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## Contributors

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**David Kernek** has, for the past four years, been in a full-time post editing two glossy travel magazines - Holiday Villas and Holiday Cottages. He has since converted it into a freelance role having become self-employed and now has regular commissions in consumer, trade and B2B publishing.

**David Robinson** has worked in business journalism for more than a decade. He worked as a reporter at the *South China Morning Post* newspaper in Hong Kong, and as a London-based investigative journalist at *Chambers Magazine*, a quarterly journal on the global legal market. He recently worked as deputy editor at *South West Business Insider* in Bristol.

**Patrick Truss** is a freelance copywriter and editor based in Bristol. He has extensive experience of writing for both print and online media across a wide variety of topics, including telecommunications, climate change and computing.
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No one knows Vietnam better.
It’s a truism beyond dispute that patients, stranded in a hospital in a foreign country, feel more comfortable and relaxed when picked up, escorted and handed over to their home hospital by one medical team, nurse or doctor – that is, they receive a bed-to-bed service by one team of people. But then, in times of rigorous cost containment by insurance companies and air ambulance operators, and when there is an economic need to utilise aircraft to capacity, medical repatriation is increasingly facing financial pressures, and patient comfort is not always granted the highest priority as long as a mission is considered safe.

In order to convince all parties involved in the delivery of travel insurance products and services that bed-to-bed policies should become the undisputed standard of the industry – not only because it is beneficial for the patient’s psychological wellbeing and comfort – it is necessary to look at the hard facts that support pursuing this policy, and to look at how these facts contribute to a good outcome for the patient, as well as the air ambulance, assistance and insurance companies.

Making contact
Firstly, let us begin with how the personal presence of the medical crew at the treating hospital can aid the patient, assistance company and insurer. The medical crew that has been sent to collect the patient has come, more often than not, from a country with a different language and different ways of operating from the country where the patient is being treated. By having the medical crew on the ground at the treating hospital, issues such as language barriers can be better overcome, and medical information is passed on in a direct and unfiltered manner, allowing for a more comprehensive and informed decision-making process. The crew can collect the relevant medical documents and get copies made, where necessary, and results of medical tests can be seen and X-rays

A good bedside manner

What are the pros and cons of air ambulance crews meeting their patient at the airport rather than assessing them at the treating medical facility? Dr Thomas Buchsein gives his opinion on the relevance of air ambulance companies offering a ‘bed-to-bed’ policy.
or MRI scans reviewed, if necessary, again allowing for a better handover of the patient.

This is also an opportunity for the medical crew to show the company’s colours, establish good contacts within the hospital and helpfully set up relationships to allow for improved co-ordination of care in the future. Of course, the visit will also serve to enlighten the medical crew as to the state of the care and equipment in the hospital, which could be better than they thought ... or worse; but such personal visits give a direct impression of the capabilities of a facility, which is extremely valuable information for the assistance company, allowing them to keep their data on international hospitals as current as possible.

Every so often, a medical crew receiving a patient at the airport will be handed a patient that has not been properly prepared for the flight – either medically or psychologically.

Being at the hospital before the patient is discharged gives the crew the chance to medically prepare the patient for the flight – for example, modifying treatment, or setting up an arterial or central IV-line, which is clearly more difficult and less safe in the aircraft cabin.

From the point of view of the sick or injured tourist who probably just wants to go home, the pre-flight visit to the hospital to pick them up means that communication channels are opened, allowing contact between the patient and their family and the crew that will accompany the patient. This contact gives both sides a chance to clear up anything that hasn’t been clearly explained, thus avoiding misunderstandings and possible subsequent complaints to the company after the transport is complete. As a side note, the crew can also ensure that the patient’s personal documents and belongings are not left behind.

Certainly, one of the most important considerations, if not the most important, is that the medical crew does not receive a patient on an airstrip who is clearly not fit to fly. Sadly, this scenario is still too common, and puts the patient at further risk of injury or illness, and puts unnecessary pressure on the air ambulance crew and assistance company to decide what the next best step for the patient is. When the decision is made to send a patient back to a foreign hospital, it can cause much upset and grief for the patient and their family, and can also be cause for complaint.

In transit
The presence of the medical crew in the road ambulance transferring the patient to the air ambulance also brings with it numerous benefits: the team can compensate for poor equipment and lower local staff standards, and the team can ensure that all monitoring equipment is connected at the hospital, so there is no need for change until arrival at the intended destination. Furthermore, the medical crew’s presence allows them to update the home base and flight crew about the estimated arrival time at the airport, enabling them to adjust the flight plan and prepare the aircraft, instead of leaving to chance if and when the road ambulance will arrive at the airport.

Almost anyone who has been on a foreign holiday has an anecdote to relate about a ‘crazy taxi driver’, and ambulance drivers are also not all made equal. By being in the back of the ambulance with the patient, the crew could have a positive influence on the driving style employed by the ambulance driver. If the road is rough, for instance, and the patient in the back is suffering, the driver could be asked to go more slowly or avoid the largest potholes, to increase comfort for the patient.

Finally, but of great importance, the crew being onboard the ground ambulance ensures that it is taking the right patient to the right airport at the right time!

Exceptions to the rule
Even though there are so many factors in favour of bed-to-bed transports, some exceptions exist. A bed-to-bed policy can be problematic or generate unacceptable, and possibly dangerous, delays in certain circumstances. These include if special visas or permits are required for the medical crew to leave the arrival airport, as is the case in some regional Russian airports, for example. Serious consideration must also be given to the time needed for the medical crew to get to the treating hospital – if it takes too long, this could result in the pilots falling out of their duty time, thus generating an unreasonable delay for the patient and possibly having a serious impact on their medical condition.

A true or urgent medevac mission that does not allow for any delay may render bed-to-bed care inappropriate. However, this is only the case if road ambulance services appear acceptable for the patient’s status, or an alternative is simply not an option.

The final situation where the medical crew collecting the patient from their hospital bed is out of the question is when the situation on the ground is deemed to be too dangerous for them – for example, from hotspots such as Mogadishu, Baghdad or Kabul.

Gold standard
In conclusion, I believe that bed-to-bed transports should be the gold standard of aeromedical transportation companies. Exceptions are there, but really these must be kept to a minimum.

In my opinion, the acceptable reasons for not performing a true bed-to-bed transfer are if the crew is considered to be in danger if they leave the airfield, and genuinely time-critical medical evacuation missions.

The one other situation in which it could be acceptable not to collect a patient from their hospital bed is when the transport is to or from a personally well-known, safe medical facility with which the air ambulance operator has an established relationship and communication standard; there are absolutely reliable ground ambulance services; and there is a family member with the patient at all times. Even if all these criteria are applied, it is essential that all the involved parties are happy with the medical crew not seeing the patient until they arrive at the airport, and that such scenarios are considered on a strict case-by-case basis.

Although I recognise that in these tough economic times there are incentives to economise – such as through saving aircraft ground time, airport fees, or hotel costs – there is no acceptable financial excuse to divert from the bed-to-bed standard.

Author
Dr Thomas Buchsein is medical director of FAI rent-a-jet, Germany. He has specialist qualifications in Internal Medicine, Intensive Care, Emergency Medicine and Aviation Medicine. From the mid-eighties on, his professional focus shifted increasingly to emergency and transport medicine, starting off with Europe’s first civilian rescue helicopter (Munich-based Christoph 1), followed by fixed-wing patient transports for ADAC and the German Red Cross.
In January this year, an air ambulance landed at Le Bourget airport on the outskirts of Paris from Abidjan in the Ivory Coast. Onboard was a patient with a serious heart condition who was being transported to a private hospital in the French capital. But airport staff were shocked by what they found inside.

“The plane did not have any onboard medical facilities or equipment. It was just a standard corporate jet,” says Dr Hervé Raffin, general manager of Medic’Air International. “It didn’t even have a stretcher.” Medic’Air had been scheduled to handle the evacuation until a last minute hitch meant the job went to a new and relatively unknown operation.

The last few years have seen a surge in the number of small one-plane air ambulance operations on the market. This trend has been driven by the closure of many executive air companies that sprang up during the boom years, which has led to a surfeit of cheap available corporate jets. “An increasing number of companies offer air ambulance flights without any expertise but at a low cost,” Raffin says.

The air ambulance industry has always been a relatively easy business to move into, observes Patrick Schomaker, sales director at European Air Ambulance, and the instability in the global economy has encouraged a lot of new start-up operations. “When a company providing executive flights is struggling, they can just hire a doctor and just become an air ambulance company. That’s how many small air ambulance companies start,” he says.

And as companies in Europe grapple with rising costs and anaemic growth, insurers are turning to cheap one-plane operators to save money. “There are suddenly lots more providers out there, which can cause problems for the established operators,” Schomaker admits.

Price is of the essence

“It’s a real price battle out there now,” says Dr Olivier Seiler, medical director at Swiss Air-Ambulance operator Rega. “Insurance companies are trying to pay as little as possible. The company that is 10 cents less expensive will get the flight.” However, the rise in the number of small operators has been countered by the fact that in the current economic climate some struggle to stay viable. The last couple of years, for example, have seen Air Alliance in Germany, Medical Jet Service (MJS) in Austria, and Airbulance in Holland disappear from the scene. “New companies without much cash flow are more sensitive to market fluctuations,” says Robert Glück, sales director, ADAC. “The bigger air ambulance companies are better equipped to survive.”

As assistance companies and insurers try to cut costs, air ambulances say there is more pressure to admit patients locally – where possible – and then return them to their country of origin on commercial airlines. “The result is a deflation of the number of air ambulance missions,” Raffin says. “We try to work with the insurers and tell them that this may work in the short-term, but over the long-term it makes sense to transfer patients back home because then the overall hospitalisation time will be shorter,” says Seiler. “There will be fewer complications – and they’ll end up spending less money.”

Schomaker continues: “Five years ago, when an assistance company asked for a quote, we said ‘take it or leave it’. Now, we tend to get called back and have to negotiate. It puts pressure on our business. We have to calculate with a very sharp pen to see how low we can go. How much rebate can we give? Can we match this price or do we have to say no?” It forces financial and operations departments to be more tight-lipped about costs, he says, and to give sales departments an exact figure. ‘How low can we go to sell this mission and at what point does it become a loss?’ are the common questions being asked.

The big squeeze

Other developments have seen the bigger assistance companies team up with subsidiaries to negotiate deals. “By re-grouping their purchasing, they are in a better position to negotiate prices, which on one side is good because it can mean bigger volumes, on the other hand prices are...”

“One long-haul flight more than compensates for two or three flights within the Mediterranean”
it at a certain price, they will lower the price to make it more attractive,” Schomaker adds, by way of explanation. “Although people have less money, many try to have at least one nice holiday a year. And for this they will need travel insurance.”

EAA has seen its repatriation amongst business travellers hold up well despite the downturn. “We do a lot of work for big oil companies, and there are many big international projects. The high price of oil has made it more viable to dig in far-flung places. Companies are sending more expatriates out to these projects. This results in more people in need of medical care in the event of accidents.”

“We have tried to cut costs by having more double-stretcher aircraft, which, of course, reduces the cost burden on our clients. If you can combine two patients in one aircraft it will reduce the overall costs. That was one reason we invested in two Lear 45s, which both have double-stretcher configurations.”

ADAC, meanwhile, exchanged its Learjet 35 – which could only be used for single transports – for a Learjet 60, which can transport two patients. “The pressures of the market have led us to try and do more combined flights and reduce overall costs,” says Glück.

But this situation does not always work in the air ambulance companies’ favour. Rega looked at overhauling its fleet of three Challenger CL-604 jets two years ago. “We looked at selling our three existing aircraft and buying four new planes. But the prices that we would have got for the old aircraft were so low that we decided to keep up the same fleet. We would have paid less for the new aircraft, but we would have got hardly anything for our three existing aircraft,” Seiler says. The next few years look likely to provide more economic uncertainty and more challenges for Europe’s air ambulance sector. Schomaker expects a certain amount of market consolidation this year on the back of the sharp rise in the number of single-plane operations. “If you are small company with one or two aircraft, your chances of survival are slim. If you want to survive, you will have to team up with another operator in order to achieve some kind of critical mass,” he says. The last big merger in the sector was six years ago between DFR Luftrettung and Ducair-Luxembourg Air Rescue to create EAA. “There is lots of gossip in the market,” Schomaker says. “In the next year or two, we will see some of these companies merging, forming alliances, joint ventures, or regrouping themselves under a new name. It’s inevitable.”

