that has appropriate medical equipment by today’s standards meeting the needs of the patient, I have no difficulty with filing empty legs. It makes sense economically too! Issues to be considered are team fatigue, adequate redundant equipment and ensuring that the particular skill set of the medical team matches the patient’s medical condition.

ITIJ: The term Medical Director is universal, but does it have different connotations in different countries? Or does it have a precise, standardised international definition?

MCS: There is, in fact, no precise, standardised international definition of a medical director. However, there is a body of scientifically based medical knowledge that is generally accepted throughout the western world that is progressively spreading into all medical education curricula. Since the professionals involved in aviation medicine are acquiring their education from the same underlying construct, there is growing uniformity amongst currently trained physicians in the particular knowledge base required to be an aviation medical director. With this fact in mind, the last Medical Director’s Forum developed a resolution which states:

“Every company requires a Medical Director who should be a practising physician with flight physiology training, aviation medicine experience and management knowledge.”

This resolution was unanimously adopted at the Forum and we believe that there should be little variation from country to country in its interpretation and application.
commercially and via air ambulance. What role have air ambulance companies played in making these improvements possible? MCS: As mentioned, the first change came in the late eighties when the insurance industry realised that wiser medical judgment was needed for air transports. Experienced medical directors with modern academic training – cardiologists, intensivists, emergency medicine specialists and MDs with aviation medicine experience – were hired within the assistance industry. This cohort of physicians more closely reflected the types of patients being repatriated. They helped to educate the insurers that sick patients could be transported quite early and safely after an acute illness. They also introduced the notion of how to medically ‘risk manage’, which meant saving money while not endangering the patient. Increasing numbers of travellers to remote sites have resulted in a greater number of acutely ill patients requiring safe transport to a higher level of medical care. In response, many air ambulance organisations began to configure the interior of their aircraft as modern intensive care units, staffing them with properly trained medical teams. About the same time, commercial carriers’ appetite for transporting sick patients started to diminish. Once it became apparent that sick patients in relatively large numbers could be transported long distances, and that a modern ICU air ambulance was the optimal model, the air ambulance organisation’s role in the industry took on a new level of importance. There was no going back. At this stage in our evolution, the scientific literature remains quite undeveloped in the aviation medicine field. The biggest spheres of influence are derived from resprology, cardiology, ICU, anaesthesia and emergency medicine. New knowledge from these subspecialties is then extended and adapted to the unique clinical environment of an aircraft. Our next big step will be to collect meaningful data and objectively question our practices in order to achieve even better medical outcomes for patients being transported. There is lots of work yet to come.

MCS: Accreditation is here to stay. It is now accepted practice that all major healthcare facilities and academic institutions undergo an intensive accreditation every few years. There are two important aspects – one is the accreditation site visit and the other is the internal preparation prior to the accreditation. This means that the whole organisation reviews its medical systems and procedures in advance of the visit and uses this opportunity to determine not only the quality of its operation in detail, but also to rethink the assumptions that may have crept into the procedures that are the template for its day-to-day performance. If I were running an insurance company, I would want to be sure that the air ambulance organisations that I use have been accredited by a recognised body.

The larger difficulty that we face is that there is no single accreditation entity that has a global authority and responsibility over the current regional accrediting bodies. Therefore, there is uncertainty about the uniformity of the evaluation criteria amongst the various organisations that currently do the accrediting. We need an overarching entity to which they would agree to report.

MCS: The first important change has been the industry’s recognition that aviation medicine is specialised knowledge to be practised by properly trained health professionals. It is as important a part of the overall package as the aircraft side of the equation. Secondly, high quality, digitisable and durable equipment has helped to produce the modern ICU within the aircraft itself. However, I feel that the most important piece of equipment is the satellite telephone. A complete medical array of experts can be reached at any time, any place and at a reasonable cost. Other technological refinements such as small, mobile CT scans and ultrasound diagnostic tools will be only marginally useful.

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Ground ambulance transportation is often an essential element of repatriation. Andrew Lee gives a personal view on the rigours of ensuring quality in ground transport.

Ground ambulance companies are an integral part of the repatriation process and yet credentialing is often left undone or it’s trusted to others without question. This was the case when I first came into this industry in 1992, and remains more or less the same now as I establish The Air Ambulance Connection, with clients and operators alike having privately expressed their concerns to me. At the risk of incurring the fury of many UK ambulance companies, it has to be said that this is where some of the worst examples of poor standards and overcharging happen. I can hear the wave of indignation from here — “Us? How dare he? What gives him the right?” — and so on. Nothing I haven’t heard before and probably will hear again.

Some years ago I was threatened — a strong statement but a fact — by a group of ground ambulance companies who felt they needed to persuade me to discontinue my work to raise standards and regulate costs. My crime, as far as they were concerned, was to challenge their level of competence for both staff and equipment. I did this by establishing that many vehicles were not roadworthy and the ambulance personnel unqualified. Many did not carry the correct level of indemnities. I took my thoughts and fears to the government. The minister concerned was Baroness Jay, and I was told it was important and needed attention, but it was a low priority and would not receive timely attention.

I decided to create a safer, more reliable method of using ground ambulance services for my company Atlas International Rescue. I negotiated a contract with the National Health Service’s (NHS) Surrey Ambulance Trust, which was to co-ordinate from region to region, giving national coverage. The Trust had to guarantee an ambulance for each booking, and there was a rate card calculated on patient carried miles, not round trip mileage. The whole initiative worked very well, and many assistance companies who had been against the set-up realised that they could use the service through Atlas International Rescue when they were unable to get an ambulance elsewhere.

Of course, this affected many private companies, who began to lose business. In a desperate attempt to defend their position, they decided to attack me. I received anonymous letters and faxes, phones calls from mystery individuals telling me I was going to be stopped. Apparently, the Masonic Order was going to ensure that my company was black-listed — not sure where that one came from. Then we had a middle-of-the-night visit to my home, where my wife’s car had all its windows broken. It was at this point that I decided to call in the police. Up to then I was dealing with threats with a certain amount of humour, but when it gets close to home, it’s time to take action. The police moved quickly and visited, after some discussion with me, the person they felt was behind the whole thing. After advising him they were about to request all his phone and fax records for the previous six months, he confessed. I didn’t receive any about it, on the understanding that it all stopped, which it did.

Whilst all this was happening, I continued to work with Surrey Ambulance to devise an application form for private companies to apply to work for the network under the auspices of the NHS. They would be inspected by an NHS representative once they had successfully completed all the documentation. We actually approved four operators, from about 30 applications. At that time there were something like 342 private companies in the UK.

Mystery shopper

I discovered all these inadequacies whilst working for an ambulance company as a medical escort. In order to get first-hand knowledge of what actually goes on, I did two flights to Spain. Nobody at any time asked about my training or qualifications. I did have a hospital background, working years before in operating theatres as a technician (now called an ODP), and I fully admit I should not have been escorting patients. But I needed to prove a point; people like me should not have been allowed to do this work. (Incidentally, both patients were fine. Both had broken legs, and the most challenging duty I had to deal with was to stop one guy from grabbing drinks off the trolley, as he was an alcoholic!)

The transfers were also extraordinary. Both happened on the tarmac, the patients having been loaded into the receiving ambulance with no handover report or looking at the notes. The ambulances sped off and left me standing alone but relieved. My experience as an escort was finished, but my point had been proved, with regard to credentialing. This was an ambulance company that did escort work too. Scary or what!

I also worked as an ‘ambulance man’, again doing two trips, once as the driver, with no training (in fact they never even checked my license) and as the attendant on the second one.

