Donor Heart Storage Solution.

The Royal Children's Hospital has traditionally used Modified Euro Collins Solution (EC) as its donor heart storage solution. This usage dates back to the late 1980's when the original transplant methodology was created by the Perfusion unit.

Due to the short shelf life of EC (3 months) and logistic supply issues for distant procurement sites (eg. Brisbane), a review of contemporary storage solutions was undertaken.

We found that there exists very little literature relating to storage solutions and a lack of uniformity in the type of cardioplegia used with one review demonstrating 167 different cardioplegic solutions in use across the US[1].

After consultation with the two largest adult transplant centres in Australia, The Alfred (Melbourne) and St Vincent's (Sydney) it was identified that our current transplant cardioplegia (Cardioplegia A, Baxter, AHB 7832) with the addition of 28 mmol Aspartate and 100 mg GTN would be the most suitable and that this should also be utilized as the storage medium.

This solution has a shelf life of 1 year and can be ordered directly through Baxter.

1. Carter K T, Lirette S T, Baran D A, The Effect of Cardiac Preservation Solutions on Heart Transplant Survival. JSR. 2019; (242): 157-165

Donor Heart Protocol

Donor Heart Cardioplegia

Base Solution - Cardioplegia Solution A - Baxter AHB7832 1000ml

Add to this:	GTN	100mg	
	Monosodium L-Aspartate	28 mmol	(2 x 10ml Ampules)
	Sodium Bicarbonate	10 mmol	(10 ml 8.4%)
	(Erythropoietin – if available)	5000 units	

Oxygenate solution through a five micron filter prior to leaving.

This mixture is also used as the storage solution.

Depending on the size of the heart retrieved, make up 2 -3 bags of the above mixture.

Place all bags in an esky with ice.

Administration technique

- Donor Heart Cardioplegia Delivery Line
- Digital manometer
- Pressure bag
- Cardioplegia Needle

- At the earliest opportunity, hand the disposable items to scrub nurse
- Have the nurse turn the 3 way tap to the bottom of the giving line and the monitor isolator to the other side of the 3 way tap.
- Have the nurse hand back to you the giving set and monitor isolator
- Make sure 3 way tap is turned off to the table
- Spike 2 cardioplegia bags and use volume to prime this line and the monitor isolator
- Cut off end of primed isolator and connect to digital manometer and place cardioplegia bag into pressure bag.
- Pressurize 2 bags, ensuring clamp on giving set.
- Once required, have surgeon connect 3 way tap to cardioplegia needle

Administration Protocol

Calculate predicted cardioplegia flow for donor based on weight, from perfusion database. This will give you a guide to volume of cardioplegia required to give, and the possible need for two bags. Run cardioplegia at a line pressure of ~100 mmHg (as measured by digital manometer) for 4 minutes.

Once heart is removed, place into 1st sterile bag filled with 1 -2 litres of donor heart cardioplegia formula. (Depending on heart size).

This bag is then tied and placed into a 2nd sterile bag filled with cold saline. This is then placed into a third sterile bag also filled with cold saline.

The 3rd bag is then placed into an esky filled with ice.

Donor Cardiac Death

Donor heart cardioplege given at 4C (from fridge) at standard dose then transported submerged in plege to theatre for administration of tepid Buckberg blood plege (21C).

Transport Bag Contents

3	Three way taps		4	Transplant bags with ties	
3	Vigos		4	Taxi Vouchers (keep receipts)	
3	14G Cardioplege Needles (Angiocath)		4	7.5 ml Brown Top Gel Tubes	
3	Spike Adaptors		2	Snuggers	
3	30ml Luer Lock Syringes		3	6/0 Prolene Suture	
2	Pressure Bag (1L size)		1	28Fr Single Venous Cannula	
1	Digital Manometer		1	3/8” Tubing	
2	Donor Heart Cardioplegia Delivery Line		2	3/8” Straight Connector	
	Tape and scissors				

Once in-flight

Ask pilot to confirm with ground base that a taxi or police car will be waiting to take you to the hospital. Get pilots phone number so you can inform him of time of return.