But with the shadow of the debt crisis still hanging over Europe, even the most established players will have to keep a steely eye on costs. Hope springs eternal, however, and rightly so. “Of course, there could be a really big crisis and everyone will stay at home and won’t travel,” admits Raffin. “However, I don’t think that will happen. Over time, the economy will slowly improve, but it’s going to take time.”

squeezed,” says Schomaker.

One issue above all others that is putting pressure on air ambulance companies is the high price of the cost of fuel. At the time of writing, oil prices were above US$120 a barrel amid fears of supply disruption in Iran and upbeat economic data from the US, the world’s largest oil user. “The high price of fuel is likely to continue,” Raffin says. “People have to find ways to reduce costs in other ways.”

Munich-based ADAC – an assistance company that has its own four-plane air ambulance fleet – has a different business model to much of the market. About 80 per cent of ADAC’s customers come from within the group, with the rest coming from third-party clients. “The number of third-party clients we have is down because of the downturn in the economy,” Glück admits. “Like other air ambulance companies, we are dependent on the number of business travellers and holidaymakers.”

And across the Western world, people are travelling less. The ITB World Travel Trends Report 2010/2011, for example, shows a six-per-cent decline in outbound travel from the UK, a 3.4-per-cent fall from the US and zero growth from Germany. However, Glück says this has not necessarily led to a drop in the number of people requiring its services, despite the downturn. People are still travelling, he says, but where they are going and how they get there has changed. “The German people are the world champions at travelling. They are travelling less, but still travelling. They may not be flying to Thailand, but [they] are going by car to Italy or Turkey. And those people still need travel insurance.”

At European Air Ambulance, sales increased by five per cent in 2011 and by 30 per cent in 2010. “People are still travelling,” Schomaker assures. His explanation is that the global travel industry has resorted to a smorgasbord of offers and incentives to fill hotel rooms and put bums on airline seats in spite of the global slump. “The hotels and the airlines have a certain capacity. If they cannot fill
The repatriation of a high-dependency patient over three continents and 12,000 miles – CEGA Air Ambulance

The request
CEGA was asked to repatriate a high-dependency patient from New Zealand back home to the UK for ongoing rehabilitation and recovery. The multi-disciplined team and the patient’s family elected that this was in his best interests.

Clinical history
The patient, a UK resident, suffered a traumatic head injury whilst working in New Zealand. After an emergency craniotomy, he was admitted to intensive care and required prolonged respiratory support. He made slow neurological progress and received regular neurological rehabilitation with physiotherapists. The repatriation request was made more than a month after the initial injury. The patient was on weaning nocturnal pressure support via a tracheostomy and had a productive cough, require increased respiratory support. After a craniotomy, guidelines stipulate that patients should generally not fly until all air is absorbed, unless the aircraft is pressurised to sea level.

Considerations
- Mobility: a stretcher was required for repatriation, due to the patient’s high-dependency needs.
- Residual air within the cranium: this is a key consideration in an air ambulance repatriation after a craniotomy. Guidelines stipulate that such patients should generally not fly until all air is absorbed, unless the aircraft is pressurised to sea level.
- Hypoxia (oxygen deprivation): this can be seen in normal individuals above 10,000 feet and can lead to tissue hypoxia, when the patient may require increased respiratory support.
- Microbiology/infectious disease: a potential concern to both patient and crews. Any possibility of positive microbiology had to be assessed before repatriation.
- Thromboembolic prophylaxis: as on any air ambulance repatriation.
- The need for special and essential care: a special mattress to prevent pressure sores (with two hourly turns), mouth care, a catheter bag, bowel management and the continuation of rehabilitation could all be needed on the transfer.
- Nutrition and medication: the importance of adequate supplies of enteral feeding and appropriate medication.
- Portable equipment and oxygen: what equipment could be carried aboard the three planes? Were there compatibility issues, e.g. with electrical sockets and ventilator valves? What were the patient’s oxygen requirements, taking into account flight time, cabin pressure/altitude, and possible diversions or flight delays?
- Motion sickness, vibration, or noise: these could have physiological and psychological effects.
- Multiple time zones: changes to the sleep-wake pattern could lead to fatigue and general malaise for the patient.

Planning
CEGA’s in-house medical team first built a clinical picture of the patient’s suitability to repatriate and his ‘fitness to fly’, assessing potential risk versus potential benefit. Once all medical information had been received and reviewed, planning was then undertaken by CEGA’s medical and travel unit teams, who considered the options below, to ensure that the patient underwent the most efficient transfer whilst maintaining ongoing care needs, privacy and dignity:

- Air ambulance for the entire journey
  Most air ambulance jets would have to undertake five or six fuel stops to fly from New Zealand to the UK, a lengthy process. Relatives would not be able to fly with the patient on such a long journey, due to fuel calculations and limited space.
- Commercial airlines
  No single commercial airline operating on this route was able to accommodate a high-dependency patient.
- A combination of the above
  This was preferable, offering reduced travelling time and an ability to meet all the patient’s clinical needs.

The logistics
The critical care transfer involved three flights:
- Sector 1 – The first air ambulance critical care team was dispatched to the patient’s bedside in New Zealand then transferred the patient to the airport via road ambulance and on to a dedicated air ambulance – a Learjet 36. This flew to Singapore International Airport to interline with an Airbus A380 commercial aircraft. The patient transited with a wing-to-wing transfer. The handover had to be executed with extreme care and precision, taking into consideration the patient’s condition.
- Sector 2 – The commercial aircraft with a built-in intensive care unit (ICU) had all the facilities of a standard ICU. It maintained patient...
privacy and dignity away from the commercial passengers, whilst meeting high care needs. On arrival in Germany, the patient transited with a second wing-to-wing transfer and handover to the third high dependency team, maintaining continuity of the patient’s care.

- **Sector 3** – The final transfer was taken via CEGA’s King Air 200 air ambulance. CEGA’s critical care team flew with the patient to the UK and successfully completed a road transit via ambulance to the patient’s local hospital, which contained a neurological high dependency unit facility.

The high dependency patient required more than one critical care team to ensure quality care throughout the lengthy repatriation, and to ensure all medical equipment was consistent with that supplied within a standard high dependency unit. All critical care teams were accredited by the European Aeromedical Institute (EURAMI) for ‘special care’.

**Communication**

All communication was channelled through CEGA to ensure that the complex repatriation ran smoothly. CEGA updated next of kin and interested parties throughout the proceedings. Initially, all documentation was obtained by CEGA from the original hospital. This included typed reports from all multi-disciplined teams involved in the patient’s care.

Airport wing-to-wing transfers were utilised to reduce time on the ground and to ensure any clinical communication was undertaken at the patient’s bedside within the discharging aircraft. To communicate effectively, all high-dependency teams used a tool similar to that of SBAR (Situation, Background, Assessment and Review) and additional information gathered included: medication information; documented timings for medication; any noted physiological effects of transfer; and the patient’s sleep pattern (kept consistent with the time at the original hospital in New Zealand).

Admission to the UK hospital was established before the patient left his hospital bed in New Zealand and this communication standard continued until the patient was successfully discharged to the UK hospital’s multi-disciplined team.
Originally developed from British Aerospace’s BAE125 aircraft, the Hawker 800 – now manufactured by Hawker Beechcraft – is a mid-size, twin-engine, fixed-wing plane. The aircraft is similar to many other modern airframes in that it requires sub-assemblies at locations separate from the final manufacturing point. In the case of the 800, the fuselage sections, wings and control surfaces are manufactured and assembled in the UK at Hawker Beechcraft’s own facility and at Airbus UK. The sections are partially fitted out and installed with control surfaces and major systems, then are shipped out to Wichita, Kansas, US, for final assembly, fitting out and testing at Hawker Beechcraft’s main manufacturing site.

The Hawker 800XP is an all-metal, twin-turbfan engine, swept-wing jet aircraft. The powerplants are two Honeywell TFE 731-5BR turbofan engines, pylon mounted on the rear fuselage. The aircraft is certified for two-pilot operation. The standard avionics on the aircraft is a fully digital Collins Pro Line 21 display and radio system featuring four large liquid crystal displays. The Collins Flight Detector/Autopilot is a fully digital system that provides automatic three-axis control of the aircraft.

Testimonial

“AirMed International chose the Hawker 800 aircraft for multiple reasons, all of which focus on a higher level of patient care. The Hawker has a stand-up cabin, the capability to transport two patients simultaneously, and is three times larger in cabin volume than the Learjet, according to Conklin & de Decker, independent aviation analysts. For long-range transports, we feel that a stand-up cabin is essential for chest compressions and intubation, which are both crucial components of uncompromised patient care. The Hawker has an Auxiliary Power Unit (APU), which the 30 series Learjet does not. The APU allows us, again, to provide uninterrupted levels of care to patients during fuel stops. The Hawker requires more maintenance per flight hour than average aircraft, but it counters that with extremely high dispatch reliability, one of the best in the industry. We have three Hawker 800s in our fleet because they are superior to the Learjet in every aspect of air ambulance operations.”

Jeffrey Tolbert, CEO, AirMed International

Testimonial

“The Hawker Beechcraft 800A as an air ambulance is probably a very operator dependent choice. In the case of Netcare 911, we would be classified as a ‘hot and high operator’ and so many of the choices around the aircraft were made with this in mind. The 800 series brought good range advantage and the ‘sheer grunt’ to depart an airfield with full tanks during the hot African summers. We deploy our present 800A in the role of long-range evacuations, which are routinely to Nigeria, Ghana, Sierra Leone or Mali and back to South Africa. This means that the larger cabin can accommodate a three-pilot crew, makes provision for greater medical crew comfort, and of course the onboard bathroom adds to reducing crew fatigue and ensuring both flight and patient safety. The large cabin also caters to multi-casualty incidents by having two fully ICU-equipped stretcher bays and sufficient medical crew to cater to the needs of two patients.

From the flight deck, the Hawker 800 is a very pilot-friendly machine but I think the most important thing to our flight crew is that the aircraft is routinely reliable – ‘it does the same thing every time’ – and that is true of range and performance, which is a big issue when flying over Africa at night. Night-time operations in Africa routinely decrease your access to alternate airfields, fuel and technical services, so when you depart your home field you want to know that you’re going to get to your intended destination or planned ETOPS alternate with a 100-per-cent guarantee of safe arrival. So, in three adjectives, the Hawker 800A is safe, reliable and spacious for operation of an air ambulance.”

James Crawford-Nutt, general manager, international business development, Netcare Limited

Specifications

1 patient configuration

2 patient configuration

Pilots: 2
Medical crew: 2 (with 2 stretchers)
Stretcher capacity: One or two
Length: 15.6 m
Wingspan: 15.6 m
Height: 5.5 m
Basic operating weight: 7,370 kg
Max. take-off weight: 12,700 kg
Max. speed: 448 kts (830 km/h)
Range: 2,540 nm (4,682 km)
Service ceiling: 12,497 m
Toilet: Yes
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From religion-based food requirements to decisions surrounding end-of-life repatriations, there are a multitude of cultural and moral questions to ask when organising a medical flight. David Kernek talks to air ambulance and assistance companies in the US, the Middle East and South Africa about their experiences of the way in which cultural and ethical issues have impacted how repatriations are planned and carried out.

Cultural considerations

Aviation and medical expertise aren’t the only essentials needed by air ambulance operators and their crews. Nurses and paramedics have to be able to respond not only to a patient’s physical needs, but also to the constraints that come with his or her religious faith and cultural traditions – and these sometimes involve requirements that make patient care more problematic.

