

Transplant Transport

Doctors want to ensure that parts of you fly safely.

REPORTS

Organ Recital

How Can We Improve Procurement Air Travel Safety?

Renz, John F. *Liver Transplantation*, December 2010. Published online Sept. 21, 2010. <onlinelibrary.wiley.com/doi/10.1002/lt.22191/abstract>, <dmmsclick.wiley.com/click.asp?p=9491760&m=33618&u=729181>.

Physician, Heal Thyself; But Don't Fly Thyself

Merion, Robert M. *Liver Transplantation*, December 2010. Published online Nov. 16, 2010. <onlinelibrary.wiley.com/doi/10.1002/lt.22219/abstract>, <dmmsclick.wiley.com/click.asp?p=9491760&m=33618&u=729182>.

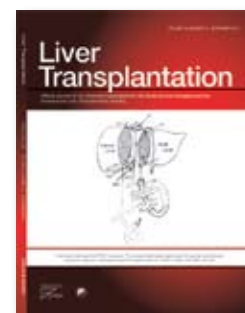
On Nov. 20, 2010, rescuers salvaged a donated liver from the wreckage of a Cessna Citation 501 that crashed on landing at Birmingham (England) Airport. Both pilots were injured but survived, and the undamaged liver was rushed to a hospital where it was implanted in a patient. The patient “would certainly have died” without the liver, the surgeon who performed the operation said.

Even without a crash, body parts can be found in aircraft these days. Thanks to the remarkable transplantation feats of modern surgery, donated organs are in demand, and speed is essential in delivering them to the sites where they will be used. That often means aircraft transportation.

In conventional emergency medical services (EMS) that involve transporting medical personnel and patients, the operational conditions may involve extra risk. EMS operations have had among the highest fatal accident rates in aviation (*ASW*, 3/09, p. 14). Although much less publicized, organ transportation flights, also known as “procurement flights,” involve similar considerations. In the December 2010 issue of the medical journal *Liver Transplantation*, two physicians consider the risk factors — while offering conclusions and recommendation that differ somewhat.

The main article, by Dr. John F. Renz, “How Can We Improve Procurement Air Travel Safety?” cites a 2009 study that found that “the procurement air travel fatality rate is 1,000 times higher than scheduled commercial aircraft and speculated [that] surgeons involved in procurement air travel may have ‘the riskiest job in medicine.’”

Renz sets himself the goal of evaluating “all fatal and non-fatal procurement air accidents within the United States reported by the National Transportation Safety Board (NTSB) in this context. To date, the NTSB has identified three fatal and four non-fatal U.S. procurement aircraft accidents (fixed-wing and rotary-wing).”



In these accidents, Renz cites evidence — based on NTSB reports — of inadequate equipment, lack of pilot proficiency, or both. In one accident, the captain had previously been imprisoned for a narcotics violation and had failed three periodic pilot proficiency tests. In addition, Renz says, “The NTSB cited numerous references to the pilot’s poor safety practices, including anomalies (implied falsification) in reported flight training activities, the absence of routine checklist utilization (the crew did not consult a normal or emergency checklist on the accident flight), and operational decisions not considered within the scope of routine practice.”

Renz says, “No accident was associated with the processes of procurement; rather, it was the tolerance of dangerous operational practices, unlike anything routinely employed in scheduled airline service, that contributed to accidents. ... These data suggest the transplant community, as a consumer of aviation services, has tolerated practices that are unnecessarily dangerous and unlike any practices routinely employed by airlines. In this context, it is not surprising the safety record is inferior.”

He cites a 2010 paper in the *Proceedings from the Michigan Donor Travel Forum*, which said, “It appears most organ procurement organizations (OPO) and transplant centers procure aircraft charter services for transport with limited knowledge of the qualifications and safety certifications of the charter operators under consideration. Furthermore, few surgeons and OPO directors possess the requisite knowledge needed to properly evaluate the qualifications of these operators and make an informed decision as to an operator’s suitability for such flights. In most cases, requisitioning parties appear to select charter operators based upon criteria that are both intuitive and readily accessible to non-aviation personnel, such as price, aircraft availability, and proximity to the departure destination.”

