



## Purpose

Describe the process for ECMO transfers in NSW; in particular when using ASNSW Aeromedical Rotary Wing aircraft.

The NSW ECMO Retrieval Service for adults consists of Royal Prince Alfred (RPA) and St Vincent's Hospitals sending ECMO teams to the referring hospital, inserting the cannula and commencing the patient on ECMO. The patient is then transferred back to *RPA or St Vincent's* for ongoing care. RPA and St Vincent's Hospitals work alternate weeks as the on call ECMO retrieval service. The receiving destination is almost always the same hospital that has sent the ECMO team out.

The ECMO equipment includes a membrane oxygenator, a pump and a heater. These are all powered off vehicle batteries and also have their own (limited) battery life to cope with transfers between hospital ward bed and vehicles. The ECMO equipment has passed testing for electro-magnetic interference with the AW139 helicopters and MPV's.

This procedure must be read in conjunction with the ECMO training package and skill sheets.

## Procedure

The Aeromedical and Medical Retrieval Service (AMRS) is the focal point of contact for the NSW ECMO Retrieval Service for Adults.

Children in NSW requiring ECMO are coordinated by NETS.

## ECMO Vehicles

ECMO transfers are transported any combination of the following depending upon logistical requirements:

- AW139 helicopters only
- Road – MPV units only
- Longer distance ECMO, such as international or interstate retrievals, are commonly done by private retrieval companies using a jet. In these instances the road leg from Mascot Airport often utilises an ASNSW MPV but the ongoing clinical care is the responsibility of the private company.

**Note: NSW Air Ambulance Fixed wing aircraft are not equipped to conduct ECMO transfers.**

1. The AMRS Consultant, SRC and potential retrieval team (normally a retrieval consultant and a paramedic with ECMO experience) must be teleconferenced in with the referring, receiving and ECMO teams early in the mission timeline.
2. The choice of vehicle for the transfer depends on a list of criteria, which include:
  - a. Distance - generally helicopters are used for distances greater than 150km from the receiving hospital.
  - b. Availability of a hospital helipad with paved relatively flat pathway into the hospital at both ends.