A brief in time …

“The cultural differences that occur during an air ambulance transport are frequently a challenge,” says Beau Brooks, communications centre manager at Air Ambulance Specialists (AASI), headquartered in Colorado, US. “You do due diligence every time, but I’d say it’s nearly impossible to plan and staff up fully for meeting all of the things that could face crews because of religious or cultural diversity.”

He says that these differences, when they occur, can present distractions for crews. “To mitigate this, we work hard to educate our staff – ahead of flights – on any cultural nuances that might exist, and we include some of our more challenging experiences as case studies at our quarterly safety meetings.”

Gender issues between patients and staff are high on the list of factors calling for sensitivity, says Brooks. “Recently, we flew a Saudi royal family member on a Gulfstream III from Minnesota, US, to Jeddah, Saudi Arabia. The patient, who had been at the Mayo Clinic in Rochester, was a female child and, fortunately, our nurse was female. The male respiratory therapist onboard was prohibited from making contact with the patient. However, had the situation been reversed – had it been a male nurse – we would have had great challenges caring for the patient.”

Another factor he highlights is the attitude to medical staff of family members accompanying

“We include some of our more challenging experiences as case studies at our quarterly safety meetings”
Middle Eastern patients. “They can be very interactive with our medical people, asking questions and second-guessing actions, which can be very distracting for our staff. In normal Western medical practice, we often see family members asking questions, but generally there is an understanding as to when you must leave the medical staff to provide care and not distract staff. This line is much more blurry in other cultures.” As far as the Middle East is concerned, he says, people in these countries have a very different attitude to female nurses: their expectations – their prejudices – are very different to those people have in the West. “That can be a challenge to our medical staff, who often have to swallow their pride,” says Brooks. Furthermore, diet is a considerably important issue for a number of religions. “We thought we had all the right things for Islamic catering on that flight to Jeddah,” recalls Brooks, “but at the 11th hour, we were asked for something we had a real job finding in Rochester, Minnesota. It ended up OK, but it was a challenge.”

But it isn’t all challenge. Brooks says that patients and their families are often very generous in their thanks for the work carried out by medical crew: “Another cultural difference is that many Mid East clients show their gratitude by showering our crew members with gifts … that’s an upside for them.”

Sense and sensitivities

At CONNEX Assistance Middle East, managing director Lara Helmi gives a similar list of sensitivities. “Middle Eastern people are, generally, conservative, so when it comes to revealing the body medically, it is preferable to reveal only the part that is to be examined and cover completely the rest of the body. In more conservative areas such as Saudi Arabia, Qatar and Kuwait, it is preferable to have only same-sex nurses and doctors for the comfort of the patient.”

But it’s not only Muslims who present ambulance crews with challenges arising from cultural or religious diversity. “There are quite a considerable number of Jehovah’s Witness Christians in Egypt for whom it is religiously prohibited to have a blood transfusion,” says Helmi. “If such patients need a transfusion, special arrangements must be made for artificial blood substitutes or low molecular weight Dextran to be given instead. And, of course, we cannot give drugs that contain alcohol to Muslims.” As far as food is concerned, the company also makes sure its flights have provisions for Muslim patients and their family escorts: “No alcohol and no pork products are served,” says Helmi, “If there is meat on the plane, it needs to be halal.”

Religious festivals that come with restrictions on when people can eat and drink can present challenges, but these are not insurmountable. Ramadan is one of them. “Muslims are expected to fast – no food and water – between sunrise and sunset during Ramadan, but breaking the fast is permissible for those who are sick or travelling. Coptic Egyptians also fast by omitting all animal products (except fish) for a sustained period, and they need to be officially excused by the Coptic Church to be able to break their fast.”

A healthy respect

Appreciating diversity is ‘encouraged and nurtured’ by one of Africa’s prominent air ambulance operators, Netcare 911, says the company’s international business development manager, James Crawford-Nutt. “South Africa truly is a ‘rainbow nation’, and as such we have access to medical professionals from various cultural and religious backgrounds,” he says, “Our personnel receive diversity training and our medical professionals are sensitised to the many ethnic and religious groups within South Africa and in the other areas served by them.”

Furthermore, Netcare 911’s air ambulance crewing is not planned on gender lines; there are no all-female/all-male crews, at least not by design. “There is both a constitutional and a moral obligation on South African companies to ensure there is no gender bias,” he says. “A South African crew would accordingly not entertain gender specification. The gender make-up of a particular aeromedical crew is not pre-determined. It can consist of either men or women or a mixture of both. The important factor is that...”
the composition of the crew is such that an outstanding level of care is provided at all times.” However, the company says it would certainly be sensitive to the gender make-up of its crews if this were necessary. “A female victim of sexual assault, for example, might prefer to be treated by women and we would endeavour to accommodate such a requirement.”

Moral dilemmas
Not all of the challenges that face crews come from cultural or religious traditions. There are tough ethical choices, too. “We routinely encounter a variety of clinical scenarios that may present an ethical dilemma,” says AirMed UK’s medical director, Dr Jon Warwick. “How to manage the repatriation of the dying has given us most food for thought. For example, we may be confronted with a request to repatriate a critically ill patient who is unlikely to survive. This creates a potential problem: to carry out a transfer in the knowledge that it might hasten the patient’s demise, and with little chance of benefit, is contrary to conventional ethical opinion. The transfer is hardly in the patient’s best interest if there is no therapeutic benefit. Being unconscious, sedated and receiving artificial ventilation, the patient has no role in the decision-making.” At the extreme end of this spectrum, says Dr Warwick, air ambulance companies encounter requests to repatriate patients who might even be dead already, being deeply unconscious, unresponsive and continuing to receive artificial ventilation following out-of-hospital cardiac arrest. “The diagnosis of brain stem death in the UK is a clinical one: the absence of brain stem reflexes in a patient with an identified cause of coma is acknowledged to be a patient who is ‘dead,’” explains Dr Warwick. “This conclusion is by no means the case in all European countries, where the diagnosis of death is not as clear cut as in the UK.”

problems for air ambulance staff. “The general assumption is that the staff in these places don’t have the appropriate training or specialisation to give accurate reports,” says Beau Brooks at AASI. “This is true some of the time, but I have often heard that doctors give reports that present the patient in a better light than is actually the case so that the air ambulance people will not say the patient is unfit for flight. If the air ambulance denies the flight, then the treating doctor is often stuck with a patient they cannot care for, which is obviously not what they want. Thus, they have an incentive to make the patient appear better than they actually are. We had a case like that recently in Hawaii, which really surprised us.”

At CONNEX, Lara Helmi comments: “Generally, in hospitals in rural areas of the Middle East, it is difficult to get full medical records and information. Most of the time, you get this information verbally. In some government hospitals, the data is satisfactory, while in others medical notes and records are deficient in details such as patient’s progress and prognostic data.” In Africa, Netcare 911’s James Crawford-Nutt agrees that, in some countries, information about a patient’s condition prior to a flight can, at times, be ‘limited’. “In all cases, aeromedical crews prepare for the worst possible scenario and carry equipment necessary to handle any eventuality. The medical information we are given is always viewed as a basic guideline only. Due consideration is taken of the fact that the situation could be very different upon arrival. Medical crews complete primary and secondary assessments prior to repatriation, and during these examinations, secondary conditions that have not been noted in medical records are often detected.”

Data, and communicating that data, is key to organising and carrying out a successful air ambulance operation – whether that’s collecting data about the religious requirements of the patient in order to provide for their needs, or passing accurate medical information to the medical flight crew – and over the years, this has become second nature for many of the international flight crews operating across the globe. With more and more countries spouting forth eager travellers, cultural, religious and moral decisions are something that will remain a focus for air ambulance providers. How well they interpret and adhere to such needs will be one of the keys to their ongoing success.
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December is a very busy time of the year for us: it’s the time when millions of tourists from Europe, the US and from within Asia flock to the region’s resorts and exotic cities. It’s also holiday time for most Asian countries, and regional holiday travel is at its highest level. As such, factories and mining companies are often operating at below normal strength, putting a strain on the existing manpower and too often resulting in illness and accidents. All of this means that there is a tremendous demand for medical evacuation via air ambulance in December, and last year was no exception. In fact, even with four air ambulance jets in our fleet – based in Singapore, Manila (Philippines), and Bali – our resources were stretched to the maximum. Amongst the numerous medical evacuations that we carried out in December 2011, one particular evacuation will remain in our memory for a long time to come, due to the numerous challenges it threw at us. Not only was it one of the longest repatriations we have carried out – it covered a distance of over 9,000 km – but it was also fraught with many trials, due to the patient’s condition, extremely bad monsoon weather en route, and destination airports being closed due to fog.

**CASE STUDY**

**Moving mountains**

Port Moresby, Papua New Guinea to New Delhi, India: 9,000-km repatriation – Flying Doctors Asia

*Prior planning*

On 27 December 2011, our alarm centre in Singapore received an email and subsequent telephone call from an insurance client requesting a cost quotation and checking aircraft availability for an air ambulance evacuation – complete with medical crew – to transport a patient from Port Moresby in Papua New Guinea to Jalandhar in Punjab, India. The patient, an Indian national, was a 50-year-old male who worked in a copper mine. He had been in a local hospital for a week and needed to be evacuated home to India. The medical report indicated that he had ‘acute ischaemic heart disease’, but stated: “The patient is fully stable, alert and fully awake.”

We responded with a bed-to-bed quote using our Westwind jet air ambulance aircraft and a routing for the evacuation as follows: the Singapore-based aircraft would fly to Port Moresby (8.5 hours flight time with one refuelling stop en route) the day before the patient transfer. The crew would have its required 12-hour rest in Port Moresby and would evacuate the patient the next day to Amritsar – the airport closet to Jalandhar, a small town about 100 kilometres (surface distance) away.

The air ambulance evacuation route would be as follows:

- Port Moresby to Menado – 4 hrs and 15 mins (refuelling stop)
- Menado to Bangkok – 4 hrs and 30 mins (refuelling stop and crew change in Bangkok)
- Bangkok to Amritsar – 5 hours and 5 mins

The cost proposal and routing was agreed by the client and the date for the repatriation was set for 31 December. This gave us ample time to obtain all the necessary approvals for the flight: because of the number of countries we were crossing or landing in – Malaysia, Indonesia, Papua New Guinea, Thailand, Myanmar, Bangladesh, and India – a total of around 12 approvals for landing and over-fly were required. All the necessary approvals were secured within two days and we were ready to begin the evacuation on time.

*Good to go*

Then came a hitch: by the time we got the go-ahead from the client and the necessary permits had been secured, all our Singapore and Manila-based aircraft were busy with other missions. The only option left was to activate our Bali-based Westwind jet, which is mainly used for flights to Australia, with December and January being peak Australian holiday months.

Activating the Bali-based aircraft was not an issue. In fact, it is actually 2.5 hours closer to Port Moresby. However, the complication was that the cardiologist medical team assigned to this
The evacuation was based in Singapore. We therefore, had little choice but to fly the air ambulance from Bali to Singapore, pick up the medical team and the equipment in a quick, one-hour turnaround, and fly on to Port Moresby. The aircraft arrived, in time, on 30 December and the medical team had a well-deserved 14-hour rest.

On the morning of 31 December, at 9:00 a.m., the medical team visited the patient in hospital in Port Moresby and determined that all was in order and that the patient was stable enough to be evacuated and begin the long journey home. The patient was transferred to the aircraft by ground ambulance, and the aircraft took off at 12:00 p.m. for Menado (Indonesia) — the first refuelling stop. With a nice tail wind, this sector took just four hours, and after a one-hour refuelling stop the aircraft was airborne again for the flight to Bangkok. At this point, we were ahead of schedule.

