New Directions in Cardiac Care in the NT

DR MARCUS ILTON
Background - What do we have.
Cardiology Department RDH

- Royal Darwin Hospital 363 bed hospital in Darwin
- Co-located with the Darwin Private hospital, 104 bed capacity
- Cardiology Department RDH – Part of Cardiac Health Network NT (TEHS and CAHS)

**TEHS**
- Regional Hospitals
  - Katherine District Hospital - pop 10,000
  - Gove District Hospital - pop 4000
- Remote clinics - 51

**CAHS**
- Regional Hospitals
  - Alice Springs Hospital - pop 40,000
  - Tennant Creek Hospital - pop 4,000
- Remote Clinics - 25
Cardiology Health Network

- Advise, guide and provide direction to NT Health and the NT Government on a range of cardiac service issues and activities across the NT;

- Terms of Reference
  - To develop comprehensive policy in line with key findings from KPMG Cardiac service review and to include:
    - Development of Cabinet Submissions
    - Implementation of programs
    - Monitoring of programs
    - Future planning beyond 5 year cycle
  - Adequate admin and adequately funded / supported project officer.
  - Representatives from key stake holders across NT including NGO’s
  - Regional Operational Committee’s to report directly to CRG
Cardiac Health Network NT Governance Structure

- NTG Department of Health
  - Cardiac Health Network
    - 2 monthly meetings
      - Chair: Dr Ilton

- Cardiac Governance Group
  - Quarterly meeting
    - Chair: Dr Pain

- Cardiac Services Contract Committee
  - Monthly meeting
    - Chair: Emma Reid

- Top End Operational Committee
  - Monthly meeting
    - Chair: Dr Ilton

- Cardiology Department RDH
  - Monthly meeting
    - Chair: Dr Ilton

- ACS Committee
  - Monthly meeting
    - Chair: Dr Ilton

- Outreach Committee
  - Monthly meeting
    - Chair: Dr Kanga

- CA Operational Committee
  - Monthly meeting
    - Chair: Dr Brady

- Cardiac Rehab Committee
  - Monthly meeting
    - Chair: Dr Kanga

- Cardiac Services Contract Committee
  - Monthly meeting
    - Chair: Emma Reid

- Top End Operational Committee
  - Monthly meeting
    - Chair: Dr Ilton

- Cardiology Department RDH
  - Monthly meeting
    - Chair: Dr Ilton

- ACS Committee
  - Monthly meeting
    - Chair: Dr Ilton

- Outreach Committee
  - Monthly meeting
    - Chair: Dr Kanga

- CA Operational Committee
  - Monthly meeting
    - Chair: Dr Brady

- Cardiac Rehab Committee
  - Monthly meeting
    - Chair: Dr Kanga
Cardiac Health Network NT

Cardiothoracic Steering Committee

Heart Foundation NT Chair Simon Dixon
President Dr Ilton

Healthy Living NT

Cardiac Health Network 2 monthly Meetings Chair Dr Ilton

RHD Steering Committee 3 monthly

AMSANT

NT Cardiac Pty Ltd Dr Ilton Dr Kanga Rama Nair (GM)
Cardiology Department RDH 2017
(Public/Private model)

- **RDH Facilities**
  - CCU – 9 Acute Beds
  - Step Down Beds - Across all wards in old block – 3A preference
  - Exercise test on 1st floor outside CCU – 5 days a week report and letter same day
  - Inpatient Echocardiography and Holter – Contract with NT Cardiac
  - Nuclear Scan – Perfusion and Gated blood pool scans – Radiology Department
  - Cardiac Rehab – Contracted out to Healthy Living NT

- **NT Cardiac Facilities – Offices Ground floor DPH**
  - All Cardiology Outpatients- NT Cardiac offices ground floor Darwin Private Hospital
  - Stress Echo/ CTCA at NT Cardiac - Chest Pain Assessment Clinic- ground floor DPH
  - Angiography/Angioplasty/Pacemakers/ICD – Cath Lab 1st floor DPH- Contract NTG/ JV (Healthscope/NT Cardiac)
  - Cardiac Outreach – Echo/Cardiologist and Registrar support – 50 communities
Cardiology Department RDH Staff-2017 (Public/Private model)

- Nursing Staff
  - 24 RN – CCU
  - 1 Exercise Test Nurse
  - 1 Heart Failure nurse
  - 3 Nurse Outreach coordinators
  - 1 Nurse Unit Manager
  - 1 Research Nurse (0.5 FTE)