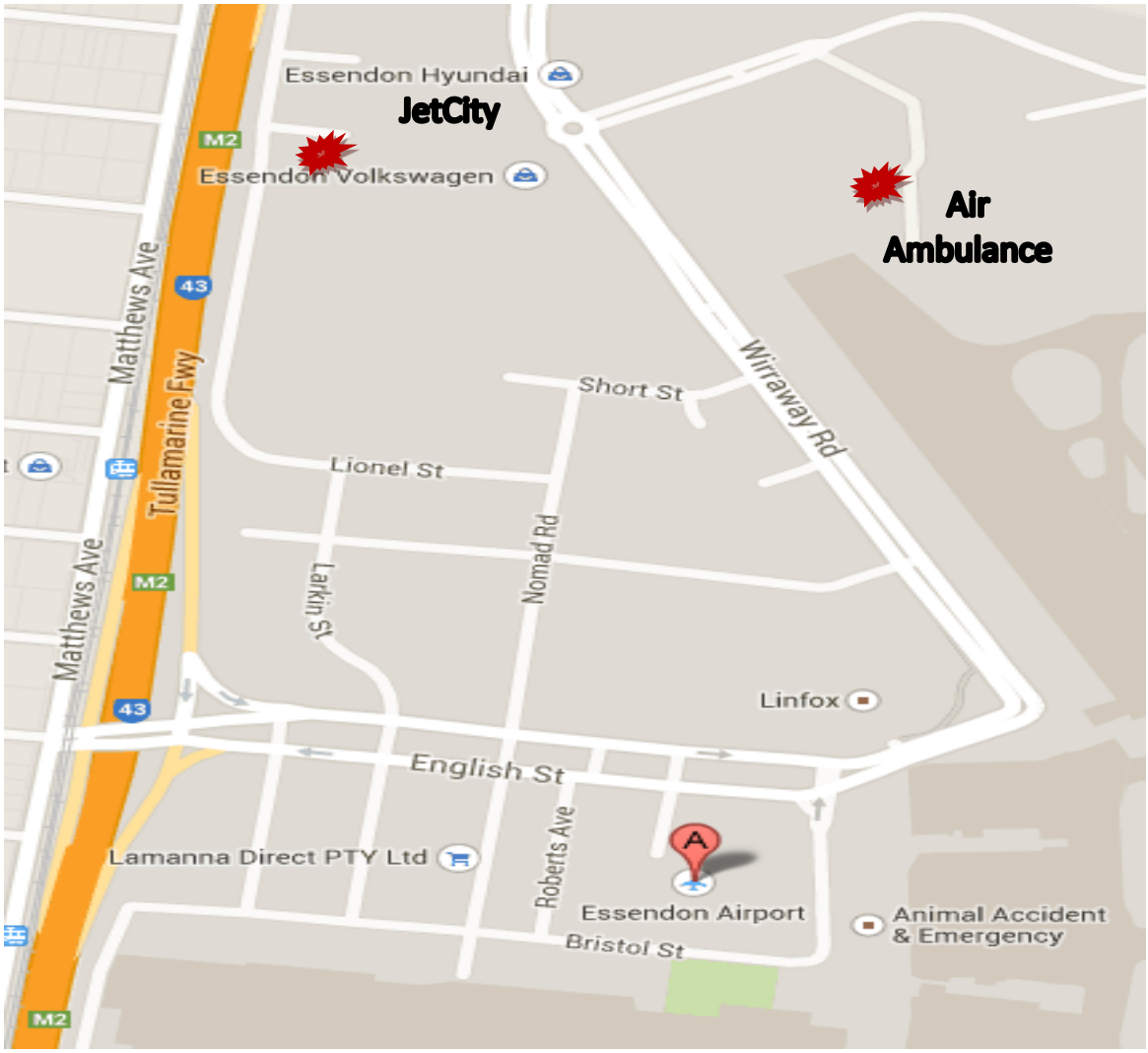
Once in theatre at donor hospital.

Establish contact with local transplant coordinator and nurse in charge of theatre.

Ask anaesthetist for blood samples: 15ml, place in 2x 7.5 ml Gel Tubes (Brown top), label and place in esky.

Once heart is out, ask transplant coordinator to call police escort for you.
Call pilot and advise him of arrival time back at airport.
Call RCH and tell them of your ETA

Once you land in Melbourne, call RCH and tell them your arrival time.



To JetCity Terminal			To Air Ambulance Victoria Terminal		
Royal Children's Hospital 50 Flemington Road, Parkville VIC 3052					
1.	Take the 1st right onto **Flemington Rd**				Travel 1.5Km
2.	Merge onto **Citylink/M2/State Route 43** via the ramp to **City Link/Bendigo/Airport/ Hume Highway**				Travel 8.4Km
3.	Keep right at the fork to continue on **M2**, follow signs for **Route 43/National Highway M31/Tullamarine Freeway/Melbourne Airport/Hume Freeway**				Travel 1.5Km
4.	Take the exit towards **MATTHEWS AVENUE/Essendon Airport**				Travel 220m
5.	Turn right onto **English St**	Travel 230m	5.	Turn right onto **English St**	Travel 750m
6.	Turn left onto **Larkin St**	Travel 290m	6.	Continue onto **Wirraway Rd**	Travel 650m
7.	Turn left onto **Lionel St**	Travel 450m	7.	At the roundabout, take the **2nd** exit onto **Larkin Ct**	Travel 210m
8.	Turn right	Travel 7m	8.	Keep right	Travel 170m
JetCity Hangar 131 Essendon Fields			Air Ambulance Essendon Fields		