TASMANIAN HEALTH SERVICE

Tasmanian Government

Tasmanian Clinical Networks
Improving patient care through cooperation and collaboration.

phn TASMANIA
An Australian Government Initiative

primary health TASMANIA

Top 4 Quality Improvement Initiatives in Cardiology

The Cardiac Community Network Education Interface Program - 3 November 2020

Acknowledgment of traditional owners

I would like to acknowledge the Tasmanian Aboriginal people as the traditional owners and ongoing custodians of the land from which we are joining this evening webinar I pay respect to Elders past and present. I would also like to acknowledge Aboriginal people who are with us this evening.

PHT is supporting this webinar series

- Webinar platform and support
- Invites and evaluations
- RACGP event accreditation
- Member of the Cardiac Community Network

Hello my name is Russell Bowden – Manager Primary Health Workforce Support

Your THS GP Liaison Team

Your ‘go to’ people for all things THS related

Region	GP Liaison Officer/s	Email
Southern Tasmania	Dr Annette Barratt Dr Elizabeth (Liz) Webber	gplo.south@ths.tas.gov.au
Northern Tasmania	Dr Isobel (Izzy) Morse	izzy.morse@ths.tas.gov.au
North West Tasmania	Dr Keith McArthur	keith.mcarthur@ths.tas.gov.au

Overview of this evening

- Dr Paul MacIntyre

  Introducing the Tasmanian Cardiac Network
- Dr Andrew Black

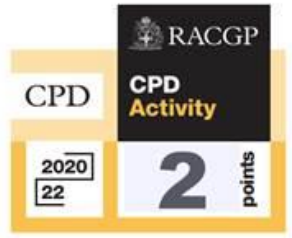
  State-wide ST Elevation Myocardial Infarction (STEMI) Network
- Dr Jonathan Lipton

  Electrophysiology Service (EPS)
- Dr Heath Adams

  Transcatheter Aortic Valve Implantation (TAVI) / Patent Foramen Ovale (PFO’s)

Tonights learning objectives

- Explain the purpose and structure of the Tasmanian Cardiac Network and its role in improving the interface between primary health and secondary acute care facilities
- Describe the optimal STEMI reperfusion treatment options
- Explain the impact of arrhythmia on patient quality of life and health care resources
- Describe the current services, resources, and procedures available to Tasmanians with structural heart disease



Some housekeeping

- Tonight's webinar is being recorded
- Please use the Zoom Q&A chat feature to ask questions
- Answers to any questions we can’t answer tonight will be circulated with the recording in the coming days
- At the end of the webinar you will be asked to complete an evaluation survey, this is important to help us improve our events program
- Please don’t forget to register for the next 2 webinars in this series (ECG Workshop and ECHO Workshop) at:

  https://www.primaryhealthtas.com.au/for-health-professionals/events/

Dr Paul MacIntyre

MBChB, MSc, MD, FRACP | Acute Medical Services Stream Director | Staff Cardiologist| Royal Hobart Hospital | Chair of the Tasmanian Cardiac Network

The Tasmanian Cardiac Network

TASMANIAN HEALTH SERVICE

Tasmanian Cardiac Network

Dr Paul D MacIntyre

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Historical Perspective

- Clinical Advisory Groups 2015
- Heartsafe project 2017-18
  - Implementing Acute Coronary Syndrome Clinical Standards
  - Addressing equity of access to treatment for ACS
- Tasmanian Cardiac Network 2019
  - Based on Scotland's MCN model

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Tasmanian Cardiac Network Mission

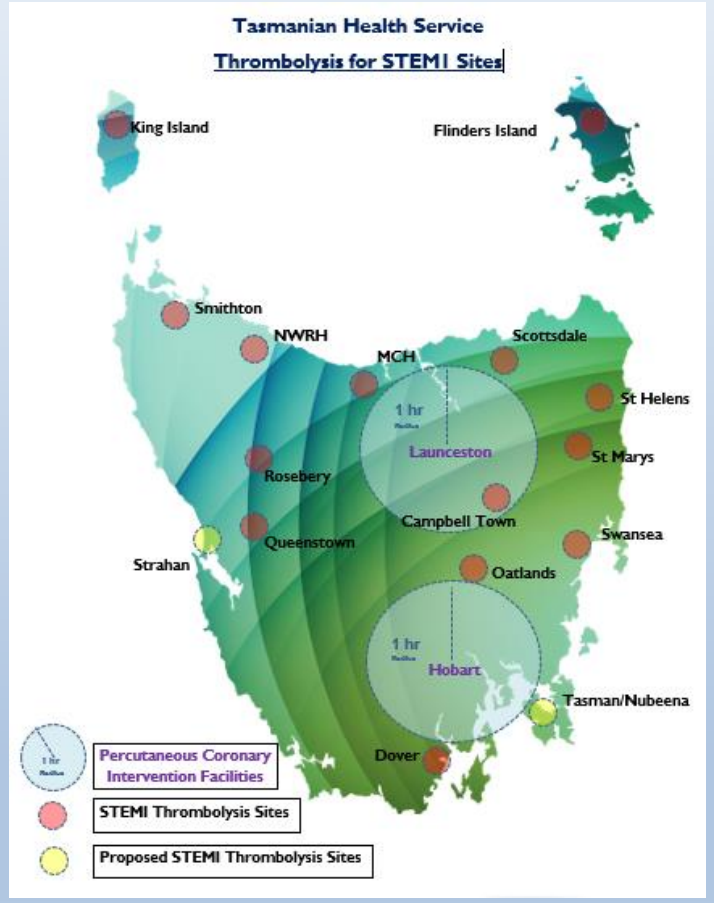
"The Tasmanian Cardiac Network will strive to improve, optimise and sustain Cardiac Services, enabling all Tasmanians to have access to safe, high quality care regardless of geographic location."

