



# Aeromedical Society of Australasia (ASA)

## Standards for Aeromedical Services

Final Version 1.0

2020

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## INTRODUCTION

This draft standard has been developed by the Standards Committee of the Aeromedical Society of Australasia (ASA) and is intended to ensure that the quality of aeromedical service provided in Australia and New Zealand promotes safety, consistency and is patient focused.

The concept of safety and risk minimisation underpins the development of this document and builds upon the excellent safety record experienced in the sector to date. Aeromedical providers wishing to provide these services will be encouraged to meet the standards required within this document once finalised.

To ensure that the standards provide a framework for clinical best practice, they will be aligned to the National Safety and Quality Health Service Standards (NSQHSS) developed by the Australian Commission on Safety and Quality in Health Care (ACSQHC).

These draft standards are currently going through a process of peer review and critique, not only by the providers of aeromedical services but also key stakeholder organisations such as CASA, other health providers, clinical colleges and aeromedical experts.

The draft document contains the aeromedical-sector agreed standards for pilots, crew, aircraft and essential equipment. The desired outcome of this standard is the promotion of national consistency, best practice and quality, and risk management practices that ensure patient and crew safety remains paramount in all aspects of aeromedical service provision.

We would like to thank the many individuals who have contributed to this standard, either in face to face consultation, in writing or by other means to date. In particular we would like to recognise the significant input provided by the ASA Standards Committee whose experience and knowledge have made the development of this draft standard possible.

We encourage your feedback and look forward to refining the next version to reflect input from the wider stakeholder group as a result of trial implementation.

A handwritten signature in black ink that reads "D. Waters". The signature is stylized, with a large, sweeping 'D' and 'W'.

David Waters

President

Aeromedical Society of Australasia

2020

### This Standard applies to:

Dedicated aeromedical services as described below. Non-dedicated services wishing to be a member of the Aeromedical Society of Australasia will need to demonstrate compliance

#### **Pre-hospital Transport**

These are services that transport critically ill patients from an accident or illness location to hospital.

#### **Emergency Inter-hospital Transport**

These are Services which predominantly transfer critically ill or injured patients who require critical level care both prior to and during the transportation phase. This includes specialist services transferring patients in specific categories (e.g. Obstetric, paediatric and neonatal) or requiring specialised equipment and skills (e.g. Balloon pump, ECMO, nitric oxide). This may include ground based ambulance support to complete the operation.

#### **Semi-urgent Inter-hospital Transport**

These are Services that usually manage less critically ill patients but will have sufficient training to initiate advanced life support in life threatening emergencies, especially in situations where critical care specialists are not available. Services providing pre-hospital (primary response) and SAR carrying a clinical crew should have advanced life support skills as appropriate to the risks identified in the patient population. This may include ground based ambulance support to complete the operation.

#### **Patient Transfer Services**

This group transfer stable (non-critical) patients whose transfer is non-time critical and who are deemed unlikely to need advanced life support. The members of the service require basic life support training and skills. This may include ground based ambulance support to complete the operation.

#### **Search and Rescue Air Service**

These are services that transport critically ill patients from a remote or hazardous location to hospital following search and rescue activities.

Note 1: - Aeromedical and Air SAR dispatch operations (tasking centres) should ensure dispatch staff are conversant with this Standard and incorporate the requirements into their decision-making process to ensure the most appropriate resource is tasked to meet the specific patient and mission requirements where these are known.

Note 2: - Aeromedical and Air SAR services that have third party lease arrangements critical to the success and safety of their operation (including the provision of back-up aircraft) shall ensure that this standard is known, understood and where applicable complied with by the third party.

## INTERPRETATION AND KEY DEFINITIONS

For the purposes of this Standard, the word 'must' refers to practice that is mandatory for compliance with this Standard, while the word 'should' refers to practice that is advised or recommended.

The terms "Normative" and "Informative" have been used in this Standard to define the application of the Appendix to which they apply.

The "Normative" Appendix is an integral part of the Standard, whereas the "Informative" Appendix is only for information and guidance. Informative provisions do not form part of the mandatory requirements of the Standard. See Appendix A and B for a list of defined terms and abbreviations used in this Standard.

## REFERENCED DOCUMENTS

*Reference is made in this Standard to the following National and International Standards:*

AS NZS 1891.1	Industrial fall-arrest systems and devices Part 1: Safety belts and harnesses
AS/NZS 3551	Technical management programmes for medical devices
DSP 83	US State Dept. End User Agreement for purchasers of US NVGs
ISO 9000	Quality Management
ISO/IEC 17021	Conformity Assessment—requirements for bodies providing audit and certification of management systems
ISO 31000	Risk Management - Principles and Guidelines
NZS 8156	Ambulance and paramedical services
ACSQHC	National Safety and Quality Health Service Standards

*Reference is made in this Standard to the following legislation:*

Australia: Civil Aviation Safety Authority

Civil Aviation Safety Regulations 1998

Civil Aviation Regulations 1988

NZ: Civil Aviation Authority

Civil Aviation Act 1990

Civil Aviation Rules

Privacy Act

Code of Health and Disability Services Consumers' Rights (NZ)

## ADMINISTRATION OF THE STANDARD

This Standard will be administered by the Aeromedical Society of Australasia Standards Committee. If any section of this Standard becomes conflicted with the Civil Aviation Safety Regulations or Act and Civil Aviation Rules, then the Regulation, Act and Rules take precedence. The Administrator of this Standard must be notified and will arrange to have the conflict resolved in the Standard. It is recognised that in exceptional circumstances, Services may be unable to fully meet the requirements of this Standard on all occasions.

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## CERTIFICATION

The aeromedical service should be independently certified to this Standard.

To enable this the administrators of this Standard will:

1. Maintain and make available a list of independent auditors/audit agencies approved to assess operators against this Standard.
2. Ensure the independent audit agency is endorsed by a recognised accreditation scheme or equivalent that ensures good audit practice and audit consistency. This may be achieved by ensuring the independent audit agency is accredited by a recognised conformity assessment body to ISO/IEC 17021:2011 - Conformity assessment - Requirements for bodies providing audit and certification of management systems.
3. Ensure the independent audit agency utilises an appropriate mix of auditor competency and specific industry and technical knowledge to audit the service against this Standard.
4. Ensure the independent audit agency adopts a risk management approach to agreeing time frames for addressing non-compliance and audit findings.
5. Ensure the independent audit agency has an escalation process that alerts the administrators of the Standard when non-compliance issues rated as 'high' or 'critical' are not resolved in the required timeframe as specified by the risk matrix.

To enable this the aeromedical service should:

1. Demonstrate compliance with this Standard via an independent audit process, resulting in certification.
2. Ensure each air-frame (including any designated back-up air-frames) is designated as compliant to the Standard.
3. Produce on demand evidence of current certification in relation to each air-frame used in the delivery of air ambulance and/or air SAR services. This shall include air-frames contracted to provide back up service when the primary air-frame is out of service.

# DRAFT ASA STANDARDS FOR AEROMEDICAL SERVICES

## 1.0 CAPABILITY AND GOVERNANCE

### STANDARD 1.1 CAPABILITY STATEMENT

**Outcome 1.1:** Each Service must have a written capability statement which clearly defines their scope of service provision.

*Note: The scope must encompass the types and number of patients to be transported, the level of care and the types of missions to be undertaken (e.g. scene response or inter-facility transport). Any limitations to the service (out of scope activities) must also be stated.*

**This criterion will be achieved by:**

- 1.1.1 The level and scope of care provided by the aeromedical service must be defined by their mission statement.
- 1.1.2 The capability statement must include description of the specialised equipment available in aircraft including medical and rescue equipment.
- 1.1.3 Emergency and routine calls must be accepted without discrimination within the bounds of the capability statement.
- 1.1.4 There must be adequate information or an education (outreach) program for the potential users of the system which should include the following:
  - a) A description of the service area and patient scope.
  - b) Hours of operation.
  - c) The capabilities of the crew used by the Service and their facilities.
  - d) A description of the type and capabilities of aircraft available.
  - e) Protocols or guidelines for appropriate use of crew and aircraft.
  - f) A safety program for all personnel who can reasonably be predicted to be involved with aircraft operations.
  - g) Guidelines as to which patients are appropriate for transportation by the Service.
  - h) Clinical guidelines for pre-transport patient preparation.
  - i) Instructions as to how to activate the service and who is authorised to do so.
  - j) The cost to the patient and/or others for using the service.
- 1.1.5 The capability statement must define the categories of aeromedical service provided as specified below:
  - a) Pre-hospital Transport
    - i) Emergency Pre-hospital Transport.
    - ii) Search and Rescue Services.
  - b) Inter-hospital Transport which includes:
    - i) Emergency Inter-hospital Transport.
    - ii) Semi-urgent Inter-hospital Transport.
    - iii) Patient Transfer Services.

**Outcome1.2: Aeromedical services implement corporate and clinical governance systems that maintain and improve patient care and service delivery outcomes.**

*Note: Governance in this context is the set of relationships and responsibilities established by a health service organisation between its executive, workforce and stakeholders (including consumers). Governance incorporates the set of processes, customs, policy directives, laws and conventions affecting the way an organisation is directed, administered or controlled. Governance arrangements provide the structure through which the corporate objectives (social, fiscal, legal, human resources) of the organisation are set and the means by which the objectives are to be achieved. They also specify the mechanisms for monitoring performance. Effective governance provides a clear statement of individual accountabilities within the organisation to help in aligning the roles, interests and actions of different participants in the organisation to achieve the organisation's objectives. In these Standards, governance includes both corporate and clinical governance.*

**References, Legislation Regulations**

- National Safety and Quality Health Service Standards

*Note: This standard may be achieved by implementation of the Australian Commission on Safety and Quality in Health Care (ACSQHC) National Safety and Quality Health Service Standards (NSQHSS).*

**This criterion will be achieved by:**

- 1.2.1 A system for the approval, implementation and regular review of policies and procedures. This should include:
- A register of clinical policies and procedures that records and flags review dates.
  - A system for consultation and dissemination.
  - Review of all policies and procedures within three years.
- 1.2.2 Implementing collecting and reviewing performance data to inform decision making. This should include:
- Activity data
  - Financial data
  - Incident data
  - Training
  - Clinical audit
  - Audit data
- 1.2.3 Implementation and regular review of a safety management program for all personnel who can reasonably be predicted to be involved in aircraft operations. This should include:
- Manual Handling
  - PPE
  - Fire and Evacuation
  - HUET
  - Sea and land survival
  - Facilities abandonment

All crew members must operate within a fully implemented Safety Management System (SMS) that maximises aviation safety and utilises the principles of risk assessment, mitigation and management.

Evaluation of the safety program as part of the Services quality program.