However, just when we thought all was going well, an hour into the flight from Menado, we received a phone call from the doctor onboard (all aircraft are fitted with satellite phones and a flight tracking system, FlightCell), who relayed that the patient was having breathing difficulties and showing signs of discomfort, and said that he wanted to divert to Singapore and admit the patient into a hospital there to place him under observation. The client was immediately informed and this course of action was agreed. A bed was secured at Raffles Hospital in Singapore and a ground ambulance was waiting to transfer the patient to the cardiac ward. Meanwhile, the doctor onboard was able to keep the patient comfortable and three hours later the aircraft landed in Singapore — at about 8:00 p.m. local time — and was immediately taken to the hospital with great sighs of relief from all. On the ground, the doctor was able to brief the client in greater detail. It was agreed that we would monitor the patient’s condition and determine when he could continue the journey.

Onwards and upwards

The patient had a good night’s rest at Raffles Hospital and his condition improved tremendously. The Flying Doctors medical team felt that he could continue the journey, and a departure time of 4:00 p.m. the next day was fixed. It was a good call by the medical team to break journey in Singapore, as it appeared that the patient might not have survived if we had continued as per the original schedule. The client also decided, upon the advice of our doctor, that the patient should not go home to his village in Jalandar but should instead be admitted to a hospital in India that had appropriate medical facilities to treat this condition. It was thus agreed that the patient would no longer be flown to Amritsar, as per the original schedule, but would in instead land in Delhi and be taken to a hospital there.

This simple change necessitated re-filing our flight permits for India, which resulted in a long, nail-biting wait for the permits to be approved. Once the approvals came in — at the eleventh hour — the planning for the flight from Singapore to New Delhi had to be sorted out. The first idea was to fly to New Delhi with one refuelling stop in Phuket. However, the forecast weather over the Bay of Bengal was extremely bad, and for the sake of the comfort of the patient, our flight ops team planned the route to New Delhi via a tech stop in Chiang Mai, Northern Thailand, bypassing the Bay of Bengal. This meant a slightly longer flight, but it would be a lot more comfortable for the patient. The Westwind air ambulance jet departed.
Singapore on schedule at 4:00 p.m. and winged its way to Chiang Mai – a three-and-a-half-hour flight. We all crossed our fingers, hoping for no more changes.

We were not to have such luck. On arrival at Chiang Mai, just as the aircraft was about to depart on the final leg to New Delhi, we were informed that New Delhi would be ‘fogged out’ at the time the aircraft was scheduled to arrive. Visibility was expected to be just 50 metres, much below our minimum for a landing of 500 metres!

It was a frantic rush back to the drawing board.

We had 30 minutes to make a decision, as the patient was in the air ambulance. Various options were considered: one option was that aircraft would fly to the airport closest to Delhi, i.e. Jaipur, and wait for the fog to lift then make a dash for Delhi; another was to land at Jaipur and take the patient to Delhi by road ambulance – a four-hour journey.

In the nick of time

We decided that, in the interest of the patient, the best option was to break the journey in Chiang Mai, admit the patient into a local hospital under the care of our medical team, and wait for the next day before attempting the flight into Delhi.

A quick conference call was made to the client and this plan of action was agreed upon. Meanwhile, our flight operations team kept checking on the weather situation to determine the best time to fly to New Delhi.

Eventually, the weather forecast indicated that the fog would start lifting around noon time in Delhi, which would give 800-metre visibility, just sufficient for us to make a safe landing. Based on this information, we decided to plan for departure from Chiang Mai the next day at 10:00 a.m. local time. The patient had a comfortable night and was ready to fly.

However, as the forecast weather and arrival visibility was very marginal, we made contingency arrangements for a land ambulance to stand by in Jaipur in case we were diverted there. We also applied for landing in Dhaka just in case Delhi was still fogged out.

The aircraft took off from Chiang Mai and again we held our breath and crossed our fingers. Our flight ops department kept in constant contact with the crew and medical team by phone whilst we tracked the flight on our computer screens. As the aircraft got closer to Dhaka, the weather forecast indicated that visibility in Delhi was improving and the decision was made to continue flying on to New Delhi and divert to Jaipur if it became bad again. Fortunately, the weather in Delhi continued to improve and our air ambulance landed safely with the patient in a good and stable condition, in one-kilometre visibility!

What was originally intended to be a 20-hour, uneventful and routine trip from Port Moresby to Amritsar turned into a three-day trip with all manner of challenges thrown at us. Thanks to our wonderful flight crew, medical team and a very understanding and appreciative client, we were able to achieve the objective of flying the patient safely home, even though he was two days late.

Prithpal Singh is a commercial pilot and a tourism, leisure, travel and aviation veteran who has held senior management positions in large private and public companies. As an aviation entrepreneur, he set up Executive Jets Asia and Flying Doctors Asia seven years ago and grew it from a single Lear35 jet to a five aircraft, all-jet fleet today. The company has operations based in Singapore and Malaysia, serving the Asia Pacific region and beyond.
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The patient
In February, DRF Luftrettung’s Alert Centre at Karlsruhe/Baden-Baden airport, Germany, received a request to provide assistance: the client was enquiring about the repatriation of a 66-year-old man from India to London. The man had suffered a heart attack a year previously, and the ensuing complications had led to a heart insufficiency. In addition, he had developed sepsis in his whole body, leading to acute lung and kidney failure, which made clinical treatment necessary. The man, who spent his holidays in India, resided in London and needed to be transported to a hospital in the UK for better medical treatment.

The mission
Given the patient’s critical condition and taking into account the crew’s shifts and rest times, performing the repatriation with a heavy crew (two captains, one co-pilot, one emergency physician, and one flight paramedic) was considered to be the most effective option. The dispatcher responsible for the mission prepared the flight plan and ensured everyone involved had the necessary medical information. This involved obtaining the respective patient and hospital records and gaining precise information about the patient’s condition. The dispatcher then informed the medical crew accompanying the patient and organised the entire transfer from hospital bed to hospital bed. Since the planned flying route was above Iran and Pakistan, a number of formal obstacles had to be resolved regarding overflight permits. Also, in cooperation with the pilots, the dispatcher organised further details concerning the flight operation, including the landing permits required for Turkey and Iran (planned fuel stops).

Regarding the potentially poor medical circumstances the team were expecting to find in India, as well as the patient’s disease pattern, the paramedic in charge needed to prepare additional medical equipment, such as a respirator, diverse infusions, certain medicines and thoracic drainage sets. Within a few hours, however, the entire mission was planned in detail and the ambulance aircraft was ready for take-off. The Learjet 35A departed at around midnight from its base at Baden-Baden/Karlsruhe.

Poor hygiene
After a short refuelling stop in Turkey, the flight continued towards the East of Iran, where another refuelling stop was necessary. Finally, at 9:43 a.m. the next day, the aircraft landed at Ahmedabad airport, India. The medical crew collected the necessary medical equipment, since the next step was to get to the hospital in order to gain an overview of the patient’s condition and to plan the subsequent repatriation, which was scheduled for the following day. In many countries, security and customs regulations often lead to long hours of waiting and making arrangements. In this case, the crew was lucky and they passed the checks more quickly than expected, arriving at the destination clinic at around noon. The patient was in a critical condition, so the
The medical team discussed with the clinic’s medical staff the additional medical interventions that would be necessary before the patient was able to be transported. In addition to this medical coordination, the flight paramedic and the emergency physician of DRF Luftrettung took their time to talk to the patient’s family. Noticing the poor hygienic conditions at the intensive care unit and within the intensive care ambulance vehicle, which was designated for the transport to the airport the following day, the medical crew realised that the medical standards in India do not always correspond to Western European standards.

All in a day’s work
At around 7 a.m. the next morning, the patient was transferred from the hospital to the airport under the intensive care of DRF Luftrettung’s medical crew. Just an hour later, the aircraft was ready for take-off, with its precious cargo and the crew onboard. During the flight, the intubated and anaesthetised patient was comprehensively monitored, the connected medical equipment was controlled, and the patient was provided with infusions and medicine. The flight passed without any problems, with the patient in a stable condition. After two stopovers in Iran and Romania, the air ambulance landed on British soil at 9:20 p.m. The alert centre had already organised the next and final steps of the mission: under the care of DRF Luftrettung’s medical crew, the patient was transported to the destination clinic in London onboard a road ambulance vehicle.

Meanwhile, the pilots continued their flight back to their home base in Germany, in order to adhere to their rest times. The medical crew stayed in London overnight. Considering the fact that the crew had a lot of medical equipment with them, they decided to return to Germany on the train via Paris and Strasbourg the following day. At 11:30 p.m., they finally reached DRF Luftrettung’s base at the airport of Karlsruhe/Baden-Baden.

Matthias Reinhard was the responsible flight paramedic during the mission. He is a qualified nurse, specialised in intensive care transports, and qualified as a paramedics’ instructor.

Christoph Lind is a flight paramedic specialised in intensive care transports and outpatient anaesthesia. Within DRF Luftrettung’s fixed-wing section, he is commissioned for education and training of the medical staff.

Authors
The rising cost of air ambulance services has been an issue at the forefront of operators’ and insurers’ minds in recent times. Major air ambulance providers are well aware of the need to keep pace with medical advances and provide state-of-the-art capabilities so they can offer a high-quality service; and such companies need to continuously invest in specialist equipment to maintain their place in the market and offer care that, to a certain extent, parallels that available in the treating and receiving hospitals – and the costs quickly mount up. For example, a whole unit for neonatal transport costs about €100,000, including all associated kit. A defibrillator costs €25,000 a unit. Air ambulance operators also need aircraft capable of carrying this equipment, and to upgrade them from time to time in line with medical advances and to reflect any change in the stretcher configurations necessary for the type of repatriations they most often carry out. The short-term costs involved in this kind of investment are high: besides the obvious cost of purchasing new or upgraded aircraft, pilots and crew will need training on how to operate the new aircraft or equipment. Maintenance costs on additional or new aircraft are another important consideration, as are fuel costs, which mount up, especially when your new aircraft or equipment leads to repatriations further afield.

To maintain quality, cost-effective service at a price point that allows consumers access is increasingly difficult,” says Paul Smith, national manager, CareFlight International, “The global financial crisis and events in Europe have, and will continue to have, lasting effects on aviation and therefore air medical providers. We are all looking at clever ways to cut costs and add value for our customers, but, at some point, these costs will have to be passed on.” Let’s look at these costs in more detail and assess how they are being contained, passed on, and, in places, absorbed.

**Tools of the trade**

Air ambulance technology and onboard medical equipment is advancing at a growing pace. It is now possible to carry a range of state-of-the-art medical equipment on air ambulances, including defibrillators, portable suction units and intubation equipment, for emergency medical treatment; and where in previous times a patient may have been considered not fit to fly or was not able to be repatriated due to a lack of air ambulance compatible ECMO or neonatal capabilities, for instance, today such patients are routinely moved due to an increasing sophistication in air ambulance capabilities. In order to avoid passing on the cost of investing in new equipment to clients unlikely to use it, air ambulance companies can offer a tailored service for clients. “Take the new neonatal incubator that we’re purchasing,” says Jane Topliss, director of terminal business development at AirMed UK, “We’ve ensured that in order to be fair to customers and to remain competitive in the market, we have spread the recuperation of the investment costs over several years to come. We are not expecting to make back the cost immediately.” Similarly, the increase in liability costs the company has seen that are associated directly with its enhanced neonatal capabilities is being kept ring-fenced to just those trips; so, clients that don’t use the company’s neonatal services aren’t paying for the increased costs the company incurs in order to provide them. This is something it recommends all air ambulance operators do. “Another way of keeping those costs down is to ensure that you are using the...
same well trained specialist teams on a regular basis. This of course has other added benefits of currency, and so forth,” adds Topliss. And what of maintenance costs? These have risen markedly too. “Engine costs increased by six per cent compared to last year, and there were similar increases in previous years,” says Patrick Schomaker, director of sales and marketing at European Air Ambulance (EAA). “The airframe, 10 per cent, and labour costs have increased over the last four years, so maintenance is a major part of our price increases to operate the air ambulances.” Personnel costs also increase annually, and training costs, which includes simulation training for pilots when new aircraft are purchased, as has been the case at EAA. The company’s larger, double-stretcher aircraft have led to an increase in the price per minute it charges for relevant flights, but as Schomaker explains: “The ability to take two patients allows us to give more options to the client, and also options to combine two patients to make the mission more cost-effective.” Offering a greater combination of flights and making use of empty legs are other ways that the company remains competitive and cost-effective, while attempting to keep its costs as low as possible. Where costs do need to be passed on, they are done so ‘as accurately as possible’, “We don’t want to have an extra profit margin,” says Schomaker. “We just want to keep our margin, which will allow us to be sustainable as a business … and remain profitable.”