Role of Tasmanian Cardiac network

- Identify gaps in service delivery
- Address equity of access to cardiac care
- Align with Tasmanian Role Delineation Framework
  - Deliver local secondary care services were possible
  - Centralise level 5 and 6 services as necessary
- Develop state wide referral pathways and protocols
  - ACS pathway
  - Endocarditis pathway
- Quality improvement
  - Australian Commission on Safety and Quality in Health Care Standards
- Stakeholders engagement
  - Collaboration and education
  - Rural and acute settings.

Tasmanian Cardiac Network Priorities

- Victorian Cardiac Outcomes Registry
- ACSQHC for ACS
  - Optimal Repefusion
  - Thrombolysis capability
    - Rural hospitals
    - Paramedic led
  - Primary PCI at intervention centres
    - First medical contact to reperfusion
    - Prenotification by AT
- Endocarditis pathway
- State-wide Improvement Strategy for Heart Failure
- Cardiac Rehabilitation and secondary prevention
- Health promotion strategies - reduce cardiovascular risk factors and increase absolute CVD risk assessment.
- Tasmanian Heart Foundation State-wide Cardiac Service Plan 2018 – 2022



Clinical Care Standards

VCOR
VICTORIAN CARDIAC OUTCOMES REGISTRY

TASMANIAN HEALTH SERVICE

Tasmanian Cardiac Network Further QI Initiatives

State-wide AF Management

- *Working group formed*
- *Representatives - ED, CNC, Heart Foundation, GP liaison*

Reducing Heart Failure readmission rates

- *Community based medication titration pathway - to progress Community based Medication Titration, UTAS patient DVD and patient pamphlet*

Cardiac Community Network

- *Improve interface between primary health and secondary acute care facilities*
- *Enable primary health services to support and manage cardiac clients in the community setting, seeking timely secondary opinions through quality referral process*
- *Education Programme*

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Tasmanian Cardiac Community Network
a collaboration

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Heart Foundation

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National Clinical Networks

Clinical Excellence Queensland Health

https://clinicalexcellence.qld.gov.au/priority-areas/clinician-engagement/statewide-clinical-networks/cardiac

NSW Government Agency for Clinical Innovation

https://www.aci.health.nsw.gov.au/networks/cardiac

Safer Care Victoria Better Safer Care

https://bettersafercare.vic.gov.au/about-us/about-scv/our-clinical-networks/cardiac-clinical-network

Dr Andrew Black

BMedSci (Hons), MBBS (Hons), FRACP | Staff Cardiologist | Clinical Lead State-wide STEMI Management, Rapid Access Chest Pain Clinic (RACPAC) and Principal Investigator VCOR | Royal Hobart Hospital

Tasmanian STEMI Network

TASMANIAN STEMI NETWORK

IMPROVING EQUITY OF ACCESS TO OPTIMAL CARE

TASMANIAN HEALTH SERVICE

Tasmanian Clinical Network
Improving patient care through cooperation and collaboration

AMBULANCE TASMANIA

MENZIES Institute for Medical Research

Learning Objectives:

- Knowledge of optimal STEMI reperfusion treatment options
- Understanding of the utilisation of Thrombolysis for STEMI Clinical Pathway
- Increased awareness of RACPAC services at the RHH
- Identify appropriate RACPAC referral criteria