The first trip was to Cornwall. A lovely man who had been very poorly whilst away from home and was now fit enough to travel the seven hours it took to do the journey. My escort was a very nice nurse who had just finished night duty and promptly slept for most of the trip. The patient was charming and on arrival asked her if she had a good sleep. I then had to drive back, again nearly seven hours; the vehicle was unable to exceed much more than 40 miles per hour. Oh yes, and she slept on the way back too! The second job was to deliver a lady to a nursing home after she had had brain surgery. About halfway there, we stopped in a lay-by, as the vehicle was over heating. I had to take a urine bottle and ask the folks in a nearby house to fill it for me — with water of course. On returning, I discovered that the poor lady had a bad headache (as did I) and she felt quite nauseous (as did I). I had thought that there were excessive fumes in the back of the vehicle, so while the driver, who was also the owner of the company, was dealing with the radiator, I discovered a pile of carpet samples in the driver’s seat footwell. Underneath was no floor — obviously the fumes were making their way to the back, and we were suffering with carbon monoxide poisoning. We eventually arrived at our destination. Apart from the sickness and headache she was OK, and she did get a chance to choose a new carpet for her bedroom.

Regulation essential

OK, funny but sad, as these are true stories; but people who say this type of thing doesn’t happen are kidding themselves. But when you look at the websites, there are no bad providers out there. Everyone’s trained; every vehicle is in good order, and all documentation is up-to-date. If only it were true. There are attempts being made by some to improve things, including efforts by the British Paramedic Association and the Health Professions Council, but things will not greatly

Don’t lose your bottle
improve until government steps in and monitors or regulates the following:
information on services and costs; management and staffing arrangements, including staff selection, recruitment, qualifications and training; infection control; drivers’ hours regulations; vehicles and equipment; evidence of arrangements for accessing medical advice; insurance liability; patient confidentiality; telecommunications; and complaints processes.
Many companies claim to supply the services of paramedics, but buyer beware: this is often not the case. A recent event was investigated by the BBC, under the Freedom of Information Act. This showed that a company in the West Country had supplied a ‘bogus paramedic’ for an NHS patient transfer. The investigation revealed many inappropriate and unprofessional happenings, which without doubt put the patient at risk. This prompted comment from Roland Furber, chief executive of the British Paramedic Association: “I think there is a lot to do on the regulation of private ambulance companies and the majority of them would welcome that. We need to look at how fair and proper regulation can be made to all ambulance services, including private companies to make sure patients get a good deal.” At the same time, Marc Seale, chief executive of the Health Professions Council, said: “To use a professional title when you shouldn’t is actually a criminal offence. We have the power to take people to the magistrates’ court, which can impose a fine of up to £5,000 per offence. So it is very serious and we have the powers to stop individuals doing that.”
The NHS ambulance trust later discovered the man in question was actually a technician and not on the paramedic register. Paramedics are regulated by the Health Professions Council (HPC) and the job title is protected by law. This just continues to show how careful we have to be. Why do we close our eyes, ears and mouths to what’s going on? Is it that we simply put too much trust in what after all is a ‘caring profession’? Is it costs, ignorance or a mixture of both? I would suggest that the industry has had an exceptional run of luck; this with people’s lack of knowledge when they become a patient under their travel insurance policy. But the public are getting wiser; the Internet is a great educator and many are raising their consciousness as to their rights and entitlements within the terms and conditions of a travel policy.
So how do we create the level of integrity and due diligence required? The industry needs to take responsibility. By and large, as I have said before, we do a good job, but we must improve in certain areas that seem to come at the bottom of the supply chain. How many times a day are insurers in breach of compliance with the financial services Authority, through the use of unprofessional providers who they have no knowledge of? Let’s stop sitting behind others and collectively make the changes.
Pooling resources is a common theme running through many areas of aeromedicine. Dr Mike Finch offers a solution that could save assistance companies precious time and money. Since working as a freelance flight doctor over a decade ago, it has struck me that there is a considerable amount of duplication and lost opportunity in the repatriation process; and I know I am far from alone in this perception. We have all seen money and resources wasted because assistance companies cannot—or do not—collaborate when repatriating their patients. In the highly competitive world of medical assistance, however, it may not be an option, or indeed appropriate, for some companies or policies; but for the vast majority of repatriations, economies could be made by working together. Either way, it should certainly be considered seriously by those parties with an interest in mitigating costs.

Finding common ground
Any solution to the matter of encouraging assistance companies to share information and work together would, naturally, need to be acceptable to all parties involved. It would seem, therefore, that the best method would be to act, not simply as a broker, but as a form of search engine and mediator. Opportunities for collaboration can then be identified and independent neutral resources provided to overcome commercially sensitive issues.

There are two distinct scenarios with huge potential for exploitation that could arise on both air ambulance and commercial repatriations:

• Escorts accompanying more than one patient on a flight

Undertaking medical clearance for a major UK airline, I frequently see patients escorted by different companies on the same flight. In fact, many escort companies will have experienced meeting in these circumstances. These are not high-depency patients, a proportion being simply ‘hand-holding’ exercises: they present no more risk of an in-flight medical event than any other passenger. Some cases could easily share a medical escort without detriment to either party. Even those convalescing from a much more serious medical condition have such a low incidence of in-flight problems that the probability of two patients having a significant problem simultaneously is minuscule. Similarly, the opportunity to repatriate seated patients utilising spare seats in appropriate air taxis instead of commercial flights has yet to be exploited. Repatriations, where significant savings could be made on ticketing and escort fees. The returns may be lower, but the number of opportunities is considerably higher.

An important difficulty preventing collaboration between assistance companies in this situation is the utilisation of a competitor’s medical crews. Unknown qualifications, competence, and insurance needs to be undertaken to flesh out the scenario. Data analysis needs to be undertaken to flesh out the scenario.

Give collaboration a chance
Researching the potential to facilitate this form of collaboration has so far been met with universal approval and certainly recognition of the unnecessary waste of resources. I have received much encouragement and expressions of interest to co-operate in principle, but having presented several opportunities where pooling could provide an effective solution, I still have received no interest. Having almost concluded the writing of this article, a golden opportunity arose. Whilst procuring a nurse to repatriate a patient from Melbourne, I happened to find a nurse who had previously undertaken many repatriations for my client and by amazing coincidence was taking a patient to Melbourne the next day. The return date was the same as that for my client’s current patient. The route was perfect, the timing was perfect and the clinical scenario was perfect, it simply required some re-ticketing. Excitedly, I put a proposal to my client, hoping that I would be able to report on this article irrefutable evidence that this concept can be made to work! However, my client was unwilling to exploit this opportunity, for reasons that to my mind are unfathomable. Potential savings could have run to several thousands of pounds! If opportunities like this can arise effortlessly, then certainly with a systematic approach the possibilities are considerable; and should co-operation be allowed to develop, more opportunities and ideas will present themselves. A simple example would be an escort assessing patients overseas in addition to their own, and reporting back. Imagine an escort doing a ward round on behalf of several companies! In the future, collaboration between companies based around the world could easily take this to another level.

Undeterred, Goldfinch will continue to develop its collaboration project with assistance companies, and would be delighted to discuss and take advice from any interested parties, both in the UK and overseas.
ITIJ spoke to Michael Weinlich MD, president of the European AeroMedical Institute (EURAMI), about the international development of the accreditation process.

One year ago, EURAMI asked the question: ‘Can air ambulance standards be applied worldwide?’ Following the successful accreditation of AMREF in spring 2007, the answer was a resounding ‘yes’! As the driving process in the air ambulance industry is the medical needs of the patient, universal medical rules should apply, completely independent of location. The only difference from country to country is how well the infrastructure can be adapted to provide a successful medical outcome. After one year of accreditation, the feedback from AMREF is quite promising. Clients do accept the accreditation as a solid basis for their judgement of quality. The staff was very proud of reaching this goal, as it gave them confidence to know that they are operating their services correctly. Finally, the accreditation process was less stressful than expected, as EURAMI is constantly trying to optimise the self-assessment system, and to adapt the accreditation process to the practical needs of the air ambulance operators and their clients. Further international activities provide evidence that EURAMI standards are accepted around the world. Skyservice was the first air ambulance provider in Canada to receive full accreditation, which went through in November 2007, while the first air ambulance provider in the United States was American Care Air ambulance, which gained formal accreditation in February this year. Dr Michael Braida, board member and the man responsible for accreditations in the Americas, was the auditor for both North American air ambulance providers. According to him, it was no problem to use the EURAMI accreditation standards on a continent with different regulations. During the accreditations, though, imprecise formulation was found of the accreditation definition of ‘special care’. The board was asked to be more precise and the answer was that air ambulances that are equipped to carry most of the common ICU patients will receive the additional phrase ‘special care’.