- 1.2.4 The service clearly delegates' safety and quality roles and responsibilities to staff. This should include:
- a) Appropriately qualified Medical Director with a position with executive powers within the Service.
  - b) A designated Safety and Quality Coordination role.
  - c) Safety and Quality Committee.
  - d) Safety and quality in Job Descriptions.
  - e) Safety and quality responsibilities in contracts.
  - f) Regular feedback from staff to assess their level of understanding of the Service's safety and quality system.
- 1.2.5 All clinical staff must receive initial and ongoing training that is in keeping with their expected Aeromedical role. This includes Medical Passengers (Doctors, Nurses, Paramedics and Ambulance Officers) who may infrequently fulfil this role.
- All clinical staff must participate in activities that maintain the skills and competencies of their specific roles required to operate as a crew member in accordance with approved Expositions. D1 – Governance for Safety and Quality in Health Service Organisations.
- This should include:
- a) Appropriate knowledge about the impact of pathophysiology in the aviation environment.
  - b) Local pre-hospital ambulance and emergency service protocols, roles, responsibilities and equipment.
  - c) Clinical audit/peer review of cases (using internal and /or external peer process).
- 1.2.6 A service wide risk management program ensures risks are managed effectively and that the Service complies with relevant legislation (E.g. Charitable Trusts Act, Companies Act, Incorporated Societies Act, Public Finance Act, Workplace Health and Safety Act).
- This should include:
- a) Policies and procedures.
  - b) Staff training in risk management policies, procedures and practises.
  - c) Maintaining a Service wide risk register that is subject to regular review and updating by executive management.
  - d) Developing, implementing and reviewing risk mitigation strategies.
  - e) Evaluating the risk management program.
- 1.2.7 A service wide quality management system provides assurance to the governing body that the Service complies with policies, procedures, relevant standards, legislation and regulations and that things are being managed well.
- This should include:
- a) A scheduled clinical and non-clinical audit program aligned to the requirements of these Standards.
  - b) Ongoing review and evaluation of the quality program.

1.2.8 Agreed clinical guidelines and pathways of care define practice.

This should include:

- a) Guidelines as to which patients are appropriate for transportation by the Service.
- b) Clinical guidelines for pre-transport patient preparation, emergency pre-hospital transport, Search and Rescue services, emergency inter-hospital transport, semi-urgent inter-hospital transport and patient transfer services.
- c) Policies and procedures to reduce risks to at risk patients.
- d) Implementation of the ACSQHC ten (10) NSQHSS.

1.2.9 A comprehensive record is documented for each patient.

This should include:

- a) A formal case sheet completed at the time of the mission and recording relevant demographic, clinical, operational details and patient management. A copy must accompany the patient and a copy must be kept at the Service.
- b) Managed and stored in a manner consistent with patient confidentiality.

Clinical documentation should include:

- a) Patient name
- b) Date of Birth
- c) Gender
- d) Medical record number/Ambulance Case reference
- e) Mission time and date
- f) Patient location/hospital
- g) Mission type (e.g. retrieval, primary, secondary, tertiary, return)
- h) Clinical reason for request
- i) Vital signs and conscious level at appropriate intervals
- j) Dispatch/response time/date
- k) Level of urgency
- l) Vehicle mode dispatched
- m) (RW/FW/Other)
- n) Departure time/date
- o) Admission time/date
- p) Admission location
- q) Vital signs at end of transport
- r) Medical record number (accepting hospital)
- s) Patient outcome – discharged from hospital/died (If ascertainable)
- t) Evaluation of compliance as part of the Services quality program

1.2.10 A system is in place to ensure that the workforce is appropriately qualified, experienced and competent.

This must include:

- a) Clearly articulated job descriptions that include essential qualifications.
- b) Monitoring and review of Licensing.
- c) A process for credentialing, scope of practice and re-credentialing of medical officers.
- d) Performance review and professional development.

- e) Evaluation of the credentialing and performance review system as part of the Service quality program.

1.2.11 The Service records and analyses all reportable events in order to identify opportunities to improve service delivery, manage risks and comply with statutory and/or regulatory requirements.

This should include:

- a) Risk register
- b) Near misses
- c) Incidents and accidents
- d) Hazardous conditions
- e) Adverse clinical events
- f) Service delivery shortfalls
- g) Non-compliance with legislation, regulation or professional practice standards
- h) Notified medical device alerts recall
- i) Medication alerts and recalls

Management of reportable events must be linked to the risk and quality assurance system. This may be achieved by but is not limited to, including process for:

- a) Investigation of underlying causes
- b) Analysis of data
- c) Identification of trends
- d) Planned corrective action
- e) Communication and consultation
- f) Monitoring and review

*Note: The Service must comply with any statutory and/or regulatory requirements in relation to external and mandatory notification reporting e.g. notifiable diseases, Coroner.*

- g) Evaluation of the reportable events system as part of the Services quality program.

1.2.12 The Service wide complaints management system is accessible and effective and complies with better practice guidelines (i.e. Australian Charter of Healthcare Rights ACSQHC or The Code of Health and Disability Services Consumers Rights).

This should include:

- a) A documented process for lodging and investigating complaints and implementation of remedial action and follow up.
- b) Without limiting the generality of this requirement, the complaints management system must conform to the relevant standard or legislative requirements where these exist.
- c) The complaint management system must be linked to the quality and risk management system to facilitate feedback and service improvements.

1.2.13 Implementation of the National Open Disclosure Standard.

This must include:

- a) Policies and procedures.
- b) Staff training.
- c) Evaluation of the open disclosure process as part of the Services quality program.

- 1.2.14 Tasking arrangements optimise the dispatch and use of aircraft.  
This should include:
- a) Policies that articulate how to activate the service, who is authorised to do so and the cost to the patient and/or others for using the service.
  - b) Staff training and ongoing professional development plans.
  - c) Evaluation of the dispatch system as part of the Service quality program.
- 1.2.15 The Aeromedical service has a Major Incident Plan agreed with their state-wide emergency services committee or equivalent.  
This plan should include:
- a) Procedures that articulate how to activate the plan and who is authorised to do so.
  - b) A 'mutual aid' agreement to augment air resources at critical times.
  - c) A rota of on-line clinicians available for on-line medical advice.
  - d) Annual staff training.
  - e) Evaluation of the Major Incident plan through test exercise as part of the Service quality program.
- 1.2.16 Implementing a system that determines and regularly reviews the roles, responsibilities, accountabilities and scope of practice for the workforce:
- a) A system is in place to define and regularly review the scope of practice for the workforce.
  - b) Mechanisms are in place to monitor that the workforce are working within their agreed scope of practice.
  - c) Organisational service capability, planning and scope of practice is directly linked to the service roles of the organisation.
  - d) The system for defining the scope of practice is used whenever a new service, procedure or other technology is introduced.
  - e) Supervision of the workforce is provided whenever it is necessary for individuals to fulfil their designated role.
- 1.2.17 Implementing a performance development system for the workforce that supports performance improvement within their scope of practice:
- a) A valid and reliable performance review process is in place for the workforce.
  - b) The workforce participates in regular performance reviews that support individual development and improvement.
- 1.2.18 Ensuring that systems are in place for ongoing safety and quality education and training:
- b) The clinical and non-clinical workforce have access to ongoing safety and quality education and training for identified professional and personal development.
- 1.2.19 Seeking regular feedback from the workforce to assess their level of engagement with, and understanding of, the safety and quality system of the organisation:
- a) Analyse feedback from the workforce on their understanding and use of safety and quality systems.
  - b) Action is taken to increase workforce understanding and use of safety and quality systems.

## STANDARD 1.3 CLINICAL GOVERNANCE

### Outcome 1.3a: Patients can expect clinical practices that provide quality, safe, patient centred care.

*Note: The organisation must have at least one formally appointed medical director who accepts responsibility for the delivery of clinical services to ensure consistent standards of patient care.*

#### References, Legislation Regulations

- National Safety and Quality Health Service Standards
- Australian Health Practitioner Regulation Agency
- Standard for Credentialing and Defining the Scope of Clinical Practice 2
- Australian Charter of Healthcare Rights 3
- Safe Work Australia

#### This criterion will be achieved by:

- 1.3.1 The Medical Director will be responsible and accountable for clinical personnel supervision by:  
The Medical Director must:
- a) Be a Medical Practitioner currently registered with Australian Health Practitioner Regulation Agency (AHPRA) or the Medical Council of New Zealand (MCNZ) and hold relevant specialist qualifications with no limitations or restrictions on practice.
  - b) Have recognised experience in pre hospital, emergency, anaesthetics ICU or other clinical roles consistent with the type of care the service provides.
  - c) Have qualifications and experience in aviation medicine.
- 1.3.2 The Medical Director will be responsible and accountable for clinical personnel supervision by:
- a) Significant involvement in clinical staff selection.
  - b) Development of guidelines for the selection of staff skills and competencies required for missions.
  - c) Development and monitoring of position descriptions including scope of practice with delegation of clinical roles and tasks to individuals fulfilling roles.
  - d) Regular assessment of skills and abilities of all clinical staff.
  - e) Ensuring an ongoing clinical, including aviation medicine, education programme.
- 1.3.3 The Medical Director will be responsible and accountable for development and review of clinical guidelines:
- a) All organisations must maintain pathways based on guidelines or accepted practice, for the assessment and management of patients.
  - b) Clinical and operational guidelines must be reviewed regularly to ensure maintenance of current standards.
- 1.3.4 The Medical Director will be responsible and accountable for the development and regular review of training programmes:
- a) The organisation will have an education programme to ensure the adoption of comprehensive, consistent, approved clinical guidelines.
  - b) The organisation will have an education programme to ensure all clinical staff have comprehensive aviation medicine training, including aviation physiology.
  - c) The organisation will have an education programme to ensure safe operation in the aviation environment.

- 1.3.5 The Medical Director will be responsible for all clinical equipment, including gases, used in the transfer process:
- a) All clinical equipment must be rated for the aircraft being utilised in the transfer process.
  - b) All clinical equipment must be pre-flighted prior to missions and at appropriate ratings periods.
  - c) All services must have equipment appropriate for and consistent with the services provided by the organisation.
- 1.3.6 The Medical Director will be responsible and accountable for a Clinical Governance System which includes, but is not limited to:
- a) Maintenance and regular review of clinical guidelines
  - b) Audit, including follow up of patients transferred
  - c) Clinical review
  - d) Analysis of incidents, near misses and adverse outcomes
  - e) Complaints management
  - f) Recommendations arising from review
  - g) Clinical risk analysis.

**Outcome 1.3b: Patients transferred can expect care from appropriately qualified and experienced clinical staff.**

*Note: The organisation will ensure care from clinical staff that are appropriately qualified and experienced for the service provided by the organisation.*

**This criterion will be achieved by:**

- 1.3.7 Clinical staff must be qualified for their clinical positions and maintain their currency as identified by:
- a) Being a clinician currently registered with AHPRA or the Medical Council of New Zealand (MCNZ) and hold relevant qualifications with no limitations or restrictions on practice.
  - b) Participation in the organisation's clinical governance processes.
  - c) Participation in initial aviation related and clinical education.
  - d) Participation in regular refresher aviation related and clinical courses.
- 1.3.8 Clinical staff will undertake duties in accordance with their position descriptions:
- a) All clinical staff will have their roles determined in accordance with their position descriptions.
  - b) Clinical staff will require specific, documented delegations consistent with their clinical skills and competency.
  - c) Clinical staff will be assessed regularly for their clinical skills and competency.
  - d) Clinical staff will be familiarised with and able to safely operate all clinical equipment that they are delegated to operate.
- 1.3.9 All clinical staff must be covered by appropriate insurances:
- a) All clinical staff must be covered by Medical Defence Insurance.
  - b) All clinical staff must be covered by Workers Compensation Insurance for their State of employment.

- c) All clinical staff must undergo review to minimise any risk to patients, for example “Working with Children” checks, AHPRA or the Medical Council of New Zealand (MCNZ) limitations, past or present.

