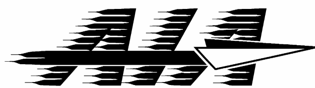

THE AVIATION INDUSTRY ASSOCIATION OF NZ (INC)

AIR RESCUE/AIR AMBULANCE

STANDARDS MANUAL

July 2003

2. CONTENTS

1 **Cover Page**

2 **Contents**

3 **Terms of Reference – Air Rescue/Air Ambulance Division**

4 **Policy**

5 **Aircraft Operational Categories (Patient Care Requirements)**

6 **Abbreviations used in Appendices**

7 **Notes - Air Rescue/Air Ambulance Standards**

7(a) **Notes - Air Rescue/Air Ambulance Standards**

ANNEX 1 – FIXED WING AIRCRAFT: OPERATION STANDARDS

A1	IFR Intensive Care Air Ambulance	(IFR)
A1(a)	VFR Intensive Care Air Ambulance	(VFR)
A1(b)	Stretcher Care Air Ambulance	(IFR/VFR)
A1(c)	Seated Patient Air Ambulance	(IFR/VFR)
A1(d)	Independent Patient Air Transport	(IFR/VFR)
A1(e)	Search and Rescue - CAT F1	(IFR/VFR)
A1(f)	Search - CAT F2	(VFR)

ANNEX 2 – HELICOPTER: OPERATION STANDARDS

A2	Intensive Care Air Ambulance	(IFR/VFR)
A2(a)	Rapid Response Air Ambulance	(IFR/VFR)
A2(b)	Stretcher Care Air Ambulance	(IFR/VFR)
A2(c)	Seated Patient Air Ambulance	(VFR)
A2(d)	Search and Rescue - CAT F1	(IFR/VFR)
A2(e)	Search - CAT F2	(VFR)

ANNEX 3 – FIXED WING PILOT TRAINING COURSES

A3 Ab-initio Air Ambulance Pilot Induction Training.
A3(a) Air Ambulance Pilot Review Training.

ANNEX 4 – HELICOPTER PILOT TRAINING COURSES

A4 Ab-initio Air Ambulance Pilot Induction Training.
A4(a) Air Ambulance Pilot Review Training.
A4(b) Air Ambulance Pilot Review Training continued.

ANNEX 5 – SUGGESTED TRAINING FOR MEDICAL ATTENDANTS

A5 Suggested training for AMC involved in aeromedical transfer of patients in NZ.
A5(a) Aircraft operational categories.
A5(b) Proposed course structure.
A5(c) Module 1: Aircraft orientation.
A5(d) Module 1: Aircraft orientation continued.
A5(e) Module 2: Aviation medicine.
A5(f) Module 2: Aviation medicine continued.

ANNEX 6 – AUDIT PROCEDURES

A6 Introduction & Purpose.
A6(a) Operations Manuals – content.
A6(b) Operations Manuals – content continued.
A6(c) Audit procedure.
A6(d) Audit procedure continued.
A6(e) Appeal procedure

ANNEX 7 – TERMINATION OR AMENDMENT OF ACCREDITATION

A7 Operators right to withdraw & AIA Accreditation Authority.
A7(a) AIA Accreditation Authority continued.

3. TERMS OF REFERENCE

It is the intention that the AIA Air Rescue/Air Ambulance Division will:

1 be a Division representing AIA members who have an interest in search and rescue, helicopter air ambulance, fixed wing air ambulance, and organ transfer activities.

2 be a Division with a name which is recognisable by all authorities in the health/accident/search and rescue fields.

3 be tasked with communicating with all the relevant organisations in the medical, hospital, rehabilitation, funding, regulatory and enforcement areas relevant to aviation as it interfaces with accident, health and search and rescue services.

4 develop an industry wide forum to address all major policy issues concerning aviation search and rescue and aviation ambulance activities.

5 become the recognised Group for setting standards for Air Rescue/Air Ambulance activities, working as necessary in conjunction with the Royal Australasian College of Surgeons, the Australian and New Zealand College of Anaesthetists, the Ministry of Health, District Health Boards, Accident Rehabilitation and Compensation Insurance Corporation, Civil Aviation Authority, New Zealand Ambulance Board, National Rescue Co-ordination Centre, New Zealand Police, New Zealand Flight Nurses Association and such other groups as may be required from time to time.

6 become a centre of referral on all matters pertaining to air search and rescue/air ambulance for authorities needing to seek aviation industry views.

7 be a credible industry organisation representative of the viewpoints of its widely dispersed interest group of members.

4. POLICY

The Civil Aviation Authority has endorsed the initiative taken by the Aviation Industry Association of New Zealand Inc (AIA) to form an Air Rescue/Air Ambulance Division for the purpose of exercising more influence and control over the direction and destiny of air rescue/air ambulance services in New Zealand. Accordingly, CAA has ceased its involvement in air ambulance matters and AIA members involved in air rescue/air ambulance operations may now register their aircraft operated in those roles for entry on the AIA Air Rescue/Air Ambulance Register, and shall submit their Operators Procedures Manual for assessment by the AIA independent auditor in accordance with the requirements set out in Annex 6.

The purpose of this Manual is to promulgate AIA Air Rescue/Air Ambulance Standards. The Standards are defined according to aircraft operation categories and include minimum listings of role and medical equipment, as well as crewing requirements. The manual also prescribes pilot and medical attendant training courses, and the AIA approved audit procedures to assess operator compliance with the Standards.

Note: The Standards do not absolve any operator from CAA airworthiness requirements and/or approvals for any aircraft modifications. Any equipment carried on board shall be adequately and securely stowed and restrained, and the appropriate calculations made regarding the weight and balance of the aircraft.

The Standards have been developed by AIA in consultation with ACC, Health, Ambulance and SAR authorities and all members of the Air Rescue/Air Ambulance Division. Medical aspects have been examined and approved by a panel of medical experts acting as medical advisers to the Division. The Standards shall be kept under constant review by the Divisional Committee to ensure that they continue to reflect current medical and aviation requirements.

5. AIRCRAFT OPERATIONAL CATEGORIES (PATIENT CARE REQUIREMENTS)

The Air Rescue/Air Ambulance Division Committee considers that an AS 350 (Squirrel), or helicopter of equivalent size and performance, is the minimum helicopter suitable for use as an air ambulance, and also considers that single engine piston powered fixed wing aeroplanes are generally not suitable for air ambulance operations.

A INTENSIVE CARE AIR AMBULANCE (IFR)

An "Intensive Care Air Ambulance" shall be used to transport patients who may require continuous attachment to a ventilator, other means of life support and/or physiological monitoring throughout the flight.

B RAPID RESPONSE AIR AMBULANCE (VFR)

A "Rapid Response Air Ambulance" shall be used to transport patients needing intensive care and continuous treatment and/or monitoring prior to initial hospitalisation, and usually needing emplanement at or near the site of an accident soon after its occurrence.

C STRETCHER CARE AIR AMBULANCE

A "Stretcher Care Air Ambulance" shall be used to transport patients needing to be transferred on a stretcher and needing some medical attention, but not intensive care during flight. Some monitoring might be required. The patient would usually be transferring from one hospital to another.

D SEATED CARE AIR AMBULANCE

A "Seated Care Air Ambulance" shall be used to transport patients who are semi-mobile, perhaps convalescent (or a walking casualty) and who may need to be embarked/disembarked using a wheelchair or other forms of assistance. There is little need for on-going care, but a risk of some form of incapacitation during flight could arise. Seated care patients include post-operative stable patients transferring between hospitals.

E INDEPENDENT PATIENT AIR TRANSPORT (VFR/IFR)

Independent Patient Air Transport aircraft may be used to transport patients who do not require an air ambulance or attendant. No wheelchair is needed during embarkation/disembarkation.