Moving on

Another issue is the questions that were raised in the autumn of last year about the involvement of EURAMI in the FLYMI option portal for empty legs. During our members meeting at the International Travel Insurance Conference (ITIC) in Venice, members demanded better separation between FLYMI and EURAMI. EURAMI is now supporting the approach of the FLYMI portal to indicate any relevant certification for air ambulance providers on an empty leg auction tool. However, it has to be made clear that this support is not restricted to FLYMI, and can be provided to any portal indicating the quality of the providers.

In other news

In February 2008, EURAMI was very honoured by the visit of the president of the Saudi Red Crescent Society, HRH Prince Faisal bin Abdullah bin Abdulaziz Al-Saud, in February. Saudi Arabia is on the edge of implementing a helicopter air rescue service in its large country. Prince Faisal’s visit to EURAMI was primarily focused on gaining information and expert advice on how to build up HEMS stations and to determine the best way in which to implement helicopter rescue into the existing EMS system. Air rescue in Saudi Arabia, according to Prince Faisal, will be established to meet international standards. Under the leadership of Dr Laurent Taymans, EURAMI is also developing the next version, 4.0, of its accreditation standards. As usual, it will include feedback from previous accreditations and will seem to improve the questions asked. It will increasingly look for applicability on an international level, and finally it will be available in an electronic form. Faster communication and rapid reviews by the board members will be essential in continuing the improvement of the international accreditation process.

EURAMI is proud to announce that several other air ambulance providers are in the accreditation pipeline. At the next ITIC in November 2008, EURAMI will have its main members meeting and will be very happy to announce further successful accreditations then.
The price of liability cover

Insurance premiums in the US have steadily increased since 9/11. This, added to the ever-present concept in the US that anyone can bring litigation for any reason, simply adds to the exposure an insurer must defend. ITJ caught up with Dana Carr for the details

In 2000, the cost associated with aircraft liability insurance was approximately US$1,500 for every US$1 million in coverage, compared to nearly US$3,800 per $1 million coverage today. “The good news is the markets are starting to stabilise, with costs now starting to level out,” said Dana Carr, executive-vice president and director of operations for Air Trek, a US-based air ambulance provider. “Those services operating medium-weight jets are seeing premiums at $7,100 per $1 million coverage today. “The price of liability cover has increased by more than six times in recent years. This year we are seeing these premiums for medical malpractice have increased by more than six times in recent years.”

On a worldwide front, the US has developed a reputation for having a highly litigious environment,” added Carr. The US has created specific laws ensuring everyone has access to medical care. The Emergency Medical Treatment and Active Labor Act (EMTALA) requires hospitals to maintain responsibility for the patient while in transport, thus they are required to have a process to ensure the air medical service is properly screened, licensed, insured, and capable of providing an appropriate level of care to the patient. This works well in the US, though there are no guidelines related to air ambulance qualifications related to transports outside the US. In these arenas, one might consider verifying a potential provider’s qualification by ensuring they have earned either the CAMTS or EURAMI accreditation.

The increase in liability exposure can result in both direct and indirect damages, such as those seen with the Challenger 600 crash at Teterboro Airport (TEB) in 2005. In this unfortunate situation there was damage to the aircraft, injuries to the crew and passengers, indirect property damage, and bodily injury to others on the ground. Needless to say, this creates several layers of responsibility for US insurers, thus they share this potential financial burden by increasing premiums. “Many US firms complicate the situation by creating a variety of holding companies: one to own the aircraft, a different one to employ the staff, and yet another to manage the Air Ambulance Certificate. This makes it very difficult for the insurance carrier to determine who owns what, who is responsible for damages, who to seek for restitution should an incident occur,” adds Carr.

A recent case in the US involved a crashed jet that had multiple owners, on a flight being completed by several different air ambulance brokers, leaving it difficult to establish responsibility. In this case, the Travel Assistance Coordinator contacted Company A – who in turned contacted Company B to do the flight – who then had Company C complete the flight. “In essence, one company brokered this to someone else, who brokered it to someone else, probably due to one of the companies not owning the aircraft or having the medical expertise to complete the flight. It goes without saying that each company involved adds their specific charges for ‘co-ordinating’ transport, driving up costs. This is a common occurrence in the US, as there are no regulations requiring the air ambulance broker to inform the customer of who will actually be completing the flight,” explains Carr. In many cases, there could be two or three different services involved, with those not operating aircraft having little to no liability insurance for their role in the process. For a minimum level of liability cover, Carr suggests $3 to $5 million, though one may need to consider a $20 million plan if operating a larger jet or transporting multiple patients simultaneously. He adds: “It really depends on your personal comfort level and who your clients are. We are finding more and more of our customers demanding to work with those actually owning and operating the aircraft, as they feel they do not need to pay the extra fees associated with the air ambulance broker.”

To provide another level of assurance when dealing with an air ambulance provider, says Carr, ask that the assistance company’s name be added to the insurance policy. This can easily be accomplished – typically at no additional cost – as it is a common administrative matter for most insurers. Alternatively, when a client demands a higher level of coverage, Carr feels it may be beneficial for an air ambulance provider to purchase additional coverage, though typically this is related to the specific contract requirements, number of flights being completed, and overall sales revenues. The good news is the aircraft insurance market is stabilising, with the addition of two more players entering the US field. This should help to stabilise insurance fees, a major costs factor in the costs of all air ambulance transports.
What are the problems or challenges faced by air ambulance directors on a day-to-day basis? Dr Andrew Pearce in Australia gives his perspective on life as a medical director

In an age where international travel is easier than ever, airlines are flying at capacity, with many passengers who are of increasing age, decreasing mobility and have any number of pre-existing medical conditions. There is, thus, no shortage of retrieval work for assistance companies – even if insureds’ levels of cover with regards to aeromedical evacuation need to be closely looked at. Nevertheless, medical directors working with air ambulance companies continue in their daily challenge of providing the right team for the right job in the right time.

Building a team

As travel insurance, in most countries or scenarios, is not mandatory, and very little medical screening is generally required before travel, are air ambulances prepared to deal with the increase in potential patients? Well, no matter how many cases are being handled, and no matter what the patient’s background or financial situation, the medical director must ensure a professional service – whether for a national or international medical repatriation – by providing a very experienced, well credentialed team, who actively work in the acute medical arena. Advances in patient care and the rapidly changing area of medical transport equipment also requires a lot of time and dedication to keep abreast of modifications; as does ensuring your staff are all more than competent to deal with almost any evenuality. There is very little help for them at 47,000 feet, especially if you are in a medical Learjet, hours from your destination; so staff training, experience and skill is essential. Sure, the medical crew can call for advice over the radio or satellite phone, but they ultimately have to make the necessary decisions and interventions to ensure the patient makes it safely to the destination medical facility.

Medical directors additionally have the responsibility of rostering staff, which, when concerning long-distance missions, poses the challenge of ensuring staff are given enough time for rest and sleep in order to carry out their clinical work safely. Attracting very good staff and retaining them, though, is one of the major challenges faced by medical directors. To do this, you need to offer very good remuneration; create an ethos that promotes training to ensure the team is highly skilled and well equipped, with the added support of a number of people behind the scenes; and ensure training, safety and ongoing professional development are key to the group.

All in a day’s work

The number of telephone calls, emails, faxes and plan changes involved in each potential retrieval is staggering, so the medical team needs to have up-to-date information on each aspect of a case, especially where planning involves issues such as oxygen consumption calculations and the ordering of sufficient oxygen for a trip. The job of the medical director is to oversee the rest of the team, whilst also taking charge of the overall planning of the mission. He must brief the team before they depart, update them on any relevant issues in destination areas, including local customs. Last but not least, the medical director gives the ‘green light’.

continued on page 35
With its base in Hong Kong opening this month, AirMed International is the first US air ambulance company with a permanent base in Asia. ITIJ caught up with the company to find out the pros and pitfalls of setting up in the region.