**Outcome 1.3c: Patients can expect that clinical staff are fit for their duties and able to provide appropriate care in a safe environment.**

*Note: The organisation will ensure that there is compliance with Occupational Health and Safety legislation, regulations and rules.*

**References, Legislation Regulations**

- National Safety and Quality Health Service Standards, Australian Commission on Safety and Quality in Health Care p12.
- Standard for Credentialing and Defining the Scope of Clinical Practice, Australian Council for Safety and Quality in Health Care, July 2004.
- Australian Charter of Healthcare Rights, Australian Commission on/safety and Quality in Health Care.

**This criterion will be achieved by:**

- 1.3.10 All clinical crew must be fit to undertake their duties.
  - a) All clinical crew must be assessed for functional fitness prior to employment and monitored regularly for the physical ability to conduct their duties.
  - b) All clinical crew members must undertake annual medical examinations to ensure an absence of conditions or management of conditions which might be adversely affected by flight or affect the clinician’s ability to fly.
- 1.3.11 There must be an Occupational Health and Safety policy which will include:
  - a) A fatigue management system covering duty and rest times.
  - b) Processes for delineation of safe access and egress to aircraft and safe operation in the aviation environment.
  - c) Policies for the management of staff with short term conditions which may affect flying, for example upper respiratory tract infections, gastroenteritis.
  - d) Policies on prescribed medication, recreational drugs and alcohol use.
  - e) Safety equipment for staff and where required, patients, including hearing protection and other personal protection equipment (PPE).
  - f) Management of pregnant and breast feeding women.
  - g) All staff must wear clothing rated for aviation wear which will provide fire retardant properties. There must be consideration to clothing design to:
    - i) Avoid components which may catch on equipment or otherwise impede egress in an emergency.
    - ii) Minimise buttons and open pockets which may contribute to foreign object damage.

1.3.12

There must be infection control policies which will cover:

- a) Selection of patients for transfer.
- b) Provision of PPE and practice of universal precautions for all staff in contact with patients who may be infectious.
- c) Management of sharps and contaminated waste.
- d) Cleaning of the aircraft and equipment following patient embarkation.

## 2.0 CLINICAL CAPABILITY

### STANDARD 2.1 AEROMEDICAL SERVICE – MEDICAL DIRECTOR

#### **Outcome 2.1: The Service is under the direction and guidance of a medical director who is a suitably qualified physician.**

*Note: The Medical Director must have a position with medical executive powers in the organisation structure, with major input into formulating and updating the organisation's medical capability statement.*

#### **This criterion will be achieved by:**

- 2.1.1 The Medical Director must have direct clinical involvement with the aeromedical service and:
- a) Be experienced in the type of care the service provides.
  - b) Have a specialist qualification consistent with the mission statement of the service.
  - c) Be actively involved in patient care.
- 2.1.2 The Medical Director must be responsible and accountable for:
- a) Supervising and evaluating the medical care provided by the health care professionals employed within the service.
  - b) Selection of aeromedical clinical crew.
  - c) Formal input into coordination of the aircrew's orientation training.
  - d) Continuing medical education and total quality management program.
  - e) Coordination of a teaching program to include:
    - i) Principles and practice of in-flight patient care.
    - ii) Limitations to patient selection.
    - iii) Altitude physiology and pathophysiology.
    - iv) Effects of transport (including flight) on patient care.
  - f) Setting up regular review of medical guidelines and protocols for patient care where appropriate.
  - g) Organisation and implementation of a regular (eg. monthly) clinical Quality Assurance/Quality Improvement program. There must be a written record of such meetings with adequate mechanism for implementing recommendations.
  - h) Selection of medical equipment which is consistent with the service's mission statement and safe and effective in the aeromedical environment.
  - i) Active involvement in conjunction with senior operational staff in establishing operational policies which relate to patient care or medical crew activities.

## STANDARD 2.2 AEROMEDICAL SERVICE - CLINICAL PERSONNEL

### **Outcome 2.2: All clinical crew must be appropriately qualified, experienced and competent to fulfil the aeromedical service's capability requirements.**

*Note: There is no set specification of discipline mix specific requirements to make up the clinical workforce. The particular mix of clinical workforce is determined by the aeromedical service requirements taking in consideration patient cohort and type of service activity (e.g. primary response; Inter-hospital transfers; search and rescue activity etc.). This workforce can be made up with a combination of clinicians.*

#### **This criterion will be achieved by:**

- 2.2.1 All clinical staff shall have appropriate professional registration or qualifications as recognised by the profession/ industry (if they are not a registered profession).
- 2.2.2 All clinical staff shall have extensive relevant clinical experience and a broad range of procedural competency suitable for the clinical service needs of the aeromedical service.
- 2.2.3 All clinical staff shall have recognised qualifications relevant to the provision of care provided by the aeromedical service
- 2.2.4 Medical officers employed by the aeromedical service must be credentialed for broad or full scope of clinical practice in pre-hospital and retrieval medicine (PHRM, ACRRM) relevant to the case mix of the organisation.
- 2.2.5 Neonatal and paediatric critical care clinicians must be trained in neonatal intensive care and paediatric advanced life support.
- 2.2.6 All clinical staff shall comply with all relevant professional clinical college guidelines and standards relevant to the provision of aeromedical care and transportation.
- 2.2.7 All clinical staff shall have received initial and ongoing training that is in keeping with their expected aeromedical role.
- 2.2.8 All clinical staff shall participate in activities that maintain the skills and competencies for their specific roles required to operate as a crewmember in accordance with approved Expositions.
- 2.2.9 All clinical staff shall have knowledge of the impact of pathophysiology in the aviation environment.
- 2.2.10 All clinical staff shall be familiar with local pre-hospital ambulance and emergency service protocols, roles, responsibilities and equipment.
- 2.2.11 Each Service shall be under proper direction and guidance of a medical director who shall be a suitably qualified medical officer for the clinical service of the organisation. The Medical Director shall have a position with medical executive powers in the organisation structure.
- 2.2.12 Scope of practice: All clinical staff must have the appropriate skills and knowledge pertinent to the specific patient cohort the aeromedical service transports.
  - a) For adult patient cohort this would include, but not be limited to, qualifications/ experience in:
    - i) Advanced life support
    - ii) Trauma management
    - iii) Advanced airway management
    - iv) Management of the Obstetric patient
  - b) For neonate/ paediatric patient cohort this would include, but not be limited to, qualifications/ experience in:
    - i) Neonate advanced life support
    - ii) Paediatric advanced life support

iii) Advanced airway management.

## STANDARD 2.3 MEDICAL PASSENGERS

**Outcome 2.3: Medical Passengers (doctors, nurses, paramedics and ambulance officers who infrequently fulfil this role) have the required experience, training and skills to care for the patients on board.**

**This criterion will be achieved by:**

- 2.3.1 All Medical Passengers must meet the minimum training requirements for their specific roles specified.
- 2.4.1 All Medical Passengers must have the knowledge of the impact of pathophysiology in the aviation environment. OR all medical passengers must have consulted with an aviation endorsed medical/nursing clinician prior to the flight.

## STANDARD 2.4 CONTINUING AEROMEDICAL/CLINICAL EDUCATION

**Outcome 2.4: There must be a formal documented education program for clinical staff consistent with the mission statement of the service.**

**This criterion will be achieved by:**

- 2.4.1 There must be written guidelines for the care of patients consistent with the mission statement of the Service.
- 2.4.2 There should be a continuing education program for all air clinical crew. This should include patient case review and involve senior specialists who are experts in the relevant field or clinical staff consistent with the mission statement of the Service.
- 2.4.3 There must be a formalised clinical audit program for medical as well as operational matters. This can run concurrently with continuing medical education and as such must involve peer review of cases using review officers outside the organisation who are experts in the relevant field.

## STANDARD 2.5 CLINICAL DOCUMENTATION

**Outcome 2.5: A comprehensive clinical record is documented for each patient.**

**This criterion will be achieved by:**

- 2.5.1 There must be a formal case sheet completed at the time of the mission recording relevant demographic, clinical, operational details and record of patient management. A copy should accompany the patient (ISOBAR?). Another copy must be kept at the service headquarters in a manner consistent with patient confidentiality.

- 2.5.2 Clinical documentation must be as detailed as necessary for the complexity of the mission and patient handover. It should include:
- a) Patient name
  - b) Date of birth
  - c) Gender
  - d) Allergies
  - e) Current medication
  - f) paediatric/neonates – weight and birth history
  - g) Medical record number/Aeromedical case reference
  - h) Mission time/date
  - i) Patient location/hospital
  - j) Mission type (Primary/Secondary/Tertiary/Return)
  - k) Clinical reason for request
  - l) Vital signs and conscious level at appropriate intervals
  - m) Dispatch/response time/date
  - n) Level of urgency
  - o) Vehicle mode dispatched (RW/FW/other)
  - p) Initial patient contact - time/date
  - q) Clinical interventions
  - r) Transportation mode if different (RW/FW/Other)
  - s) Departure Time/date
  - t) Admission time/date
  - u) Admission location
  - v) Vital signs at end of transport
  - w) Medical record number (accepting hospital)
  - x) Patient outcome - discharged from hospital/died (if ascertainable)

## 3.0 PARTNERING WITH CONSUMERS

### STANDARD 3.1 CONSUMER ENGAGEMENT

#### **Outcome 3.1: Aeromedical services implement systems to engage with and meet the needs of their consumers/stakeholders.**

*Note: Implementation of the Australian Commission on Safety and Quality in Health Care (ACSQHC) National Safety, Quality Health Service Standards (NSQHSS), Standard 2 – Partnering with Consumers and The Code of Health and Disability Services Consumers' Rights (NZ).*

#### **References, Legislation Regulations**

- National Safety and Quality Health Service Standards
- Australian Health Practitioner Regulation Agency
- Australian Charter of Healthcare Rights<sup>3</sup>
- Code of Health and Disability Services Consumers' Rights (NZ)

#### **This criterion will be achieved by:**

- 3.1.1 The Service must ensure that all staff understand the principles of patient centred care and involving patients in their own care.
- This should include:
- a) Patient centred care training.
  - b) Review and evaluation of patient centred practice within the service.
- 3.1.2 The Service must ensure that all personnel are familiar and comply with their obligations as set out in Consumers' Rights Guidelines, Standards and Legislation (e.g. the Australian Charter of Healthcare Rights).
- This should include:
- a) Policies and procedures.
  - b) Cultural awareness and non-discriminatory practice training.
  - c) Providing printed material and other media to meet the communication needs of local communities accessing the service where this is reasonable and practical, having regard to the exigencies of particular incidents.
  - d) A process to obtain feedback from patients and families in relation to their cultural and individual values being met.
- 3.1.3 The confidentiality of patients and patient information must be maintained in compliance with the requirements of the Australian Privacy Principles, and associated standards and legislation.
- This should include:
- a) Policies and procedures.
  - b) Staff training.
  - c) Evaluation of compliance as part of the Services quality program.
- 3.1.4 Informed consent to treatment is obtained whenever the patient can reasonably be expected to provide it and comply with better practice guidelines (i.e. ACSQHC).
- This should include:
- a) Policies and procedures that comply with the requirements of current guidelines, standards and legislation and provide clear guidance on consent process for the following situations:
    - i) Routine emergency situations.
    - ii) Whenever a patient has diminished competence.

- iii) Do-not-resuscitate situations and Advanced Care Directives.
  - iv) Involvement in research on teaching.
  - v) Information (Including documentation) to be provided to the patient by the Service.
  - vi) Meeting and particular needs of patients with disabilities.
  - vii) Patients' rights to refuse services and to withdraw consent to treatment.
  - viii) Recording requirements documenting consent decisions.
- b) Training clinical personnel in the principles and practises of obtaining informed consent and patients' rights to information.
  - c) Evaluation of consent procedures as part of the Services quality program.