F SEARCH AND RESCUE AIRCRAFT

A search and rescue aircraft may be fixed or rotary wing suitably equipped with navigation, communications and rescue capabilities and may include any category of air ambulance.

6. ABBREVIATIONS USED IN APPENDICES

AA	Air Ambulance
ACC	Accident Rehabilitation and Compensation Insurance Corporation.
ADF	Automatic Direction Finder
AH	Artificial Horizon
AMC	Air Medical Crew
AR/AA	Air Rescue/Air Ambulance
ATC	Air Traffic Control
ATO	Air Transport Operations
CAA	Civil Aviation Authority
CO_2	Carbon Dioxide
DI	Directional Indicator
DHB	District Health Board
DME	Distance Measuring Equipment
ET	Endotracheal
FLWOP	Forced Landing Without Power
GPS	Global Positioning System
HSI	Horizontal Situation Indicator
IAW	In Accordance With
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
I/R	Instrument Rating
IV	Intravenous
MULTI	Multi-Engined Aircraft
NIBP	Non-Invasive Blood Pressure Monitor
NRCC	National Rescue Coordination Centre
Ops	Operations
O_2	Oxygen
PA	Passenger Address system
PinC	Pilot in Command
Rad Alt	Radar Altimeter
r/t	Receive/transmit
SAR	Search and Rescue
SOP	Standard Operating Procedure
SP	Single Pilot
VFR	Visual Flight Rules
VHF	Very High Frequency
VHF DF	Very High Frequency Direction Finding
VOR	VHF Omni-Directional Radio Range
X/C	Cross Country Navigation

7. NOTES - AIR RESCUE/AIR AMBULANCE STANDARDS

The following Notes shall be read in conjunction with the Air Ambulance Operation Standards and Search and Rescue Standards prescribed for each operation category in Annexes 1 and 2.

NOTES:

1 All pilots shall undergo AIA Air Rescue/Air Ambulance pilot training courses as prescribed in Annex 3 (Fixed Wing) and Annex 4 (Helicopter).

2 All medical attendants should complete an attendant training course which at least covers the elements prescribed in Annex 5. The suggested training course contains the procedures that are considered necessary for medical attendants involved in aeromedical transfer of patients in New Zealand.

3 Part of the registration details for each aircraft should include the maximum safe number of patients that can be carried in each of Categories A, B, C, and D. A factor in determining this number is that, for reasons of safety, the allocated attendants should be able to keep their safety harness fastened while having immediate and easy access to their patient's head and upper body. No patient in any of these categories should ever be located such that head and upper body are accessible only to the pilot. In Category A air ambulance operations both allocated attendants should have access to the same patient.

4 In Category A and B air ambulance operations it must be possible to gain access from adjacent the patient's head, for intubation and airway management, without compromising CAA requirements for restraint of the stretcher. It is recognised that in certain aircraft in this unusual event, the attendant may have to decide to be unrestrained (if the circumstances permit this with safety) in order to gain suitable access.

5 Medical equipment suitable for use in aircraft (lightweight, compact with dry batteries) may be supplied by the DHB or the operator as agreed.

6 Bag/Mask Resuscitator: Self-inflating, hand ventilating assembly with PEEP valve available.

7 When oxygen is supplied, there must be a pressure gauge and flow meter visible to the attendant, and sufficient oxygen for the flight plus a suitable margin for delays. As a contingency against failures there must be suitable duplication of delivery systems.

8 The term 'climate control' in these standards means that a satisfactory ambient temperature can be maintained.

9 The PinC, or the senior attendant, may deviate from these Air Rescue/Air Ambulance Standards when an emergency situation requires immediate action to save life or otherwise protect an accident victim from further danger.

10 When an operator wishes to make a variation to these standards (except under an emergency situation) the variation in the form of an amendment to the Operators Procedures Manual shall be submitted to AIA Air Rescue/Air Ambulance Division for assessment against the relevant standard.

11. An operator Accredited to these standards may use an aircraft that has not been audited by AIA if, for any reason an Accredited aircraft is unserviceable or unavailable due to maintenance requirements, or the operator is employed to carry out additional work when an Accredited aircraft is not available. It is the operator's responsibility to ensure that the aircraft used is suitable for the air ambulance operation undertaken, and as a minimum, the aircraft must be certified for Air Transport Operations. If the requirement for an additional aircraft is expected to exceed a period of 90 days, the operator must submit an audit application with AIA to have the additional aircraft audited to the appropriate Air Rescue Air Ambulance category.

12. For training purposes an operator is permitted to use a pilot with 750 hours total time as PinC under the direct supervision of the Chief Pilot in person or by telephone.

13. A Pulse Oximeter shall be used whenever oxygen is being administered to the patient.

FIXED WING AIRCRAFT: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANTS (NOTE 2 & 9)	PILOTS (NOTES 1, 9 &12)
A. IFR INTENSIVE CARE AIR AMBULANCE **(NOTE 3, 4, 10 & 11)**	Standard multi SP-IFR ATO IFR kit including: 2 x VOR: 1 x DME 2 x ADF or ADF & GPS 1 x ILS 1 x Mobile phone (hands free) available to both aircrew & AMC. At least 0.8cu m stowage space for equipment, luggage etc. Intercrew Communication. 1 x Stretcher and mattress. 1 x Stretcher bridge. 1 x Stowage unit and/or medical pack. 2 x Power Supply (12v/240v) as appropriate with leads & adapters for monitors. Incubator. Defibrillator. 2 x Overhead hooks. 2 x Attendant seats (with one seat adjacent the patient's head). Torch for each crew person. Climate control & lighting in patient/attendant areas (NOTE 8). Restraints and fittings for the following equipment when carried; • Stretcher bridge • Stowage unit/pack • Incubator • Syringe pump • Defibrillator • Monitors • Stretcher • All oxygen carried (NOTE 7) • Neonatal incubator	Vital signs monitors: Electrocardiograph Pulse oximeter (NOTE 13) Blood pressure (Automatic NIBP) Temp monitor (electronic) Defibrillator. Suction equipment of an appropriate standard. Bag/mask resuscitator (NOTE 6). Oxygen with delivery equipment (NOTE 7). Suitably equipped medical kit including at least: IV Fluids & giving set IV Pressure bag Laryngoscope blades & suitable ET tubes Pleural drainage equipment. Cricothyroidotomy set. Medication & delivery equipment appropriate for the patient. **AS REQUIRED:** • Transport ventilator with disconnect and high pressure alarm • Syringe pump(s) • Neonatal drugs and equipment • Neonatal Incubator and oxygen (NOTE 7) • Incubator monitoring equipment • Stretcher • Capnograph	1-2: Consultant or Registrar in Anaesthetics, Intensive Care, Emergency Medicine or Paediatrics (Neonatal Transfers), and/or Anaesthetic Technician or Nurse skilled in the type of transfer, eg ICU Emergency Medicines or Neonatal Paediatrics. and/or EMST/PRIME qualified GP or Paramedic.	1 x 1000 hr. SP-IFR rated, or 1 x 1000 hr pilot plus, 1 x 500 hr pilot. The PinC shall have: 100 hrs IFR 50 hrs IMC 50 hrs multi 300 hrs PinC X/C 20 hrs night time IFR recent experience Pilot induction course to include direct and indirect supervision