When it comes to remedies, Renz says, “Transplant professionals involved in procurement air travel must proactively create

a ‘culture of safety’ through education and understanding of the fundamentals with respect to air safety. This will require acquisition of basic aviation terminology as it applies to safety, recognition of safe operational practices, and appreciation of existing mechanisms to report safety concerns. As educated consumers, we can actively participate in the development and implementation of procurement air travel practices that optimize safety.”

Specific recommendations fall under the headings of aircraft, pilots, safety reporting mechanisms and a proposed safety algorithm.

Renz says, “One can improve safety through aircraft selection. The safety record of helicopters is inferior to fixed-wing aircraft and markedly inferior to scheduled airline service. ... Utilization of a helicopter or a piston-powered aircraft increases the chance of an accident and disqualifies the operation from comparison to scheduled airline service.”

He urges that only turbine-powered aircraft be used in procurement, on the grounds that “it is widely acknowledged that the mechanical failure rate of turbine-powered engines is orders of magnitude lower” than piston engines.

Renz believes that a two-pilot crew should be mandatory for procurement flights, and adds, “A simple strategy widely applied within corporate flight departments is mandating two pilots who are each qualified to captain the aircraft. This replicates an environment of competence and safety one expects with commercial air travel.”

Equally important, he says, is ensuring crew qualification: “The [Michigan] Donor Travel Forum emphasized selection of charter operators that have completed a safety certification program such as the Aviation Research Group U.S. platinum certification, the Wyvern Standard, or the International Standard for Business Aircraft Operations of the International Business Aviation Council. The Donor Travel Forum recommended certification by one [of] these groups should be ‘strongly considered’ during selection of a charter operator by an organization planning procurement travel.

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While third party audits and certifications of a charter operator are commendable, it should be noted that the above resources are subscription services that typically involve a substantial annual fee in addition to a per-incident fee. Prerequisite aircraft and pilot specification data may not be readily available or applicable in the time frame of procurement travel. Furthermore, it may be impossible to identify multiple vendors within a geographic region who fulfill such qualifications.”

Ignorance of existing safety reporting mechanisms amplifies the risk of organ transportation flights, he says, and pilots and management should be aware of accident databases maintained by the U.S. Federal Aviation Administration and the NTSB, as well as reports from the U.S. Department of Transportation Office of Inspector General. Renz says that familiarity with these sources should increase awareness of hazards caused by poor weather, inhospitable terrain, remote locations and the urgency felt by procurement team members.

Renz advocates a “safety algorithm” for procurement flights: “Turbine-powered, fixed-wing aircraft, operated by reference to instruments under commercial flight regulations [U.S. Federal Aviation Regulations Part 135] to airports with continuous radar surveillance and/or runway guidance systems by two pilots, each qualified to captain the aircraft flown, would ensure a level of competence and safety we expect with scheduled airline service.”

In summing up, Renz says, “Procurement professionals must seek a fundamental understanding of the relevant safety issues pertaining to aviation and how to report safety concerns.”

Dr. Robert M. Merion, a professor of surgery at the University of Michigan, grieved over the loss of four colleagues and two pilots when an airplane carrying donated lungs crashed in June 2007. “We were determined not to simply get on the next horse that was brought out of the stable,” he says. “We sought out nationally renowned experts in aviation safety consultation, in order to ensure that our next horse was

a pedigreed thoroughbred with a storied jockey and a world-class trainer.”

Merion, who describes himself as “a licensed private pilot, which guarantees that I have just enough knowledge to be dangerous,” asked qualified aviation safety consultants to review and improve the system for procurement aviation used at the university hospital.

“With their assistance, we acquired a replacement jet and contracted with a first-rate aviation firm whose focus on safety is paramount and whose culture of safe flying permeates their entire organization,” he says. “Their operation is run to airline standards. Although our health system and the aviation firm are bound by a business contract, we are truly partners in a safety-based relationship. I am firmly convinced that this is the best way to minimize the risk of air transportation in the pursuit of organ transplantation.”

