# Central Australian Blended T-piece (CAB) for Remote Primary Neonatal Life Support

**Dr David Marcelline and Dr Daniel Adams**

**Central Australian Retrieval Service**






# CENTRAL AUSTRALIAN RETRIEVAL SERVICE

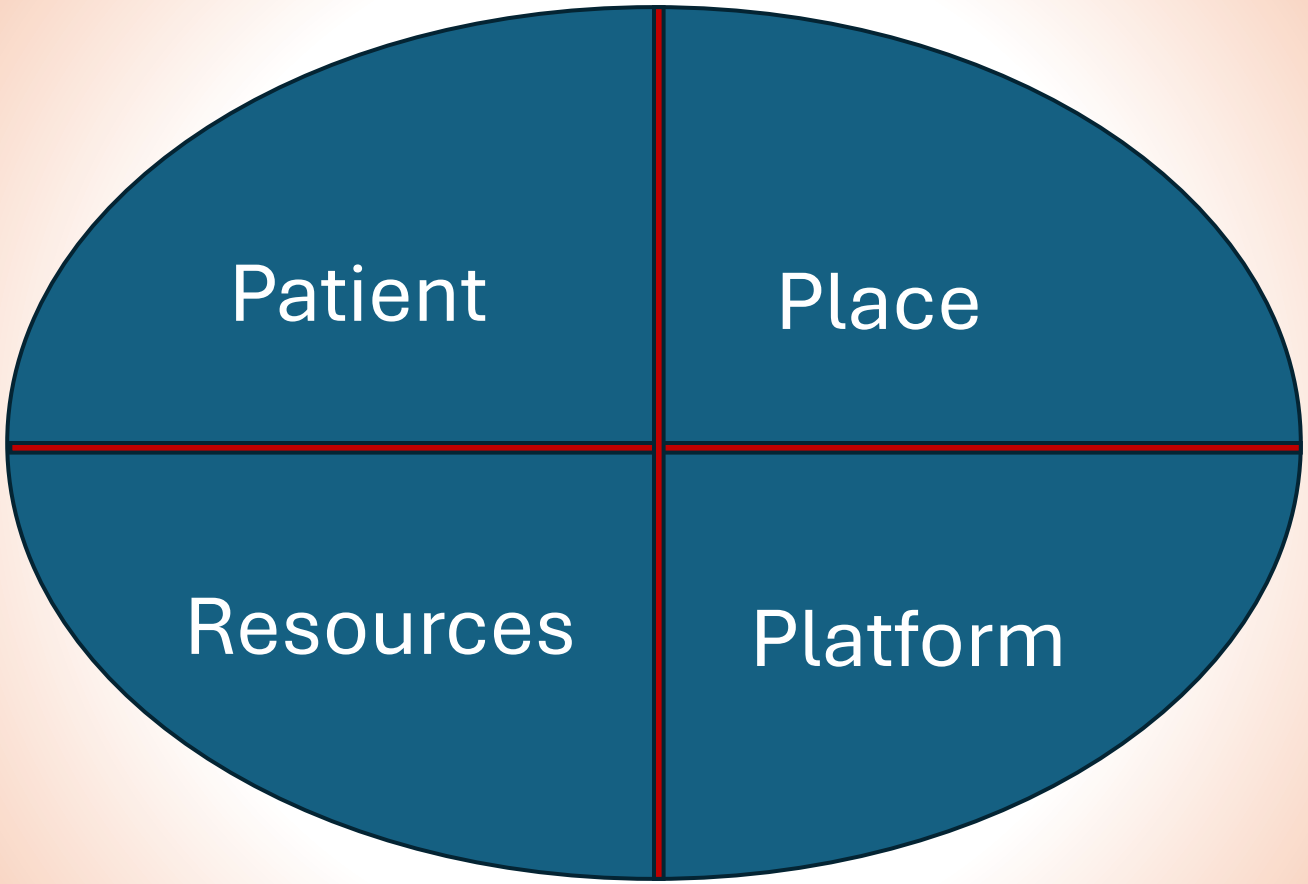
## ALICE SPRINGS HOSPITAL

Royal Flying Doctor Service
SOUTH AUSTRALIA & NORTHERN TERRITORY

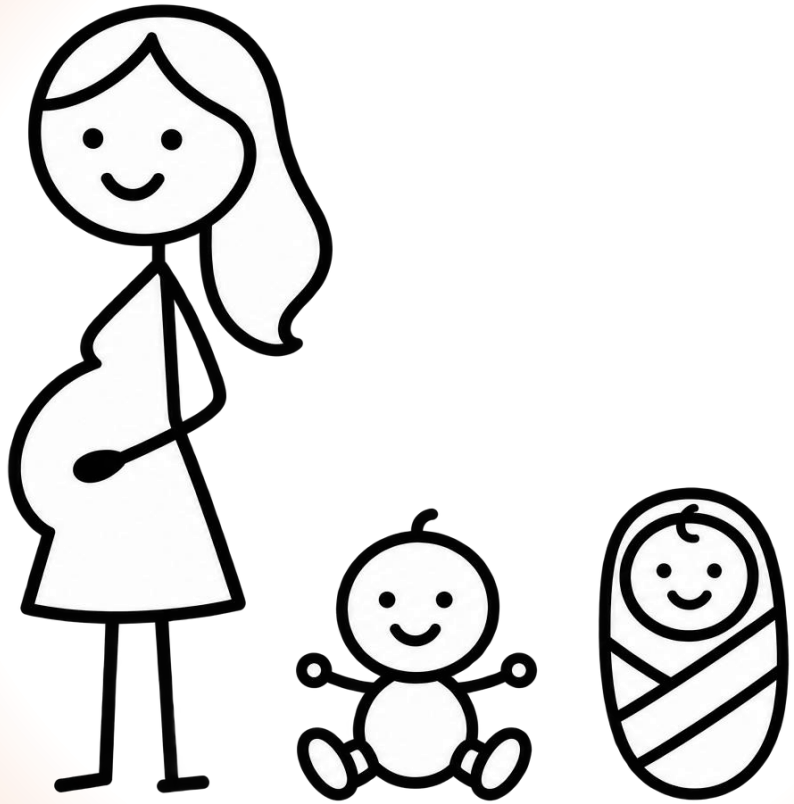


MedSTAR Kids
EMERGENCY AMBULANCE

# Providing best practice neonatal life support in the field



# Patient



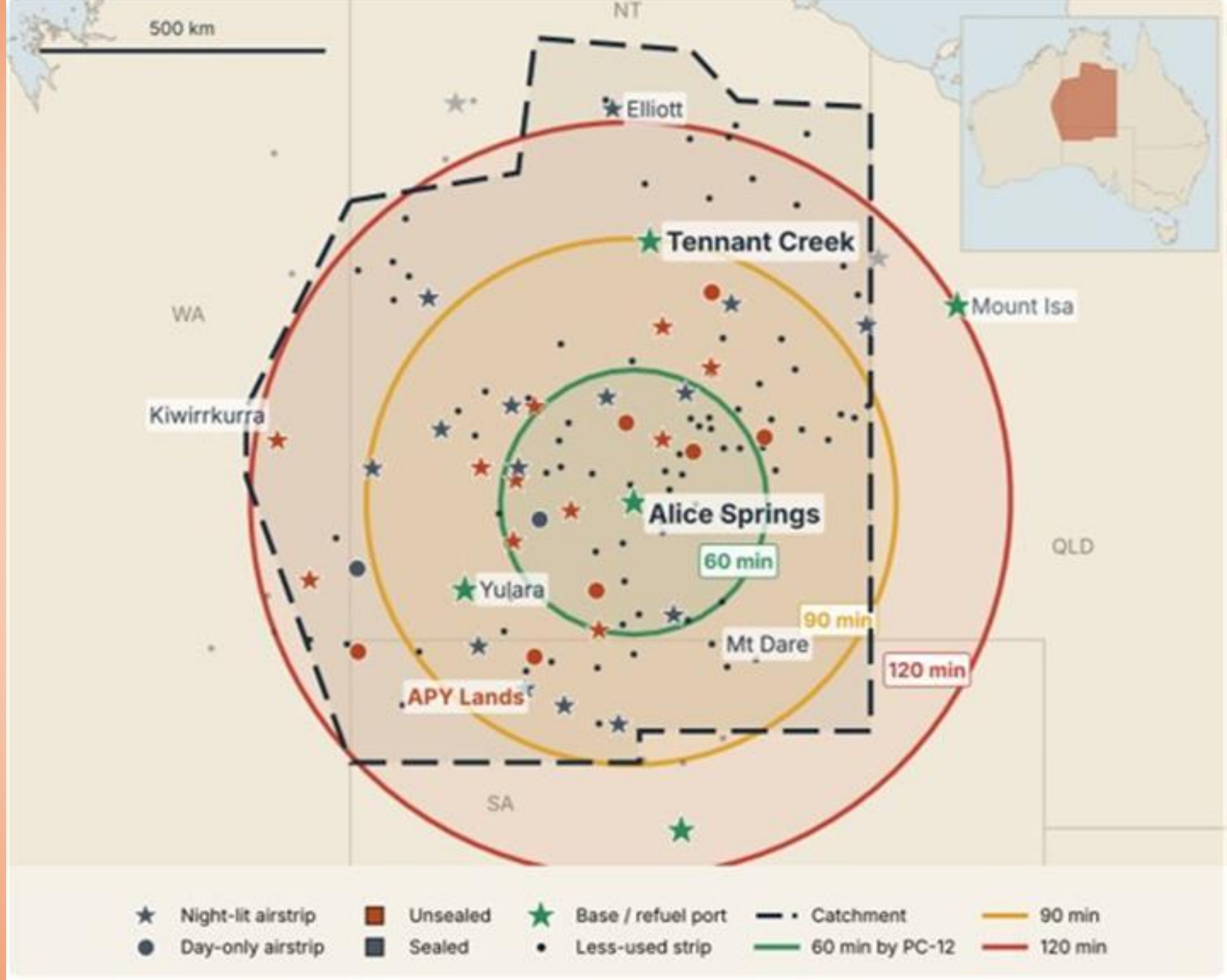