FIXED WING AIRCRAFT: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANTS (NOTE 2 & 9)	PILOTS (NOTES 1, 9 &12)
B. VFR INTENSIVE CARE AIR AMBULANCE **(NOTE 3, 4, 10 & 11)**	Standard VFR ATO instruments and, equipment and instrumentation for night VFR plus: 1 x ADF or GPS 1 x Mobile phone (hands free) available to both aircrew & AMC. At least 0.8cu m stowage space for equipment, luggage etc. Intercrew Communication. 1 x Stretcher and mattress. 1 x Stretcher bridge. 1 x Stowage unit and/or medical pack. 2 x Power Supply (12v/240v) as appropriate with leads & adapters for monitors. 2 x Overhead hooks. 2 x Attendant seats (with one seat adjacent the patient's head). Torch for each crew person. Climate control & lighting in patient/attendant areas (NOTE 8). Restraints and fittings for the following equipment when carried; • Stretcher bridge • Stowage unit/pack • Incubator • Syringe pump • Defibrillator • Monitors • All oxygen carried (NOTE 7) • Stretcher • Neonatal incubator	Vital signs monitors: Electrocardiograph Pulse oximeter (NOTE 13) Blood pressure (Automatic NIBP) Temp monitor (electronic) Defibrillator. Suction equipment of an appropriate standard. Bag/mask resuscitator (NOTE 6). Oxygen with delivery equipment (NOTE 7). Suitably equipped medical kit including at least: IV Fluids & giving set IV Pressure bag Laryngoscope blades & suitable ET tubes Pleural drainage equipment. Cricothyroidotomy set. Medication & delivery equipment appropriate for the patient. **AS REQUIRED:** • Transport ventilator with disconnect and high pressure alarm • Syringe pump(s) • Neonatal drugs and equipment • Neonatal Incubator and oxygen (NOTE 7) • Incubator monitoring equipment • Stretcher • Capnograph	1-2: Consultant or Registrar in Anaesthetics, Intensive Care, Emergency Medicine or Paediatrics (Neonatal Transfers), and/or Anaesthetic Technician or Nurse skilled in type of transfer, e.g. ICU Emergency Medicines or Neonatal Paediatrics, and/or EMST/PRIME qualified GP or Paramedic.	1 x 1000 hr pilot with 500 hrs VFR X/C, or 1 x 1000 hr pilot plus, 1 x pilot with CPL. PinC to have 300 hrs VFR X/C. Pilot induction course to include direct and indirect supervision.

FIXED WIING AIRCRAFT: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANT (NOTE 2 & 9)	PILOTS (NOTES 1, 9 & 12)
C. STRETCHER CARE AIR AMBULANCE **(NOTE 3, 10 & 11)**	**For IFR ops:** Standard multi ATO IFR kit including: 2 x VOR: 1 x DME 2 x ADF or ADF & GPS 1 x ILS **For VFR ops:** Standard VFR ATO instruments and equipment, and instrumentation for night VFR plus: 1 x ADF or GPS **IFR and VFR ops** 1 x Mobile phone (hands free) available to both aircrew & AMC. At least 0.8cu m stowage space for equipment, luggage etc. Intercrew Communication. 1 x Stretcher bridge. 1 x Stretcher and mattress. 1 x Stowage unit and/or medical pack. 2 x Power Supply (12v/240v) as appropriate with leads & adapters for monitors. 2 x Overhead hooks. 2 x Attendant seats (with one seat adjacent the patient's head). Torch for each crew person. Climate control & lighting in patient/attendant areas (NOTE 8). Restraints and fittings for the following equipment when carried; • Stretcher bridge • Stowage unit/pack • Incubator • Syringe pump • Defibrillator • Monitors	Oxygen and delivery equipment (NOTE 7). Drugs and delivery equipment. Suction equipment of an appropriate standard. Blood pressure monitor, Non-invasive. Suitable medical kit. Airsickness facilities. Defibrillator. **AS REQUIRED:** • Syringe pump(s) • Stretcher • Neonatal drugs and equipment • Neonatal incubator and oxygen (NOTE 7)	1-2: Doctor and/or Paramedic/ICO and/or Nurse and/or Anaesthetic Technician and/or EMST/PRIME qualified GP. .	**For IFR Ops:** Intensive Care Pilot, or 1 x 1000 hr pilot plus, 1 x pilot with CPL. PinC to have: 100 hrs IFR 50 hrs IMC 50 hrs multi 300 hrs PinC X/C IFR recent experience. **For VFR Ops:** 1 x 1000 hr VFR pilot with 400 hrs VFR X/C. Pilot induction course to include direct and indirect supervision.

- Stretcher
- All oxygen carried (NOTE 7)
- Neonatal incubator

FIXED WING AIRCRAFT: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANT (NOTE 2 & 9)	PILOTS (NOTES 1 & 9)
D. SEATED PATIENT AIR AMBULANCE **(NOTE 10 & 11)** **NB includes child in car seat**	**For IFR ops:** Standard multi ATO IFR kit including: 2 x VOR: 1 x DME 2 x ADF or ADF & GPS 1 x ILS **For VFR ops:** Standard VFR ATO instruments and equipment, and instrumentation for night VFR plus: 1 x ADF or GPS **IFR and VFR** 1 x Mobile phone (hands free) available to both aircrew & AMC. At least 0.8cu m stowage space for equipment, luggage etc. Intercrew communication. 1 x Attendant seat. Torch for each crewperson. Climate control and lighting in patient and attendant areas (NOTE 8). Restraints for: • All oxygen carried (NOTE 7)	Oxygen and delivery equipment (NOTE 7). Drugs and delivery equipment Air sickness facilities.	1: Doctor or Paramedic/ICO or Nurse or Anaesthetic Technician or EMST/PRIME qualified GP.	**For IFR Ops:** 1 x 750 hr IFR pilot with 200 hrs X/C and 100 hrs IFR. IFR recent experience. **For VFR Ops:** 1 x 750 hr VFR pilot with 200 hrs X/C. Pilot induction course to include direct and indirect supervision.

FIXED WING AIRCRAFT: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANTS (NOTE 2)	PILOTS (NOTES 1 & 9)
E. INDEPENDENT PATIENT AIR TRANSPORT **VFR or IFR** **(NOTE 10 & 11)**	**For IFR ops:** Standard multi ATO IFR kit including: 2 x VOR: 1 x DME 2 x ADF or ADF & GPS 1 x ILS **For VFR ops:** Standard VFR ATO & night VFR kit plus: 1 x ADF or GPS **IFR and VFR** 1 Mobile phone (Hands free). Intercrew communication. 1 x companion seat. Torch for each crewperson. Climate control and lighting in patient area.	Air sickness facilities.	Companion attendant seat adjacent to the patient's head.	1 x 500 hr IFR pilot with 75 hrs IFR. Current I/R for IFR Ops, or 1 x 500 hr VFR pilot with 150 hrs X/C. Pilot pre-flight brief.

FIXED WING AIRCRAFT: SEARCH AND RESCUE STANDARDS

CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)*	ATTENDANT (NOTE 2)*	PILOTS (NOTES 1 & 9)
F1. SEARCH & RESCUE AIRCRAFT **VFR or IFR** **(NOTE 10 & 11)** **Category A**	**For IFR ops:** Standard multi ATO IFR kit including: 2 x VOR: 1 x DME 2 x ADF or ADF & GPS 1 x ILS **For VFR ops:** Standard VFR ATO & night VFR kit plus: 1 x ADF or GPS **IFR and VFR** 1 x Mobile phone (hands free). Intercrew communication. VHF Direction Finder. 2 x observer seats. Life rafts & jackets over water. Radio for communication with Police and NRCC. Operation area police radio. Marker flares and dyes.	Aircraft First Aid Kit. * Where an intention to rescue is inherent in the tasking instruction the Medical Equipment and Attendant Requirements shall be as prescribed for a Rapid Response Air Ambulance	2 observers (minimum).	750 hrs total time with 200 hrs PinC X/C. Current I/R for IFR Ops. Trained knowledge of electronic and visual search techniques.