With China now a hot new destination for the world’s travelling public, air ambulance companies see this location as an essential place to provide their services. Choosing Hong Kong as a headquarters gives an air ambulance company several advantages, but as we saw, setting up in the region requires careful negotiation and planning.

Setting up base
The choice of Hong Kong as the location for AirMed’s first base in China was primarily based on the ability to minimise costs to customers, but also to be able to respond in a timely manner to transport requests in the surrounding area. Hong Kong is a central location, giving rapid access in and out of most locations in Southeast Asia, so is a logical choice for a base location. “A high percentage of patients need to be transported to Western-style tertiary care facilities or to the ‘nearest appropriate facility’, and Hong Kong is the destination point for the majority of those transports,” said Jeffrey Tolbert, AirMed CEO.

Based on current regulations and political restrictions, direct flights between China and Taiwan are not allowed by law. Hong Kong, however, is a Special Administrative Region of China and not officially considered part of mainland China, so flights between the island and Taiwan are permitted. This, again, makes Hong Kong a perfect destination for local headquarters, as transports between Taiwan and China are likely to arise.

Maintaining standards
Being based on the other side of the world is no reason to compromise on standards of service or equipment provision. AirMed Asia uses a Raytheon Hawker 800 aircraft that has been permanently outfitted as a state-of-the-art medical jet, complete with liquid oxygen systems allowing longer transport of ventilator-dependent patients without replenishing the onboard oxygen supply. Despite being based in Hong Kong, the aircraft is US-registered and operated by US-licensed flight crews and staffed with Western-trained medical crews, meeting the same exacting standards as the company’s US teams.

Response to the companies initial announcement that they were hiring medical team members in China was overwhelming, and it received thousands of resumés in a matter of weeks. “However, the majority of these applicants had very limited air ambulance exposure, and we struggled to find individuals skilled in critical care and with the transport experience that we require,” said Denise Treadwell, AirMed executive vice president.

“Considering a base within mainland China coupled the challenge of locating experienced medical teams with the requirement to hire Chinese nationals to provide staffing.” Obstacles in credentialing medical teams for Chinese air ambulance operations can also be many, due to the differing regulations between the countries involved. However, AirMed received support from local officials and the air ambulance industry as a whole in determining differences in training and licensure between the two counties. “It’s been a very rewarding experience thus far, and we have been successful in attracting highly qualified personnel,” continued Mrs Treadwell. At this time, the company has hired a team of American critical care nurses who are expatriates living in Hong Kong with plans to expand their staffing with physicians.
Air ambulance brokers can provide value and high levels of service to their customers. Kirk Pacheco extols their virtues

As the world continues to shrink, global travel is increasing. Whether the travel is for business or pleasure, getting back isn’t half as much fun when an accident or illness strikes. For many individuals, the need for an air ambulance is a once-in-a-lifetime occurrence. Even within the medical community, there are many that have never used an air ambulance. The cost of medical care in a foreign country can be very expensive and the level of care needed may not be available.

So, who do you turn to for help in getting your client back home or to the proper medical facility when they can no longer travel back the same way they came? An air ambulance broker could be the answer. “Why a broker?” I hear you cry. There are several good reasons. Brokers give customers the flexibility that is sometimes needed when there are delays trying to obtain a facility to which to transfer the patient, by utilising the availability of different operators. Brokers provide options for the customer, offering the most cost-effective method of transfer. A broker’s focus is on providing the best in patient care and service to the families. A broker provides all of these customer values and still provides the lowest cost possible to the customer. Air ambulance operators tend to fly out of only one or two locations. Depending on where the patient is, the operator may have to fly a long distance ‘empty’, not only to pick up the patient, but then also return to their base of operation. The cost of these ‘empty’ miles is, for the most part, passed on to the customer.

Commercial stretchers and medical escorts are options to consider when the patient’s condition is not critical; this is another cost-saving measure that brokers can provide. The medical personnel used are highly trained and experienced in providing everything necessary to ensure the patient will be safe and comfortable on a commercial flight. Brokers also save the customer (be it an insurer, assistance company or private patient) money by using ‘connecting’ flights or ‘backhauls’ that are available with a variety of operators who have a one-way flight arranged and thus are in a position to pick up a patient on their way back to their base, reducing the ‘total’ miles flown and passing the savings on to the customer.

Another element of the advantages of working with a broker is that the air ambulance companies they utilise have been properly licensed and insured. The average consumer will not know how to check on the history of an operator, but brokers are familiar with which operators have good flying records and which do not, and are therefore able to steer clear of operators with questionable histories and practices. Reputable brokers ensure that any operator used is appropriately licensed by the Federal Aviation Authority (FAA), has full liability insurance, and that their aeromedically trained personnel meet all requirements to perform air transfers. Since brokers do not generally own aircraft or employ full-time medical staff, they have only one thing to concentrate on: service. Making sure the patient is well treated and receives the best possible medical care is the broker’s number one priority. The bottom line is this: the business and the personal relationships that a broker fosters with many different operators benefits both operators and brokers alike. A broker’s ability to provide the customer with one-stop shopping for a medical transfer makes the patient and customer the real winners in the search for medical transportation, whether it is on an air ambulance, an international commercial stretcher, or a medical escort on a commercial flight. Brokers focus on providing the best service and value to their customers.

The cost of these ‘empty’ miles is, for the most part, passed on to the customer.
Air rescue was introduced in Switzerland at an early stage in the development of aeromedicine, when a growing tourist trade and flourishing interest in skiing called for an efficient method of rescuing people in distress in the mountains. In those days, helicopters did not operate well at high altitudes, so parachutists – often accompanied by avalanche dogs – jumped out of aeroplanes to bring medical assistance by air to casualties in impassable mountainous terrain. Nowadays, technology affords pilots and crew access to areas previously off limits, and to those in need who in previous times would surely have perished.

Air rescue in Switzerland is performed exclusively by private operators. In the canton of Valais, a mountainous region dominated by the Rhône valley, such services are provided by Air Glaciers and Air Zermatt, two private helicopter transport firms that between them operate four helicopter bases. The rest of Switzerland is covered by Swiss Air Rescue (Rega), a privately-run foundation and member of the Red Cross. This organisation, founded in 1952, is not subsidised by the State, but receives financial support from around one-third of the Swiss population in the form of annual contributions. Its 15 rescue bases are distributed throughout the country in such a way that a helicopter can transport an emergency doctor to an accident site anywhere in the country within 15 minutes of the alarm being raised. Rega even performs rescue missions in the dark with the aid of night vision goggles (NVGs), and a plethora of specialised lighting equipment such as a search light that specifically locates people or objects in the dark. This is most useful when those being rescued have no light source; although most people carry something – whether a camera or phone – that gives off a small amount of light that is magnified by the NVGs. In fact, around 20 per cent of the 10,000 helicopter missions carried out every year take place at night. Carrying out night missions in the mountains using a rescue hoist places great demands on both the pilot and the hoist operator, but again with the aid of specialist lighting – namely a hoist beam – and dedicated and experienced night crews, lives can be saved even in the most difficult of circumstances.

In Switzerland, working in the dark is just one small challenge faced on a daily basis by air ambulance pilots and crew. In this country, the operational area for air rescue services extends up to altitudes of over 4,500 metres above sea level. As manufacturers of modern helicopters focus on optimising the comfort, noise levels, speed and economical efficiency of their new machines rather than their performance at high altitude, it was difficult for Rega to find twin-engine helicopters that were suitable for carrying out rescues in the
mountains. Rega’s current aircraft, the first generation Agusta A 109 K2, dating from 1990, is to be replaced from 2009 onwards with 11 new Agusta ‘Grand’ helicopters. These will provide a larger cabin capacity, new avionics, slightly better high altitude performance, and will be more cost-effective with regards to maintenance costs. Working in freezing temperatures also poses challenges. Injured parties need to be swiftly transported onto the aircraft, where the environment is warm and so they can be properly treated. Ensuring the warm cabin temperature means medical crew can work effectively, and medicines and equipment are kept at a suitable temperature. Time spent outside of the aircraft is kept to a minimum.