- **Place**




KALKA KANPI
WA BORDER
PIPALYATJARA


LARAPINTA DR
Hermannsburg
(Glen Helen)
Kings Canyon
6
Alice Springs


Tennant Creek
HOSPITAL


500 km
NT
Elliott
Tennant Creek
Mount Isa
WA
Kiwirrkurra
Alice Springs
QLD
60 min
Yulara
90 min
Mt Dare
120 min
APY Lands
SA
Night-lit airstrip
Day-only airstrip
Unsealed
Sealed
Base / refuel port
Less-used strip
Catchment
60 min by PC-12
90 min
120 min

# Resources

CRANA plus

ACEM — Australasian College for Emergency Medicine

RACGP — Royal Australian College of General Practitioners

ACRRM

ANZCA — Corpus Spatiumque Curare

The College of Intensive Care Medicine of Australia and New Zealand









Flight Nurses Australia

Australian College of Midwives

# Platform


PRIMARY HEALTH AMBULANCE


Royal Flying Doctor Service
VH-VWO
RFDS
Rio Tinto
Life Flight


ST JOHN
EMERGENCY
AMBULANCE
AMBULANCE
CE 23 LX




RFDS
VH-JDN
beach
Royal Flying Doctor Service

- **Guidelines**

Neonatal Life Support Consensus on Science With Treatment Recommendations
ILCOR 2025
ANZCOR Newborn Resuscitation guidelines – 2022, next update hopefully 2026

