

Ambulance
Victoria



Air Ambulance Victoria

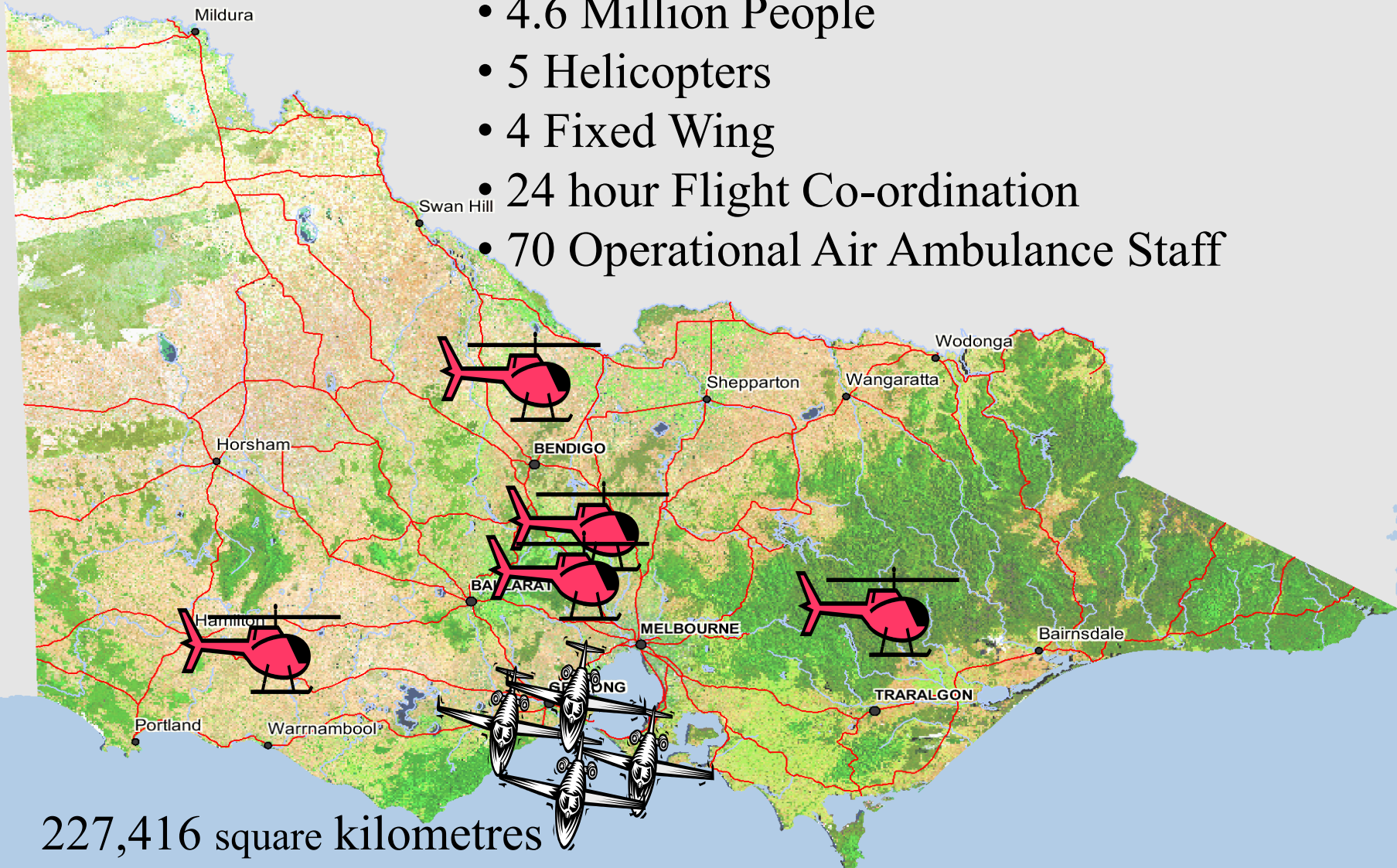
Red Cell Concentrate (RCC) Project

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Air Ambulance Victoria (AAV) RCC Project

- 4.6 Million People
- 5 Helicopters
- 4 Fixed Wing
- 24 hour Flight Co-ordination
- 70 Operational Air Ambulance Staff



227,416 square kilometres

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RCC administration is not new to Ambulance!
How did we get RCC to here originally?