FIXED WING AIRCRAFT: SEARCH AND RESCUE STANDARDS

CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANT (NOTE 2)	PILOTS (NOTES 1 & 9)
F2. SEARCH AIRCRAFT **VFR only** **(NOTE 10 & 11)** **Category B**	Standard day & night VFR kit. VHF Aeronautical radio. 1 Mobile phone (hands free). Intercrew communication. 1 x observer seat. Life jackets over water.	Aircraft First Aid Kit.	1 x observer (minimum).	1 x 300 hr pilot. Prebriefed and trained knowledge of visual search techniques.

INTENTIONALLY BLANK

HELICOPTER: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANTS (NOTE 2 & 9)	PILOTS (NOTES 1, 9 & 12)
A. INTENSIVE CARE AIR AMBULANCE **IFR or VFR** **(NOTE 3, 4, 10 & 11)**	Standard ATO IFR or VFR kit to include the following; **For IFR Ops:** 1 x VOR 1 x DME 2 x ADF or ADF/GPS 1 x ILS 2 x AH 1 x Rad Alt 1 x HSI **For VFR night Ops:** 2 x AH 1 x HSI 1 x ADF or GPS **IFR and VFR** 1 x Mobile Phone (Hands Free). Intercrew Communication. 1 x Stretcher and mattress. Patient loading facility. 1 x Stretcher bridge. 1 x Equipment stowage unit. Power supply 12v/240v as appropriate. Suction power lead and adaptor. Back-up power lead/supply. Incubator power lead/adaptor. Stowage for incubator, monitors & equipment. Overhead hooks. 2 x Attendant seats. Torch for each crew person. Climate control & lighting in patient/attendant areas (NOTE 8).	Vital sign monitors: Electrocardiograph Pulse oximeter (NOTE 13) Blood pressure (Automatic NIBP) Temp monitor (electronic) Defibrillator. Suction equipment of an appropriate standard. Bag/mask resuscitator (NOTE 6). Oxygen with delivery equipment (NOTE 7). Suitably equipped medical kit including at least: IV Fluids & giving set IV Pressure bag Laryngoscope blades & suitable ET tubes Pleural drainage equipment. Cricothyroidotomy set. Medication & delivery equipment appropriate for the patient. **AS REQUIRED**: • Transport ventilator with disconnect and high pressure alarm • Syringe pump(s) (available) • Incubator and oxygen (NOTE 7) • Incubator monitoring equipment • Neonatal drugs and equipment • Stretcher • Capnograph	1-2: Consultant or Registrar in Anaesthetics, Intensive Care, Emergency Medicine or Paediatrics (for Neonatal Transfers, or a Nurse trained as a Paediatrics Specialist), and/or Anaesthetic Technician or Nurse skilled in type of transfer, eg ICU Emergency Medicines or Neonatal Paediatrics, and/or EMST/PRIME qualified GP or Paramedic.	1 x 2000 hr pilot, or 1 x 1000 hr pilot plus, 1 x 500 hr pilot. All with: 15 hrs X/C night VFR with appropriate VFR night X/C rating where night operations are undertaken. **Minimum for IFR Ops:** 50 hrs IFR 30 hrs IMC 20 hrs multi 200 hrs PinC X/C Meet IFR recent experience requirements. 50% of a pilots fixed wing flight time may be credited towards the above totals to a maximum of 50% of the helicopter requirements.

Restraints for:

- 1 x Stretcher
- All oxygen carried (NOTE 7)
- Neonatal incubator

HELICOPTER: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANTS (NOTE 2 & 9)	PILOTS (NOTES 1, 9& 12)
B. RAPID RESPONSE AIR AMBULANCE **IFR or VFR** **(NOTES 3, 4, 10 & 11)**	Standard ATO IFR or VFR kit to include the following; **For IFR Ops:** 1 x VOR 1 x DME 2 x ADF or ADF/GPS 1 x ILS 2 x AH 1 x Rad Alt 1 x HSI **For VFR night Ops:** 2 x AH 1 x HSI or DI 1 x ADF or GPS **IFR and VFR**: 1 x Mobile phone (hands free). Intercrew communication. Power supply 12v/240v as appropriate. 1 x Stretcher Bridge. 1 x Stretcher or Incubator. Climate control and lighting in patient and attendant areas (NOTE 8). Torch for each crew person. Restraints for: • All oxygen carried (NOTE 7)	Intermediate care ambulance kit appropriate to callout situation. Electrocardiograph. Pulse oximeter (NOTE 13). End tidal CO_2 detector (disposable). Defibrillator. Suction equipment of an appropriate standard. Blood pressure measuring equipment. Bag/mask resuscitator (NOTE 6). IV pressure bag. Oxygen with delivery equipment (NOTE 7). Medical kit set up as a Paramedic Ambulance Officer's Kit suitable for common out of hospital medical and trauma emergencies.	1-2: Doctor and/or Anaesthetic Technician and/or Paramedic/ICO skilled in trauma management and intubation and/or EMST/PRIME qualified GP.	1 x 2000 hr pilot. or 1 x 1000 hr pilot plus, 1 x 500 hr pilot. All with: 15 hrs X/C night VFR with appropriate VFR night X/C rating where required to operate at night. Mountain flying experience if operating in mountainous terrain. Min for IFR Ops: 50 hrs IFR 30 hrs IMC 20 hrs multi 200 hrs PinC X/C Meet IFR recent experience requirements. 50% of a pilots fixed wing flight time may be credited towards the above totals to a maximum of 50% of the helicopter requirements.

HELICOPTER: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANT (NOTE 2 & 9)	PILOTS (NOTES 1, 9 & 12)
C. STRETCHER CARE AIRAMBULANCE **IFR or VFR** **(NOTE 3, 10 & 11)**	Standard ATO IFR or VFR kit to include the following; **For IFR Ops:** 1 x VOR 1 x DME 2 x ADF or ADF/GPS 1 x ILS 2 x AH 1 x Rad Alt 1 x HSI **For VFR night Ops:** 1 x AH 1 x HSI or DI 1 x ADF or GPS **IFR and VFR ops:** 1 x Mobile phone (Hands free). Intercrew communication. 1 x Stretcher bridge. 1 x Equipment stowage unit. Power supply 12v/240v as appropriate. Suction power lead and adaptor. Backup power lead. Incubator power lead and adaptor. Incubator, monitors and equipment stowage. Overhead hooks. 1 x Attendant seat, (2 seats with babies - mother and nurse). Torch for each crewperson. Climate control and lighting in patient and attendant areas (NOTE 8). Restraints for:	Oxygen and delivery equipment (NOTE 7). Drugs and delivery equipment. Suction equipment of an appropriate standard. Blood pressure monitor (Non Invasive). Suitable medical kit. Air sickness facilities. **AS REQUIRED:** • IV syringe pump • Stretcher • Neonatal drugs and equipment • Neonatal incubator and oxygen (NOTE 7)	1-2: Doctor and/or Paramedic/ICO and/or Nurse and/or Anaesthetic Technician and/or EMST/PRIME qualified GP.	1 x 1500 hr pilot, or 1 x 1000 hr pilot plus, 1 x 500 hr pilot. All with: 15 hrs X/C night VFR with appropriate VFR night X/C rating where required to operate at night. Mountain flying experience if operating in mountainous terrain. Min for IFR Ops: 50 hrs IFR 30 hrs IMC 20 hrs multi 200 hrs PinC X/C Meet IFR recent experience requirements. 50% of a pilots fixed wing flight time may be credited towards the above totals to a maximum of 50% of the helicopter requirements.