## STANDARD 3.2 CONFIDENTIALITY OF PATIENT INFORMATION

### Outcome 3.2: The confidentiality of patients and patient information is maintained in compliance with the requirements of Privacy guidelines, standards and legislation.

This criterion will be achieved by:

- 3.2.1 The Service must develop and implement policies and procedures in relation to patient confidentiality.
- 3.2.2 Policies and procedures must clearly guide clinical personnel in maintaining patient confidentiality.

## STANDARD 3.3 INFORMED CONSENT TO TREATMENT

### Outcome 3.3: Informed consent to treatment is obtained whenever the patient can reasonably be expected to provide it and comply with best practice guidelines (i.e. Australian Commission of Quality and Safety in Health Care).

This criterion will be achieved by:

- 3.3.1 The organisation must develop and implement informed consent policies and procedures that comply with the requirements of current guidelines, standards and legislation.  
*Note: It is not necessary to obtain informed consent whenever the service is considered essential to support life and no acceptable documentation to the contrary is available.*
- 3.3.2 Informed consent policies and procedures must provide clear guidance on:
  - a) Consent processes for the following situations as appropriate:
    - i) Routine and emergency situations.
    - ii) Whenever a patient has diminished competence.
    - iii) Do-not-resuscitate situations and advanced care directives.
    - iv) Involvement in research or teaching.
  - b) Information (including documentation) to be provided to the patient by the Service.
  - c) Meeting any particular needs of patients with disabilities.
  - d) Patient rights to refuse services and to withdraw consent to treatment.
  - e) Recording requirements documenting consent decisions.
- 3.3.3 Informed consent must be obtained from the patient unless there are reasonable grounds for believing that the patient is not competent. Patients who are potentially unable to provide consent may include:
  - i) Young children (eg < 14 years).

- ii) Patients with either permanent or temporarily impaired cognitive function as a result of medical conditions, injury, dementia, use of alcohol, drugs, medication, substance or solvent abuse; or
- iii) Patients with acute mental health conditions.

3.3.4 Clinical personnel must receive education in the principles and practices of gaining informed consent and patients' rights to information.

3.3.5 Clinical personnel must implement the specific requirements of the consent process as specified in the Service's policies/procedures.

3.3.6 The consent procedure should be evaluated as part of the Service's quality assurance programme.

### STANDARD 4.1 HEALTH AND SAFETY

#### **Outcome 4.1: The organisation must have a written policies relating to workplace health and safety, clinical crew fitness and shift-time limitations.**

*Note: All clinical crew must undertake a pre-employment medical examination from a recognised aviation medical examiner who is not a member of the service. This must include audiometry and tympanometry. All clinical crew will also complete a pre-employment functional assessment to assess a candidate's physical fitness and mobility against the inherent requirements of the position.*

##### **This criterion will be achieved by:**

- 4.1.1 There must be regular reviews of crew health and fitness and written policies for medical crew health and fitness levels. These policies should include hiring policies and the statement of any physical limitations that would preclude a medical crew from being able to fly with the organisation.
- 4.1.2 There must be a Fatigue Risk Management System in place for all clinical and operational crew.
- 4.1.3 The aeromedical service must have implemented schedules for medical crew duty times and limitations to these schedules. This should include a staff schedule and clear limitations to work periods to ensure crew safety. When junior staff are in training there should be a second tier available for advice and supervision.
- 4.1.4 There must be a policy for the management of crew suffering from otitis or sinusitis.
- 4.1.5 There must be suitable hearing protection available for those members of the organisation who are likely to be exposed to 93db.
- 4.1.6 The organisation must have policies for infection control both for patient and staff protection including sharps disposal and contaminated materials.
- 4.1.7 The organisation must have a policy regarding limitations for pregnant and lactating crew members that does not prejudice their employment chances.
- 4.1.8 The organisation must have a policy regarding what medications and recreational drugs including alcohol are inappropriate for air medical crew to take with special attention being paid to sedative or psychotropic drugs including compliance with DAMP.

## STANDARD 4.2 HUMAN FACTORS AND CREW RESOURCE MANAGEMENT (CRM)

**Outcome 4.2: Pilots and crewmembers must operate within a CRM Programme that ensures professional and proficient crew communication and participation in order to maximise safe flying and operational practices.**

**This criterion will be achieved by:**

- 4.2.1 Pilots and crewmembers participate in a well-planned and implemented Crew Resource Management (CRM) programme (in accordance with the syllabus requirements specified by CASR part 61 MOS/CAA) that all operational staff are familiar with. This programme must accommodate the usual crew combinations and includes learning outcomes that ensure the following:
- a) Improving communication and leadership skills among all team members.
  - b) Integrating checklists and error traps into everyday practice.
  - c) Reducing the risk of threat and error.
  - d) Promoting a culture that supports professional development.
  - e) Improving employee performance and staff retention.
  - f) Making facilities and operations safer and more efficient.
- 4.2.2 Crew Resource Management training should include but is not limited to:
- a) Human error and reliability, error chain, error prevention and detection.
  - b) Company safety culture, SOPs, organisational factors.
  - c) Stress, stress management, fatigue and vigilance.
  - d) Information acquisition and processing, situation awareness.
  - e) Workload management.
  - f) Decision making.
  - g) Communication and co-ordination inside and outside the cockpit.
  - h) Leadership and team behaviour synergy.

## STANDARD 4.3 SAFETY MANAGEMENT SYSTEMS

**Outcome 4.3: Pilots and crewmembers must operate within a fully implemented Safety Management System that maximises aviation safety.**

**This criterion will be achieved by:**

- 4.3.1 Pilots and crewmembers participate in a well-planned and implemented Safety Management System (SMS) which utilises the principles of risk assessment, mitigation and management (in accordance with the requirements specified by CASR/CAA).

*Note: A Safety Management System is a systematic, explicit and comprehensive process for managing safety risks. As with all management systems, a Safety Management System provides for goal setting, planning, and measuring performance.*

## STANDARD 4.4 RISK MANAGEMENT AND QUALITY ASSURANCE

### **Outcome 4.4: The organisation effectively identifies and manages its risk and maintains a quality management system.**

**This criterion will be achieved by:**

- 4.4.1 The organisation must have systems to assess, treat, monitor, and review all forms of risk that could affect achievement of its objectives including those concerned with clinical personnel and patient well-being. As part of its system of risk management, it must have an assurance system appropriate to its size and structure (in accordance with the requirements specified by CASR/CAA) to monitor the effectiveness of the risk management processes including those dealing with quality of service delivery.
- 4.4.2 Risks to be managed may include but are not limited to those relating to:
- a) The ongoing viability and reputation of the organisation.
  - b) The well-being and safety of personnel.
  - c) The well-being and care of patients.
  - d) The use of medicines, controlled drugs, and medical devices.
  - e) Proximity to hazardous waste, infection and unsafe situations.
  - f) The use of aircraft, vessels and land vehicles.
  - g) The Organisation's assets.
  - h) Contractual and legal obligations.
  - i) Service continuity.
  - j) The relationship with and management of resources and assets on which the Service depends but are not the property or responsibility of the Service e.g. Road ambulance for ground transfers, charter/military/commercial aircraft operators.
- 4.4.3 The risk management system must be supported by policies, processes, procedures and training together with a quality assurance system.
- 4.4.4 As a result of feedback from the quality assurance system or other, the Organisation must seek continually to improve the effectiveness and efficiency of its services.
- 4.4.5 Organisations must undertake and maintain external third party certification to this standard by an approved and accredited certification body.

## STANDARD 4.5 COMPLAINT MANAGEMENT

### **Outcome 4.5: The organisation's complaint management system is accessible and effective and comply with best practice guidelines (i.e. Australian Charter of Healthcare Rights - Australian Commission of Quality and Safety in Health Care).**

**This criterion will be achieved by:**

- 4.5.1 The organisation must have a documented process for lodging and investigation of complaints and implementation of remedial action and follow-up. Without limiting the generality of this requirement, the complaint management system must conform to the Code of Health and Disability Services Consumers' Rights.
- 4.5.2 The complaint management system must be linked to the quality and risk management system to facilitate feedback and service improvements.

## STANDARD 4.6 REPORTABLE EVENTS MANAGEMENT

**Outcome 4.6: The organisation records and analyses all reportable events in order to identify opportunities to improve service delivery, manage risks and comply with statutory and/or regulatory requirements.**

**This criterion will be achieved by:**

4.6.1 Reportable events relevant to the organisation must be identified. These include but are not limited to:

- a) Near misses.
- b) Incidents and accidents.
- c) Hazardous conditions.
- d) Adverse clinical events.
- e) Service delivery shortfalls.
- f) Non-compliance with legislation, regulation, or professional practice standards.
- g) Notified medical device alerts and recalls.
- h) Medication alerts and recalls.

4.6.2 Management of reportable events must be linked to the risk and quality assurance system. This may be achieved by, but is not limited to, including a process for:

- a) Investigation of underlining cause(s).
- b) Analysis of data.
- c) (Identification of trends.
- d) Planned corrective action.
- e) Communication and consultation.
- f) Monitoring and review.

4.6.3 The Organisation must comply with any statutory and/or regulatory requirements in relation to external and mandatory notification reporting (e.g. notifiable diseases).

*Note: The organisation should report actual and potential risks/hazards to a single national database where this exists.*

## 5.0 SERVICE OPERATION

### STANDARD 5.1 OPERATIONAL INFORMATION

**Outcome 5.1: The organisation records relevant operational data in order to identify opportunities to improve service delivery, manage risks and comply with statutory and/or regulatory requirements.**

**This criterion will be achieved by:**

- 5.1.1 Operational data relevant to the organisation and services delivered must be identified. These include but are not limited to:
- a) Aircraft availability.
  - b) Engine hours.
  - c) Flying hours.
  - d) Cycle times.
  - e) Turnout delays.

### STANDARD 5.2 OPERATIONAL MANAGEMENT AND DISPATCH

**Outcome 5.2: Tasking arrangements must ensure optimum dispatch and use of aircraft.**

**This criterion will be achieved by:**

- 5.2.1 Consistent dispatch criterion and protocols should be established to ensure a comparable standard of tasking.
- 5.2.2 All aeromedical service providers must have a Major Incident Plan agreed with their state-wide emergency services committee or equivalent.
- 5.2.3 Air ambulance services must agree 'mutual aid' agreement to augment their air resources at critical times.
- 5.2.4 All clinical and operational staff must be selected on criterion agreed by the organisation.
- 5.2.5 All clinical and operational training must be designed around the service being delivered.
- 5.2.6 There must be a rota of senior clinicians available for on-line medical advice.
- 5.2.7 Each Service should have an annual training and continuing professional development plan.

## STANDARD 5.3 AIRCRAFT OPERATIONS

### **Outcome 5.3: All aeromedical flights are conducted in a safe manner and in compliance with the Regulatory Authorities legislated requirements.**

**This criterion will be achieved by:**

*Note: The safe operation of aircraft is regulated by [CAA](#) in New Zealand and [CASA](#) in Australia. This section sets out those supplementary requirements for aircraft used for patient transport.*

- 5.3.1 Consistent with the mission profile of the service, the aircraft should be fitted with equipment designed to accommodate the patient in a seat, stretcher or incubator as required by the patient.
- 5.3.2 The aircraft must permit loading and unloading of the patient in a manner which meets local health & safety standards.
- 5.3.3 The following Medical equipment is required:
  - a) Oxygen supply.
  - b) Method of suction.
  - c) Source of medical power.