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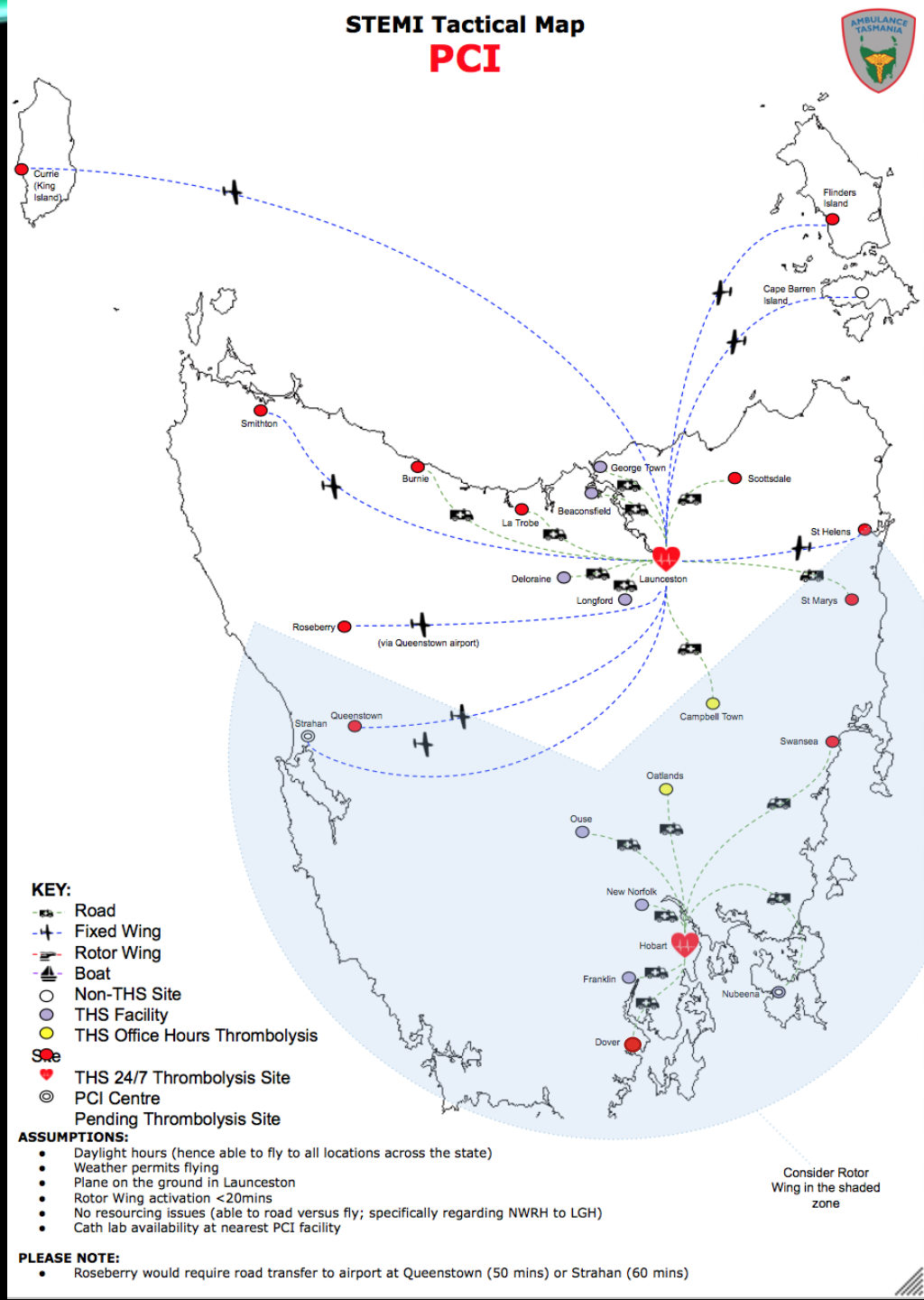
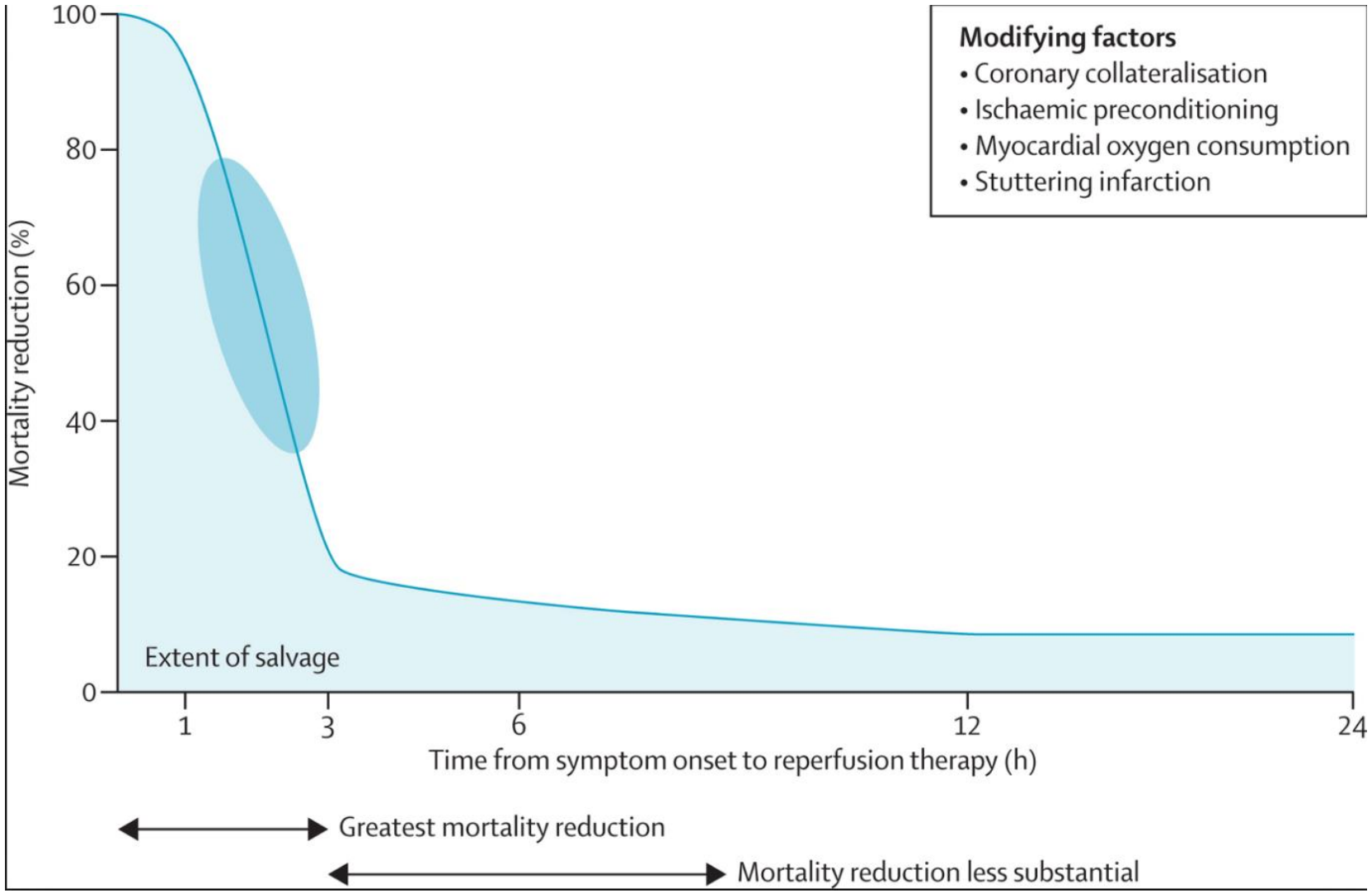
AMBULANCE TASMANIA