In it together Particularly in mountainous regions, air rescue depends on all the rescue organisations involved working hand in hand. The piste patrollers in the winter sports regions and the rescuers from the Swiss Alpine Club (SAC), with their special equipment and their avalanche rescue dogs, provide indispensable help. By carrying crevasse winches, avalanche poles, special lighting, and tools with which to free paragliders stuck on cables, as well as dog sleds, these rescuers provide an invaluable initial point of contact in many situations.

The SAC operates 98 rescue stations and has a total of 3,000 mountain rescuers at its disposal, who work on a voluntary basis and regularly take part in training exercises. They attend courses to maintain their skills and to be able to provide competent, optimal assistance in the case of an emergency. The rescue centres have at their disposal state-of-the-art equipment, which is adapted to the terrain and the local topography. It is only thanks to the SAC that the municipal authorities can fulfil their obligations and ensure the population’s safety throughout the country.

Around 80 helicopter rescue specialists (HRS) are regularly on standby for the SAC. The HRS is an important member of the crew during difficult helicopter rescue missions, when his specialised skills and local knowledge can make all the difference.

Special equipment
In winter, helicopters are fitted with ski-like pads on their undercarriage, but in the event that a helicopter is not able to land at the scene of an accident, the injured person is rescued using a rescue winch. If the patient can only be transported lying down, he is lain in a helicopter rescue bag, hauled up to the helicopter and flown to the nearest possible landing site, where he is transferred into the helicopter cabin. Using long-line systems, mountain climbers and the like can even be rescued from vertical or overhanging rock faces. Up to 200 metres of rope can be suspended from the cargo hook of a helicopter, enabling the rescuer to reach the injured person even in high, steep, or vertical rock faces. If the injured person is located under an overhanging rock, the rescuer can pull himself towards the rock face by means of a telescopic pole. Rescuing a person from a glacier crevasse is a slightly different matter and is often a race against time. The warmth of the casualty’s body makes it stick to the freezing-cold ice, and his body temperature is continually dropping. Using their special tools, however, the rescuers work their way down to the accident victim, constantly widening the gap in the ice until they are below him. All the equipment necessary for the mission – such as a tripod, a steel cable with a winch, a compressor with a compressed-air reservoir, and a compressed-air hammer with pneumatic tubes, as well as shovels, spades, extra fuel and lighting apparatus – is packed in a special container and flown to the accident site on the glacier. If patients receive the appropriate medical care after they have been rescued from the crevasse, they can survive with a body temperature as low as 20°C.
Pocket-sized Scenar technology is impressive in many ways. Richard Cumbers describes its advantages for emergency medicine.

Imagine there was a way to treat pain and acute health conditions quickly and effectively without complications and side effects, to be able to reverse many chronic diseases that are seen as irreversible by the mainstream orthodox medical fraternity. Now imagine that this treatment can be delivered by a hand-held device no bigger than a TV remote control, weighs less than 300 grams, runs on three 1.5-volt batteries for months at a time, needs minimal training and can act as a heart defibrillator. If all this sounds too good to be true then you have never experienced Scenar technology close up.

Dubbed ‘the Star Trek device’ by the European press, Scenar (an acronym for Self-controlled Energo Neuro Adaptive Reflex) made its appearance onto the western stage in the latter half of the 1990s as perestroika helped to unravel the Soviet Union. A team of Russian doctors and scientists at Sochi University developed Scenar technology in the late 1970s as massive funding went into the ‘space race’; portability, ease of use and effectiveness were of paramount importance.

How it works
Scenar technology is a fusion of knowledge that allows the device to mimic nerve impulses in a biofeedback dialogue with the central nervous system, a dynamic communication that facilitates internal balance and the re-establishment of homeostasis. A healthy coherent body has the ability to deal with pathology quickly by harnessing its own internal pharmacy of bioactive compounds, producing healing that the conscious mind is often unaware of, or at worst, is projected as a fast moving progression resulting in a return to normality or good health. When repetitive pathological signals cannot be processed, the body eventually fails to recognise that it has a problem and effectively stops communicating with the pathology, creating an energy cyst – isolated from the body’s control. The Scenar is operated by placing the electrode directly on the skin and can usually be sensed by the recipient as a pleasant tingling sensation. As the operator moves the device over the skin, information is collected that identifies areas of ‘small asymmetry’ – pathology relating to tissues and organs connected via the ectodermic layer.

Once located, the Scenar becomes the Dr Dolittle of the cellular world, prompting and stimulating the nervous system to produce neuropeptides (nerve chemicals that are generally regarded as the most powerful of healing elements) in a response that is immediate and long lasting.

Why it works
As information is now flowing to previously unresponsive areas (energy cysts), communication continues long after the treatment is completed and helps other members of the body’s energetic orchestra bring about harmony and coherence. The success of Scenar therapy is effected by:

• Stimulation of all the skin structures. The skin develops from the same embryological layer as the nervous system allowing for treatment of internal organs via reflexive zones on the skins surface.
• Working along acupuncture meridians and neurological zones.
• Action on A, B and C nerve fibres creating powerful neuropeptide cascades.
• Restoring homeostasis and sympathetic/parasympathetic balance.
• Restoring repetitive central nervous system patterns.
• Working directly on local spinal reflexes.
• Re-establishing normal membranous resonance.
• Through molecular polarisation it normalises adapted tissue polarities.
• By microphoresis as it stimulates selective re-absorption of trace elements and minerals from the skin.

The body can quickly adapt and become unresponsive to most electrical therapies, such as TENS, due to the consistent nature of the impulses. This cannot happen with Scenar as every impulse is different to the previous one, the signals are constantly changing as the electrical properties of the skin are analysed.

Behind the science
The complex software that allowed this breakthrough to happen was developed by two exceptional electronic engineers, Ganadi Fursov and Alexander Nadtochy, who were both recognised at the highest level for their achievement. The founding researcher behind the development
of Scenar technology is Dr Alexander Karasev, who demonstrated his invention to space programme scientists while working at the Cosmonaut training centre in the 1970s. Dr Karasev, who tends to shy away from publicity, said in his first ever interview with the BBC World Service in 1999: "If I had to prove it to you it would probably take me about 10 minutes. I can demonstrate it on anything, even the wrinkles on the skin. Rejuvenation. If you compare the treated and non-treated parts of the face, for instance, you can see the difference clearly. Or if you have a bruise somewhere it’ll take 10 to 15 minutes to demonstrate initial effect. I have introduced the SCENAR to maternity hospitals and it heals all the bruises and traumas in newly born babies within a few minutes."

Alexander and his family have not used pharmaceutical drugs since its invention. Two doctors working with research teams greatly increased the effectiveness of the technology after perfecting powerful techniques that have led to the ‘almost unbelievable’ results achieved in Russian clinics and by an increasing number of medical staff and therapists worldwide. Like Dr Karasev, the brilliance of Dr Yori Gorfel and Professor Alexander Revenko has given the world a wonderful healing technology.

Proving the point
The Scenar is licensed in Europe for ‘pain relief’ and in the US for ‘pain relief and muscle re-education’. Although its ability to quickly reduce pain is exceptional, we can see from statistics compiled from Russian clinics and Universities that ‘pain relief’ is almost a ‘side effect’ of something much more fundamental. Listed below is a summary of reports compiled by Scenar practitioners with varying degrees of experience: it should be noted that the average effectiveness includes complete recovery in 66 per cent of cases:

Diseases of:

- Musculoskeletal system - average 79%
- Circulatory system ** - average 82%
- Respiratory system – average 79%
- Digestive system – average 93%
- Male Genital, Urinary – average 89%
- Female Genital, Urinary, Obstetrics – average 78%
- Nervous system - average 81%
- Ear and mastoid process - average 82%
- Eye and adnexa - average 93%
- Oral cavity, salivary glands and jaws - average 91%
- Skin and subcutaneous tissue - average 68%
- Other applications - average 81%

** This includes 48 patients with acute heart failure – recovered after one 25-minute treatment. Also, 16 patients with sudden cardiac arrest – 12 recovered after one 10-minute treatment.