- Stretcher
- Neonatal incubator
- All oxygen carried (NOTE 7)

HELICOPTER: AIR AMBULANCE OPERATION STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANT (NOTE 2 & 9)	PILOTS (NOTES 1 & 9)
D. SEATED PATIENT AIR AMBULANCE VFR only (NOTE 10 & 11) **Note: includes child in car seat**	Standard ATO VFR kit. 1 x Mobile phone (hands free). Intercrew communication. 1 x Equipment stowage unit. Climate control and lighting in patient and attendant areas (NOTE 8). Patient and attendant areas. Restraints for; • All oxy gen carried (NOTE 7)	Oxygen and delivery equipment (NOTE 7). Drugs and delivery equipment. Airsickness facilities.	1: Doctor or Paramedic/ICO or Nurse or Anaesthetic Technician or EMST/PRIME qualified GP.	1 x 750 hr pilot with 200 hrs X/C. 50% of a pilots fixed wing flight time may be credited towards the above totals to a maximum of 50% of the helicopter requirements.

HELICOPTER: SEARCH AND RESCUE STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTES 5)*	ATTENDANT (NOTE 2)*	PILOTS (NOTES 1 & 9)
F1. SEARCH & RESCUE **VFR or IFR** **(NOTE 10 & 11)** **Category A**	Standard ATO IFR or VFR kit to include the following; **For IFR Ops:** 1 x VOR 1 x DME 2 x ADF or ADF/GPS 1 x ILS 2 x AH 1 x Rad Alt 1 x HSI **For VFR night Ops:** 1 x AH 1 x HSI or DI 1 x ADF or GPS **IFR and VFR** VHF DF. 1 x Mobile phone (hands free). Winch, or tested steel core static line as required in Part 133. Winch belts, strops, bosun, chair, harnesses. Stretcher suitable for external recovery. Scoop net, scoop stretcher. Nite Sun or other approved direction controllable external light. Suitable device for communicating with police and NRCC. Ambulance radio. Ground/air portable radios. Protective equipment for crews as appropriate, thermal survival suits, life raft. Marker flares and dyes.	Standard first aid kit (minimum equipment). * Where an intention to rescue is inherent in the tasking instruction, the medical equipment and attendant requirements shall be as prescribed for a Rapid Response Air Ambulance.	Winch crewman and trained observers as appropriate.	1 x 2000 hr pilot, or 1 x 1000 hr pilot plus, 1 x 500 hr pilot. All with: 15 hrs X/C night VFR with appropriate rating, where required for night operations. Mountain flying experience if operating in mountainous terrain. Under slung load and long line experience as required. Min for IFR Ops: 50 hrs IFR 30 hrs IMC 20 hrs multi 200 hrs PinC X/C Meet IFR recent experience requirements. 50% of a pilots fixed wing flight time may be credited towards the above totals to a maximum of 50% of the helicopter requirements.

Life jackets and harnesses.
Diving equipment where appropriate.
Aerial drop life rafts & crew raft.

HELICOPTER: SEARCH AND RESCUE STANDARDS

OPERATION CATEGORY	AIRCRAFT EQUIPMENT	MEDICAL EQUIPMENT (NOTE 5)	ATTENDANT (NOTE 2)	PILOTS (NOTES 1 & 9)
F2. SEARCH **VFR only** **(NOTE 10 & 11)** **Category B**	Standard VFR kit for ATO. For VFR night Ops: 1 x AH 1 x HSI or DI 1 x ADF or GPS 1 x Mobile phone (hands free). Life raft and jackets for all on board if over water.	Standard first aid kit (minimum equipment).	1 x Observer or crewman. Crewman to be trained in static line and winch ops as applicable.	1 x 500 hr pilot. 15 hrs X/C night VFR with appropriate rating. Mountain flying experience if operating in mountainous terrain. Under-slung load and long line experience as required. Pre-briefed or trained in visual search techniques. 50% of a pilots fixed wing flight time may be credited towards the above totals to a maximum of 50% of the helicopter requirements.

ANNEX 3 - FIXED WING PILOT TRAINING COURSES

COURSES:

Induction Training
Recurrent Training

INDUCTION TRAINING

This training is to be completed by all pilots who join the air ambulance operation of the organisation. It involves:

(1) **Ab-initio AA Pilots** — Fully detailed Induction

(2) **Experienced AA Pilots** — Same as ab-initio pilots except tailored to previous experience. Must cover organisation SOPs.

AB-INITIO AIR AMBULANCE PILOT INDUCTION

(1) Record personal and flying details and ensure these meet minimum organisation flight crew standards and AIA AR/AA Standards.

(2) Carry out an aircraft type rating or rating review on aircraft type so the pilot operates the aircraft in accordance with organisation SOPs.

(3) Introduce and practice setting up preparing and loading, and unloading aircraft configurations:

(a) Stretcher equipment, 2 attendants, stretcher bridge
(b) Stretcher, attendant, and relative
(c) Incubator, 2 attendants, and relative
(d) Wheelchair patient and attendant
(e) Sitting patient(s) and attendant
(f) Familiarise and practice use of communication system

External Communications

i Equipment - pagers, mobiles, r/t, lists
ii SOP's - normal and after hours
iii Contact numbers and names - hospitals, ambulances, taxis, Doctors and refuellers.

Onboard Aircraft

i PA
ii Intercom
iii Mobile phone
iv Radio telephone

v SOP

(g) Familiarise and practice checking, maintaining and stowage of air ambulance equipment

i At Aerodrome – Oxygen, stretchers, stretcher base, loading ramps, power leads, hooks.
ii In Aircraft - same as above

(h) Routes and Terminals Familiarisation
Weather, communications, alternate routes, parking, refuelling, altitudes, turbulence, descents, pilot's documentation, protective clothing, oxygen, traction.

(i) In flight responsibilities and priorities.

(j) Basic medical knowledge of aviation medicine (altitude, motion sickness, eyes, brain, gases, casts, infection), defibrillator use.

(k) Medical emergencies, O_2 failure, power failure, incubator failure, aggressive behaviour, defibrillator paddles.

(l) Introduce to relevant hospital and ambulance personnel.

(m) Search and Rescue training and responsibilities - callout, electronic and visual search techniques.

(n) Post flight duties - documentation, aircraft cleaning, equipment configuration, resource replenishment, defects action, hospital reports/documentation.

(o) Occupational Safety and Health

REVIEW TRAINING

Carry out every six months in association with six monthly proficiency checks.

(1) Routes review (cover all main routes once every 12 months)

(2) Loading/unloading review

(3) Equipment review

(4) Medical knowledge review

(5) Communications review

(6) Responsibilities - pre-flight, in-flight, and post flight

(7) Search and rescue technique review

ANNEX 4 - HELICOPTER PILOT TRAINING COURSES

COURSES:

Induction Training
Recurrent Training

INDUCTION TRAINING

This training is to be completed by all pilots who join the air ambulance operation of the organisation. It involves:

(1)	**Ab-initio AA Pilots**	Fully detailed Induction
(2)	**Experienced AA Pilots**	Same as ab-initio pilots except tailored to previous experience. Must cover organisation SOPs.

AB-INITIO AIR AMBULANCE PILOT INDUCTION

(1) Record personnel and flying details and insure these meet minimum organisation flight crew and AIA AR/AA Standards.

(2) Carry out an aircraft type rating or rating review on aircraft type so the pilot operates the aircraft in accordance with organisation SOPs.

(3) Introduce and practice setting up, preparing, loading and unloading aircraft configurations.

(a) Stretcher equipment, 2 attendants, stretcher bridge
(b) Stretcher, attendant, and relative
(c) Incubator, 2 attendants and/or a relative
(d) Familiarise and practice use of communication systems
(e) Fitting rescue and other operational equipment

External Communications
i Equipment - pagers, mobiles, radio lists
ii SOPs - normal and after hours
iii Contact numbers and names - hospitals, ambulances, taxes, Doctors, and refuellers.