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✧ PROJECT AIMS

- Store, Transport, Document & Administer RCC
 - ✓ complying to all Australian Red Cross Blood Service (ARCBS) regulations
 - ✓ by a MICA Flight Paramedic (MFP)
 - ✓ within an aviation environment and associated regulations
 - ✓ returning unused RCC to pathology without degradation and complying to temperature requirements

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✧ PROJECT ESTABLISHMENT

- ✓ AAV Project Officer: Mr Murray Barkmeyer, HEMS 3 Team Manager
- ✓ AV Medical Advisory Committee (MAC) approves RCC guideline in 2005
- ✓ ARCBS: Dr Chris Hogan, Medical Director
- ✓ Transfusion Laboratory: Royal Melbourne Hospital (RMH) – Mr Michael Haeusler, Chief Scientist
- ✓ AV legal and Insurance requirements

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✧ ISSUES

- ✓ Supply of RCC
- ✓ Regulatory & Audit compliance
- ✓ Minimising wastage
- ✓ Storage at AAV Bases – Blood Fridge
- ✓ Validated Transport Container (Fridge/Shipper)
- ✓ Temperature/Data logging the ‘Shipper’
- ✓ Funding
- ✓ AV Policy & Work Instructions
- ✓ Training of staff

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✧ SOLUTIONS

- ✓ ARCBS & RMH agree to supply
- ✓ Helimed 1 (HEMS 2, Traralgon) Auxiliary fund project
- ✓ Blood refrigerators purchased
- ✓ Portable 'Shippers' manufactured to meet strict temperature profiles
- ✓ Calibrations performed on all equipment by NATA endorsed companies

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✧ **SOLUTIONS (cont)**

- ✓ Training to staff by: Dr Chris Hogan
 - Dr Giles Kelsey (Consultant Haematologist)
 - Mr Michael Hauesler (Chief Scientist)
 - Ms Frances Hammer (Transfusion Nurse)

- ✓ Air Ambulance Work Instructions developed for:
 - Handling and movement of RCC
 - Data logging temperatures and reporting
 - Alarm Checks
 - Records and procedures
 - Patient record changes to reflect RCC administration.

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✧ **LAUNCH**

- ✓ 21st of April 2011
- ✓ Coincides with the Easter Road Toll Campaign
- ✓ Victorian Health Minister and AV CEO conduct launch

✧ **FIRST TRANSFUSION**

- ✓ Canadian Student as a result of MVA, 25th April 2011
(Easter Monday)
- ✓ Extensive media interest: Including Canada
- ✓ Pt's mother urges the Canadian Ambulance Service to adopt the same project.

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✧ ROLL OUT TO REGIONAL BASES

- ✓ Warrnambool (HEMS 4) - 4 units of RCC
(Ian Whan, Healthscope Pathology)
- ✓ Bendigo (HEMS 3) - 4 units of RCC
(Colin Anderson, Bendigo Pathology)
- ✓ Traralgon (HEMS 2) – 4 units of RCC
(Glenda Shrimpton, Gippsland Pathology)
- ✓ Total of 20 units of RCC, available to Victorians.
(Coroner's recommendation 2010)

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✧ CLINICAL GUIDELINE

- ✓ Ongoing Tachycardia
- ✓ Ongoing Hypotension
- ✓ Received 40mls/kg of crystalloid
- ✓ Then consult for RCC via ARV Consultant
- ✓ Pre-Transfusion Hb
- ✓ Administer RCC



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✧ **CLINICAL GOVERNANCE**

- ✓ Medical Advisory Committee (MAC) endorsement (2005)
- ✓ Air Ambulance Victoria Clinical Practice Guidelines (CPG)
- ✓ MFP consults with ARV coordinator (Doctor) prior to administration of RCC.
- ✓ Patient Care Record (PCR) audited by Team Manager
- ✓ Limited Occurrence Screening reportable to MAC
- ✓ AAV Clinical Meeting & AV Clinical Department



Patient 1

Patient 2

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✧ RETURN OF RCC TO PATHOLOGY

- ✓ 42 day shelf life: returned at 1 or 2 weeks depending on laboratory supply
- ✓ Maintenance of the 'Cold Chain' via data logger & blood fridge
- ✓ Validated blood refrigerator & shipper
- ✓ Out of temperature indicators on each unit of RCC (Lifeguard Indicators)
- ✓ Audit trail as per ANZSBT (Documentation)
- ✓ Review of procedures by pathology department, AV & auditors

Category	Apr – Jun 12	Jul - Sept 12	Oct - Dec 12	Jan – Mar 13	Apr – Jun 13
Total Number of requests for RCC	5	7	16	9	7
-Trauma	4	7	16	9	5
-Non trauma	1	0	0	0	2
Authorised ¹	5	6	15	9	7
-Not indicated but authorised	0	1	4	1	0
-Indicated	5	5	11	8	7
Not Authorised ¹	0	1	1	0	0
-Not indicated	0	1	1	0	0
-Indicated but not authorised	0	0	0	0	0
Mean RCC units per patient	1.8	2.0	1.6	2.2	2.71
Mean Age	55.6	47.3	38.6	33.1	35.4
Referred for Clinical Review	-	1	-	1	1
Clinical variation: Level 1 – Severe Level 2 – Moderate Level 3 – Mild / Minor Level 4 – Acceptable Documentation No variation Pending		1		1	1

¹ Each administration must be authorised by an ARV physician who will consider the indications as provided in the Clinical Practice Guideline and other relevant factors.