Scenar and emergency use – pain relief
Scenar is used widely in Russia by paramedics and emergency doctors. It is regarded as a ‘polyclinic’ and ‘ambulance in the pocket’. The dramatic effects on pain, oedema and traumatic injury are quite difficult to comprehend unless you have received such treatment or given it. Professor Tarakanov, the clinical director of Rostov State Medical University, compiled some results achieved by 43 emergency doctors residing in 11 cities and towns. Six hundred and ten patients received emergency treatment – 57 per cent were given Scenar as a mono-therapy and 43 per cent were given Scenar combined with drugs. The most frequent calls for emergency treatment were:

- 153 patients were suffering from neurovisceral hypertension stroke. Blood pressure was decreased on average between 15-20 per cent and pulse rate by 10 per cent. Pain (cardialgia and cephalgia) was virtually non-existent after 20-30 minutes treatment.
- 77 patients were divided into three groups suffering from osteochondrosis with radicular pain and neuralgia – pains in neck, head, chest and lower back. A four-point scale was used to assess pain. On average pain reduced to 0.2–0.5 from 3-0 after 20 minutes of treatment. Normal haemodynamics were achieved.
- 33 patients with acute viral infection
- 32 patients with dystonia
- 26 patients with severe pain from angina pectoris
- 24 patients with myosiall and muscular pain
- 20 patients with contusions, fractures, haematomas
- 16 patients with acute bronchial asthma
- 9 patients with gastrroduodenal disease
- 9 patients with soft tissue bruising

211 patients with other emergency issues

A summary of the results shows that the Scenar is an effective medical instrument for rendering immediate and ongoing medical assistance. It has been proved that Scenar action relieves pain, recovers functionality, accelerates the clinical course of a pathological process and decreases its evidence. The beneficial effect in the study is 87 to 92.3 per cent, irrespective of prior drug therapy. Through the use of the Scenar, patients spend less time on drugs and subsequent rehabilitation and the number of medical errors is reduced.

Contra-indications
No unwanted side effects have been demonstrated in over 25 years of use in Russia and Europe. The only absolute contra-indication is for people with cardiac pacemakers; although certain other diseases and injuries should only be treated by practitioners with thorough training.

Summary
The technology has, over 25 years, proven research, and hundreds of thousands of people have been successfully treated. The device can be used in confined spaces, is totally non-invasive, robust and portable, uses minimal energy, needs minimal training, reacts to the exact needs of the client at the time of treatment and is just as happy treating the knee of one patient and the heart of the next. Atlantic or Everest. Scenar works. The possibilities it offers emergency physicians, whether on the ground or in the air, are almost endless.

“Widespread use of this device [SCENAR] could save the NHS billions of pounds”

Quote taken from a talk given by Dr James Colthurst in England to the inaugural joint congress between the Royal College of Physicians and Royal College of surgeons.
The definition of assistance

There are many aspects to a medical retrieval. Mamoun K Mustafa, spoke to *IT* about the role an assistance company should play in the successful repatriation of a patient.

Without a doubt, assistance companies look at accreditation of air ambulance operators as being of vital importance, but the main question remains: Is accreditation alone enough to ensure adequate, safe, and cost-effective air ambulance transport? Or, do assistance companies have an obligation to play an important role in the successful completion of each air ambulance transport provided by a third party?

For the past 10 years, working as an aviation specialist responsible for the aviation and logistical aspects of our air medical transport, I have reviewed, audited and worked closely with dozens of air ambulance companies throughout the world. My role remains mainly the same as it did when I was first introduced to the industry: To perform successful air ambulance transports while bridging together the two most multifaceted and complex industries – aviation and medicine. Experts in these two subject areas must conduct due diligence as well as exercise real-time quality control to ensure adequate in-flight patient medical care and a problem-free air ambulance transport. This can only be achieved by:

- Co-operation between the air ambulance providers and the assistance company
- Assistance companies having both their own medical and aviation specialists as aero-medical experts

The aviation specialist would offer his/her assistance company knowledge of the aviation logistical challenges associated with an air ambulance mission, and would also be able to provide aviation solutions consistent with the medical direction of the transport. Since air ambulance missions are medically driven, the assistance company’s medical director would be responsible for the overall management of the air ambulance transport case, and would provide clear directions to achieve the ultimate objective, which is quality patient care during the transport.

It is in the assistance company’s best interest to have a comprehensive air medical provider network. One that offers a wide range of capabilities for air ambulance services. Being intimate with each provider’s scope of services, capabilities, and limitations enables them in real case time to match the appropriate air ambulance provider to the specific requirements of the transport from a medical and aviation standpoint.

To simply outsource the service and not know what it really takes to get the job done is a disservice to the patient and the client and can be a recipe for failure. At International SOS, we take each evacuation seriously by following an established process of due diligence that must be carried out before we call upon a third-party air ambulance provider. We must know first what is required to carry out a successful air ambulance transport. Our medical team also provides a thorough overview of all medical requirements to ensure an adequate environment for patient care in the interim of the transport. Our aviation specialist then provides the aviation logistical support through his understanding of the operational capabilities and requirements of airports of origination, destination, and en route fueling/technical stops. They would also need to know what landing permits, over flying permits, and licenses are required, and which aircraft is both operationally capable and most cost effective to perform the transport. Combining this information gives us an educated basis from which to make recommendations and decisions. Also, it enables us to identify the air ambulance provider best suited for the transport. But the evacuation process does not finish here. Since flight plans and itineraries are based on proposed estimated times, real-time monitoring of the transport progression is essential. The actual time should be more or less consistent with the proposed timeline. Any significant time difference from the itinerary may cause the need to re-co-ordinate with other service providers supporting the mission, such as the receiving hospital or ground ambulance company.

It is in the patient’s best interest when insurance companies and corporations providing air ambulance transport services as a benefit to their insured and employees understand the realities of the various roles and decisions involved in carrying out a satisfactory air ambulance transport mission. It is not as simple as calling any air ambulance provider from a long list and crossing your fingers that the right one was chosen. Because the air ambulance market has many air ambulance programmes with different medical and aviation capabilities and limitations, one cannot simply assume that any air ambulance operator is able to transport all medical conditions or fly in and out of all countries. Also, it’s not practical to do your research in real case time, when time is of the essence. To ensure a successful air ambulance mission, it is absolutely imperative to conduct due diligence and have a qualified, credentialed, and specialty identifiable provider network, as well as aeromedical specialists who are experts in this area, available and ready to make those life-critical decisions.
The horrors of arranging ground transportation! Who can you call, better yet, who can you trust? Allan Adler attempts to simplify the process.

How many times have you laboured to co-ordinate an air ambulance or commercial medical escort transport only to cringe because the process of arranging a ground transportation lies ahead? Why can a seemingly simple process become a frustrating and costly issue? How often have you had to call at the last moment or in the middle of the night to set up transportation, only to find you do not have a provider, cannot find one or worse yet, they command immediate payment at a rate much higher than you originally expensed for.

If these scenarios aren’t bad enough, consider the time spent that could be better served providing more essential company functions. There is a solution though, an alternative to dealing with these concerns. You use a travel agent to purchase airline tickets, a fueling service to purchase discounted fuel, a Fixed Base Operator to co-ordinate some needs, even a handling service to assist in international co-ordination. Now you can use an industry specific Transportation Management Organisation (TMO) to co-ordinate your ground transportation needs.

Transportation Management Organisations are not new. In fact, they’ve been established for quite some time. Leading national companies in the US include: Black Diamond, Optimal Transportation, Access OnTime, and Zonecare USA, all of which have been providing such cost effective transportation management solutions by developing regional and national transportation networks to serve their clients’ specific needs.

A TMO assists companies by providing the following service:-

- Immediate, one-call/one-stop turnkey service
- Calling and co-ordinating the appropriate provider to meet your specific needs
- Assuring provider standards are met
- Monitoring the progression of each transport to ensure accuracy and on-time performance
- Create a tailored billing mechanism to meet your needs
- Dealing with issues with real-time resolution

How an industry specific TMO operates:

A TMO earns its business by providing highly personalised customer service with 24/7/365 access where customised transportation is arranged to meet the specific needs of its customers. The value in its service comes in many forms.