- 7 Adult Cardiologists (0.5 FTE RDH and 0.5 FTE NT Cardiac)
- 1 Paediatric Cardiologist
- 4 Registrars
- 2 Residents
- 1 Intern
- 1-2 meds students
Cardiology Department RDH Staff-2017 (Public/Private model)

- **Nursing Staff**
  - 24x RN – CCU
  - PSA
  - 1 Nurse Unit Manager
    - Also Coordinator chronic disease program
  - 1 Exercise Test Nurse
    - Co ordinates and attends stress tests 5 days/week
  - 1 Heart Failure nurse
    - Hayley – Co ordinates and provides education for CHF and PHT patients
  - 3 Nurse Outreach coordinators – Co ordinates Patient care across 3 regions
    - Katherine
    - East Arnhem
    - Darwin/Daly/West Arnhem
  - 1 Research Nurse (0.5 FTE)
    - Co ordinates Concordance
  - Aboriginal Health Worker
    - Works with Nurse CNC
- **Administration**
  - Chronic disease
  - Ward Clerk
Cardiology Department Medical Staff 2017

- 7 Adult Cardiologists
  - Duties
    - 1 week on call starts Friday Ward Rounds – Daily Ward round at 08:00 and PM Handover at 16:00.
    - ACS on call 24/7
    - 1 week as consult support – 10:00 until 14:00
    - Registrar/RMO/ Med student training/teaching
      - Ward Round
      - Wednesday Journal Club 08:00 to 09:00
    - Angiography/PCI/PPM/Echo/TOE/CTCA/Stress Echocardiogram
    - Outpatient and outreach
4 Registrars

- Cardiology Advanced Trainee x 2
  - 6 month rotation FMC
    - Daily Ward Round Mon/Friday
    - On call 3 nights/week/ General Med Ward cover 1 weekend day 2 months
    - Angiography/Echo/TOE/ Outpatients/Outreach
    - Co ordinates Junior Staff/Journal Club/M&M meeting

- Combined Cardiology/ Gen Med Trainee
  - 12 months alternative month Ged Med Cover
  - Ward Service – 1st on call 1 week in 2 month cycle/ 1 week ward consults in 2 moths cycle
  - Angiography/Echo/TOE/ Outpatients/Outreach

- Out Reach Cardiology Registrar - Dr Rosemary Weber
  - GP Trainee
  - Outpatients/ Outreach/ Exercise testing

1 x Medical Basic Trainee

- Daily ward rounds CCU/ Daily ED /Ward cover
- Outpatients/ Exercise testing/ Outreach
Cardiology Department RMO Staff 2017.

- 2 RMO
  - 10-12 week term
  - Rotate 2 weekly between CCU / Stress Testing
  - Daily Ward rounds
  - Attend RDH Theatre –DC Cardioversion/TOE observation
  - Attend Cath Lab- Angiogram/Angioplasty/PPM/ICD – observation
  - Attend Teleconference – Cardiothoracic –Cath Lab Thursday16:30 SA time
  - One out reach trip per term
Cardiology Department Intern / Medical Students 2017.

- 1 Intern
  - 10-12 week term
  - Daily Ward rounds
    - CCU/ED/Wards
  - Attend RDH Theatre –DC Cardioversion/TOE observation
  - Attend Cath Lab- Angiogram/Angioplasty/PPM/ICD – observation
  - Attend Teleconference – Cardiothoracic –Cath Lab Thursday16:30 SA time
  - One outreach trip per term

- 1-2 Medical Students
  - NT Medical school/FU/JCU
  - 4-6 week term
Health Services NT

- Hospital Networks
  - Tertiary Hospital
    - Local RDH
    - Interstate
  - Regional Hospitals
    - ASH / TCH
    - KDH/ GDH
- Remote Clinics
  - Government
  - AMS
Cardiac Services - NT

- Acute Care
  - Remote Clinics
  - Regional Hospitals
  - Tertiary Hospitals – RDH and Interstate