## STANDARD 5.4 CHIEF PILOT

### **Outcome 5.4: The Service is under the direction and guidance of a Chief Pilot who is suitably qualified and approved by CASA.**

*Note: All crew must have the required experience, training and current competency to provide the safe operation of the aircraft in flight and maintain the safety and wellbeing of all passengers and crew.*

*Note:*

1. *The Chief Pilot of the organisation is a person approved by CASA to represent the operator on all matters relating to flying operations and is responsible to CASA for all regulatory matters associated with flying operations including compliance with legislated requirements.*
2. *The Chief Pilot is a key appointment within the organisational structure with major input into formulating and updating the organisation's aviation capabilities and activities.*

**This criterion will be achieved by:**

- 5.4.1 The Chief Pilot must have direct involvement with the aeromedical service flight operations and:
  - a) Possess extensive relevant operational experience
  - b) Be experienced in the type of services provided
  - c) Undertake sufficient participation in routine aeromedical flights to maintain personal currency and awareness of operational procedures and requirements
- 5.4.2 The Chief Pilot must be responsible and accountable for:
  - a) Ensuring that the operator's air operations are conducted in compliance with all relevant regulatory provisions that apply to the operation
  - b) All flight crew training and operational matters affecting the safety of the flying operations of the operator
  - c) Selection of flight crew
  - d) Arranging flight crew rosters
  - e) Oversight and input into coordination of pilot Base/orientation training
  - f) Monitoring the operational standards of aeromedical flight operations
  - g) ensuring compliance with loading procedures specified for each aircraft type used by the operator

- h) Ensuring that any safety related issue is promptly investigated and any necessary corrective actions or procedures are implemented as and where appropriate
- i) As part of the Flight Crew training programme, ensure that clinical and medical flying staff are provided with safety training to the requisite standard
- j) Participation in regular review of procedures and protocols for patient transport where appropriate
- k) Regular (eg. monthly) participation in established clinical Quality Assurance/Quality Improvement program
- l) Active involvement in conjunction with senior medical and clinical staff in establishing operational policies and procedures relating to aeromedical transport operations

## STANDARD 5.5 PILOT IN COMMAND/CAPTAIN

### Outcome 5.5: The Aeromedical service is crewed by appropriately trained, experienced and competent Flight-crew.

*Note: All crew must have the required experience, training and current competency to provide the safe operation of the aircraft in flight and maintain the safety and wellbeing of all passengers and crew.*

#### This criterion will be achieved by:

- 5.5.1 The Pilot in Command must have the required experience, training and current competency to provide the safe operation of the aircraft in flight and maintain the safety and wellbeing of all passengers and crew.
- 5.5.2 All Pilots in Command must have acquired the minimum flying hours/experience specified in Table 1 - Pilot Experience Minimum Requirements.
- 5.5.3 All Pilots in Command must meet the minimum training requirements specified in Table 1 for air ambulance activities.
- 5.5.4 All Pilots in Command must participate in activities that maintain the required skills and competencies as specified in Table 1 to operate as a Pilot in Command. Up-to-date records must be maintained to demonstrate the continuing maintenance schedule and acquisition of the required skills and experience for the role.
- 5.5.5 The Pilot in Command must operate their aircraft in a safe manner with respect to performance in compliance with the operating limitations specified in the aircraft Flight Manual.
- 5.5.6 The Pilot in Command must communicate, either directly or through a co-pilot, flight progress and or environmental conditions to all crewmembers as the pilot duties permit throughout the flight, especially before take-off and prior to approach to land.

**Table 1**

PIC Experience Minimum Requirements	FW	RW	Comments
Licence	ATPL	ATPL	In line with CASR requirements for Medical Air Transports
Total experience	2,000 hours	2,000 hours	Minimum 1,500 hours in command.
In command	1,500 hours	1,500 hours	For RW, 1,300 hours must be RW in command.
On type	100 hours	100 hours	or factory training plus 25 hours PIC prior to EMS flights.

Turbine experience	500 hours	500 hours	If operation uses turbine aircraft.
Ratings	ME Command Instrument Rating	ME Command Instrument Rating	In line with CASR requirements for Medical Air Transports
Night	200 hours	200 hours	As applicable
Rating renewals	X3	X3	Minimum
NVIS GR 1		40 hours	Refer Part 91
NVIS GR 2		20 hours	Refer Part 91

5.5.7 Additional training and qualifications may be required prior to conducting EMS operations. All EMS services should have a documented program matched to their range of operations. This must include detailed operating procedures for:

- a) Pilot judgement and decision-making in the EMS environment.
- b) Operation of loading systems for equipment and patients.
- c) Clinical and emergency service communication systems.
- d) Fixation or stowage of medical equipment, including specialist fitments.
- e) Operation of medical equipment in flight.
- f) Special procedures and their application.
- g) Emergency procedures.
- h) Limited performance.
- i) Overwater operations.
- j) Local area orientation.
- k) Local weather patterns.
- l) Night vision.

5.5.8 Services operating 2 pilot or multi-engined aircraft should document the policies under which they operate, including details of training and skill maintenance programs used.

5.5.9 For search and rescue operations in helicopters, additional training and recency checking should include:

- a) Low flying.
- b) Hoist load (wet/dry).
- c) Search techniques & patterns.
- d) Mountain flying.
- e) Airborne dropping of stores.

## STANDARD 5.6 CO-PILOTS

**Outcome 5.6: All Co-pilots must have the required experience, training and current competency in their specific roles to assist the Pilot in Command in the safe operation of the aircraft in flight and maintain the safety and wellbeing of all passengers and clinical support crew.**

**This criterion will be achieved by:**

- 5.6.1 All Co-pilots must meet the minimum training requirements for their specific roles specified in Table 4 – Minimum education and training requirements for air ambulance and air-SAR activities (non-pilot personnel). The Operator must ensure that each Air Crew is competent to perform his/her duties in accordance with approved Expositions.
- 5.6.2 All Co-pilots must participate in activities that maintain the skills and competencies for their specific roles (ref table 4) required to operate as Air Crew, as prescribed in the approved Expositions. Up-to-date records must be maintained by the Operator to demonstrate the on-going maintenance and acquisition of the required skills and experience.

## STANDARD 5.7 HELICOPTER AIR-CREWMEMBERS

**Outcome 5.7: All helicopter crewmembers must provide general assistance to the pilot and medical personnel, carry-out air search duties and operate specialist equipment (such as Winch, Night Sun, FLIR etc.) for search and rescue purposes.**

*NOTE: There are two helicopter crewman functions in EMS operations – air-crewmember and rescue-crewmember.*

**This criterion will be achieved by:**

- 5.7.1 The air-crewmember's function in helicopter EMS operations is a professional and dedicated function and may perform the following duties under the supervision and direction of the pilot assist with the safe conduct of a flight (without manipulating any flight controls, switches, or levers that are considered to be critical to the safety of flight) in accordance with the following:
- a) Scan, Lookout and obstacle reporting;
  - b) Normal and emergency cockpit administration;
  - c) Monitoring of instruments during flight;
  - d) Navigation;
  - e) Radio communications; and
  - f) Interpretation of instrument flight rules (IFR) departure and approach procedures charts.
  - g) If appropriately qualified and trained, assist the pilot in specialized role operations:
    - a. Operate specialist role equipment e.g. Night Sun.
    - b. Carry-out winching/rappelling operations.
    - c. Operate the winch/supervise and dispatch rappellers.
    - d. Carry-out various winching techniques.
    - e. Respond to winching/rappelling emergencies.
- 5.7.2 The service must ensure that the Air-crewmember's mental and physical ability and readiness to safely conduct an EMS mission is assured.

- 5.7.3 Staffing and scheduling requirements must comply with CAO Part 48 - Flight Time Limitations, or a model based upon an approved CASA dispensation for EMS operations.
- 5.7.4 The service must ensure that Air-crewmembers have the following minimum qualifications:
- a) 200 flying hours in helicopter EMS, SAR or other similar operational experience deemed appropriate by the purchasing/contracting organisation.
  - b) 50 flying hours of winching operations, such experience to be inclusive of night and over-water experience.
  - c) Current First Aid qualification to advanced/occupational level.
  - d) Current HUET certification.
  - e) Workplace Trainer/Assessor qualification (Train Small Groups).
  - f) Hold or previously held rescue crewman qualifications.
- 5.7.5 Prior to conducting EMS operations, additional mission specific training and qualifications are required for Rescue Air-crewmembers:
- a) Aircraft type systems, role equipment and flight deck familiarisation.
  - b) Aircraft type/operator procedures familiarisation (inclusive of flight operations).
  - c) Winching/rappelling operations addressing normal and emergency procedures inclusive of night and over-water operations.
  - d) Night Sun operation.
  - e) Medical equipment and, as appropriate, assistance with medical procedures.
  - f) External load procedures.
  - g) Search techniques, patterns and procedures.
  - h) Site hazards and considerations associated with EMS/SAR operations.
  - i) Specialist role equipment fitments.
  - j) Airborne dropping of stores.
  - k) Local area orientation, agency and related agency familiarisation, local weather and special local hazards.
- 5.7.6 The service must ensure that recurrency (?recency) training and checking is conducted at least annually.
- 5.7.7 The service must ensure that all winching/rappelling operations, both standard and emergency procedures, must be exercised quarterly.
- 5.7.8 The service must provide a planned structured orientation to all relief air-crewmembers with sufficient content and duration to address role responsibilities and familiarisation with the region served.
- 5.7.9 The currency of relief air-crewmembers must be confirmed prior to the beginning of operations.
- 5.7.10 The service must ensure remedial training is implemented as deficiencies are identified. If systems and capabilities to assure these activities within the operation are not possible, then they must be acquired or accomplished from outside sources.
- 5.7.11 The service must ensure that all air-crewmembers have the right to decline or abort any portion of the mission if there is any doubt as to the safety of the mission.

## STANDARD 5.8 HELICOPTER RESCUE-CREWMEMBERS

**Outcome 5.8: All helicopter crewmembers must provide general assistance to the pilot and medical personnel, carry-out air search duties and operate specialist equipment (such as Night Sun, FLIR etc.) for search and rescue purposes.**

*NOTE: There may be two helicopter crewman functions in EMS operations – air-crewmember and rescue-crewmember.*

**This criterion will be achieved by:**

- 5.8.1 The rescue-crewmember function, in helicopter EMS operations, is a professional and dedicated function. However, a member of the medical team will usually perform the rescue crewman function. The rescue crewman performs the following duties:
- a) Assist the pilot.
  - b) Provide checks and clearances.
  - c) Assist the medical personnel with non-clinical tasks (when the rescue crewman is not part of the medical team).
  - d) Patient handling/packaging.
  - e) Handling/loading/set-up of medical equipment.
  - f) Assistance with basic life-support/medical procedures.
  - g) Carry-out air search operations.
  - h) Operate search equipment and SAR markers.
  - i) Act as a visual observer.
  - j) Carry-out winching/rappelling operations.
  - k) Inspect and service winching/rappelling equipment.
  - l) Carry-out "down the wire" work inclusive of working in the sea, on-board small craft and hazardous sites on land.
  - m) Carry-out various winching techniques.
  - n) Respond to winching/rappelling emergencies.
- 5.8.2 The service must ensure that rescue-crewmembers have the following minimum qualifications:
- a) Flight Radiotelephone Operator Licence.
  - b) Current Class 2 Medical Certificate.
  - c) Current physical fitness level (determined by appropriately qualified persons).
  - d) Current First Aid qualification to advanced/occupational level (for non-medical crew).
  - e) CRM course.
  - f) Operations over water should also include:
  - g) Current water skills to Bronze Medallion or equivalent.
  - h) Open water diver qualification.
  - i) Current HUET training.
- 5.8.3 Prior to conducting EMS operations, additional mission specific training and qualifications are required for rescue-crewmembers:
- a) Aeronautical knowledge training inclusive of a good knowledge of safety, survival, air legislation and dangerous goods. And, at an introductory level; ATC, meteorology, communications and aircraft general knowledge.
  - b) Aircraft type systems and role equipment familiarisation.