One benefit is the use of industry trained call-takers and co-ordinators, who are versed in both air and ground procedures, which helps to facilitate a seamless process from the initial call through to the completion of each transport. Included in that process is the use of proprietary software and tools that help in the co-ordination and monitoring of each transport.

Another benefit is the amount of time saved by utilising a TMO. By virtue of using the service, one simple, short call is all it takes to process a request giving back invaluable time to the customer to deal with more sensitive matters.

Time is saved by eliminating redundant calls with providers and other parties associated with each transport. In addition, having to find new providers can be a labour intensive, timely process. Finally, if an issue were to arise, the TMO handles the situation in real time.

A TMO will also have a division whose sole purpose is to work as a provider liaison where relationships are developed, standards are monitored, and contracts are negotiated and executed. The TMO must continually monitor its providers to assure the best possible service available at the most reasonable rates, passing these savings on to its customers. Because of the valued mutual relationship, the providers continually take extraordinary steps to keep the TMO satisfied with their service and availability.

A TMO offers significant value in its service delivery, but in terms of cost containment, that is realised several fold. The first and most obvious is the fee for service. In many cases a customer is afforded significant discounts by the TMO as well as the savings from not having to pay providers immediate, time-of-service retail rates. Other savings come from the fact that the customer’s overhead in the accounting process is lowered as they receive accurate, tailored billing from the TMO, thus eliminating the inconvenience of having to dispute discrepancies or reconcile invoices from multiple providers.

The bottom line in utilizing a TMO is in the opportunity for cost savings that it presents, the efficiency it allows and the frustration it eliminates.
When you search the Web or browse are, you're in for one painful hangover. for making your selection, chances you use those sources alone as a basis and convincing advertisements, but if dozens of alternatives, pretty packages like choosing good tequila. You will find Mexico, Central or South America is like choosing good tequila. You will find dozens of alternatives, pretty packages and convincing advertisements, but if you use those sources alone as a basis for making your selection, chances are, you’re in for one painful hangover. When you search the Web or browse through a local directory you will find more ‘air ambulance’ companies than airplanes in these regions. If you call the numbers listed there, chances are you will end up talking to a local ground ambulance company with little or no flight experience, a company that will go unchallenged in Latin America.

**Tequila and tango** – a guide to Latin American services

Latin America provides a mixed bag when it comes to air ambulance services. Jessica Faubert guides us through.

There are excellent air ambulance providers in Latin America, but choosing a local air ambulance provider in

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So, before you take a swig, do your due diligence. Select and certify the air ambulance providers you will use before you need them. Don’t rely on local doctors, who will often have an economic interest in referring patients to one or another air ambulance company irrespective of the company’s qualifications. Network with other insurance and assistance companies to identify the various serious, professional, qualified companies they use. Ask the air ambulance companies you select for their documentation: air ambulance permits indicating the aircraft tail numbers that will be used, civil liability insurance, malpractice insurance, medical protocols, medical equipment documentation, medical staff names and licenses, advanced life support course certificates, physician specialties, and so forth. Ask for the documents you would expect from a local provider in your country. In Latin America, you will find the air ambulance industry in different stages of development depending on the country. Countries like Mexico, Ecuador, Brazil, Chile and Argentina will offer more than one reliable air ambulance alternative. Countries like Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Guyana, Suriname, Peru, Bolivia, Paraguay, and Uruguay will not. You may consider using operators from your own country to evacuate a patient from Latin America because you are already comfortable with these operators and their standards. That might not be the best idea. A smooth air operation in Latin America is not like drinking tequila, it’s more like dancing tango. If you don’t know the dance, expect some broken toes. Operations in Latin America are unusual and can be tricky. To begin with, ground handling, fueling, landing permits and over-flight permits need to be carefully arranged if you don’t want serious problems with Peruvian authorities on your way to pick up a patient in Chile or have your plane stacked with fuel cards only to find airports in Peru and Bolivia only take cash (and you’re not leaving until they’re paid). Also, airports in Latin America are few and far between compared to the dense concentration of airports in European Community and the US. Pilots experienced in Latin America know that airport alternatives decrease significantly the further south they fly, so careful flight planning and pilot experience are essential.

Even politics can come into play when operating in Latin America. US-registered aircraft sometimes receive a cold, unco-operative persona non grata ‘welcome’ in Cuba, Venezuela and several other Latin American countries. You can use local companies that comply with international standards, or another excellent alternative is to work with a hybrid company, a foreign-owned air ambulance company operating locally in Latin America or a foreign company with extensive experience operating in Latin America. There are several reliable and experienced alternatives. AirLink Ambulance, a US-based company with bases in Mexico, specialises in evacuating patients from Latin America to the rest of the world; Aeromedevac, a California-based company, has extensive experience in Latin America; Air Med is an Ecuadorian company that complies with international standards and can also provide air ambulance services within Peru; Aero Jet International has operational bases in the US and Puerto Rico; and these are several excellent Florida-based air ambulance companies with bilingual personnel experienced in Latin America (Air Trek Air Ambulance, Air Ambulance Professionals, among others). Most, if not all, of these companies already work on behalf of assistance companies; they will keep the hangovers at bay, and the toes intact.
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The next major issue to confront the whole industry will be fleet renewal. What will be the replacement jet for our current ‘workhorses’? There are about 10 years remaining before they are no longer economically viable. It is a question that must be addressed soon and, as of today, there is no obvious answer. With fleet renewal, we may also need to develop new economic model partnerships between insurance companies or fractional ownerships in order to finance and distribute the cost for the most acceptable aircraft. It is possible that individual insurance companies or a consortium will choose to either own, lease or finance one or more aircraft. Also, I do not see the commercial carriers reacquiring a big role in transporting sick people. In fact, I think they will become progressively less interested.

There will continue to be wide variations in the overall quality of healthcare delivery between countries and even within different regions of the same country. Travellers will undoubtedly continue to explore and discover new destinations and, as a result, there will be sicker patients found in more remote places. The gap between the level of healthcare that can be provided locally at the moment of illness and the perceived or documented standard available in the traveller’s country of origin will still be prominent and continue to challenge every aspect of the repatriation process.

ITJ: The US air ambulance market is extremely varied. Do you think the market will continue to diversify? Is there room for any other operational models? Which models work best?

MCS: At the end of the day, this industry is about the insurance market and associated risk management. In our world, it happens to involve two complex fields – aviation and medicine. There is not a lot of margin for manoeuvre when repatriating sick patients. As with aviation, our work must be very well done because the risk of a serious outcome as a result of poor medical practice in the hostile environment of a plane can be significant. Payors must maintain their healthy respect for both the medical decision-making process and aviation regulations. If the doctor and the pilot are not forced into making rash choices, there is no reason why excellent medical outcomes cannot be achieved within a profitable business model. At the present time, we have successful air ambulance operators many with an excellent standard who consistently produce high quality repatriations. Their example, though, needs to be generalised across the globe.

ITJ: Which is the easiest global region to work in, in terms of infrastructure and capabilities? What’s the worst?

MCS: It is hard to be specific but those regions where medical and aviation systems are mature and respected by both the insurance and healthcare cultures within their countries are probably the easiest. Today, in general terms, this would be Western Europe. In other areas of the world, a country’s language and culture can camouflage the quality of medicine being practised, making it more difficult to gain a clear picture of the actual depth and breadth of their infrastructure and capabilities.