Fuel costs
The rise in the cost associated with operating and utilising air ambulances is partly a symptom of their success. As air ambulance services have become more effective, offering a wider range of services to ever more remote areas, so they continue to have to operate within the framework of a high fixed cost base. The most important of these is fuel, which is the main driver behind the increased cost of air ambulance services.

“Fuel costs have increased dramatically,” explains Patrick Schomaker of European Air Ambulance (EAA), “At the end of 2010, the price of fuel increased by nearly 50 per cent; since then they have continued to increase dramatically, especially since the end of 2011, and now at the beginning of 2012 there’s really been an extremely sharp increase.” With the price of oil subject to global economic fluctuations, it is difficult to predict if and when costs will drop; however, for companies that operate across national borders, one obvious way to contain fuel costs is by taking advantage of lower fuel prices in neighbouring countries, or indeed within countries where some airports have a greater buying power, enabling cost savings to be passed onto the operators. There is no shortage of opportunities to make these kinds of savings within Europe, according to Jane Topliss: “When we are positioning from airports where the fuel is significantly cheaper than home base, we will fill up the aircraft as much as possible and then spread the benefit of the cheaper fuel across into the next job. This careful fuel planning is used by all operators on all missions and is a great way of offsetting the costs to both the operator and in turn to the client,” she says.

Silver lining
Costs are increasing and air ambulance companies say they are working hard to contain these costs and avoid passing them on to insurers; but the position air ambulance operators are currently in, and their current performance capabilities, also opens up new opportunities for the insurance industry to make cost savings. The development of new aircraft and aeromedical equipment, along with the presence of specialist, highly skilled staff, means patients can be moved sooner and over greater distances. This, in turn, leads to significant cost savings to the insurer, which can offset increased repatriation costs.

“Medical technologies are improving and the level of sophistication does offer earlier, faster, and safer retrieval options,” agrees Pauls Smith, “I think that this is where insurers will potentially make savings: identifying the right patient, the right team, at the right time, and being able to relocate into the right health system.” Assistance companies are also now tending to reduce the number of air ambulance companies they work with to a smaller number of better located, dedicated operators. “They are undoubtedly benefitting from this purchasing power and obtaining better value for better quality,” says Rupert Dent, managing director, AirMed UK. At the end of the day, many air ambulance companies are offering quite a different product to the one they were offering just a few years ago. Today, with the constantly increasing sophistication seen in aircraft design, and with aeromedical equipment and capabilities moving forward at a mesmerising rate, air ambulances now offer services that were previously unavailable or beyond the capabilities of care in the air. This enhanced service is more complex and, naturally, more expensive, but air ambulance companies are making use of all available avenues to limit passing these, as well as the unrelenting fuel and maintenance price hikes, onto clients.
Where were you born and raised, where were you educated and where do you live now?
I was born in Dortmund, grew up in Dortmund, and now live – after living in several other places – in Dortmund again. I’m very happy here; I like the open and honest way of the people here. Dortmund is located in the heart of the Ruhr area, which has undergone a complete structural change in recent times. It is fascinating to see. Just 50 years ago, it would have been unthinkable that the coal industry would one day no longer provide local jobs. Oh, and by the way: Dortmund’s football team – Borussia 09 – is the current German league champion. Even as a child, I wore the club colours of black and yellow!

How did you come to work in the air ambulance industry, and more specifically how did you come to your current role?
Before becoming director of the GRC Air Ambulance Service and its assistance arm DRK Assistance in 2004, I was in charge of state-level emergency services for the German Red Cross. It was through this specialist route that I came to work with the air ambulance service of the DRK, and in 2004 became managing director of the service. My task was to make the service fit for the future, and to build up DRK Assistance by also becoming managing director of this sector of the German Red Cross.

What is the most complex repatriation mission you have performed in the past 12 months?
I won’t forget it in a hurry: East London, South Africa in early 2011. In a traffic accident near East London, three young German medical students were critically injured. Two of the injured died on the way to the hospital. The other, a twenty-two-year-old female, was taken to the local hospital and cared for in accordance with local standards, in the ICU. Since the patient was not fit to fly, the father of the patient, a German physician, travelled to South Africa and attended to the care of his daughter in situ.
As the medical condition of the patient did not improve post-operatively, the German Red Cross decided to send an air ambulance to bring the patient to Germany. A Challenger 601 with an anaesthetist, an intensive care nurse, and a paramedic was sent to South Africa. After the arrival of the Red Cross crew, it was discovered that the patient was still not in a suitable condition for air transport. Our team, together with the South African nurses, took a number of intensive medical care measures over the next 24 hours, which meant that the transport of the severely injured, mechanically-ventilated patient could be carried out. On 27 March, shortly after 2:00 a.m., after an 18-hour flight, the CL 601 landed at Frankfurt airport. There, the patient was transferred to the University Hospital in Heidelberg.

In your opinion, what is the biggest challenge facing the travel/medical assistance industry in the coming year?
From a German point of view, it means getting used to the fact that more and more patients from Germany, a ‘Centre of Excellence’, fly to other countries for medical treatment, and medical tourism has changed so much. Overall, everything is much more international: an insured person, injured or ill abroad, needs to be repatriated to Germany for treatment more and more rarely. Thus, where previously you used to automatically start making your own provisions to get your patient home, now you have a global network of internationally-focussed assistance companies to assist you. Naturally, the Red Cross is one of the best-placed associations for assisting its own clients and patients, as well as others. As a network, we really are on the spot in virtually every country. Of course, each arm of the Red Cross has heterogeneous capabilities, so our great challenge is bringing these together to help people in need – wherever they are!

What resources does the German Red Cross have at its disposal in an emergency?
The German Red Cross is the number one rescue service in Germany. We have more than 500 alarm centres, 4,500 rescue vehicles and 180,000 employees in emergency medical services (including doctors and medical assistants). We no longer own an air ambulance fleet, as it is economically advantageous to rent these aircraft. Worldwide, we have a presence in virtually every country.

cost containment, as we understand, is essential in all countries
country. The DRK, alone, has up to 1,000 foreign delegates who are, at any time, working on a variety of projects worldwide. This means that wherever they are needed, we have a good chance of already having an employee on the spot.

Cost containment of medical bills is always a challenge for an assistance company – in which countries do you believe it is most important to be especially vigilant with hospital bills? I am firmly convinced that cost containment, as we understand, is essential in all countries – including Germany. We need to be proactive, though: that is, once a patient has to be treated, the payers should talk, in advance, and stay in close consultation with the attending physician or hospital and then, depending on the presented results and data, give the necessary approvals step by step. Negotiation and monitoring after completion of treatment, even if successful, is, I personally think, not the best way to go.

Does the German Red Cross have its own cost containment team in-house, or does it outsource such services? Why did you choose this option?
For the above reasons, we don’t have these in-house specialists, who closely and highly professionally intervene in the treatment. We use a partner here who can do it. Why? Simply because it saves us money.

Does the German Red Cross prefer to meet patients they are repatriating in the treating hospital before the repatriation, or is the company happy to meet the patient on the airport tarmac just before take-off?
That depends on the complexity of the case. Sure, it’s always best to see the patient treated in the treating hospital; but this is actually appropriate only in difficult cases. In such cases, we will send either a local partner, or in rare cases, one of our team.

What is your opinion on wing-to-wing transfers? Are they safe practice?
Yes, in my view. But I leave the decision entirely to our medical directors. They know what they are doing and they always make decisions that are in the best interest of the patient. There are indeed cases where, from a medical point of view, we achieve better quality with wing-to-wing because this provides a faster option! Sure, there are also contra-indications. As managing director, though, I count on the views of the doctors.

If you could do any other job in the world, what would it be and why?
If you could trade places with any other person for a week, famous or not famous, living or dead, real or fictional, with whom would it be?

Oh, I would immediately choose Dr Watson. I have a weakness for detective stories and I would be interested in working with Sherlock Holmes, in the time and circumstances of Arthur Conan Doyle’s wonderful characters.

What is your dream holiday destination?
It does not matter where you are, but with whom!

What are you reading at the moment? Do you have a favourite author?
I’m reading Redemption (original title Flaskepost fra P) by Jussi Adler Olsen. My favourite author is Simon Beckett. As I said, I love crime novels.

If you were stranded on a desert island, what three items would you bring with you apart from food, clothes and water?
A photo of wife and children, my solar-powered iPad, and my cross bike.

Negotiation and monitoring after completion of treatment ... is ... not the best way to go
What’s the view on accreditation – essential, just desirable or a necessary evil – within the air ambulance industry? Stewart Farr dives into the deep end of the accreditation pool.

The stamp of approval

What was touted as a key product differentiator when first introduced, accreditation is now arguably commonplace, yet some air ambulance companies successfully carry on business without being accredited, while insurance and assistance companies still follow their own rules and audits when choosing an ambulance partner. Does everybody know what they’re getting anyway – for instance, would an insurer or assistance company choosing an accredited provider know exactly what standards that provider is adhering to, or would it simply accept that it is ‘accredited’ and therefore ‘better’?

The European Aeromedical Institute (EURAMI) and Commission on Accreditation of Medical Transport Services (CAMTS) are not mutually exclusive and both have a geographical bias in an increasingly global industry. And from a political perspective, would a body such as the recently formed (2009) International Air Ambulance Alliance (IAAAA) better serve the industry? There is a chance that with too many cooks in the kitchen, accreditation could get too confused, onerous and overwhelming for its own good.

Air ambulance companies asked to comment on the importance of accreditation were fairly unanimous in their response. “At Air Ambulance Professionals we feel that accreditation is both desirable and essential for our business ... it makes us stand out in an industry which, until recent years, has had very little regulation,” says Jacqueline Farley, director of clinical services. “Much of our business is done with insurance and travel assist companies, who are increasingly asking for much of the same standards that are required by both CAMTS and EURAMI.”

Some 90 per cent of this Fort Lauderdale, Florida, US-based company’s flights are international. Farley added: “We work a great deal with European agencies. We felt it would be beneficial to have both [accreditations], to show that we meet and exceed not only US standards of care, but also European standards, which are a bit different.”

EURAMI-accredited Air Medical Ltd, also known
as Air Med UK, (the first UK air ambulance operator to be awarded Full Accreditation ‘Special Care’ from EURAMI) maintains it is essential if you are to be publicly regarded as a ‘first class’ air ambulance expert provider. Chief flight nurse David Quayle said: “Our market is extremely competitive and while competing with lower quality air ambulance companies who have not adopted the very high standards set by EURAMI and CAMTS makes for an unlevel playing field, differentiation based on quality is very important for the best assistance companies.” Quayle believes that accreditation takes away an element of uncertainty for insurers in that they ‘simply know that this air ambulance is a good one’. Given that patient transport is not risk free, he added, ‘it will be increasingly likely that assistance companies will want to use only accredited providers’ when balancing risk against benefit. However, while any unaccredited company is able to operate as an air ambulance ‘without placing quality at the heart of their operation and are able to get work based upon being cheap’, no one can be certain that high quality will remain financially sustainable. The failure of an accredited air ambulance operator because of uneven competition ‘would be a significant diminution of the quality available for patients’.

Paul Smith, national manager of CareFlight International in Australia, agrees that credentialing, through EURAMI, CAMTS and ISO 9002 (specifically ‘core standards in health care’) – or at least a combination of two of these three – will be an essential stamp of quality, going forward, given the changes occurring in the industry. Pricing pressures have led to a situation where four or more assistance companies are contacting aviation providers about the same patient, he says; and a slowed charter market has seen aircraft operators the world over dusting off its aeromedical assets to move into the medevac industry by aiming at the lower acuity, low-risk demograph. “Demonstration of appropriate credentialing would represent a low-clinical-risk option for the insurer,” says Smith, “as well as investing in the industry to ensure a sustainable future.”

