Safety of emergency medical service helicopters

Robust safety specifications and funding arrangements are needed

A recent review of the safety of helicopter emergency medical services (HEMS) in the United States found that the risk of death for a HEMS crewmember (per hour engaged in the activity) was similar to that of rock climbers and skydivers.[1] The study on the accident and fatality rate of HEMS by Holland and Cooksley (*page 17*) in this issue of the Journal[2] is a timely reminder of the risks faced by HEMS crew in Australia.

Aviation safety, like patient safety, is a complex interaction of systems, human factors and technology. Many of the lessons learned in aviation in improving safety and management of risk, such as incident reporting, crew resource management and simulator training, have crossed over into medical practice. The underlying issues affecting safety are similar, and are frequently unrelated to operator error.

Investigation of major incidents and accidents worldwide, in industries such as transport, mining, and indeed health, has revealed many common contributing factors identified as "latent conditions", or failures of the system.[3] These include the lack of a positive safety culture through poor governance, limited resources or misallocation of resources. Blame for accidents often lies with operator error, or active failures (slips, lapses and mistakes — errors at the level of the frontline operator), but it is the mitigation of latent failures that is likely to have the biggest impact on safety.

> …at least one Australian state government is yet to conduct any independent audits of its contracted HEMS operators…

HEMS in Australia operate in a risky environment for flight crew, medical crew and patients alike, for several reasons. First, HEMS in Australia are generally required to fulfil multiple roles, performing critical care interhospital transfer, land-on-scene response, hoist operations and search and rescue (SAR). In North America and Europe, there is generally a distinction between hoist and SAR operators and those who undertake interhospital transfers and land-on-scene response. Second, Australian HEMS operations are further complicated by the vast distances and the predominantly hot conditions, which challenge both aircraft and crew performance.

All incidents with injuries or fatalities reported by Holland and Cooksley[2] were flights conducted in helicopters without sufficient instrumentation for flight in cloud. Under the current regulatory requirements, flight in such aircraft over water or in rural areas at night is acceptable but is not viewed as best practice. Aircraft not equipped to fly in cloud have much lower acquisition costs than aircraft that are so equipped. Crew training and experience levels are also substantially less. Such aircraft continue to be used for HEMS in Australia, operating with minimal safety margins, as a result of inadequate funding arrangements.

In Australia, the Civil Aviation Safety Authority (CASA) certifies aircraft operators to provide specified levels of service. However, CASA certification does not necessarily mean a safe operator, any more than accreditation by the Australian Council on Health Care Standards means a safe hospital. Furthermore, the supervision provided by CASA varies with the category of operation. HEMS is situated at the lower end of the oversight spectrum by virtue of the category of operations in which CASA has placed it, resulting in a level of scrutiny that, given the complexity and risk involved, is lower than perhaps required. Recategorisation of HEMS into a higher category requiring higher standards of compliance, and hence scrutiny by CASA, is probably appropriate.

However, effecting regulatory change is a slow process. Given the low level of regulator scrutiny in some categories of aviation operations, the industry has recognised a need to enforce its own standards by commissioning aviation safety experts to conduct independent safety audits. For example, in high-risk areas, such as the off-shore oil industry, oil companies conduct independent safety audits of contracted helicopter operators as frequently as every couple of months. Although HEMS carry greater risk than off-shore oil work, at least one Australian state government is yet to conduct any independent audits of its contracted HEMS operators, despite this being a requirement of contract.

Recent accidents in Australia[2] have highlighted latent factors, such as equipment and crewing issues. However, to operate the equipment specified by either regulations or contracts, operators will only put in place systems they can afford. Maintaining the high standards mandated by this complex operating environment requires that health systems work in partnership with HEMS providers to ensure robust contract and auditing processes. This does not come without cost, and adequate funding of HEMS needs to be accepted and achieved. Cost cutting to ensure financial survival compromises the safety systems that HEMS operators endeavour to put in place. These are designed to mitigate error, and include hazard and incident reporting, training and education, audit programs, and safety officer appointment.

Against this background, a group of community HEMS providers in NSW and Queensland have commissioned, at their own expense, the development of a safety and integrated risk-management framework for HEMS. This is being facilitated by a specialised aviation risk-management company, which has been responsible for the development of similar programs for the Royal Australian Air Force, commercial airlines, airports and other aviation organisations. This program is a collaborative effort by HEMS operators to exceed regulatory compliance and lead the way for best practice. The program has subsequently expanded to a trans-Tasman initiative, with a number of New Zealand operators joining the consortium. The framework will be formally launched in February 2005.

Robust safety specifications and funding arrangements are essential to ensure that HEMS operations in Australia are performed at a more appropriate level.

Alan A Garner
Medical Chairman
NRMA CareFlight/NSW Medical Retrieval Service, Sydney, NSW
alang@careflight.org
Deanne M Keetelaar
Risk Adviser
Aerosafe Risk Management, Sydney, NSW
Jeff Konemann
Training and Safety Manager
NRMA CareFlight/NSW Medical Retrieval Service, Sydney, NSW

1 Blumen I, and the UCAN Safety Committee. A safety review of risk assessment in air medical transport. Supplement to the Air Medical Physician Handbook, November 2002. Salt Lake City, Utah: Air Medical Physician Association, 2002.
2 Holland J, Cooksley DG. Safety of helicopter aeromedical transport in Australia: a retrospective study. *Med J Aust* 2005; 182: 17-19.
3 Reason J. Human error: models and management. *BMJ* 2000; 320: 768-770. ❑