Merion says that Renz “lays out the problems in an organized and careful way, and it is here that his strongest points are made.” But Merion does not believe that excessive risk in organ transportation flight operations is related to acceptance of nonstandard practices. “It’s clear that transplant surgeons (especially tired ones) who are also pilots should not fly themselves to donor hospitals,” he says. “But other accidents, including the Michigan tragedy, are a result of the actions of pilots who are assumed to be professionals.”

Merion says, “Renz proposes a solution to the complex and multifaceted issues of aviation safety for organ procurement travel. He asks us to believe that it is simple, cheap and easily implemented. The principles underlying the recommended actions are sound, but his characterizations of their ease of application are unrealistic.

“The selection of an aircraft is a good example. I do not know of a simple, cheap and easily implemented method to choose, acquire and operate an airplane. Renz blithely impugns the use of helicopters, without accounting for specific geographical and operational details that may dictate the need for rotary rather than fixed

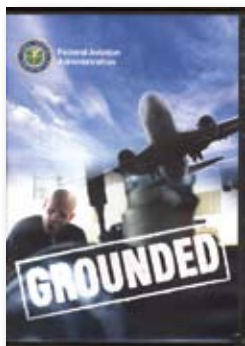
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wing operations, although he correctly points out the inferior safety record for helicopter flight in general and the particularly troublesome safety record of medical helicopter operations.”

While acknowledging that flights with two captains as pilots would be desirable, Merion sees such a requirement as unrealistic: “Unfortunately, we found that identifying such pilot teams required substantial investment of time and resources. There are few organizations capable of providing this level of service 24 hours a day, 365 days a year.”

Merion says, “The Michigan Donor Travel Forum recommendations included safety certification by one of the well-established aviation safety organizations. Renz deems these too expensive and also believes that the required aircraft and pilot specification data may not be available on short notice. At Michigan, we require this certification, pre-approve pilot teams, and have created an additional pre-approval process for back-up vendors needed in the event that our own aircraft is unavailable, precisely to avoid the need to make these assessments in the middle of the night. It’s neither simple nor cheap, but it’s smart.”

— Rick Darby



VIDEO

Lights ... Camera ... Fatigue Awareness!

Grounded

U.S. Federal Aviation Administration (FAA) Flight Standards, the Civil Aerospace Medical Institute and the Chief Scientist Program. Available online at <hfskyway.faa.gov/HFSkyway/FatigueVideo.aspx>.

Grounded, which can be found on the FAA’s fatigue awareness training Web site, is a departure from the traditional training video. Its fictional format uses characters and a story line — “infotainment” instead of the usual documentary-style visuals, written onscreen messages and solemn voice-over.

One character, Gregg, senior manager for maintenance at a major airline, is having a week

full of stressors. Deadlines are not being met. Replacement parts go missing. A just-in-time inventory at one base turns out to be a not-in-time inventory. Gregg is tough on maintenance employees, asking them to work extra hours after they finish a graveyard shift to help get caught up with the work.

He doesn’t take it easy on himself, either. The hours are long. He gives himself jolts of caffeine to keep up the pace and a few “cold ones” after work to settle down. His wife, a long-haul airline pilot, is often away, so Gregg is on his own a lot of the time with the additional responsibility of their daughter.

Thanks to a plot device at the video’s beginning, Gregg makes the acquaintance of a doctor — the script gives her no name — who just happens to work in a sleep research clinic. For the remainder of the video’s 20-minute running time, she counsels him about ways to counteract the fatigue that is making him short-tempered and probably affecting his judgment.

“You’re going to have to break some bad habits and form new, better ones,” the doctor says. “You’re going to have to get a lot more rest.”

Gregg’s “alter ego” — appearing through computer graphics as a double of Gregg in some of the shots — insists he can safely ignore physiological reality and sidestep burn-out. A little bit of dramatic conflict builds up, which culminates when Gregg’s wife returns from a long flight, also fatigued. Irritation breaks out on both sides. “One happy sleep-deprived family,” the doctor comments in an aside to the viewer.

People do not like to be lectured on their lifestyle habits, so *Grounded* takes a new tack to make its points go down smoothly. The actors are talented, and the “doctor” delivers her lines with vivacity and a touch of humor. If infotainment be the food of training, then play on. 🎯

— Rick Darby