- c) Aircraft type/operator procedures familiarisation (inclusive of flight operations)
- d) Winching/rappelling operations addressing normal and emergency procedures inclusive of night and over-water operations.
- e) Medical equipment and, as appropriate, assistance with medical procedures (for non-medical crew).
- f) External load procedures.
- g) Search techniques, patterns and procedures.
- h) Site hazards and considerations associated with EMS/SAR operations.
- i) Ship and small craft familiarisation relevant to SAR and medical evacuation operations.
- j) Climbing/rappelling equipment and techniques (including industrial equipment and techniques for working at heights) familiarisation relevant to EMS and SAR operations.
- k) Specialist role equipment fitments.
- l) Airborne dropping of stores.
- m) Local area orientation, agency and related agency familiarisation, local weather and special local hazards.

5.8.4 The service must ensure that recurrency training and checking is conducted at least annually.

5.8.5 The service must ensure that all winching/rappelling operations, both standard and emergency procedures, must be exercised quarterly.

5.8.6 The service must provide a planned structured orientation to all relief rescue-crewmembers with sufficient content and duration to address role responsibilities and familiarisation with the region served.

5.8.7 The currency of relief rescue-crewmembers must be confirmed prior to the beginning of operations.

5.8.8 The service must ensure remedial training is implemented as deficiencies are identified. If systems and capabilities to assure these activities within the operation are not possible, then they must be acquired or accomplished from outside sources.

5.8.9 The Service must ensure that all rescue-crewmembers have the right to decline or abort any portion of the mission if there is any doubt as to the safety of the mission.

*Note: The rescue-crewmember has significant responsibilities during winching operations and may (along with any persons he/she is attempting to assist) be exposed to significant hazards. The rescue-crewmember function may also be very demanding of strength and aerobic capacity, particularly during rescue operations at sea.*

*EMS helicopters are commonly tasked to respond to the most challenging of search and rescue operations. Assurance of the safe and effective conduct of these operations is dependent upon the combination of a highly capable aircraft operated by pilots and rescue-crewmember of superior competence and informed confidence. Such competence and confidence is the result of sound training and extensive quality experience.*

*The air-crewmember is a dedicated crewman function. The rescue-crewmember function may be a dedicated function, however, in civil EMS helicopter operations this role is usually performed by a member of the medical team. Air-crewmembers and rescue-crewmembers require appropriate qualifications, experience and training.*

## STANDARD 5.9 WINCH OPERATOR

**Outcome 5.9: The Winch Operator must have the required experience, training and current competency to assist the Pilot in Command in the safe operation of the aircraft in flight whilst conducting winch operations.**

**This criterion will be achieved by:**

- 5.9.1 All Winch Operators must have satisfactorily completed a course of training that meets current accepted practice, and be certified by an approved person. Competency checks are completed at 12 month intervals and recorded.
- 5.9.2 Note: An approved person is an operator's check and training pilot or winch operator as designated within their approved Expositions.
- 5.9.3 In addition all Winch Operators must meet the minimum training requirements specified in Table xx – Minimum education and training requirements for air ambulance and air-SAR activities (non-pilot personnel) for rotary wing operations.
- 5.9.4 All Winch Operators must participate in winching activities that maintain the skills and competencies required to operate competently as a Winch Operator, as prescribed in the approved Expositions. Up-to-date training records must be maintained by the operator to demonstrate the on-going maintenance and acquisition of the required skills and experience. An example of the winch-skills and down-the line refresher requirements has been provided.

**Table 2**

**Minimum education, training and ongoing competency requirements for aeromedical and air-SAR activities (Pilots and crew members):**

	<b>Aircraft operations</b>	<b>Pilot in command</b>	<b>Co-pilot</b>	<b>Rescue Air-Crew member</b>	<b>Clinical support crew (Frequent crew member)</b>	<b>Medical passenger (Infrequent crew member)</b>
1	Standard Operating Procedures (SOPs)	Yes	Yes	Yes	Yes	
2	Specific aircraft orientation – pre-flight	Yes	Yes	Yes	Yes	Yes
3	In-flight procedures	Yes	Yes	Yes	Yes	Yes
4	Role specific equipment orientation	Yes	Yes	Yes	Yes	Yes
5	Safety in and around aircraft	Yes	Yes	Yes	Yes	Yes
6	Human factors / CRM	Yes	Yes	Yes	Yes	
7	Physiological effects of altitude	Yes	Yes	Yes	Yes	
8	Stressors of flight	Yes	Yes	Yes	Yes	
9	Survival training	Yes	Yes	Yes	Yes	
10	HUET (if conducting regular flights over water) (Rotary only)	Yes	Yes	Yes	Yes	
11	Day and night flying protocols	Yes	Yes	Yes	Yes	
12	EMS and general communications	Yes	Yes	Yes	Yes	Yes
13	Aircraft evacuation procedures	Yes	Yes	Yes	Yes	Yes
14	In-flight and ground fire suppression	Yes	Yes	Yes	Yes	Yes
15	In-flight emergency procedures	Yes	Yes	Yes	Yes	Yes
16	NVG cabin protocols (for night	Yes	Yes	Yes	Yes	Yes (RW)

	<b>Aircraft operations</b>	<b>Pilot in command</b>	<b>Co-pilot</b>	<b>Rescue Air-Crew member</b>	<b>Clinical support crew (Frequent crew member)</b>	<b>Medical passenger (Infrequent crew member)</b>
	operations only)					
17	Emergency landing procedures	Yes	Yes	Yes	Yes	Yes
18	Management of oxygen supplies	Yes	Yes	Yes	Yes	
19	Use of emergency locator beacons	Yes	Yes	Yes	Yes	
20	Patient loading and un-loading (Group 1-3)	Yes	Yes	Yes	Yes	
21	Refuelling procedures with patient on board	Yes	Yes	Yes	Yes	
22	Hazardous materials recognition	Yes	Yes	Yes	Yes	
23	Human sling loads, strops, harnesses & winching	Yes	Yes	Yes	Yes	
24	Aviation terminology	Yes	Yes	Yes	Yes	
25	SAR visual search techniques (if conducting SAR ops)	Yes	Yes	Yes		
26	Direction controlled light protocols	Yes	Yes	Yes		
27	Flight following	Yes	Yes			

## 6.0 SERVICE EQUIPMENT

### STANDARD 6.1 AVAILABILITY FOR TASKING

**Outcome 6.1: The air ambulance/rescue aircraft shall be available for tasking for the date and time periods as agreed in formal contract or Service Level Agreements concluded with the tasking agency or contracting authority.**

**This criterion will be achieved by:**

- 6.1.1 The response aircraft is available for tasking.
- 6.1.2 Specialist role equipment necessary to ensure the required ambulance capability is fitted or available to be fitted to the aircraft in compliance with Table 3. All modifications attached to the aircraft shall be approved as required by CAA rules.
- 6.1.3 Appropriate personnel are available to crew and operate the aircraft for the air ambulance incident in accordance with this standard.
- 6.1.4 Pilots and crewmembers have ready access to weather reports for both the route, destination of missions and alternate landing areas. Where practicable, low level rotary route structure and approach should be pre-determined and documented.

### STANDARD 6.2 PREPAREDNESS AND ACTIVATION

**Outcome 6.2: The air ambulance/rescue aircraft shall meet the preparedness requirements as agreed in formal contract or Service Level Agreements concluded with the tasking agency or contracting authority.**

**This criterion will be achieved by:**

- 6.2.1 Air ambulance aircraft are to respond to requests for dispatch in a timely manner with due consideration for all safety planning and preparation necessary to ensure a safe response. Air ambulance aircraft shall inform the tasking authority of the anticipated time to get airborne following a request to dispatch in light of the requirement above.
- 6.2.2 Tasking authorities shall have procedures in place to inform the operator that an alternate provider has refused to respond to the mission due to flight safety concerns.
- 6.2.3 Processes for review of preparedness and activation performance should be audited within the Service as part of the Service's quality cycle.

*Note: It is the primary goal for air ambulance aircraft to respond in as short a time period as possible, but this shall never be to the detriment to flight safety. Therefore, while there are no stated response time requirements in this Standard, all operators shall undertake to respond as soon as operational and safety requirements allow.*

Table 3 - For the benefit of this standard, aircraft have been grouped in the following manner:

Rotary aircraft	Technical capability	Mechanical capability	Night vision goggles	T-CAS	Ground proximity warning system and EGPWS	Flight tracking	Radar altimeter	Standby artificial horizon
<b>Group 1</b>	IFR/VFR operations	Multi engine-Turbine	Yes	Recommended in congested traffic areas	TAWS/HTAWS recommended Or Moving map with terrain warning	Yes	Yes	Yes
<b>Group 2</b>	VFR operations	Multi engine-Turbine	Yes	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Yes	Yes
<b>Group 3</b>	VFR operations	Single engine - Turbine	Yes	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Yes	Yes
<b>Group 4</b>	VFR operations	Single engine - Piston	Not applicable	Not applicable	Moving map with terrain warning or GPS	Recommended	Recommended	Recommended

Fixed wing aircraft	Technical capability	Mechanical capability	Cabin capability	T-CAS	Ground proximity warning system and EGPWS	Flight tracking	Radar altimeter	Standby artificial horizon
<b>Group 1 CAR Part 125</b>	IFR/VFR operations	Jet, Single or Multi engine-Turbine	Pressurised	Recommended in congested traffic areas	TAWS	Yes	Yes	Yes
<b>Group 2 CAR Part 135</b>	IFR/VFR operations	Single or Multi engine - Turbine or Piston	Non-pressurised	Recommended in congested traffic areas	TAWS recommended Or Moving map with terrain warning	Yes	Yes	Yes
<b>Group 3</b>	VFR operations	Multi engine or Single engine - Turbine	Non-pressurised	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Yes	Yes
<b>Group 4</b>	VFR operations	Single engine - Piston	Non-pressurised	Not applicable	Moving map with terrain warning	Yes	Recommended	Recommended

For the benefit of this Standard, aircraft mission capability has been defined for each aircraft group in the following manner:

Rotary aircraft	Mission capability	Hours of operation	EMS Primary response dispatched by ambulance comms	Level 1 patient transfer (ICU)	Level 2 patient transfer (non-ICU)	SAR - Search and rescue	SAR-Search only	Mission capability
Group 1	Air ambulance Search and Rescue	24 hr As IFR	Yes	Yes	Yes	Yes	Yes	Air ambulance Search and Rescue
Group 2	Air ambulance Search and Rescue	24 hr Limited at night as VFR	Yes	Yes	Yes	Yes - Limited at night as VFR	Yes - Limited at night as VFR	Air ambulance Search and Rescue
Group 3	Air ambulance Search and Rescue	24 hr Limited at night as VFR	Yes	Yes	Yes	Yes - Limited at night as VFR	Yes - Limited at night VFR	Air ambulance Search and Rescue
Group 4	Search and Rescue	24 hr Limited at night as VFR	No	No	No	Yes - Limited at night as VFR	Yes - Limited at night as VFR	Search and Rescue