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✧ Case Example 1

- 26 year old female
- Epigastric pain (Rigid abdomen)
- HR 120, BP <60/systolic, RR 30, GCS 13
- Treatment at local hospital:
 - ✓ 4000mls crystalloid
 - ✓ Adrenaline infusion
- Diagnosis:
 - ❖ Ectopic pregnancy

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✧ IC Flight Paramedic Management

- ✓ Consultation (ARV Dr)
- ✓ Complies to guideline
- ✓ iStat
 - ✓ Hb?, Hct <0.1, pH 7.11, PCO2 50, BE 12 (venous)
- ✓ RCC x 2 units
 - ✓ Target BP >80/systolic
- ✓ Flight to LRH (73 minutes)
- ✓ Surgical Team ready
- ✓ Remaining RCC left at LRH
- ❖ Similar to Echuca case

VAGIS - electronic Patient Care Report
BRANCH COPY

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Case # 11460

Case Date 25 Jan 2013, Friday

Management & Reassessment

00:17 Onroute, consulted with Dr Wenzel regarding removal of blood for warming. Pt's sit-rep hypotensive despite 4000mls fluid. Consent given [Attendant: 50580]

00:17 other equipment >> four RCC removed from fridge and progressive warming commenced on route to case. second consult for administration agreed to on arrival post MFP assessment [Attendant: 50580]

00:17 position supine >> in back of ambulance, LMO and MICA¹ IA. Pt poorly perfused, 2 slow IVs institu, patent. [Attendant: 50580]

00:17 Adrenaline 6 mcg / min, IV, effective >> commenced earlier, plan to wind back with concurrent RCC administration. [Attendant: 50580]

00:18 oxygen therapy oxygen mask 8 l / min, effective [Attendant: 50580]

00:19 Urinary Catheter >> already institu, 30mls output total. [Attendant: 50580]

00:22 other equipment >> iStat take. Minimal blood sample gained, requiring two attempts. VBGs Hb unrecorded, Hct <0.1, pH 7.11, PCO2 50, BE 12 [Attendant: 50580]

00:25 Morphine 2.5 mg, effective [Attendant: 50580]

00:29 Move to hell. Pt extremely hypotensive, fluid Rx now 4500mls, no improvement. [Attendant: 50580]

00:30 Consult re RCC by Wenzel. Approved. See consultation details. [Attendant: 50580]

00:40 Red Cell Concentrate unit number 4447639 0 IV effective >> blood Rx rate titrated to SBP 75-80mmHg. Obvious perfusion improvement with GCS elevation, HR reduction [Attendant: 50580]

00:45 other equipment >> Ready Heat blanket successful [Attendant: 50580]

00:50 Morphine 2.5 mg, IV, effective [Attendant: 50580]

00:50 Adrenaline 3 mcg / min, IV >> ceased at 0100hrs with RCC managing target BP [Attendant: 50580]

01:05 LRH confirmed by ARV, with surgical team awaiting our arrival. [Attendant: 50580]

01:10 IV access 18 g >> Fast flowing. Third access., (L) foot, 1 attempt, successful [Attendant: 50580]

01:16 Morphine 2.5 mg, IV, effective [Attendant: 50580]

01:40 Red Cell Concentrate unit number 4483587 0 IV effective >> Rx rate titrated to target BP, permissive hypotension. Pt more alert, comfortable [Attendant: 50580]

02:00 Morphine 2.5 mg, IV, effective [Attendant: 50580]

02:20 unit number 4475010 & 448358 0 >> Left with LRH surgical team who intended to use it during procedure. Not used by MFP. Pt found to have approx 3ltr free blood in abdo with R ectopic pregnancy. Transfusions continuing. [Attendant: 50580]

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✧ **Case Example 2**

➤ 63 year old male

➤ Horse fell on patient

➤ Injuries

❖ Open book fractured pelvis

❖ *Head of femur through acetabulum*

❖ *Pelvic bone tear through to sacrum*

❖ *Torn urethra*

❖ *Sigmoid mesenteric bruising*

➤ HR 122, BP 70/39, RR 40, GCS 14, Cyanotic & Cold

➤ HR 120, BP 85/55, RR 28, GCS 14, Pale & Cold

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✧ **IC Flight Paramedic Management**

- ✓ Crystalloid 40mls/kg (4000mls)
 - ✓ Consult (ARV Dr)
 - ✓ 4 units of RCC administered
 - ✓ Sam Pelvic Splint
 - ✓ Vacuum Mattress
- ❖ **Trauma is the most common case where RCC is used**

Thankyou



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