- Chronic Disease Management
  - Remote Clinics
  - Regional Hospitals

- Rehabilitation
  - Remote Clinics
  - Regional Hospitals
Cardiac Services - NT

- RDH (ASH) – Interstate Tertiary Hospitals
  - Acute Care
    - ACS - IHD
    - Heart Failure
    - Arrhythmias
    - Acute rheumatic fever / RHD/Endocarditis
    - Congenital Heart disease
  - ? Chronic disease Management
    - IHD
    - Heart Failure
    - Arrhythmias
    - RHD and other valvular heart disease
    - Congenital Heart disease
Remote Clinics / Regional Hospitals

- **Acute Care**
  - ACS - IHD
  - Heart Failure
  - Arrhythmias
  - Acute rheumatic fever / RHD/Endocarditis
  - Congenital Heart disease

- **Chronic disease Management**
  - IHD
  - Heart Failure
  - Arrhythmias
  - RHD and other valvular heart disease
  - Congenital Heart disease
Drivers for getting it right

There has always been strong social and economic arguments for addressing:

▪ Avoidable ‘early’ mortality
▪ Reduced morbidity
▪ Avoidable admissions in NT Hospitals
▪ Avoidable intra state and interstate transfers
▪ Avoidable cost such as unnecessary emergency evacuations, transfers interstate, and high cost interventions (e.g. surgery)
Investing in critical points across the disease pathway can

- Reduce the progression and/or pace of progression, of cardiovascular disease in patients;

- Reduce health care costs; by enhancing primary healthcare and improving local access to early diagnosis and interventions

- Improve the productivity of Territory residents, particularly those who are long term residents, who are profoundly affected by chronic illness and early death
Where have we come from? – Cardiac History

- 1992-1997 Visiting cardiologist RAH
  - Dr Sangster/ Dr Leo Mayer / Dr Richard Yeang
  - 4 clinics a year Darwin and Alice Springs

- Jan 1996 - Beginning of an Echo service RDH
  - General ultrasound 2 afternoon sessions / week
  - Started by Paediatrics – Dr Charles Kilburn

- 1996 Dr Jonathon Carapidis Paper on RHD in the indigenous population in the NT

- Aug 1997 – Commencement of Resident Cardiologist RDH
  - Regular Cardiology Outpatients RDH and DPH
  - Regular Adult Echo service 2 afternoons a week shared with paediatrics

- Sep 1997 First Pacemaker inplant RDH
Dates

- **Nov 1997** Establishment of the Rheumatic Fever Registry
  - Established by CRC, THS, and MSHR

- **March 1998**
  - NT Cardiac Services (NTCS) Established as a consequence of:
    - Decision by RDH CEO Michael Martin/ DoH Secretary Peter Plummer/ DMS RDH Len Notaris/ NT Imaging to outsource RDH inpatient/outpatient echos and TOE.
    - This was the only way we could establish an adequate echo service at RDH
  - Initial Echocardiogram contract NT DoH and Joint venture NTCS and NT Imaging
  - RDH - Daily echocardiographic and TOE service
  - Commencement of Cardiology Outreach service Top End
    - 6 weekly clinics to Katherine Hospital and Gove District Hospital
March 2001 Coronary Angiography established DPH
- RDH contracted Joint venture between NTCS and DPH (Healthscope Hospital)
- Initially 300 public patients – now 850 public patients /year
- 37% increase in revascularisation in first year. Predominantly in the indigenous population
- First Intra aortic balloon pump insertion RDH 2001

2001
- Healthy Living NT established – to provide Cardiac Rehabilitation to RDH and Darwin

Feb 2002 2nd Resident Cardiologist in Darwin
- Dr Tristam Smyth
- Expanded Outreach Service – now including regular visits to smaller communities Top end
Dates

- April 2004 – Opening of New Coronary Care Unit RDH
  - 6 beds initially – insufficient funds for full nursing funds.
  - All 9 beds opened 2006

- 2004 – Outreach service in Central Australia and Barkley region established
  - Dr Warren Walsh

- Jan 2005 3rd Resident Cardiologist
  - Dr Nadarajah Kangaharan
  - Expanded Cardiology and echocardiography Outreach services to Alice Springs Hospital Congress and 5 CA communities

- 2007 Further Expansion Outreach services Top End

- Jan 2007 – Regular echocardiogram service established Alice Springs Hospital (in association with new DoH contract for Angiography and echocardiography services)
  - Stress Echocardiogram ASH 2010
  - TOE ASH 2013
Dates of Reports and Reviews

- 2003 – CASPA – Audit of ACS in CA and Top End
  - Data 2001 to 2002
  - Alex Brown Et al