AirMed International (US) is another advocate for accreditation. The company has several contractual agreements that require this distinction. Also, as an approved air carrier for the US Department of Defense, it must maintain its CAMTS accreditation in good standing. Executive vice-president Denise Treadwell, who’s been a CAMTS site surveyor for US programmes since 2008, states: “We would strive to achieve these standards regardless of contractual requirements. The accreditation demonstrates commitment to quality and validates your service level to customers, clients and partners.” Treadwell believes that all companies should go through the CAMTS process every year. Yes, it is timely and costly but it serves to identify areas in which the programme excels and other areas that could be improved. Treadwell added that as there is no US government agency ‘that regulates our industry, this self-reporting is very vital to ongoing safety and service’. CAMTS is seen as a very expensive process, but nonetheless an essential part of business by Beau Brooks, communications centre manager at Air Ambulance Specialists International (AASI). “It is a validation of our service from all perspectives – financial, aviation and medical. It requires a high level of dedication from our management to fulfill all the necessary requirements, but also aids us in maintaining the highest standards. And, of course, it is the standard bearer with US insurance and assistance companies.”

Most companies choosing not to do the CAMTS accreditation do so because of the cost and invasiveness of the evaluation. Bart Gray, president of Global Jetcare, a company not accredited with either CAMTS or EURAMI, maintains: ‘From our point of view, the expense isn’t justified. We still need the same amount of insurance cover – medical, flight etc. – whether accredited or not, and we have to meet the costs of complying with Federal Aviation Administration rules, which would be duplicated with CAMTS accreditation; why

“the expense (of accreditation) isn’t justified”

—-
spend money twice over when there’s no reason to and we get enough business anyway?” He points out that CAMTS and EURAMI are businesses after all and need to sell their services. Nonetheless, he added: “Their standards are fantastic and we use them as guidelines.”

Meanwhile, Brooks feels ‘the triage’ effect provides the necessary level of inspection that contractual and private-paying customers need to be comfortable with the ‘uncomfortability’ related to long-range medical transport. He notes a trend among US companies in recent times to acquire EURAMI accreditation and recognises the logic of this for those with clients and aircraft operating within Europe.

The EURAMI accreditation procedure is described as a very slim and practical process by the Institute’s president Dr Michael Weinlich. The main difference (compared to CAMTS) lies in measuring quality by looking at the outcomes instead of telling air ambulance providers how they should do certain things. The question asked during the audit is: “Is there evidence that the expected quality level in each field is being reached?” The view of CAMTS executive director Eileen Frazer is that the EURAMI process is focused on patient care and medical standards. “We address these aspects as well, but also address operational safety, pilots, maintenance, ground ambulances, ethical business practices, medical escorts etc. We are expanding the fixed-wing standards to address some of the issues regarding long-range fixed-wing medical transports.”

Weinlich sees both accreditation processes as having a benefit for the air ambulance industry, but says EURAMI has never understood the benefits of IAAA. “The quality level reached ... is already very high, and there is no scientific evidence that another system different from constant improvement within the companies would really make a significant change.” Brooks of AASI believes that: “The more hands we get in the accreditation pot – just like anything else in life – makes things more confusing and oftentimes convoluted.” Quayle of Air Med UK maintains:

Some claim accreditation is unnecessary because their own standards are higher than those set by EURAMI or CAMTS
“EURAMI and CAMTS are the only recognised organisations undertaking this type of work. The IAAA has yet to persuade [the industry] that they have a role given the excellence provided by the likes of EURAMI.”

The IAAA naturally begs to differ. President Gary Andrews points out that three of the fundamental aspects of what the Alliance stands for are: ensuring that complete transparency of operations, pricing and patient care management exists between air ambulance operators and insurance/assistance companies; ensuring that a commitment to continuous improvement of patient care and operational management is in place; and holding members accountable to the IAAA for non-compliance of agreed standards.

Andrews says: “I know that EURAMI and CAMTS accreditation for some operators is simply a means to be seen with the right credentials. When an assistance or insurance company seeks to appoint an air ambulance operator, some will look for accreditation, if the choice is available. However, the other side is that payers will use whoever is available for repatriation at the time and, if two or more are available, simply choose the cheapest, which has its own consequences.”

Andrews continues: “What is generally true is that insurers and assistance companies don’t know enough about the air ambulance industry and what an accreditation represents ... most don’t know that it is a voluntary code of compliance. Part of what the IAAA stands for is educating [such] companies to fully understand the responsibilities and obligations that reputable operators need to comply with and the logistics and pressures they endure.”

Having their own standards and proven abilities in their field explains why several air ambulance companies operate successfully without accreditation. Some claim accreditation is unnecessary because their own standards are higher than those set by EURAMI or CAMTS and that they enjoy a creditable reputation with assistance and insurance companies. Doubtless the larger assistance companies, especially, will expect some form of accreditation, but as in many instances insurance companies go to, and overspend with, an accredited company, which then subcontracts the flight (to an unaccredited provider).”

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On the other hand, the economic pressures of running an air ambulance are forcing some operators to evaluate overheads with a consequent decision that accreditation is not worth the cost, though the IAAA believes such operators will continue to ‘maintain the standards expected and will be successful with the payer relationships they have’. On a final note, Brooks argues that if accreditation is not necessary, it will provide validation for some of the larger insurers who contract for air ambulance services, then the insurer carries some level of responsibility for due diligence as it is placing a very high level of trust in the air ambulance provider.
A wing-to-wing operation involving three air ambulance providers – from Bagram, Afghanistan to Missouri, US

When air ambulance companies around the world team up to carry out a medical evacuation mission, amazing things can be achieved, as is shown by this case study, which saw RMSI, European Air Ambulance and Skyservice Air Ambulance co-ordinate to provide the medical care needed to transport a severely injured patient from Afghanistan to the US.

Part 1 – RMSI
On 13 September 2011, the RMSI Mission Response Centre, in conjunction with the patient’s medical insurance provider, received an emergency request for evacuation from Bagram, Afghanistan to Columbia, Missouri, US, for a critical patient – a 62-year-old male who had sustained an atraumatic subtrochanteric fracture of the right femur when ambulating laterally from a standing position; an injury suggestive of a pathologic etiology. He was transported to the US military hospital on Bagram Air Base in the Parwan province of Afghanistan, where he underwent imaging studies that confirmed the presence of the fracture, and increased the suspicion that osteosarcoma of some form was present. After initial immobilisation of the fracture, the treating physicians were not able to manage that injury further in the field. It was decided that the patient needed to be urgently evacuated to a medical centre that would be able to offer orthopaedic oncology treatment to fully evaluate and manage the fracture, an acute manifestation of his cancer, and the cancer itself. RMSI immediately began preparing to evacuate the patient. There were many considerations that had to be evaluated to execute a long-distance evacuation for a patient with such a unique injury. European Air Ambulance (EAA), RMSI’s partner in evacuations to Europe, was called to assist with planning the evacuation. As alarm centres from both companies began communicating, a plan began to emerge. The best course of action would be for an immediate evacuation from Bagram with RMSI’s ICU air ambulance jet aircraft, under the care and direction of RMSI’s intensive care medical team to Trabzon, Turkey, to rendezvous with the critical care air ambulance team from EAA. After a wing-to-wing transfer of the patient, and a physician-to-physician handover, the patient could then be transported the rest of the distance.

The following morning, a few hours after being activated, the RMSI flight team, including a flight physician and flight paramedic, had a conference call from the runway with the patient’s treating physician for what would be the last contact with the ground until their arrival in Bagram. As the patient had remained stable throughout the night, RMSI’s jet aircraft departed Dubai.

Three hours later, the aircraft arrived to meet with the waiting US military ground ambulance, where the flight physician received a handover report from the treating physician on the ambulance, and conducted a brief examination of the patient to ensure he was fit to fly. After loading onto the aircraft, and securing advanced life support monitoring, the aircraft was ready to leave Bagram. Meanwhile, the RMSI Mission Response Centre was a flurry of activity. EAA’s aircraft from Luxembourg, en route to Trabzon, Turkey had to be carefully launched in order to facilitate both aircraft meeting at the same time. Online satellite tracking onboard RMSI’s aircraft helped to give precise time indications as to its arrival both in Bagram, and the wing-to-wing destination in Turkey.

As both aircraft approached Trabzon, it was clear that the organisation from both RMSI’s Mission Response Centre and EAA’s Alarm Centre was sound. The receiving aircraft arrived 10 minutes prior to the patient; just enough time to begin refuelling. By the time RMSI’s ICU air ambulance taxied to the pre-designated meeting location for the aircraft, the receiving flight team was fully prepared. A successful handover was conducted,

As alarm centres from both companies began communicating, a plan began to emerge

A team effort
and RMSI’s medical team breathed a sigh of relief as the patient, prepared for the next step in his voyage, departed Trabzon en route home. After retrieving a critical patient from a hostile area, a wing-to-wing rendezvous is the most crucial part of any long-range air ambulance evacuation. Any number of variables could go wrong, leading to an unsuccessful mission. Such events could have catastrophic results for patients; a tragedy that hundreds of people work tirelessly to prevent for each mission conducted from hostile areas.

Part 2 – European Air Ambulance
EAA’s Mission Control Centre (MCC) was alerted to the mission by RMSI. After receiving a comprehensive brief from RMSI of the patient’s condition and the schedule of the flight from Bagram to Trabzon, EAA discussed the medical and operational planning of the mission with RMSI and started the mission preparation. The mission preparations included the final medical evaluation and preparation, the positioning flight from Luxembourg to Trabzon, the transportation of the patient on to Montreal, the total route and duty time calculation, as well as the permit request for a Canpass – the Canadian Border Services Agency’s immigration programme for private aircraft. EAA’s Learjet 35A, call sign LX-ONE, took off for Trabzon at 12:00 UTC crewed with two pilots, a flight physician and a flight nurse. As usual, the entire operation was monitored constantly by the MCC. The aircraft landed at 15:45 UTC, and a smooth patient transfer was completed thanks to the experience of the crews in working together over the last three years. The Learjet then flew back to Luxembourg for a flight crew change, departing Trabzon at 17:00 and landing back at EAA’s Luxembourg base at 20:50 UTC. Just under an hour later, at 21:49, the aircraft was airborne again and heading for Keflavik in Iceland for refuelling. Arrival in Iceland was at 01:20, then the aircraft set off across the north Atlantic at 02:05, heading for Goose Bay where it landed at 05:45. A further refuelling stop at Goose Bay saw the aircraft depart for its final destination – though not that of the patient – of Montreal at 06:35. Touchdown at Montreal was at 09:10, where rough weather awaited. The aircraft was directed to a hangar to perform the patient transfer into Skyservice Air Ambulance’s Learjet 35A in a safe and warm environment.

Part 3 – Skyservice Air Ambulance
Skyservice Air Ambulance (Skyservice) received the request for transport on 12 September from its partner EAA. Prior to the EAA aircraft landing in Montreal, the Skyservice pilots and medical crew had prepared its aircraft to ensure a smooth transfer of care. The flight physician of EAA handed over care to Skyservice’s physician and transport team and the transfer of the patient was completed without incident. A complete medical assessment of the patient was done by the Skyservice medical team prior to take off, ensuring that the patient’s condition was unchanged and the patient was prepped for take-off. The medical condition of the patient remained virtually unchanged during the transport from Afghanistan to the final destination of Columbia, Missouri. Upon landing at the final destination, customs officials greeted the aircraft and the patient was offloaded and transferred to a waiting road ambulance, accompanied to the receiving hospital by the medical team. The final transfer of care was completed at the receiving hospital, where a medical team and specialists received the patient, and where his care was continued until his discharge.

Authors

Robert Lamb is president and founder of RMSI. A former Australian military officer and intensive care flight paramedic, Rob Lamb began his medical career in Sydney, Australia before moving to Iraq to work as a contractor in hostile areas.