Onboard Aircraft
i PA
ii Intercom
iii Mobile phone
iv Radios
v SOP
vi Safety briefings
vii GPS

(f) Familiarise and practice checking, maintaining and stowage of air ambulance equipment

i At rescue helipad, preparing helicopter with medical rescue and operational equipment

ii In aircraft - same as above

(g) Routes, terminals and operating area familiarisation.
Weather, communications, alternate routes, parking re-fuelling, altitudes, descents, pilots documentation, protective clothing.

(h) In flight responsibilities and priorities.

(i) Basic medical knowledge of aviation medicine (altitude, motion sickness, eyes, brain, gases, casts, infection), defibrillator use.

(j) Medical emergencies, oxygen failure, power failure, incubator failure, aggressive behaviour, defibrillator paddles.

(k) Introduction to relevant hospital and ambulance personnel.

(l) Search and Rescue training and responsibilities - call-out, electronic and visual search techniques.

(m) Post flight duties - documentation, aircraft cleaning, medical equipment cleaning, resource replenishment, defects action, hospital reports/documentation, emergency flight regulations notifications.

(n) Night VFR operations - minimum weather requirements, operational procedures, limitations, use of external lighting.

(o) Emergency flights under Section 13a of the Civil Aviation Act 1990- Duties of PinC and operator during emergencies.

(p) Occupational Health and Safety requirements.

REVIEW TRAINING
Carry out every six months in association with six monthly.

(1) Routes review - discussion on organisation normal operational routes not flown within the last six months.

(2) Loading/unloading review.

(3) Equipment review.

(4) Medical knowledge review.

(5) Communications review.

(6) Responsibilities - pre-flight, in-flight, and post flight.

(7) Search and rescue technique review.

(8) Instrument approach if helicopter is equipped for night operations and has appropriate navigational aids.

(9) Winch, Nitesun and other operational equipment review if fitted and used.

(10) Emergency flights and night operations criteria review.

The above, other than the instrument flight requirements in (8) which shall be a flight review, may be conducted using an oral or written exam. The decision as to the need to flight review a pilot on the remaining items shall be at the discretion of individual organisations.

INTENTIONALLY BLANK

ANNEX 5

SUGGESTED TRAINING

FOR

MEDICAL ATTENDANTS

INVOLVED IN

AEROMEDICAL TRANSFER OF PATIENTS

IN

NEW ZEALAND

INTENTIONALLY BLANK

AIA SUGGESTED ATTENDANT TRAINING COURSE

PURPOSE

The aim of this Annex is to provide a standard framework for the development of a training course for AMC's involved in aeromedical transfers.

All staff involved in aeromedical transports are to have formal training. The following recommended training syllabus is designed to address this issue and provide SUGGESTED TRAINING FOR MEDICAL ATTENDANTS INVOLVED IN AEROMEDICAL TRANSFERS IN NEW ZEALAND.

AIRCRAFT OPERATIONAL CATEGORIES

These have been designed by the AIA on the basis of patient care requirements and are as follows:

A INTENSIVE CARE AIR AMBULANCE (IFR)

An Intensive Care Air Ambulance shall be used to transport patients that may require continuous attachment to a ventilator, other means of life support and/or physiological monitoring throughout the flight.

ATTENDANTS: Consultant or Registrar in Anaesthetics, Intensive Care, Emergency Medicine or Paediatrics (neonatal transfers) and/or Anaesthetic Technician or nurse skilled in type of transfer, eg ICU, Emergency Medicine or neonatal Paediatrics, etc and/or EMST/PRIME qualified GP or Paramedic.

B RAPID RESPONSE AIR AMBULANCE (VFR)

A Rapid Response Air Ambulance shall be used to transport patients needing intensive care and/or monitoring prior to initial hospitalisation, and usually needing emplanement at or near the site of an accident soon after its occurrence.

ATTENDANTS: Doctor and/or Anaesthetic Technician and/or EMST/PRIME qualified GP and/or Paramedic/ICO skilled in trauma management and intubation.

C STRETCHER CARE AIR AMBULANCE

A Stretcher Care Air Ambulance shall be used to transport patients needing to be transferred on a stretcher and needing some medical attention, but not intensive care during flight. Some monitoring might be required. The patient would usually be transferring from one hospital to another.

ATTENDANT: Doctor and/or Paramedic/ICO and/or nurse and/or Anaesthetic Technician and/or EMST/PRIME qualified GP.

D SEATED CARE AIR AMBULANCE

A Seated Care Air Ambulance shall be used to transport patients who are semi-mobile, perhaps convalescent (or a walking casualty), and who may need to be embarked/disembarked using a wheelchair or other forms of assistance. There is little need for ongoing care, but a risk of some form of incapacitation during flight could arise. Seated care patients include post-operative stable patients transferring between hospitals.

ATTENDANT: Doctor or Paramedic/ICO or Nurse or Anaesthetic Technician or EMST/PRIME qualified GP.

E INDEPENDENT PATIENT AIR TRANSPORT (VFR/IFR)

Independent Patient Air Transport aircraft may be used to transport patients who do not require an air ambulance or attendant. No wheelchair is needed during embarkation/disembarkation.

ATTENDANT: None

F SEARCH AND RESCUE AIRCRAFT

A Search and Rescue aircraft may be fixed or rotary wing suitably equipped with navigation, communications and rescue capabilities and may include any category of air ambulance.

Note: If there is any intention to rescue, rather than just to search, then the aircraft should also be set up as a Category B - Rapid Response Air Ambulance.

PROPOSED STRUCTURE

The course would involve two modules each of which may require one half day to complete. They need not be both completed on the same day.

MODULE ONE: AIRCRAFT ORIENTATION

A practical hands on session involving inspection of the aircraft and its equipment plus medical equipment used, ie pulse oximeter, portable ventilator, etc. This would be conducted with the local medical adviser and Chief Flying Officer or nominated alternates, under the following headings.

AIRCRAFT

A briefing and familiarisation of the aircraft type, performance and rating is required. Principles of flight, eg stalling, pitch roll and yaw, FLWOP. Instruction on VFR and IFR conditions. Equipment carried on aircraft, VOR/DME/GPS, etc. Circuits in aircraft with equipment, as appropriate.

SAFETY

Ground

Hazard identification, approaching a helicopter, safe areas, propellers, carrying of equipment, disembarking, etc.

Air

Safety equipment, fire extinguisher, axe, exits, lifejackets, harnesses, sick bags, etc. Scenarios, engine failure, fire sudden decompression, turbulence, survival techniques, door latches.

COMMUNICATION

Knowledge of ATC, headphones, talking to ambulance, pilot, patient both on ground and in air. Knowing when not to talk!

STRETCHER LOADING AND TRANSFER

Familiarisation with stretcher bridge. Thomas pack etc. Be able to confidently load/unload patients in adverse conditions. Secure loose objects such as blankets.

EQUIPMENT

ECG monitor, defibrillator, electrical connection, battery, suction equipment of an appropriate standard, oxygen supply and attachments, drugs, incubators, etc. Attendants should be competent in operating equipment necessary for their level of transfer and able to interface ambulance equipment with aircraft fittings.

Equipment must be securely stowed, compatible with aircraft avionics, backup power and capable of operating under adverse conditions such as vibration, etc. NG tubes (wide bore), venting of colostomies, ET tubes, cuffs filled with water. This is one of the fundamental issues in training. Due to the high turnover of medical staff, eg Registrars, nursing staff are vital in equipment management and use.

COMMON PROBLEMS

Noise and inability to take blood pressure, auscultate chests and hear alarm monitors. Limited space for CPR. Difficulty getting IV fluids to run, accessing IVs and injecting drugs in turbulence.

ADMINISTRATION GUIDELINES

Priority of mission, the pilot is in absolute command of the aircraft and crew.

Documentation:

- Liaison with referring or accepting hospital.
- Patient handover and availability and co-ordination of land transport.
- Pre flight and in-flight checklist and recordings are vital.
- Check lists to be specific for category of transfer.
- Debrief.