Fixed wing aircraft	Mission capability	Hours of operation		EMS - Level 1 patient transfer (ICU)	EMS - Level 2 patient transfer (non-ICU)		SAR - Search only	
Group 1	Air ambulance Search and Rescue	24 hr as IFR		Yes	Yes		Yes	Air ambulance Search and Rescue
Group 2	Air ambulance Search and Rescue	24 hr As IFR		Yes limited where unpressurised	Yes		Yes	Air ambulance Search and Rescue
Group 3	Air ambulance Search and Rescue	Daylight only - Limited at night as VFR		No	Yes		Yes	Air ambulance Search and Rescue
Group 4	Search only	Daylight only - Limited at night as VFR		No	No		Yes - Limited at night as VFR	Search only

## STANDARD 6.3 MEDICAL EQUIPMENT - CERTIFICATION

**Outcome: All aeromedical equipment is fit for purpose, in good order and certified airworthy in compliance with the Regulatory Authorities legislated requirements.**

**This criterion will be achieved by:**

- 6.3.1 : All equipment installations shall meet the applicable airworthiness and roadworthiness standards for fixed wing aircraft, helicopters and road ambulance vehicles for a standard adult.
- 6.3.2 : The applicable design standard for equipment installations in road ambulance vehicles is AS/NZS 4535:1999 "Ambulance Restraint Systems". This standard provides the requirements for restraining patients, occupants and equipment sharing the same interior space in motor vehicles specifically designed as, or modified and converted into, ambulances.
- 6.3.3 : The minimum design standard for equipment installations in aircraft is the certification basis of type certification of the aircraft plus any other regulations (Airworthiness Directives, Civil Aviation Orders etc) applicable to the aircraft type or operation. The installation shall have no feature or characteristic that makes the aircraft unsafe for its intended use.

## STANDARD 6.4 MEDICAL EQUIPMENT - STRETCHERS

**Outcome: All aeromedical equipment is fit for purpose, in good order and certified airworthy in compliance with the Regulatory Authorities legislated requirements.**

NOTE: Stretchers shall be attached in aircraft so as to restrain the stretcher and any associated equipment in accordance with the applicable airworthiness standard for the aircraft type. These standards specify that the supporting structure must be designed to restrain, under any load up to those specified, any item of mass that could injure an occupant if it came loose in the event of an emergency landing.

**This criterion will be achieved by:**

- 6.4.1 : Stretchers in aircraft shall be either fixed installations or capable of removal from the aircraft for patient transport outside the aircraft.
- 6.4.2 : Stretchers shall be compatible with ground vehicle stretcher systems; including meeting ground vehicle safety standards.
- 6.4.4 : Access shall be possible to the head of an emergency patient from at least one side and end of the stretcher in flight.
- 6.4.5 : Where patients require stretcher transport, loading and unloading of the stretcher from the aircraft shall:
  - i. Maintain the stretcher close to the horizontal plane at all times.
  - ii. Minimise the need for vertical lifting by attendants.
  - iii. Be operable by no more than two persons.
  - iv. Be available at all locations expecting to convey stretcher patients by air medical transport. This requirement may be best met by a loading system which is aircraft-based.
- 6.4.6 : Locking systems between stretcher and aircraft shall be simple to use. They shall **not** allow a partially locked position.
- 6.4.7 : Equipment attached to the stretcher shall be fixed or lockable in such a way as **not** to allow a partially locked condition.
- 6.4.8 : All stretchers shall have a bridge capable of securing medical equipment for the mission.

## STANDARD 6.5 MEDICAL EQUIPMENT – SUCTION

**Outcome 6.5: Medical aircraft must be fitted with a suction system capable of performing to the relevant hospital standards in all foreseeable cabin pressures.**

This criterion will be achieved by:

- 6.5.1 There must be one suction outlet/apparatus per patient, plus one reserve method of applying suction.

## STANDARD 6.6 MEDICAL EQUIPMENT – MONITORING EQUIPMENT

**Outcome 6.6: Monitoring of appropriate physiological indices must be carried out on all medical transports.**

This criterion will be achieved by:

- 6.6.1 Monitoring must be appropriate for the patient's clinical condition and should meet or exceed monitoring at the point of referral.
- Note: It should be noted that some indices may be more difficult to monitor in a mobile environment.*
- 6.6.2 There must be a capacity to utilise an alternative monitor should one monitoring device fail to provide valid information.
- 6.6.3 The following specific monitoring devices must be available on all medical transports, including:
- a) Oxygenation - A means of monitoring tissue oxygenation, such as pulse-oximetry or transcutaneous oxygen tension must be available on all medical transports.
  - b) Electrocardiograph - Equipment to monitor and display the ECG must be available on all medical transports. A recording or screen freeze ability is desirable.
  - c) Temperature - A means of monitoring patient temperature must be available on all medical transports. Mercury thermometers should not be used.
- 6.6.4 A selection of other medical equipment must be carried for patient support consistent with the air medical service's mission statement and the type of patients carried.
- Note: Equipment should be available to continue all appropriate therapy from the point of referral and to deal with all reasonably predictable changes in condition and complications.*
- 6.6.5 An enhanced level of equipment must be available for particular patients, as required for specific missions and be available on all medical transport, including:
- a) Resuscitator(s) - Self-inflating resuscitators of sizes compatible with the age and size of patients carried by the service. It should be possible to ventilate the patient with air or oxygen or a mixture. A selection of masks and artificial airways should be available.
  - b) Intravenous infusion - All medical aircraft should be equipped with intravenous infusions. A method of infusing intravenous fluids by means other than gravity should be available. Appropriate IV cannulae, fluids and giving sets should be carried. Overhead hooks for intravenous infusions are recommended if the infusion system is in any way gravity dependent.
  - c) Other - Advanced life support air medical transport should have, in addition to the above:
    - i) Equipment and drugs for the intubation of the trachea.
    - ii) Appropriate drugs for advanced cardiac life support.
    - iii) Equipment for needle or tube thoracostomy.
  - d) Critical care medical transports should carry equipment complying with the ANZCA and ACEM Policy Document p. 23 Minimum Standards for the Transport of the Critically Ill.

- e) Medical transports in advanced or specialised areas should carry equipment appropriate for the management of actual and foreseeable patient conditions. These areas include: hyperbaric, obstetric, burns, neonatal and neurosurgical patients.
- f) All patients dependent on a mechanical ventilator during medical transport should be protected with a disconnect alarm. A method of detecting hypoventilation is recommended (e.g. capnography).

## STANDARD 6.7 MEDICAL EQUIPMENT – MEDICAL POWER

### **Outcome 6.7: The Service should ensure adequate provision of outlets to provide power from the medical transport system to supplementary external devices such as monitors, ventilators and pumps.**

#### **This criterion will be achieved by:**

- 6.7.1 To provide a universal 12V dc and 24-28Vdc connection which is functional, reliable and safe vehicle wiring should be designed so that for all vehicle operating conditions:
  - a) For a 12 volt, 25 amp system: the voltage at the Power Connector is no less than 11 volts with a 25 amp load.
  - b) For a 24-28 volt, 20 amp system: the voltage at the Power Connector is no less than 22 volts with a 15 amp load.
- 6.7.2 The Service should ensure that where multiple devices require electrical power, demand for vehicle outlets is reduced by providing standardised secondary power outlets within medical transport equipment or systems to power supplementary equipment.
- 6.7.3 The Service should ensure that wiring is taken by the most direct route from the vehicle battery to the Power Connector. Wiring should be protected by an accessible breaker or fuse.
- 6.7.4 The Service should ensure that the vehicle Power Connector is a chassis mounting socket. Note: It is essential that only one supply voltage (either 12 volts or 24-28 volts) should be connected to an individual vehicle outlet. Some equipment in service cannot resolve which voltage to use or may cross-connect the two supplies.
- 6.7.5 The Service should ensure that the location of the Power Connector in the vehicle should take into account the location of the power inlet and cable length of the equipment to be connected.
- 6.7.6 The Service should ensure that where aeromedical services interface with ground transport a common equipment cable and connector is used in both air and ground vehicles.

*Note: Fixed wing aircraft and helicopters are both modes of transport and not inherently therapeutic. To be of value to the patient, their advantages in speed, smoothness and access to hostile locations must be complemented by adequacy of medical care. This depends to a large part on provision of medical equipment equal to or better than that offered on the ground or within a hospital. Although these standards are principally directed toward air medical transport, the standards should also apply to any ground phase of the mission. Given the diversity of mission profiles in air medical transport, it is not possible to be prescriptive about medical equipment. Unforeseen circumstances will make compliance with the standard less important than making an informed clinical judgement in an individual case. However it is considered necessary and possible to have a planned, documented strategy for selection and carriage of equipment to meet a particular service's clinical needs.*

- 6.4.1 Fixed wing aircraft should provide an alternating current power (230v AC) supply using an approved, protected outlet supplying a minimum of 5 amperes.

## STANDARD 6.8 MEDICAL EQUIPMENT – MEDICAL GASES

**Outcome 6.8: Aeromedical aircraft must be fitted with an approved oxygen system capable of supplying adequate oxygen for any foreseeable mission profile.**

**This criterion will be achieved by:**

- 7.8.1 Ensuring that in the event of main oxygen supply failure or exhaustion, there must be reserve oxygen supply capable of allowing continuing oxygen therapy while the mission is completed or aborted, as appropriate.
- 7.8.2 There must be a warning device for main oxygen supply exhaustion.
- 7.8.3 For missions moving specialist teams, other medical gas supplies should be provided (eg Medical Air, NO).
- 7.8.4 There must be a portable supply available for loading & unloading requirements.

## 7.0 SERVICE COMMUNICATIONS

### STANDARD 7.1 COMMUNICATIONS

**Outcome 7.1: The emergency communications centre/air desk (Comms) has a process to accurately categorise patients according to urgency and dispatch the most appropriate airframe and clinical response.**

**This criterion will be achieved by:**

- 7.1.1 The Comms function must:
- a) Provide timely and seamless access to air ambulance resources as the need arises.
  - b) Provide a comprehensive, integrated 24-hour communications system.
  - c) Meet recognised current accepted practice standards for emergency call processing.
  - d) Categorise all calls for service based on priority.
  - e) Provide access to clinical support for clinicians in-field.
  - f) Identify special-needs requirements, such as meeting the needs of the hearing impaired and non-English speaking callers.

### STANDARD 7.2 RESPONSE TO INCIDENTS

**Outcome 7.2: Appropriate resources are dispatched to the incident.**

**This criterion will be achieved by:**

- 7.2.1 Comms must:
- a) Triage requests to determine the most appropriate response – including whether to transport, mode of transport (local, regional, tertiary), appropriate vehicle, priority of response and clinical personnel.
  - b) Allocate the necessary resources using a medical-based priority decision support system.

### STANDARD 7.3 COORDINATION OF CRITICAL INCIDENTS

**Outcome 7.3: Comms efficiently coordinates ambulance responses during multi-casualty and critical incidents.**

**This criterion will be achieved by:**

- 7.3.1 Comms must:
- a) Coordinate multi-casualty and critical incidents in line with approved (CIMS) and specifications.
  - b) Ensure multi-casualty incidents disaster and recovery plans are exercised at scheduled intervals, in real time.
  - c) Lessons learnt from exercises are incorporated into standard operating procedures.