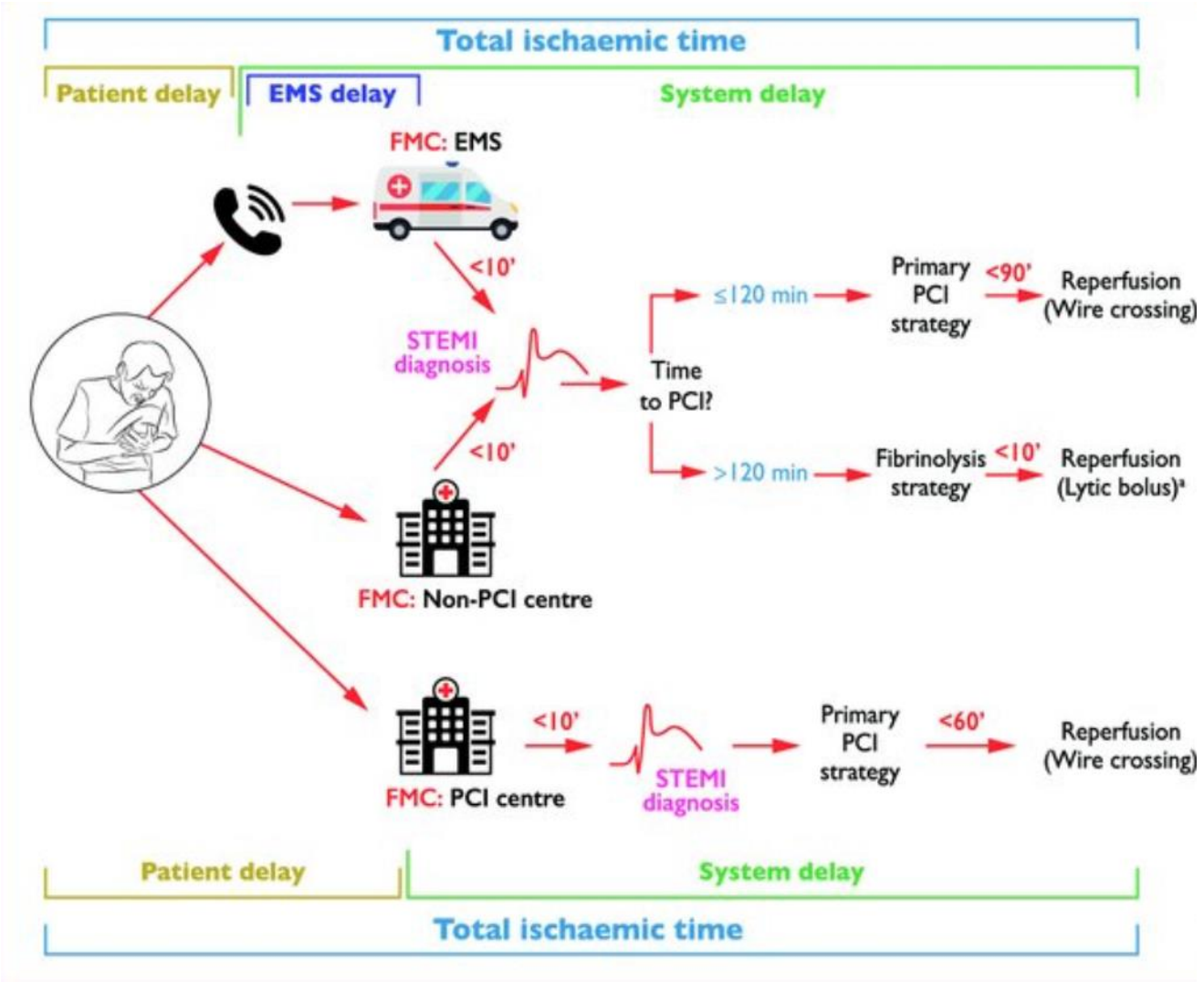
MENZIES Institute for Medical Research

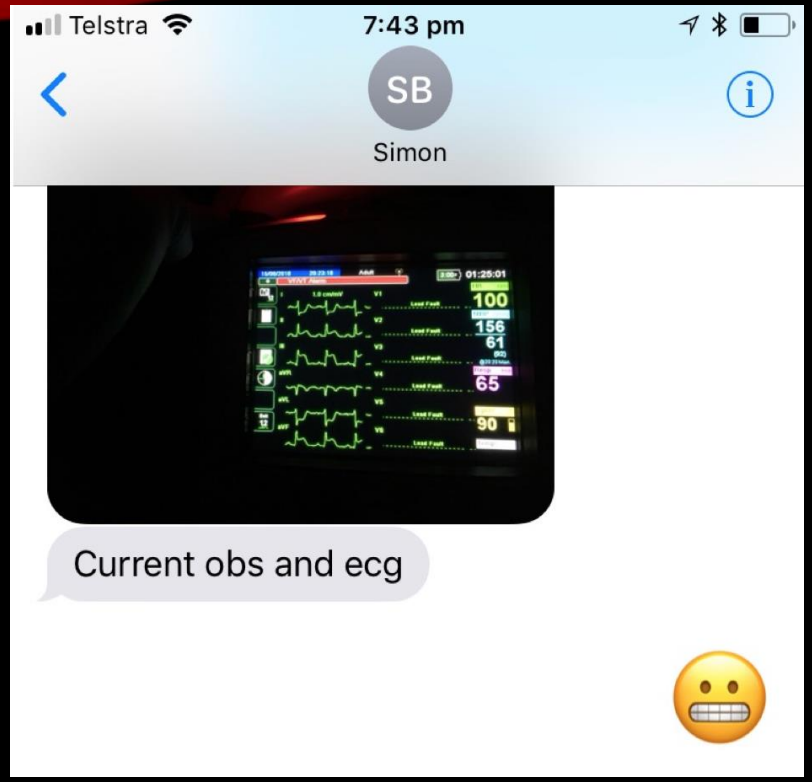
STRATEGY

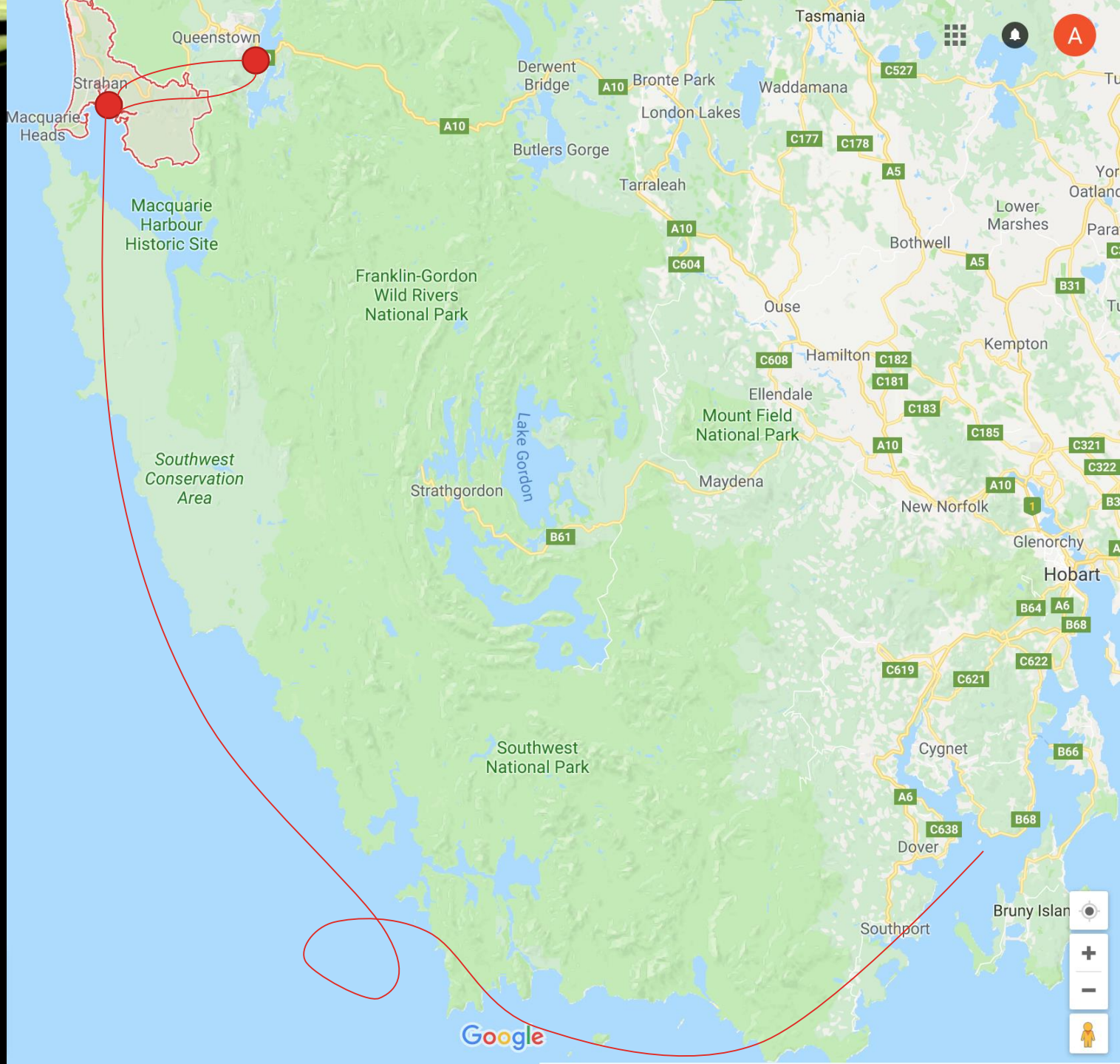
- ***Improve access to timely reperfusion***
  - Better use of lysis
  - Streamline retrieval
  - Optimize DTRT
  - Data collection




Modifying factors
• Coronary collateralisation
• Ischaemic preconditioning
• Myocardial oxygen consumption
• Stuttering infarction
Mortality reduction (%)
100
80
60
40
20
0
Extent of salvage
1
3
6
12
24
Time from symptom onset to reperfusion therapy (h)
Greatest mortality reduction
Mortality reduction less substantial


Total ischaemic time
Patient delay
EMS delay
System delay
FMC: EMS
<10'
STEMI diagnosis
≤120 min
Primary PCI strategy
<90'
Reperfusion (Wire crossing)
Time to PCI?
>120 min
Fibrinolysis strategy
<10'
Reperfusion (Lytic bolus)a
<10'
FMC: Non-PCI centre
FMC: PCI centre
<10'
STEMI diagnosis
Primary PCI strategy
<60'
Reperfusion (Wire crossing)
Patient delay
System delay
Total ischaemic time


Telstra
7:43 pm
SB
Simon
Current obs and ecg


Tasmania
Queenstown
Strahan
Macquarie Heads
Derwent Bridge
Bronte Park
Waddamana
London Lakes
Butlers Gorge
Tarraleah
Macquarie Harbour Historic Site
Franklin-Gordon Wild Rivers National Park
Bothwell
Lower Marshes
Ouse
Kempton
Hamilton
Ellendale
Mount Field National Park
Lake Gordon
Southwest Conservation Area
Strathgordon
Maydena
New Norfolk
Glenorchy
Hobart
Southwest National Park
Cygnet
Dover
Southport
Bruny Islan
A10
C527
C177
C178
A5
C604
B31
C608
C182
C181
C183
C185
C321
C322
B61
B64
A6
B68
C619
C621
C622
B66
C638
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BETTER USE OF LYSIS

TASMANIAN HEALTH SERVICE | Tasmanian Government

THROMBOLYSIS FOR STEMI CLINICAL PATHWAY

STATEWIDE

FACILITY: _____

PT ID									

SURNAME ..... D.O.B. .....

OTHER NAMES .....

ADDRESS .....