Patrick Schomaker is director sales and marketing at European Air Ambulance (EAA). Schomaker preceded his appointment at EAA, which he helped launch in 2006, with six years at Lufthansa German Airline.

David Ewing has been active within the air ambulance and travel insurance industry for over 23 years. His current position is vice president of international business development with Skyservice Air Ambulance based in Montreal, Quebec, Canada.
Milan Korcok reports on the latest accidents and efforts to promote the safe operation of fixed-wing air ambulances, as well as the ways in which international insurers and their partner assistance companies can identify those companies with higher standards of care, training and equipment.

The headlines are grim: the irony painful. Air ambulances are designed for but one purpose – to save the lives and alleviate the pain of their passengers. But when things go wrong, those lives are lost and the pain multiplied.

Texas, US, July 2010 – a Cessna 421 twin engine, operated by Air Ambulance Stat, crashed in a muddy field shortly after take-off, killing all five people onboard, including a 73-year-old patient heading to a hospital in Odessa. Besides the patient and her husband, the crash claimed the lives of the pilot and two flight nurses. The National Transportation Safety Board (NTSB) report suggested pilot error and possible fatigue.

Faridabad, India, May 2011 – a single-engine Pilatus PC-12 air ambulance carrying seven passengers, including a critically ill patient, to an Apollo hospital in New Delhi crashed onto two houses killing all onboard as well as three people on the ground. According to reports, the aircraft, operated by Air Charter Services India Private Ltd., hit headwinds so strong it became unable to move forward and nosedived to earth.

Horsham, Australia, August 2011 – a single-engine Piper Cherokee, provided by Australia’s Angel Flight charity and carrying a 15-year-old patient and her mother from the Royal Melbourne Hospital, crashed into a field while attempting to land in bad weather. The pilot and patient, who had made numerous flights to Melbourne for treatment of juvenile arthritis, were killed. The mother survived with chest, head and rib injuries.

Chicago, US, November 2011 – a Travel Care Air Ambulance twin-engine Piper Navajo, arriving from West Palm Beach, Florida, and carrying five people including an 80-year-old male patient heading for a Chicago area hospital, crashed in a wooded field, killing the pilot and the patient’s wife. The patient also died, but of a heart attack, not directly because of the crash. The co-pilot and a paramedic survived. A fuel problem is suspected.

In India, as in Australia, Africa or North America, getting people the hospital care they need can involve covering vast distances.

Influence of distance and demand
Sadly, fatal crashes involving air ambulances (or ‘angel’ or ‘charitable’ flights, as were some of those above) are becoming increasingly frequent as medical air transport services become integrated into the mainstream of healthcare. There isn’t an emergency medical service in the world that isn’t increasing its reliance on the technological advances in transport medicine to bring the frontline of healthcare closer to the needs of patients in critical situations. But, as the headlines show, those advances can too often be offset or nullified by the more elemental factors of weather, human judgment and frailty, or just plain bad luck. In India, as in Australia, Africa or North America,
involve covering vast distances. Flying is often the only way to get there. The province of Saskatchewan, one of the world’s pioneers in the use of air ambulances to link its far-flung communities, recently retrofitted a retired government executive aircraft to replace one of its air ambulances previously damaged when it hit a snow bank and veered off the runway. The loss of that single craft left a void felt throughout the province, which encompasses 227,000 square miles. But oil-rich Saskatchewan not only quickly filled that void, it mandated that henceforth, all air ambulance flights would be required to have two pilots. The rationale put forward was that having only one pilot instead of two increases the potential for accidents by a factor of 1.5, and ‘it’s just not the way to manage an air ambulance’. Prior to the snow bank mishap, Saskatchewan’s three air ambulances transported about 1,850 patients a year, many of them over huge distances. Perhaps no country has felt the benefit of air ambulance, or flying doctor, or charitable medical flight services, as much as Australia. In the case of Julie-Ann Twigg, who died in the crash at Horsham, it was the 20th time she had been transported back and forth to Melbourne for treatment of her arthritis, a particularly debilitating condition for so young a girl. It was supposed to be her last treatment and her last flight as she was deemed to be in remission. For her 69-year-old volunteer pilot, it was his 24th flight for the Angel Charity. A perfect match up? Up until that night, it seemed so. But it appears to have been one flight too many. Was it the law of averages catching up? Or was it just one of the trade-offs we’ll have to learn to live with?

In the US, 47 million people (16 per cent of the population) live more than one hour away from a level one or two trauma centre. To cover those distances, helicopters fly approximately 400,000 medical transports annually, and a further 150,000 patients are flown by fixed-wing aircraft, generally those over longer distances. That’s within the US only and does not encompass international flights.

**Blame it on the rotors**

To date, accidents by EMS helicopters account for the vast majority of air ambulance accidents and fatalities, and each year over the past decade has only added increasingly discouraging numbers. But that same focus has not yet narrowed on fixed-wing air ambulances, consequently the fixed-wing segment of the air medical transportation industry has not been tainted by the stigma of questionable safety, at least, not to the same degree. But is that changing? Are variables entering the industry that might prove troublesome for international travel assistance companies that rely on medical evacuations and repatriations to bring their clients home safe and sound? Fixed-wing flights involve mostly hospital-to-hospital transfers of patients who are normally tended to by medical professionals working hand in glove with specialist flight crews. The expectation of high standards is taken for granted. But is such expectation warranted? Tom Cox, director of business development for Englewood, Colorado, US-based Air Ambulance Specialists, Inc., believes that international assistance companies are fortunate to have some ‘very good air ambulance providers’ who ‘really understand what it means to repatriate a very sick patient’. He adds: “Very few fixed-wing air ambulance accidents/incidents occur when you consider how many transports are provided each year.”

But he also describes an industry in which there are considerable fluctuations in quality. He told ITIJ: ‘There are a number of very cheap companies who sell just [on] price, but the air medical crew may not be full-time employees. They may be paramedics working for a fire department and [they may just] climb aboard a plane they know nothing about … and probably have no training of in-
flight physiology, which should be mandatory.” Admittedly, the air ambulance industry is facing hard times during the weak economy, says Cox: “We are all just … waiting for the good old days of 2008 to return where we can all make a decent profit to re-invest in newer aircraft and updated medical equipment. It is very difficult to make a reasonable profit due to any number of factors: the down economy, and too many weekender air ambulance companies quoting really low prices who may be hauling freight during the week … not really qualified companies.”

He added: “Unfortunately, pricing is a really big deal for the assistance companies, and the full-time, well-qualified companies that the assistance companies would like to use are sometimes thrown aside for those offering the lowest price.” There are also some companies merging in order to consolidate their business and share expenses and ‘some who are just hanging on’. Meanwhile, he adds, the best are finding a way to upgrade their aircraft in order to have fewer mechanical costs, and to fly more efficiently.

In a newswire statement issued last December to coincide with an NTSB report on two recent fixed-wing air ambulance crashes, Jeremy Freer, founder and chief executive officer of Arizona, US-based Angel MedFlight, confirmed a concern about what he termed ‘the enormous quality and safety discrepancies that can exist among air medical transport operators’. Freer asserted: “Patients are flown on medically-equipped aircraft and cared for by medical personnel, but that’s where similarities among some operators end … air medical transport isn’t like the airlines, where you can feel pretty confident that carriers are operating near the same levels of safety and excellence … sadly, there are some operators or brokers who cut corners. Individuals looking into medical flights should research the companies they’re calling and ask questions regarding operations, safety, aircraft, equipment and crew.” He concluded: “Unfortunately, a lot of times it comes down to the dollar amount and cheapest doesn’t always mean safest.”

In respect to safety and operating efficiency, all aircraft have specific safety requirements and inspection protocols set by groups such as the Federal Aviation Administration and the aircraft manufacturers themselves, says Cox. They all have inspection routines and overhaul requirements and all must be performed at specified intervals by authorised inspectors and personnel and entered into the aircraft logbook.

Charitable flights

‘Angel’ or ‘charitable’ flights, provided by non-profit organisations or individuals, should not be confused with air ambulances, as they are simply chartered – or donated – aircraft doing mercy missions and are not equipped or staffed to provide any in-air medical services. Yet if they go down, they are often classified by the media as such and the perception remains. The downed flight in Australia was one such case.

But discrepancies remain, he insists. How then should international assistance companies, often working at great distances from the air ambulance bases, be guided in making their choices – choices that could mean the difference between life and death for their clients, or profit or loss for them? What should assistance companies be looking for and what should they do?

• The most obvious is to ensure that the companies they hire have CAMTS and/or EURAMI accreditation, which set certain minimum standards for both aircraft safety and medical protocols.

• Do periodic site inspections and look over the base operations first hand.

• Check out current copies of the company’s insurance coverage and make sure it’s adequate. Some companies carry only the basic legal minimum required.

• Review a company’s history, how many transfers they do each year, and which countries they are authorised to fly into.

• Also review their medical protocols and the minimum equipment list to be sure they have the appropriate equipment and drugs to properly assist patients in almost any condition or combination of situations.

Air medical transport operators exist in an increasing variety of guises. The expectations insurers, assistance companies, patients, families and headline writers have of them are infinite. For them, that could be a blessing or a curse.
The number of air ambulance services currently accredited by CAMTS. These services are located in five different countries. The number of Learjet 35 and 36 aircraft that have been built since 1973 are 738. The number of Hawker 900XP aircraft purchased in 2011 by the Turkish Ministry of Health for aeromedical services is 26. The approximate number of patients flown on fixed-wing air ambulance aircraft within the US each year is 100,000. The approximate cost, in euros, of a neonatal transport unit is 15,000. The approximate number of patients flown on helicopter air ambulance services annually is 7,157. The approximate number of aircraft acquired by EURAMI accredited services located in 14 different countries is 164,633. The approximate number of patients flown on helicopter air ambulance services annually is 38,743. All figures were correct at the time of going to print.
Although we appreciate that no two days are ever the same for an international air ambulance pilot, could you possibly try to describe for us what you might conceive to be a ‘typical’ day in your job?

A typical day includes preflight preparations and planning such as reviewing weather, fuel requirements, safety checks of the plane, weight and balance, and a briefing with other pilots and medical crew members. The services and facilities of airports involved are reviewed based on the patient’s needs as well as equipment and items stocked onboard. We fly to predetermined airports for patient pick-up and drop-off, and coordinate with our dispatchers and medical team during the entire transport with regards to the trip itself and the patient’s condition and needs.

When did you first decide you wanted to become a pilot; and what then drew you towards working for an air ambulance company?

I first decided to become a pilot whilst taking flying lessons in San Diego during college. I was drawn to working for an air ambulance company whilst flying for the airlines and searching for a more meaningful job. I became employed by AirMed International after researching many air ambulance companies throughout the country and sending in a resume: I didn’t find an advertisement that AirMed was hiring pilots, but was fortunate on the timing! They flew me to Birmingham for the interview, and I was immediately impressed with their professionalism and southern hospitality.

Does AirMed International have its own maintenance personnel? If so, how closely do you work with these staff members to ensure the continued smooth running of the aircraft?

Yes, we have our own maintenance personnel, and the team is always at the aircraft for departure and arrival of our flights. We are able to talk to them about any discrepancies or questions that we have at any time. They are very knowledgeable and helpful to us.

On page 36, we have an article about fixed-wing air ambulance safety issues in the US. What safety provisions do you have as a pilot, both before and during a flight?

As a pilot, I am responsible for continuously assessing my ability to fly safely. Besides my own personal checklist assuring that I am safe to fly from illness, stress and fatigue, there are other mandated checklists to follow. As part of a crew, pilots review a checklist that assesses the entire trip, which includes weather, airports to be used, crew rest and experience of the aircraft. Also, the pilots perform safety checks of the aircraft and make sure that all safety equipment is onboard and within limitations.

How do ‘permitted flying hours’ for pilots affect operations at an air ambulance company?