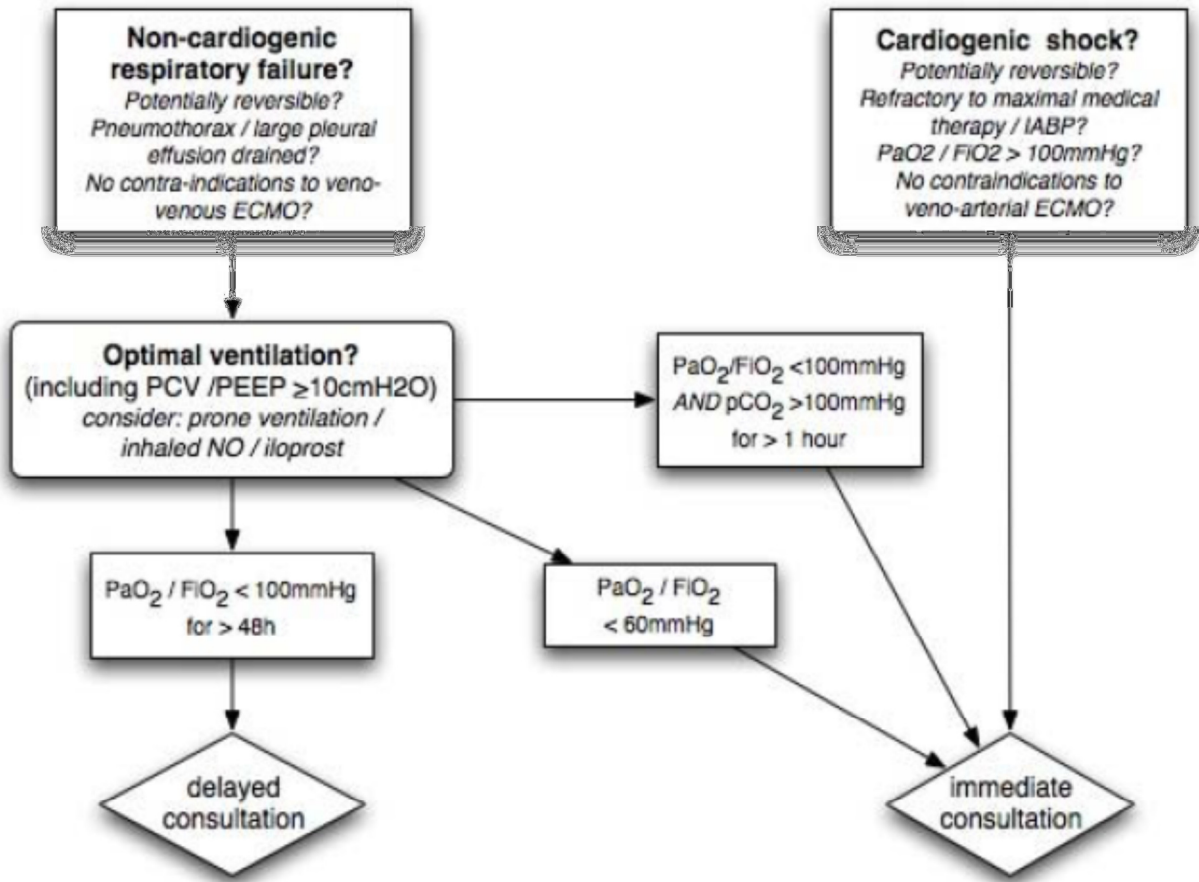
- c. St Vincents is an exception to point b. As it does not have a helipad the helicopter lands at Bankstown Airport or Mascot and the patient is transferred to an MPV for the final road leg.
  - d. The referring hospital must also have a flat suitably-wide, height-adjustable stretcher available. Do not assume that this is the case; ask early as it will potentially change the choice of transfer vehicle.
  - e. If the patient chosen for ECMO meets bariatric criteria, the bariatric checklist must also be filled out and logistics must be able to be managed accordingly.
3. The ECMO Retrieval Team from RPA and St Vincents consists of a maximum of three people – a perfusionist (usually a cardiac anaesthetist), a cardiac surgeon and a theatre nurse. The perfusionist is usually the team leader (use this person as the contact point for all discussion).
4. Include the Aviation crew in all aspects of flight operations as much and as early as possible. Establish the weight of the patient, team and all equipment and discuss with the pilot for flight planning purposes.
5. In general the ECMO team will already be at the referring hospital, however depending on the size of the team and the associated logistics, the helicopter may also be needed to transport the ECMO team to the patient. It takes approximately 90-120mins for the ECMO retrieval team to stabilise the patient on ECMO and ready for the return leg.
6. Where the ECMO team are already at the referring hospital; consider these timings for arrival at the referring hospital for the return leg.
7. For the return transfer the patient will be accompanied by the perfusionist (who looks after the ECMO), the helicopter retrieval doctor (who looks after the patient) and the helicopter paramedic (who looks after the logistics). The cardiac surgeon and nurse return separately.
8. If the return leg to the receiving ECMO hospital requires a road leg, ensure this is arranged early with the Sydney Control Centre, as they are responsible for MPV acquisition and staffing.
9. Once the patient is transferred from the ECMO retrieval equipment onto the receiving hospital ECMO equipment the team and aircraft/MPV can return to their respective bases.

## For Review

August 2014



**INDICATIONS FOR ECMO REFERRAL**



- Absolute contraindications to all forms of ECMO**
- \* Significant pre-existing co-morbidity, such as irreversible neurological condition, cirrhosis with ascites, encephalopathy, history of variceal bleeding, active malignancy with predicted limited survival, HIV.
  - \* Weight > 120kg
- Relative contraindications to all forms of ECMO**
- \* Age > 65
  - \* Multiple trauma with uncontrolled haemorrhage
  - \* Multiple organ failure
- Absolute contraindications to veno-venous ECMO (for respiratory failure)**
- \* Pulmonary hypertension (mPAP > 50mmHg)
  - \* Severe right or left heart failure (EF < 25%)
  - \* Cardiac arrest
- Relative contraindications to veno-venous ECMO**
- \* High pressure, high FIO<sub>2</sub> IPPV for > 1 week
- Absolute contraindications to veno-arterial ECMO (for cardiac failure)**
- \* Severe aortic valve regurgitation
  - \* Aortic dissection
- Relative contraindications to veno-arterial ECMO**
- \* Severe peripheral vascular disease