- **Ventilation**

- **Device**
  - “Where resources permit, we suggest the use of a T-piece resuscitator over the use of a  self-inflating bag in infants receiving positive-pressure ventilation at birth”

- **Method**
  - “For spontaneously breathing preterm infants with respiratory distress, we suggest initial use of CPAP over I+V “
  - (not clear for late preterm/term)

# Ventilation

- Ayres T-piece with Jackson Rees modification (flow inflating bag )
- Ayres T-piece with APL valve and bag
  - More approachable, still different to most equipment utilised by majority of staff
- Proprietary solutions
  - Familiar, easy to use, compromise
- Self inflating bag
  - For backup only



- **Guidelines**

  Neonatal Life Support Consensus on Science With Treatment Recommendations
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- **Oyxgenation**

- ILCOR – starting 02 concentration
  - <32 weeks begin with >= 30% oxygen
  - 32 – 35 – no recommendation
  - >35 begin with room air

- ANZCOR – starting 02 concentration
  - <35 begin with >= 30% oxygen
  - >35 weeks begin with room air

- Balance between hypoxic injury vs **oxidative** injury
  - Lungs (BPD)
  - Eyes (ROP)
  - Brain (IVH/HIE)
  - Gut (NEC)

  - All cause Mortality

- **Titratable Oxygen Blending**



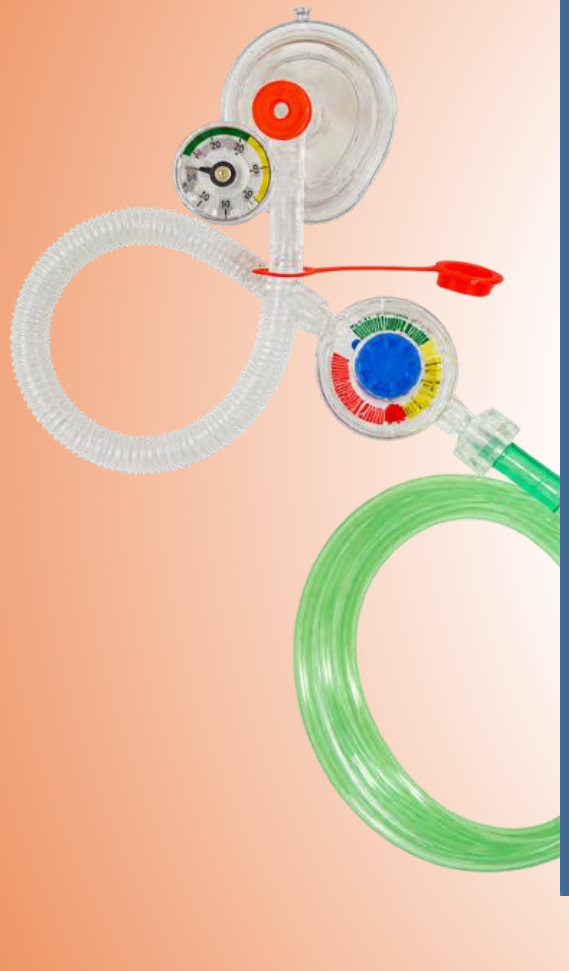








# Equipment









# CENTRAL AUSTRALIAN RETRIEVAL SERVICE

## ALICE SPRINGS HOSPITAL

## Risks

- This is a MacGyvered solution
- Turbine ramping in response to flow reduction
- Ventilator software safety – alarms at 65% reduction of flow and stops delivery at 50% flow reduction for ~>4 seconds
  - ?unintentional safety feature!

## Benefits

- Each of the individual devices are registered, regulated and work as intended
- We are using each individual component ‘as intended’
- Easily/rapidly adjustable
- No additional equipment to standard load
- Transitioning to more invasive ventilation strategies on same device
- Method is essentially device/s agnostic

# Thank you