CLINICAL RESPONSIBILITY

The chain of responsibility must be clear throughout the transfer. Responsibility for patient care during transport must be vested in an appropriately qualified medical practitioner. Formal handover from referring doctor to retrieval doctor and from the latter to the hospital doctor is essential.

Source: Faculty of Intensive Care, Australian and New Zealand College of Anaesthetists and Australasian College for Emergency Medicine, Minimum Standards for Transport of the Critically Ill.

MODULE TWO: AVIATION MEDICINE

This would also take one half-day and would be theory orientated. It would be conducted by medical staff nominated by AIA and would be a set curriculum under the following proposed headings.

1 EFFECTS OF ALTITUDE

Physiology, and effects of reduced pressure. Trapped gases and expansion at normal sites, abnormal sites and in equipment, eg sinuses, air emboli, intra cranial air, etc. Balloon catheters, ET tubes, ventilators, IV lines. UWSD. Boyles and Daltons Law. Reduced temperature, reduced oxygen tension and hypoxia. Sudden decompression if pressurised aircraft.

2 EFFECTS OF AIRCRAFT

G forces, acceleration, turbulence, vibration and noise. Motion sickness, fear of flying, anxiety, panic disorder, effects of confinement under normal and adverse flying conditions. IFR, night flying and adverse weather.

3 CONDITIONS AT RISK

Head Injuries:

Maintain O_2, sandbag head (to stabilise and immobilise), beware C-Spine injury. Ventilator settings, intubated, NG tube, urinary catheter, free air in skull, aerocoele. Need for low-level helicopter operation or pressurised aircraft. IV line for antibiotics or Mannitol, relaxants, etc. ICP monitoring, if available. Capnography if available.

Chest Injuries

Pneumothorax, pneumomediastinum, rib fractures, chest drains. The need for reduced rate of descent/climb. UWSD and Heimlich valve, risk of barotrauma with IPPV.

Multiple Trauma

Control haemorrhage, immobilise #, EMST course.

Gastrointestinal Problems

Bowel obstruction, colostomies vented, use NG tube.

ENT and Eye Trauma

Beware intracranial air, retinal detachment and need for high O_2, pressurised aircraft.

Infection

Sinusitis, pneumonia, HIV and other infectious diseases.

Diving Injuries

Decompression sickness, arterial gas embolism. Supine, left lateral position. High O_2 and volume support. Use of heparin. Fly minimum safe altitude, usually Helicopter low level.

Cardiac Patients
Post MI, arrhythmia's. All attendants should have current CPR training for all transfers.

Spinal Injuries
Convert swinging to fixed/traction, vacuum mattress, beware lack of sensation, risk of burns, injury, etc, as patient unable to identify painful stimulus. Maintain adequate core temperature.

Psychiatric Disorders
Restrained, IV access with plenty of tranquillisers and neuroleptics.

Neurology
Seizures, epilepsy. Need for calming patient and potential restraint in flight, or need to land to address situation, or IV access to facilitate drug administration.

Infants/Neonates
Highly specialised and only needs to be taught to staff involved in this type of transfer.

Organ Donation

SUMMARY

This is a guideline for each operator/medical adviser to follow. Due to variety of operations, the course will need to be structured to the needs of the organisation, eg ICU nurses do not need to be fully skilled in neonatology if not doing this type of transfer.

The important issue is that there is a formal teaching programme in Aviation Medicine and Aircraft Orientation. If an operator is to be accredited by the AIA on the basis of pilot competence and equipment carried, the organisation providing the medical staff must provide a course as described above. Attendants should have completed a course and preferably completed a dual transfer with a more skilled attendant before going solo.

In addition, medical attendants must be deemed to be clinically competent by the organisations medical adviser, and qualified to provide the level of care determined by the category of transfer. **Medical attendants who have not been in light aircraft, and/or are unfamiliar with equipment, and/or have no training in Aviation Medicine should be deemed UNFIT TO FLY.**

ANNEX 6 - AIR RESCUE/AIR AMBULANCE AUDIT PROCEDURE

1 INTRODUCTION

1.1 In 1995 the Civil Aviation Authority ceased its involvement in determining standards for, and registration of, air ambulances. In a parallel development the Aviation Industry Association formed an Air Rescue/Air Ambulance Division which has subsequently published national Standards (AR/AA Standards Manual) for air rescue/air ambulance aeroplanes and helicopters. These Standards have been endorsed by ACC, DHB's and MOH.

1.2 AIA members providing air ambulance services to the ACC, DHB's and MOH, or wishing to do so, will be required among other things, to meet the AIA standards. It is, therefore, in the national interest to have all members of the AIA Air Rescue/Air Ambulance Division complying with the Standards.

2 PURPOSE

2.1 The purpose of this Manual is to set out the audit procedures acceptable to AIA for assessing members' compliance with the appropriate Standard and for gaining registration as a quality supplier of air ambulance services.

3 AIR RESCUE/AIR AMBULANCE OPERATIONS MANUAL

3.1 Operators applying for registration under the AIA standards shall submit an operations manual for assessment. The operations manual may be submitted either as a paper based document, or in a suitable electronic format, provided that the manual details the means and methods they have adopted for supplying air rescue or air ambulance services to the requirements set out in the AR/AA Standards Manual. This operations manual is an essential element of the audit process.

3.2 It is intended that the operations manual be part of the Civil Aviation certification requirement, although evidence that the operator holds the appropriate air operator certificate will be sought prior to the audit. The Operations Manual shall be a complete description of the company management structure and operating procedures for the provision of AR/AA services. Specific issues to be addressed in the operations manual are:

(1) A statement concerning the scope of AR/AA activity, including objectives, air ambulance category, and the company's commitment to AIA Standards, quality and observance of the requirements of their air operator certificates.

(2) A definition of the organisation adopted by the company for the delivery of AR/AA services including the trust board and accountable manager, together with the named person/s responsible for:

a fight operations,

b medical facilities, eg medical equipment and maintenance, attendants.

c aircraft maintenance,

d training and checking,

e liaison with other emergency services,

f liaison with governing authorities, eg CAA, ACC, DHB,

g media,

h quality assurance, and

(3) A list of duties and responsibilities for the key persons identified in (2) and,

(4) An organisation chart showing associated chains of responsibility of the persons specified in (2) and (3) above, and

(5) A description of the facilities established to support the AR/AA service including:

a operations or dispatch room,

b maintenance workshop,

c hangars,

d training facilities,

e passenger (patient) transfer, and

f equipment storage, and

(6) A list of limitations and requirements covering at least

a flight operations, including the additional AR/AA role instrumentation or equipment,

b aircraft registration/s,

c hours of operation,

d operational limitations (eg day, VFR only, etc),

e geographical limitations,

f flight and medical crew complements,

g medical equipment lists for each category of air ambulance (Note: the AIA Standards may be referenced),

h duty time limitations, and

(7) Procedures for initiating AR/AA operations, including:

a call our arrangements,

b dispatch criteria,

c dispatch facilities,

d dispatcher duties and responsibilities,

e dispatch records,

f aircraft availability and configuration,

g radio procedures,

h flight procedures,

i flight following,

j notification to authorities,

k procedures for dealing with media, and

(8) A description of ab-initio and recurrent training programmes in accordance with AIA approved training schedules, aimed specifically at preparing flight crew and attendants for AR/AA operations including, as appropriate:

a aircraft operations,

b safety around aircraft,

c special medical factors applicable to airborne operations,

d aircraft communications systems,

e airborne emergencies,

f loading/unloading of patients, and

(9) Details of internal audit arrangements, and

(10) Details of retention and disposal of records pertaining to AR/AA operations, including,

a flight records,

b personal licences and renewal,

c training records,

d equipment maintenance records

e patient records,

f audit reports and follow-up actions, and

g departures from Standard Operating Procedures.