Attach Patient Sticker Label

FT043332

☑ relevant boxes throughout

Presentation time / date: 00:00 DD / MM / YYYY Symptom onset: 00:00 DD / MM / YYYY

Use this pathway for thrombolysing patients with acute ST – elevation myocardial infarction (STEMI). Primary Percutaneous Coronary Intervention (PCI) is preferred if achievable within 90 minutes of first medical contact (FMC) – that is: transport time less than 60 minutes (or transport time less than 90 minutes for patients presenting > 2 hours after symptom onset)

Clinical Pathways do not replace clinical judgement, variances must be clearly documented in the patient notes.

1. CONFIRM INDICATIONS FOR THROMBOLYTIC REPERFUSION

- ☐ Cannot be treated with PCI within 90 minutes of FMC *and*
- ☐ Typical chest pain ≥ 20 minutes duration *and*
- ☐ Symptom onset within 12 hours and
- ☐ 12 lead ECG reveals persistent ST segment elevation in two or more contiguous leads:
  - ≥ 2.5 mm ST elevation in leads $V_{2\text{-}3}$ in men under 40 years *or*
  - ≥ 2 mm ST elevation in leads $V_{2\text{-}3}$ in men over 40 years *or*
  - ≥ 1.5 mm ST elevation in $V_{2\text{-}3}$ in women *or*
  - ≥ 1.0 mm in other leads *or*
  - Development of new left bundle branch block (LBBB)
  - Consider posterior myocardial infarction

If all criteria are not met, contact Cardiology Services or Ambulance Tasmania Retrieval Consultant for advice.

2. CONSIDER CONTRA-INDICATIONS (answer every question)

Absolute		
Active bleeding or bleeding diathesis	☐ Yes	☐ No
Severe, uncontrolled hypertension (BP > 180/110 mmHg)	☐ Yes	☐ No
Recent trauma / surgery	☐ Yes	☐ No
Gastrointestinal or genitourinary bleeding within previous 2-4 weeks	☐ Yes	☐ No
Stroke / TIA within 12 months	☐ Yes	☐ No
Prior intracranial haemorrhage at any time	☐ Yes	☐ No
Suspected aortic dissection	☐ Yes	☐ No
Known malignant intracranial neoplasm	☐ Yes	☐ No
Relative		
Current anticoagulants (including warfarin and novel anticoagulant agents)	☐ Yes	☐ No
Traumatic or prolonged CPR (> 10 minutes)	☐ Yes	☐ No
History of chronic, severe, poorly controlled hypertension	☐ Yes	☐ No
Advanced liver disease	☐ Yes	☐ No
Advanced metastatic cancer	☐ Yes	☐ No
Non-compressible vascular punctures	☐ Yes	☐ No
Pregnancy or within one week postpartum	☐ Yes	☐ No

If 'yes' to any of the above, contact Cardiology Services or Ambulance Tasmania Retrieval Consultant for advice.

NO CONTRA-INDICATIONS

↓

Immediately proceed to thrombolysis (target < 30 minutes of FMC)

THROMBOLYSIS FOR STEMI CLINICAL PATHWAY

TAS - TH5-NW 208123 4/18 RAP 28378.APR.18 9103

TASMANIAN HEALTH SERVICE | Tasmanian Government

THROMBOLYSIS FOR STEMI CLINICAL PATHWAY

STATEWIDE

FACILITY: _____

PT ID

SURNAME ..... D.O.B. .....

OTHER NAMES .....

ADDRESS .....

Attach Patient Sticker Label

FT043332

☑ relevant boxes throughout

3. PREPARATION FOR THROMBOLYSIS

- ☐ Non-PCI centres: Contact Ambulance Tasmania (1300 558 329) to arrange immediate transfer to PCI facility
- ☐ Transmit STEMI ECG & transfer form to stemi@ambulance.tas.gov.au
- ☐ Obtain written or verbal consent (sign below)
- ☐ It is preferable for 2 IV cannulas to be inserted one in each arm (avoiding the right radial area)
- ☐ Continuous cardiac monitoring, with defibrillator immediately available
- ☐ Take bloods for venous blood gases (if available), troponin, FBC, U&Es, COAGs

4. ADMINISTRATION OF THROMBOLYSIS (document medication on the STEMI Thrombolysis Medication Chart)

- ☐ Aspirin 300 mg PO (unless already given)
- ☐ Clopidogrel 300 mg PO
- ☐ Anticoagulation – Enoxaparin OR Heparin (for severe renal failure, if eGFR < 30 mL/min)

Age less than 75 years

- Enoxaparin loading dose 30 mg IV bolus. (To give 30 mg dose IV, use the 60 mg prefilled syringe. **Expel the air bubble** and the excess Enoxaparin before injecting)
- Enoxaparin 1 mg/kg (up to 100 mg) subcutaneously commenced 15 minutes after IV load and continued every 12hours

Age 75 years or more

- No Enoxaparin IV Bolus, Enoxaparin 0.75 mg/kg (up to 75 mg) subcutaneously every 12 hours

OR Patients with known RENAL FAILURE (eGFR <30 mL/min/1.73 m²)

- Unfractionated heparin - give unfractionated heparin 5 000 units followed by continuous infusion of 100 units per mL running 10 mL per hour. 5 000 units heparin in 50 mL 0.9% sodium chloride can be draw up in a 50 mL syringe for Ambulance Tasmania transport. If infusion running for more than 4 hours without transfer to acute medicalfacility, contact Cardiology Services for advice

- ☐ Tenecteplase (see dose guide on page 3)
  - Patient weight: _____ kg
  - If patient age **greater than 75 years**, tenecteplase should be administered at **half** the weight based dose.
- ☐ Atorvastatin 80 mg PO

5. POST THROMBOLYSIS

- ☐ Transmit medication chart and ECG's to stemi@ambulance.tas.gov.au
- ☐ 12 lead ECGs reviewed at 30, 60 and 90 minutes
- ☐ Ensure complete documentation of medical history
- ☐ Continuous Cardiac Monitoring

Treating Medical Officer (print name):

Signature: | Time / date: 00:00 DD / MM / YYYY

Consent

The risks (Reperfusion arrhythmias, Haemorrhage, Cerebral and GIT 1.5% and Death) and benefits of thrombolysis medication have been explained to me / legal guardian and I consent to have this medication administered.