- 2006 – Cardiac Services in the Northern Territory 2006-2015
  - Interviews Sep 2004 / Tabled by Gov Feb 2006
  - Dr Michael Frommer and Dr Phillip Harris

- 2010 - KPMG Report

- 2011 -NT Cardiac Implementation Plan

- 2017 – Further KPMG report pending
### Cardiology Service Development 2010/17

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
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<tbody>
<tr>
<td>Establishment of CRG and Operational Committees</td>
<td>May/June 2010</td>
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<tr>
<td>Stress Echocardiography TCH, GDH, KDH</td>
<td>April / July 2013</td>
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<tr>
<td>Expanded Outreach</td>
<td>April 2013 ongoing</td>
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<tr>
<td>5 Regional Nurse Coordinators</td>
<td>September 2013</td>
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<tr>
<td>Chest Pain Assessment Unit</td>
<td>April 2013</td>
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<tr>
<td>Cardiac CT Darwin/ASH</td>
<td>May 2013</td>
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<tr>
<td>Expanded Concordance Data Base</td>
<td>Oct 2013 not complete</td>
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<tr>
<td>Phase</td>
<td>ACS Network</td>
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<td>-------------------------------</td>
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<tr>
<td>Phase 1</td>
<td>Oct 2013</td>
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<tr>
<td>Phase 2</td>
<td>Nov 2013</td>
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<tr>
<td>Phase 3</td>
<td>Feb 2016 not complete</td>
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<tr>
<td>CVIS</td>
<td>2014- not complete</td>
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<tr>
<td>Low Risk Angioplasty Service</td>
<td>April 2014</td>
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<tr>
<td>Holter ECG for Remote Clinics</td>
<td>August 2016</td>
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<tr>
<td>Cardiology Health Network NT</td>
<td>September 2016</td>
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<tr>
<td>Cardiac MRI ASH</td>
<td>October 2016</td>
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<tr>
<td>Expanded Cardiologist Work Force</td>
<td>7 Adult/1 Paediatric Cardiologist Feb 2017</td>
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Future Cardiology Service Development - 2017

- Cardiac MRI Darwin - October 2017
- Electrophysiology Service Darwin - August 2017
- Expanded Angioplasty service - August 2017
  - Rescue PCI
  - Primary PCI
- Complete Data Sharing DoH/NT Cardiac/ AMS - August 2017
- Data Service - 2017
  - Research Nurse
  - Data entry for Q/A KPI review and annual reports
- Expanded Outreach - August 2017
  - Nurse Coordinator
- Cardiothoracic Surgery - May 2018

Northern Territory Government
Future Service Planning

- MRI service
  - Available ASH 2016
  - Negotiations TEHS/ Regional Imaging - 2017
  - Indications
    - Cardiomyopathy
      - Sarcoidosis/ amyloidosis
    - Arrhythmia
    - Congenital heart disease

- Electrophysiology Services
  - Dr W. Choo – to commence 6 months Cath Lab 2017
  - Arrhythmia management
    - SVT – focal / re entrant
    - Atrial Flutter
    - VT
Future Service Planning cont

- Expanded PCI
  - Rescue PCI post thrombolysis
    - Protocols being developed
  - Primary PCI
    - Gradual Phase in with 2nd Interventional Cardiologist (working hours to start with)
  - Balloon Valvuloplasty
    - Once Cardio thoracic established

- Cardio thoracic service
  - Funding available
  - TEHS – Steering Committee
  - RDH service to start 2018
Future Service Planning cont

- Cardiac Rehabilitation/Secondary Prevention
  - Overseen by Cardiac Rehab Committee.
    - Patient centered
    - 3 phase program
    - Multi disciplinary
    - Innovative technologies and programs
    - Monitor outcomes

- Quality monitoring and service maintenance and improvement
  - Regular annual review across all cardiac service in NT

- Develop local and indigenous workforce across

- Research
  - Rheumatic Fever prevention
    - Vaccine – eradicate heart
  - Risk factors – eg low HDL
  - Systems of care
Aspirations for the Future.

- Close the survival gap for the indigenous population of the NT
  - Better control of relevant risk factors through primary health care
  - Eradicate Acute Rheumatic Fever
  - Enhance Health literacy

- Provide easier access to a fully integrated, evidence based, patient centered cardiac service across the whole NT

- Develop training initiatives in all elements of cardiac care for the local NT population.