Many different issues can interfere with a smooth repatriation but it usually comes down to money. For example, the US has some of the best medical facilities in the world but, in certain states, groups of doctors and administrators collude and sabotage access to accurate patient information. In this environment, in my judgment, foreign patients may sometimes receive excessive medical interventions and, therefore, less than optimal care. In other parts of the world, one has to carry a wad of cash paying out every step of the way. In the UK, the economic imperative drives the market at times to the detriment of the patient, who may be languishing in a poor foreign hospital when better and equally economical options are available. The Canadian healthcare system has big issues with access to entry to the operating room. And on it goes. The worst regions to work have a poor healthcare infrastructure and obstruct the operator’s ability to do their work.
Building your air ambulance business is naturally a priority, but how do you do this when information on your potential market is withheld? Dr Terry Martin puts out a call for better access to flight data

Consider this: you want to start up your own business repairing cars. You intend to offer a mobile service, and you need to lease a fleet of vehicles suited to the task. But, actually you are unsure about the task and therefore about the right type of vehicles needed in your fleet. You are also uncertain about the level of trade and likely short and long-term growth. No sensible bank manager would offer you financial support without a thorough and believable business plan, and that plan needs data. Data on the number of customers at start-up and at the end of the first year of trading, and data on the likely nature of the different types of mechanical work that will be requested. It all sounds so obvious doesn’t it? Yet you may be surprised to know that international air ambulance organisations, especially providers of aircraft, do not have access to reliable and validated pooled information on the nature and growth of aeromedical transportation.

Readers of this article will already know that the term ‘aeromedical transportation’ covers a wide variety of situations from short duration ‘hops’ in a primary helicopter retrieval to long-haul repatriations on commercial airliners, with a vast assortment of other types of systems and organisations in between. The one thing they all have in common though, is a lack of pooled data on aeromedical missions.

Into the void
With the phenomenal rise in patient transport that has followed in the wake of massive increases in global travel in the past 50 years, there are literally hundreds of air ambulance and medical assistance organisations that are collecting data for their individual use. In the next layer above, there are hundreds of insurance companies that have data from thousands, if not millions, of travellers who have been injured or taken ill abroad and who have required assistance. Where does this information go? Well, mostly nowhere. Most stays just where it is collected – in the computers and files of the companies concerned. The usual reasons are quoted as ‘commercial’, i.e. companies don’t want to give away too much to their rivals. The same has been said about airlines who, traditionally, don’t like to give out information about the number of passengers who fall ill in-flight. This sort of information ‘sends the wrong message about the airline’.

To paraphrase an old quotation: ‘statistics are like a bikini – what they reveal is interesting but what they conceal is vital’. Despite the 105-year history of powered flight, it must be remembered that aeromedical transportation is very much a new kid on the specialty block and does not yet possess the benefits and background of a fully developed research and literature base. In 1996, I wrote ‘It is hoped that, as aeromedical services continue to grow and document their efforts, this literature base will flourish’. Certainly, there has been growth. Aeromedical transportation has come a long way in that 12 years and the new age has brought new challenges. Increasing fuel costs, international terrorism, larger aircraft, advances in medical technology, critical ‘expensive’ care, demands for training, improvement and documentation of standards of care, and ever increasing legislation – these are just some of the challenges that are facing the aeromedical transport industry worldwide. All of these challenges need to be met with planning and improvement of efficiencies without detracting from safety or operational capability.

Let’s pool together
So why are the bean counters and managers still jealously guarding their data? Sharing information and building a true global database can only improve the management of current demands and planning for the future. As I see it, one potential solution would be to match similar organisations around the world so that subsets of data can be collected and pooled. The information should be freely given and freely available to global health planners, be they from commercial or governmental organisations. Like all good databases, much work is needed to ensure that the ‘right’ questions are asked and that uniformity pervades the system. The discerning user will realise that ‘garbage in’ equals ‘rubbish out’, so the bean counters and managers will need to work with the planners to ensure that the outcome data are reliable and useful. All this is possible. The consensus agreed that pooled data would benefit the whole industry. The will is there, the time is right and the academic means are available. With cooperation from the industry and funding, a global database can be operational within a year.

Masters courses in Aeromedical Retrieval and Transport at the University of Otago have already spawned some interesting projects, and I envisage this topic might fire the imagination of many postgraduate students. At a recent meeting of global air ambulance operators in London, a statistics are like a bikini – what they reveal is interesting but what they conceal is vital
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for a mission to commence, and keeps in touch with the crew whilst they’re away. Gauging whether a patient is fit to fly is another serious consideration for the medical director. There are, however, varying degrees of ‘fit to fly’, with different levels of necessary medical assistance that go with them. If the medical director agrees that the patient needs to fly, and has established the reason they are being transported in this way, he will then look at the safety issues involved for both the patient and the accompanying medical crew. If the conclusion is reached that the flight can go ahead, the medical director will then look at what is needed for that particular case with regards to both equipment and staff. Patient assessment is a crucial part of evaluating who to send and what gear is needed. This is easy if the patient is in your city at a nearby hospital, but obtaining this information in a timely fashion from remote locations can be difficult and can ultimately affect the decision of who and what to send. In such situations, teleconferencing and telemedicine are essential tools that help give us a better picture of the patient and their needs before flight. Of course there is more control if the mission is being carried out on a dedicated airframe, but there are still customs, quarantine and local laws to consider that can make the job very tricky. Ensuring the crew wears a medical uniform and carries identification and letters from the medical director about medications and sharps usually works, but there are still issues that can delay flights and impact on patient care. I find a checklist is a great way of ensuring that nothing is missed; and it also forms the basis of a brief for the departing team. If there is lead in time for the trip, getting the team together, meeting the patient and getting to know each other, as well as going over personal gear, medical gear, paperwork and providing a good list of contacts is an excellent start to identifying what problems the team may face and how to deal with them ahead of time. My main concern whenever I have a team away is for their safety, and knowing that everything is going ok. Good communication, therefore, is crucial especially if there are delays. That way, we can alter the plans from base in order to help the team. Attention to detail, constant updating and checking are the key and something I try to ensure my teams adhere to.

Setting the standard
One concept that is being looked into – and that would greatly help medical directors in their daily task – is that of defining international standards for retrieval medicine. The streamlining and co-ordination of national regulations by various aviation bodies is ongoing in Australia, and has had mixed success. To have national standards, however, would help medical directors gain international standards for the work we do.

Medical directors have many responsibilities – both to the patient and the crew – with decisions being made every day that can only come from someone with the relevant skill set and managerial know-how. There are certainly many challenges ahead for those in the air ambulance industry, though. Safety through credentialing, competencies and standards, however, is one way to ensure we are able to provide the highest level of care possible to the patients we carry.

Richard Cumbers is the CEO of 21st Century Energy Medicine. Richard researches leading edge healing technologies and is a Scenar practitioner and trainer. Courses are run in conjunction with the only authorised manufacturer of Scenar technology.

Dr Mike Finch is director of Goldflinch, a repatriation provider and aviation medicine consultancy. He has worked in the assistance industry as a freelance medical escort, becoming medical director of Travellers Medical Service and then Green Flag. For the past eight years, his company Goldflinch has supported many of the major UK assistance companies, the Channel Islands and, uniquely, provided medical clearance services for a major UK airline.

Milan Korosic is an award-winning freelance health policy and economics writer who covers travel insurance, public health, and medical education issues in Canada and the US. He has been writing about health financing and policy issues in these countries since the 1960s and is a frequent contributor to leading North American professional journals and consumer media. He lives in Fort Lauderdale, Florida.

Andrew Lee is committed as the CEO of the Air Ambulance Connection to continue his work in achieving the company’s objectives. With his background as founder and MD of Atlas International Rescue and later Travel-Solve Assistance he is the ideal candidate. A passionate individual who drives from the front enthusing others with his beliefs, often impatient, sometime controversial but always positive.

Patrick Schomaker is the director Sales & Marketing at European Air Ambulance (EAA). Schomaker, who speaks four languages, is a graduate of IPBS (International Partnership of Business Schools). He preceded his appointment at EAA, which he helped launch in 2006, with six years at Lufthansa, working in Revenue Management and Commercial Airport Relations.
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Ensuring the safety of patients and crews is paramount for air medical operators. That’s why Skyservice, a leader in air ambulance services, is equipping its Learjet 35 fleet with the Raisbeck ZR LITE Performance System. ZR LITE-equipped aircraft fly higher, faster, and further, with less fuel, to deliver the ultimate in productivity, efficiency, performance and, of course, safety.