Pilots are limited to both flight and duty times, which a long-distance mission can easily exceed. For these missions, pilots are repositioned ahead of time to receive their rest. Repositioning means the relief crew flies out commercially to a predetermined city where the aircraft will make a fuel stop. When the mission makes the planned fuel stop, then the pilot crew members who are rested take over from the working pilots. People may think that getting from point A to point B is a simple flight, but preparing for crew, crew rest and repositioning, patient needs, family members who may be onboard, medical staffing, airport requirements, refuelling, weather – these variables add up to long hours of logistical planning in order to make it a success.

How much are you told about the profile of the patient(s) you are carrying?

The pilots need to know certain specifics about the patient we are carrying. We need to know their weight for weight and balance, whether or not the patient will need a sea-level cabin, if we will be using an isolette or a regular stretcher, whether the patient is on ECMO, whether there are certain dietary needs, and any other factors that could affect our flights for planning. Also, we may have a family member onboard the flight and need to be informed of their status as well.

How involved are you with the air ambulance medical crew, both with regards to planning an air ambulance mission, and carrying it out?

We work very closely with our medical crew. It is important for us to plan together for specific needs of the patient. The medical crew keeps us informed of the
patient’s condition in flight, such as having a critical patient who may require us to divert to a different airport. The pilots help load and offload the patient from the aircraft. We always have one pilot in the aircraft with at least one medical crew member, and one pilot outside the aircraft.

What is the most interesting/complex mission you have been involved with as an air ambulance pilot?
My most interesting mission involved transporting a patient from South Africa to the US. It was interesting and heartfelt because the person was brought home from donations given by his local hometown. His father travelled home with him, and I was able to learn about the patient and his life. This made me appreciate what it really means to be a part of air ambulance missions and how fortunate we are to play a small role in the lives of our patients and their families. The trip was also complex due to the distance and countries through which we travelled: it involved multiple pilots positioned around the world and the acquisition of many permits. We also encountered challenges such as language barriers through airspaces and airports where we stopped for fuel in countries throughout Africa and Spain.

In your role, you are given an opportunity to see parts of the world that you might otherwise never get to visit – where is the most interesting place you have been?
The most interesting place that I have visited was Townsville, Australia. The country is beautiful, and the people are genuine and outgoing.

What’s the most difficult airport/runway you’ve ever had to land at, and what made it such a challenge?
We often operate into the Aleutian Islands while en route to the Pacific rim, and this sometimes has us travelling through Cold Bay, Alaska. This airport is challenging due to the weather, surrounding terrain, and lack of other suitable airports in the vicinity. The severe winter climate of Cold Bay causes blowing snow that can reduce visibility to below minimums, has temperatures so cold that it can cause refuelling problems, and de-icing of the aircraft requires advance notice.

Flying into countries such as Central America, South America and the Caribbean is a challenging process with regards to the efficiency of handling operations. It’s very apparent that different countries function at a different pace from one another; for example, they may not have operations open on a Sunday when we are attempting to obtain a permit, or they have cultural variances and we need to adapt to those.

One trip during which we had an enormous delay was in Lima, Peru. We had a fuel stop there on the way home from dropping off a patient in Santiago, Chile. We had a mechanical problem that caused us to remain there until our maintenance personnel arrived with the parts and his tools. Our mechanic arrived that evening, but the airlines would not allow him to ship the boxes; the boxes with the parts and tools had to be shipped via cargo. The customs in Peru held up our needed cargo for days! This delay caused our aircraft, pilots, medical team, and mechanic to be stuck in Peru for nearly a week, but our mechanic was able to fix the aircraft in just an hour once he obtained the parts and tools.

What’s the most rewarding thing about being an air ambulance pilot?
Playing a role in helping others and, yes, saving lives.
A number of international air ambulance companies have dedicated services catering to patients in the Middle East, especially those in tourist hotspots such as Turkey; but the development of air ambulance services based or headquartered in this region – including locally-owned services – have been slow to develop, and where they have developed, regulations or other, external issues have not helped the development of the air ambulance industry. Furthermore, air medical services in the Middle East currently lack a common denominator, in as much as they have differing levels of transparency, operational guidelines and modes of operation, which doesn’t make it easy for assistance companies looking to work with them.

The essence of air medical services
The determining factor affecting the development of air medical services in the Middle East is the lack of well-structured medical systems. Countries that lack specialty hospitals or that cannot run a successful referral hospital programme are extremely unlikely to develop air medical services. The establishment of advanced trauma centres like the Ryder Trauma Center in Florida, US, the Heidelberg Spinal Injury Center in Germany, and advanced cardiac centres in various other countries, have all contributed to the development of the air medical services in those countries.

The other important issue regarding air medical service development in the Middle East relates to the overall culture inherent in the medical system. Air medical services can only flourish in cultures where the physician is humble enough to say ‘There are better medical centres than the one that I am in, and for the benefit of the patient I must refer him there’. All too often in the Middle East, doctors succumb to inferiority complex and overlook the wellbeing of the patient for their own ego. Where this happens, the door to the development of air medical services is firmly closed. However, the development of better hospitals in the region will eventually bring specialist hospitals that will provide invaluable support for the air ambulance services operating there.

Historically, it has been easier for assistance companies in the Middle East to purchase air ambulance services from trusted and established providers in the US and Europe, who are known for their outstanding service and equipment, rather than to work at building and establishing their own, or for air ambulance companies in their own right to come to fruition. So many factors, such as favouritism and family ties, are inherent in Middle Eastern business and society, making it difficult to establish dedicated services of any kind. Furthermore, there is a lack of training facilities in the region for aeromedical crew, and where they do exist they are often not satisfactory. The attitude of many of the civil aviation authorities, who often see ‘air taxi operations’ (read: ‘air ambulance flights’) as something of an inconvenience, only adds to the problem.

The Middle East is known as having an abundance of private jet charter companies, but why have air ambulance services been slow to gain as much of a solid reputation? Dr Mustafa Atac considers a variety of factors that have both hindered and aided air ambulance development in the region.

World focus
Middle East

The Middle East is known as having an abundance of private jet charter companies, but why have air ambulance services been slow to gain as much of a solid reputation?
Business roots

Arab Wings in Jordan is the pioneer in business aviation in the Middle East, while the Royal Jet Group out of Abu Dhabi is the founder of the Middle East Business Aviation Association (MEBAA) – and both are pioneers of the air ambulance industry in their respective countries. Looking at these facts, you could easily jump to the conclusion that, in the region, air ambulance services are almost all derived from the business aviation companies. You wouldn’t be far wrong. The main reason for this is down to the oil and gas industry, with its abundant wealth and demand for business charter jets. Not so long ago, it was realised that these jets could be put to good – and profitable – use when not flying business tycoons around the globe. The need for local medical repatriation services, together with a concerted initiative on behalf of local medical doctors, soon saw aircraft owners supporting the development of air ambulance services in the region. Looking at the different parts of the Middle East individually will provide a better picture of current air ambulance services available in the region. It will also allow us to explore in more detail what is being done in each area to combat the issues faced by air medical providers and explore the impetus behind those air ambulance providers that have succeeded in providing profitable air ambulance services.

Arab countries

Arab countries are not often short of funds when it comes to acquiring a fleet of aircraft or subcontracting an operator. Furthermore, the civil aviation authorities in the Arab countries have all been supportive of the development of air ambulance services. However, issues that do exist for the industry relate to a lack of education, aeromedical training, innovation, co-ordination and, above all, finding appropriate staff. This lack of co-ordination can be frustrating when time is of the essence and it takes a number of days to reach the decision-maker within a company, or to activate the air ambulance companies’ services. The most critical missing touch amongst many air medical service providers in Arab countries, though, is the provision of 24/7 operations, and the monitoring of operations systems for efficiency. Air ambulance operators need to work under the motto of ‘providing the right service, at the right time, for the right purpose’ and the lack of any of these means your mission cannot be fulfilled.

The Kingdom of Saudi Arabia has recently made a remarkable step forward in the industry by building up an impressive rotor and fixed-wing fleet dedicated solely to air medical services – via the Saudi Red Crescent Authority, which launched its landmark air ambulance services during the 2010 Hajj. The service was initiated to help pilgrims in case of accidents or emergencies. Dr Mowaffaq Al Bayouk, general director of emergency services at the Red Crescent headquarters, and his team – with support from H.E. Prince Faisal bin Abdulaziz, the president of the Saudi Red Crescent Society – oversaw the creation of the service, which is also utilised in times of man-made and natural disasters, which are sadly plentiful in this area. In fact, Arab Wings and several other operators in the region were quick in taking the initiative to develop their air medical services as a result of the plentiful man-made disasters in the region.

Elsewhere amongst the Arab countries, especially in Jordan, an improvement in the quality of hospital services and in the overall healthcare system – together with a need in the country for rapid casualty response – has contributed a great deal to the development of aeromedical services. Some of the key aeromedical providers in Arab countries include Royal Jet Group, RMSI, and FAI – all of which have dedicated air ambulance aircraft based in Abu Dhabi or Dubai. Other air ambulance providers based in the Arab countries of the Middle East include Abu Dhabi Aviation, Arab Wings, Peeraj Group (UAE), Raya Jet (Jordan), Gulf Helicopters (Qatar), and Smart Aviation (Egypt) – all of which operate their own aircraft that are converted for air ambulance use. Furthermore, companies offering air ambulance brokerage services in these countries include Alfaevac (Jordan), Air Charter Service (based in the UK and operating through its UAE subsidiary), Arab Assist (Jordan), Associated Air Charter (UAE), Graffco (UAE), and Royal Wings (Kuwait). In addition, Egypt is home to Cairo JRCC, a government-backed search and rescue service that offers air ambulance services.

Israel

Israel boasts a number of excellent medical facilities and several air ambulance fleets with a proven track record of success, and, thus, ...
could be seen to lead the way in the Middle East when it comes to dedicated air ambulance provision. The most prominent air ambulance providers in the country are Orange Aviation and CN Airways, which both operate dedicated air ambulance aircraft, and Global Jet Solution, which is primarily an executive jet charter company that has air ambulance capabilities. Furthermore, national airline El Al is one of the only commercial airlines in the world that accepts mechanically ventilated patients onboard with specially licensed flight physicians. The main issues in Israel concern flight restrictions and the impact of regional political conflicts on the provision of air medical services.

Turkey
Turkey was one of the first countries in the Middle East to provide a dedicated, international air ambulance service, when Marm Aviation launched in 1988 with a dedicated Beechcraft KA 200. Later that year, it acquired a Learjet 35; then in 1992, it began to provide a fleet of four Mi-2 helicopters, and rebranded to become Redstar Aviation. It is now a pioneer of air medical services in Turkey, and includes in its fleet a Spectrum twin ICU stretcher Jetstream 32 EP fixed-wing aircraft, and offers regional and international evacuation and repatriation services, having an established network of international assistance clients.

In 2008, the Turkish Ministry of Health (MoH) contracted Kocoglu Aviation, another air ambulance operator, to provide medical helicopters throughout the country. Its fleet now consists of 19 helicopters – an EC145, 10 EC135s and eight A109E Power type craft – available for day-time operations only. The company also has an Ankara-based Legacy 600, acquired last November, which features four advanced life support systems to transport intensive care patients or newborns with incubators; and a Hawker 400XP. It actively promotes the use of air ambulance services in the country by hosting an annual symposium, which last year was held in association with AugustaWestland under the patronage of the Ministry of Transport, and the airports and civil aviation authorities.

Dr Mustafa Ataç is founder and CEO of Redstar Aviation, was a partner in Marm Assistance, and CEO of Strarcscent Assistance, all of which signify milestones in Turkish air medical services and assistance services.

Turkey was one of the first countries in the Middle East to provide a dedicated, international air ambulance service of government-supported and MoH-operated air ambulance services have gone through the roof and the sustainability of these services, at these prices and in this turbulent economic environment, hangs under a big question mark. The country needs to build on sharing its experience with regards to air ambulance operations, work together to provide a common voice for the industry, and get more involved in international networking. There are many associations – such as the Air Medical Physicians Association based in the US, which is an excellent teaching and educational NGO of which most US and many worldwide operators are a member; and
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