(11) A description of any promotional programmes designed to enhance safety awareness, ie procedures for attendance at public gatherings, establishment of landing zones, patient follow-up, etc.

4 AUDIT PROCEDURE

4.1 OPERATIONS MANUAL

Applicants seeking AIA registration shall submit the company's AR/AA Operations Manual, together with their application and completed data base form to:

The Secretary
Aviation Industry Association of NZ (Inc)
Air Rescue/Air Ambulance Division
PO Box 2096
WELLINGTON

4.1.1 Where an operator is unable to produce an Operations Manual, other documentation that shows clearly how they intend to comply with the Standard will be acceptable. This other documentation may take the form of a "Letter of Compliance" containing as many of the elements of an operations manual as necessary - refer Section 3.

4.1.2 Other operators, who for any reasons are unable to produce an operations manual, or Letter of Compliance, may apply for registration in the knowledge that an AIA appointed independent auditor will be required to

make a visit to the applicant's operating base. During this visit, the auditor, in consultation with the applicant, will document how compliance with the Standard is to be achieved. The registration fee for this option is higher than for the other two.

4.1.3 Operations Manuals, Letters of Compliance, or audit visit documented procedures shall be used for subsequent audits.

4.2 AUDIT ASSESSMENTS (INITIAL)

4.2.1 The AIA appointed independent auditor will assess the submitted Operations Manual or Letter of Compliance for conformity with the Standards.

4.2.2 Applicants whose documentation satisfies the auditor that adherence to the documented procedures and standards will achieve compliance with the Standard, shall be Accredited by the AIA for a period not exceeding two years.

4.2.3 Applicants whose documentation does not satisfy the auditor that compliance with the Standard can be achieved by adherence to the documented procedures, will have the deficiencies brought to their attention by way of a "Deficiency Report" raised by the auditor. The applicant may elect to re-examine the documented procedures and submit amendments to the Operations Manual or Letter of Compliance, or alternatively request a site visit by the auditor. During this visit measures to correct the deficiencies will be documented by the auditor. Once applicants have incorporated the appropriate amendments into their Operations Manual or Letter of Compliance to the satisfaction of the auditor, they will be certificated by AIA for a period not exceeding two years.

4.3 MANUAL REVISION

4.3.1 To facilitate follow-up audits, operators may elect to issue amendments to their Operations Manuals or Letter of Compliance to ensure that compliance with the Standards is maintained at the highest level.

4.4 POST ACCREDITATION AUDITS

4.4.1 Within two years of receiving initial AIA Accreditation, operators shall be audited by an AIA appointed independent auditor. This audit will be conducted on site and carried out with reference to the member's Operations Manual, Letter of Compliance or the original site visit report. During the two year interval members will be expected to have fully implemented their operations in line with documented procedures and to have accumulated records of their AR/AA activities.

4.4.2 If the post certification audit confirms that the operator is in full compliance with their procedures manual, letter of compliance or visit report, AIA Accreditation will be extended for a further two years.

4.4.3 If the post certification audit results in corrective action notices being issued by the auditor, Accreditation may be extended for a further period of up to two years. During this period, the operator will be expected to implement the corrective actions within a reasonable time frame, as agreed with the auditor, and amend the Operations Manual, Letter of Compliance or visit report.

4.5 SUBSEQUENT AUDITS

4.5.1 Subsequent audits will be carried out at two yearly intervals, depending on the results of the previous audits.

5 APPEAL PROCEDURES

An operator who wishes to dispute the results of an audit may lodge an appeal to the AIA Executive Director. The appeal shall be tabled for early resolution by the Audit Review Panel comprising the AIA Executive Director, one Medical Adviser to the Air Rescue/Air Ambulance Division, and one independent member of the Air Rescue/Air Ambulance Division having no commercial or other interest in the outcome of the appeal.

6 AUDIT FEES

Refer approved audit schedule

ANNEX 7 - TERMINATION OR AMENDMENT OF AIR RESCUE AIR AMBULANCE ACCREDITATION

OPERATORS RIGHT TO WITHDRAW

Each operator has the right to withdraw from the Air Rescue Air Ambulance Accreditation scheme at any stage. Following the operator's decision to withdraw from the Scheme the Accreditation Certificate, and any other items referring directly or indirectly to AIA Accreditation status, must be returned to AIA office within 30 days.

If an operator withdraws from the Accreditation scheme after the Air Rescue Air Ambulance Certificate has been issued then no refund of the Accreditation fee, or any part thereof, will be made. If an operator withdraws prior to, or before the audit process is complete, a refund of a proportionate amount of the Accreditation fee less the audit costs incurred to the date of withdrawal will be made.

An operator's decision to withdraw from Air Rescue Air Ambulance Accreditation does not prevent or prohibit a subsequent re-application for AIA Air Rescue Air Ambulance Accreditation.

AIA ACCREDITATION AUTHORITY

AIA may, in its sole discretion, terminate or amend an operators Accreditation status in the event of an operator no longer being in compliance with the required Accreditation standard. In the event of termination or amendment of an operators Accreditation status, the operator must return to the AIA office within 30 days the Accreditation Certificate and all other items referring directly or indirectly to the Accreditation status.

Amendment of Accreditation Status

From time to time an operator's Accreditation status may require amendment. Amendment shall, in the first instance, be facilitated by informal discussion between the operator, AIA and the AIA Auditor. In the event of this procedure not achieving a satisfactory resolution the procedure for "Termination of Accreditation" will be invoked.

Termination of Accreditation

If an operator is deemed by AIA to be no longer fit, or does not comply with the requirements to hold Air Rescue Air Ambulance Accreditation, or a mutually agreed upon amendment to an operator's Accreditation status cannot be found the following procedure will be invoked.

An operator who is no longer deemed fit, or deemed as not complying with the Accreditation requirements, will be audited by the AIA Auditor at the request of the AIA Audit Review Panel. The Audit Review Panel shall comprise of the AIA Executive Director, one Medical Adviser to the Air Rescue/Air Ambulance Division, and one independent member of the Air Rescue/Air Ambulance Division.

The operator shall be advised of the impending audit at least fourteen (14) days prior to the commencement of the audit.

The AIA Auditor shall provide to the Audit Review Panel the result of the audit, and the Audit Review Panel will make a recommendation within 30 days of the receipt of the audit of its determination to withdraw or maintain the operator's Accreditation. The Audit Review Panel will, at the same time notify the operator of its recommendation.

A recommendation to withdraw Accreditation shall be determined by the Air Rescue/Air Ambulance Division Committee which will make a final determination on the recommendation of the Audit Review Panel. For a decision to be made at least half of the total number of current Committee members, but no fewer than five members, must vote and any Committee member having a conflict of interest must record the conflict of interest and is not eligible to vote.

The operator who is affected by the Audit Review Panels recommendation may make submissions to the Committee prior to the Committee reaching its decision. The submissions may be presented either in person or in writing. The Committee's decision shall be notified to the operator who, in the event of an adverse decision, may lodge with the AIA Executive Director an appeal against that decision.

Upon receipt of an appeal lodged against the Committee's decision, AIA will invite the operator to provide such submissions as that operator deems appropriate for consideration by the Air Rescue/Air Ambulance Division Committee. The operator has the right to attend the Committee meeting to make personal submissions. The Committee shall then vote to determine whether the original ruling of the Committee is confirmed or reversed.

If an operator is no longer deemed fit, or deemed as not complying with the Accreditation requirements, the operator is responsible for notifying all affected parties using the service that their Accreditation status has changed.

The appeal to the Committee shall be final and binding and an operator has no further rights of appeal or review, but is at liberty to re-apply for Air Rescue Air Ambulance Accreditation at any time thereafter.