## STANDARD 7.4 COORDINATION OF PATIENT TRANSFER SERVICES

### Outcome 7.4: Comms efficiently coordinates the patient transfer functions of the ambulance service providers.

This criterion will be achieved by:

- 7.4.1 Comms must be capable of providing coordination of the clinical personnel (including if necessary those provided by the hospital or other operator) and the mode of transport required to transfer:
- a) Critical/urgent patients from one healthcare facility to another.
  - b) Non-urgent patients from one healthcare facility to another.
  - c) Patients, whose transport has been scheduled in advance, to and from healthcare provider locations.

## STANDARD 7.5 COMMUNICATIONS BACKUP SYSTEMS

### Outcome 7.5: Comms implements systems and processes to ensure that the provision of service is uninterrupted.

This criterion will be achieved by:

- 7.5.1 Comms must ensure that backup systems provide a seamless service in the event of business interruption.
- 7.5.2 The Organisation must provide for adequate backup from other locations, by providing reciprocal arrangements for systems including, but not limited to, the following systems:
- a) Telephone answering.
  - b) (Emergency and other call registration.
  - c) Dispatch.
  - d) Vehicle tracking.
  - e) Radio communications.
  - f) Digital mapping.

## STANDARD 7.6 RESOURCES

### Outcome 7.6: Comms is resourced in a manner that ensures operational standards are met at all times.

This criterion will be achieved by:

- 7.6.1 Comms must implement Communications Centre Standard Operating Procedures.
- 7.6.2 Comms must ensure that:
- a) The centre is staffed to the level required to meet the call volume, demand and quality requirements.
  - b) It has access to fully qualified replacement personnel as required to maintain service levels.
  - c) It has access to senior clinical advice 24 hours a day.
  - d) All call takers and dispatching clinical personnel have ambulance field experience.
  - e) Revalidation of qualifications occurs in accordance best practice.

### 7.6.3

Comms must ensure that:

- a) Critical and environmental systems are protected by generator backup and adequate uninterruptible power supply.
- b) Buildings have adequate space for routine operations with additional space for backup and disaster situations.
- c) The technology platform supports interfaces between emergency calls, dispatching, critical incident management, and administrative processes.

## 8.0 AIRCRAFT LANDING AREAS

### STANDARD 8.1 AIRCRAFT LANDING SITES (ALS)

**Outcome 8.1: All aeromedical services have access to aerodromes that comply with Aircraft Landing Area Standards.**

This criterion will be achieved by:

#### 8.1.1: Aircraft Landing Site (ALS)

A aircraft landing site (HLS) for fixed wing aircraft engaged in Health Medical Transport (HMT) operations complies with CASR/CAA ALA Standards and facilitates the safe and efficient transfer of patients by aircraft and associated activities.

### STANDARD 8.2 HELICOPTER LANDING SITES (HLS)

**Outcome 8.2: All aeromedical services must have access to a helicopter landing area with easy, trolley access to and from the hospital's critical care areas.**

This criterion will be achieved by:

#### 8.2.1: Helicopter Landing Site (HLS)

A helicopter landing site (HLS) for helicopters engaged in Health Medical Transport (HMT) operations is a facility provided to facilitate the safe and efficient transfer of patients by helicopter and associated activities. The facility, which may be located on or near a hospital site and be at ground level or elevated, includes the airspace associated with the arrival and departure flight paths.

#### 8.2.2: Minimum Design Standards

The heliport shall be designed to satisfy the minimum standards of:

- (i) ICAO Annex 14 Volume II
- (ii) The relevant Rotorcraft Flight Manual

#### 8.2.3: Design Helicopter

The design helicopter is a composite helicopter reflecting the critical characteristics of the range of helicopters representing the current and foreseeable future range of helicopters engaged in medical transport flights.

**Table XX: Design Helicopter Parameters**

D-value, the largest overall dimension with rotors turning	18.5 metres
Rotor diameter	15 metres
Maximum mass	8 tonne
Undercarriage type	Skid and wheel
Height	5 metres
Capable of Cat A operations for all defined operations	

#### 8.2.4: Performance Class Objectives

The aim should always be to locate, design and build heliports that support helicopter flights to operate in Performance Class 1.

**Table XX: Characteristics Required for Performance Class 1 Operations**

<i>Physical characteristics</i>	
Heliport (FATO/TLOF) dimensions (single flightpath)	23m x 27m
Heliport (FATO/TLOF) dimensions (perpendicular flightpath)	27m x 27m
Heliport Safety Area dimensions	37m x 37m
<i>Obstacle Accountability Area (OAA)</i>	
Inner edge	37 metres
Lateral boundary splay	15 per cent
Maximum width of splay	150 metres
<i>Obstacle Limitation Surface within OAA</i>	
Maximum gradient	4.5% (2.58°)

**8.2.5 : Pathway**

Pathway to touchdown area: Construction concrete or asphalt

Minimum width	1.2 metres
Maximum slope	1 : 10
Maximum camber	nil
No steps	

**8.2.6 : Lighting**

Heliport lighting is to be provided for night time use of the heliport. Wherever possible the lighting should be Night Vision Device compatible. Surface mounted and/or flush lights are considered superior to external elevated floodlighting options, however for low use areas floodlighting may be acceptable.

**8.2.7 : Surroundings**

Non-concreted areas within 50m of touchdown area to be well grassed to avoid dust.

**8.2.8 : Wind indicator**

An Illuminated Wind Direction Indicator (IWDI) needs to be provided at each heliport and located in a position to catch the prevailing wind as well as be visible from the helicopter and heliport.

The standard aerodrome IWDI has a 3.6 metre long windsock and is mounted on an 8 metre high pole. An alternate IWDI with a 2.4 metre windsock and a 5 metre pole height has recently become available from Australian manufacturers with mains powered and solar powered options available. The smaller IWDI complies with the ICAO Annex 14-II SARPS for heliports.

**8.2.9 : Accessibility**

- i. Available 24 hours for use
- ii. Shortest practical route to areas of hospital requiring helicopter transport
- iii. Not dependent on using a vehicle
- iv. Pathway from touchdown area to hospital entrance.
- v. Any lifts between helipad and hospital entrance to be fitted with access control.

**8.2.10 : Security**

Designated person to keep touchdown area free of obstacles, maintain safety of onlookers, switch on lights and provide trolley

**8.2.11 : Fire Protection**

Fire protection measures for the heliport are determined by the type of facility. Hospital heliports will be attended by hospital staff which may be trained in the use of hand held fire fighting equipment but in general the heliports can be considered as normally unattended installations with reference to fire protection measures.

**8.2.12 : Comments**

- i. Single control point for lighting (flood, beacon, wind indicator and edge lighting). Power supply supported by back-up source.
- ii. The designated flight paths to and from helipad should be developed by medical helicopter operator(s) using the facility.
- iii. A noise abatement procedure should be developed for the helipad.
- iv. A weather-proof sign should be displayed such that it can be read by the pilot of a helicopter parked on the touchdown area. Details of the approach and departure paths (using bearings or geographical landmark references) and the noise abatement procedure should be given.

**Preferred additional features**

**8.2.14 : In ground helipad lighting**

A ring of aviation marker lights as specified in AIP. Operated by separate switch to that operating floodlight, beacon and windsock lighting.

**8.2.15 : Pathway**

Covered from hospital to within 20m of helipad. Lit with edge or flood lighting.

**8.2.16 : Perimeter fencing**

Touchdown area fencing (child-safe) at least 10 metres from edge of touchdown area.

**8.2.17 : Noise abatement**

At frequently used helipads (e.g. > 1 movement per day), windows of occupied hospital buildings within 50m of the helipad to be double-glazed.

**8.2.18 : Environmental control**

Systems for managing effects on the surrounding buildings such as ingress of exhaust fume entry into surrounding buildings.

System for managing effects of surrounding buildings on helicopter operations such as magnetic resonance imaging.

**Off-site helipad**

Definition: *"a helicopter landing area designated for medical helicopter use which requires the use of a vehicle to convey a patient between the hospital and landing area."*

**8.2.18 : Requirements of an off-site helipad**

The closest site as determined by medical helicopter operators to meet operational, aviation safety, access and medical team requirements, in consultation with local authorities. This may be a nearby sports ground, park, golf course, open area or airport.

**8.2.19 : The following should be considered:**

- i. Ground surface - should be flat, grassed and well drained.
- ii. Security & safety - may require police attendance.
- iii. Transport - will require ambulance vehicle transport.
- iv. Lighting - may require portable lighting.
- v. Vehicle access - requires a smooth surface, with minimum slope.
- vi. In the case of sporting areas, potential for disruption of sporting events.
- vii. Ground ambulance support incurs additional costs to hospitals.

**8.2.20 : Upgrade**

Wherever possible, upgrading to "hospital helipad" should be the goal.

**NOTE:** The design and operating guidelines provides only general minimum information for the installation and/or upgrading of helicopter landing sites. It is the responsibility of the pilot in command and aircraft operating company to ensure the landing area is adequate for safe operations.

For all hospitals making use of medical helicopters, a medical helipad is required. This should preferably be a "hospital helipad", defined as "a helicopter landing area within easy, trolley access to and from the hospital's critical care areas". At some locations, a hospital helipad may not be practical because, for instance, of existing construction or lack of space. If this is the

case, an "off-site helipad" may be the only alternative. All tertiary hospital facilities should be equipped with a "hospital helipad".

A hospital helipad offers a number of operational and clinical advantages. These include time savings, reduction in patient transfers and multiple handling, improved travel conditions for critical patients, improved security/crowd control, freeing up of first response ambulance vehicles otherwise less available for casualty cases, more appropriate use of ambulance personnel and reduced cost.

Well planned hospital helipads are served by level or near-level smooth pathways leading from the helipad to the hospital building. Where a vehicle is used, the ambulance trolley will often traverse unprepared surfaces from the ambulance to the helicopter. Such surfaces are often uneven, boggy, poorly lit or sloping. When within the ambulance vehicle and despite careful driving, riding over gutters or ridges into and out of an off-site location such as a sports oval can cause gross movement of the stretcher and patient. Deteriorations in patient condition have been observed in this situation.

## 9.0 UNIFORM STANDARD

**Outcome 9.1: Uniforms are appropriate to the specific environment the aeromedical mission is conducted in taking into consideration crew safety and environmental comfort.**

**This criterion will be achieved by:**

- 9.1.1 Uniform requirements for rotary-wing missions:
- a) Each pilot and crew member must have a fire resistant/fire retardant 2 piece suit.
  - b) Under shirt must be of natural fibre 100% cotton or wool.
  - c) Uniform for cold weather operations.
  - d) Uniform for wet weather operations.
  - e) Boots must have ankle support, non-slip leather.
  - f) Woollen Gloves & socks must be provided.
  - g) Non-catch belts/lanyards.
  - h) Hi Visibility for night operations on outer clothing (trousers/jacket).

## 10.0 FIRE FIGHTING EQUIPMENT ON-BOARD AIRCRAFT

**Outcome 10.1: Firefighting equipment must be readily available and suitable for fighting the identified fire risk.**

**This criterion will be achieved by:**

- 10.1.1 Firefighting equipment must be compliant with aircraft type regulations and include:
- a) Extinguishers.
  - b) A hood for on-board smoke incidents.
  - c) One pair fire retardant gloves.
  - d) A water supply in the event of a fire incident causing a thermal run on a medical battery supply.