Patient name and signature / legal guardian (print):

Date: DD / MM / YYYY

THROMBOLYSIS FOR STEMI CLINICAL PATHWAY

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THROMBOLYSIS FOR STEMI CLINICAL PATHWAY

STATEWIDE

FACILITY: _____

PT ID									

SURNAME..... D.O.B.....

OTHER NAMES.....

ADDRESS.....

Attach Patient Sticker Label

ST ELEVATION MYOCARDIAL INFARCTION (STEMI) THROMBOLYSIS MEDICATION CHART

1st prescriber to print Patient Name and Check Label Correct | Ward/Unit:

ALLERGIES & ADVERSE DRUG REACTIONS (ADR) — Nil Known / Unknown (tick appropriate box or complete details below)

Drug (Other)	Reaction/Type/Date	Initials

Prescriber to sign and date each order

Patient Weight: kg

Print name: | Signature: | Date: DD / MM / YYYY

Once only medications *(Give all medications as indicated unless contraindicated)*

Oral adjuncts to thrombolysis

	Date prescribed	Medicine	Route	Dose	Date/time of dose	Prescriber Signature	Given by	Time given
1.	DD / MM / YYYY	Aspirin	PO	300 mg	stat			00:00
2.	DD / MM / YYYY	Clopidogrel	PO	300 mg	stat			00:00

Adjuvant anticoagulation therapy for thrombolysis - 3a. Enoxaparin OR 3b. Heparin

3a.
- **Age less than 75 years:** Enoxaparin 30 mg IV bolus, followed 15 minutes later by 1 mg/kg (up to 100 mg) subcut (To give 30 mg dose IV, use the 60 mg prefilled syringe).
- **Age 75 years or more:** Enoxaparin 0.75 mg/kg (up to 75 mg) subcut **ONLY (NO IV Bolus)**

DD / MM / YYYY	Enoxaparin	IV	30 mg	stat		/	00:00
DD / MM / YYYY	Enoxaparin	Subcut		stat		/	00:00

OR

3b. **For patients with known renal failure (eGFR <30 mL/min/1.73 m²)** give unfractionated heparin 5 000 units IV bolus, then continuous infusion of 100 units per mL running at 10mL per hour (5 000 units heparin in 50 mL 0.9% sodium chloride)

DD / MM / YYYY	Heparin	IV	5 000 units	stat		/	00:00

Thrombolysis with Tenecteplase

- Dose according to weight adjusted dose guide.
- If patient age **greater than 75 years**, tenecteplase should be administered at **half** the weight based dose.

Tenecteplase Dose Guide Using 5 mg/mL solution once reconstituted

Body weight kg	Units	mg	Volume
Less than 60 kg	6 000	30 mg	6 mL
60 to 70 kg	7 000	35 mg	7 mL
71 to 80 kg	8 000	40 mg	8 mL
81 to 90 kg	9 000	45 mg	9 mL
91 kg or greater	10 000	50 mg	10 mL

	Date prescribed	Medicine	Route	Dose	Date/time of dose	Prescriber Signature	Given by	Time given
4.	DD / MM / YYYY	Tenecteplase	IV	mg(mL)	stat			00:00
5.	DD / MM / YYYY	Atorvastatin	PO	80 mg	stat			00:00

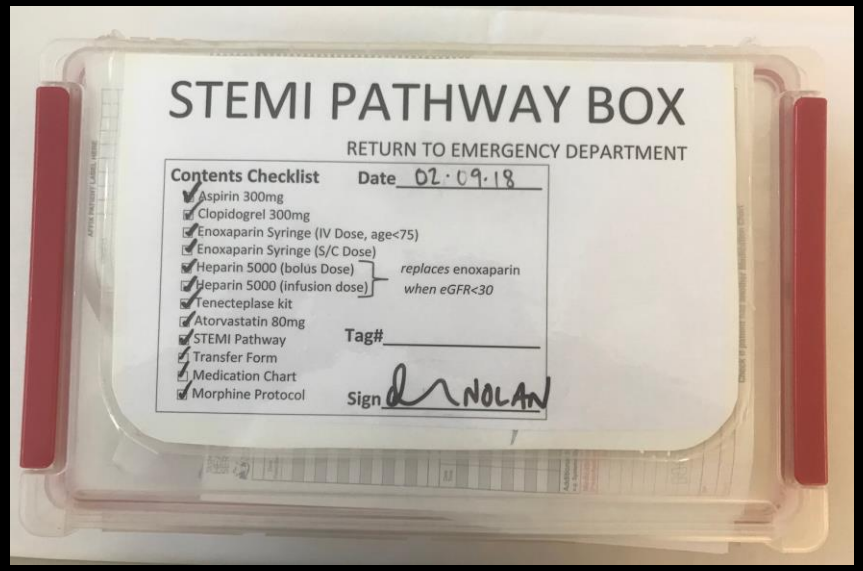
Doctor *(print name – block letters)*:

Signature: | Time / date: 00:00 DD / MM / YYYY *(24 hour clock)*

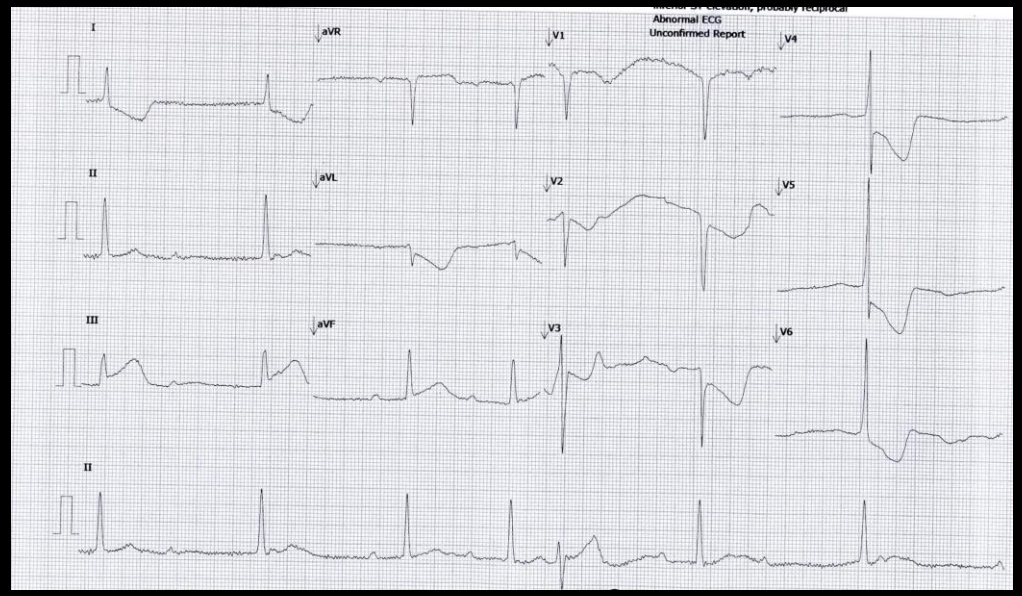
Check if patient has another Medication Chart **Hospital Prescription Only**

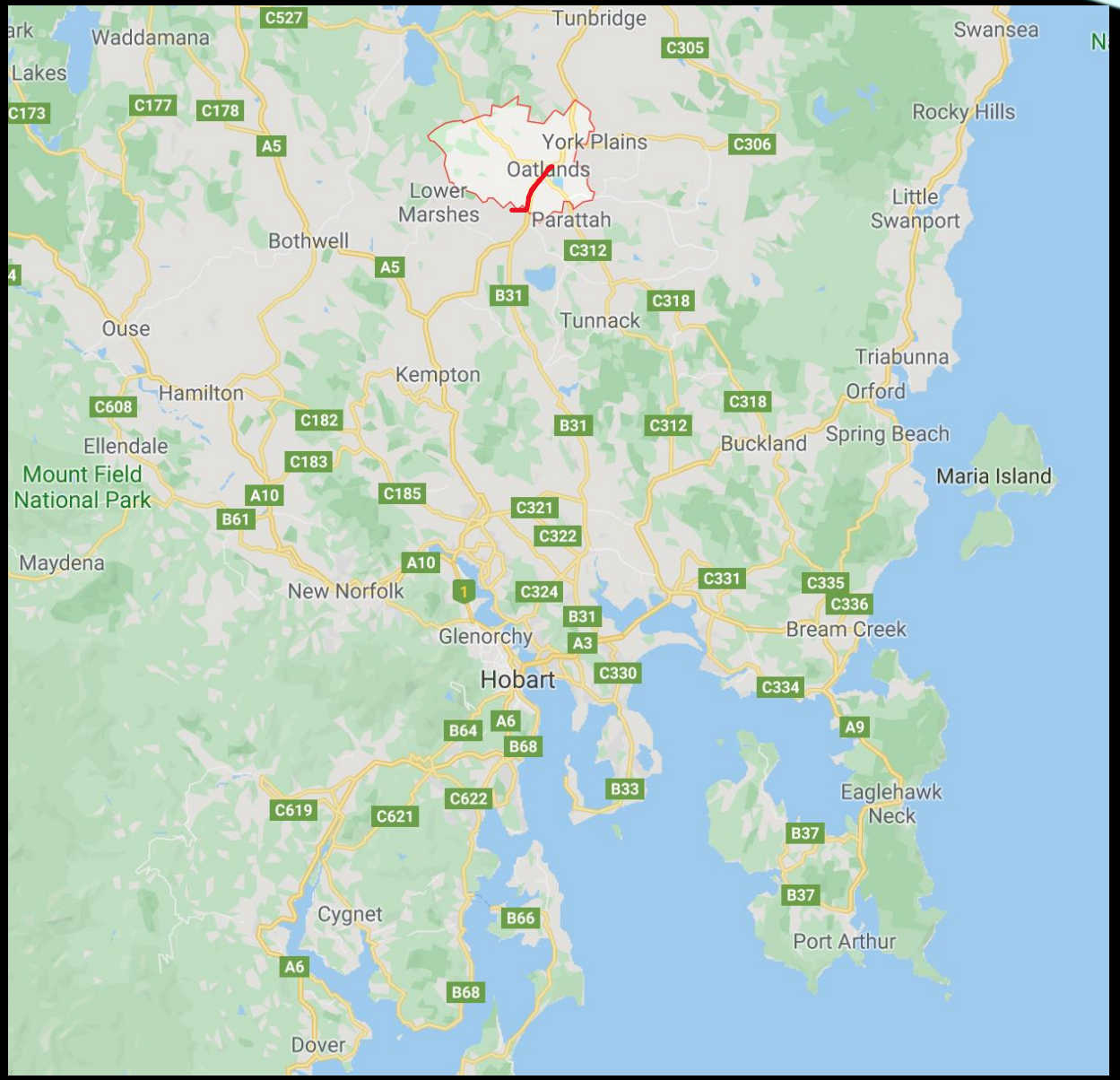
Please refer to electronic medication history or where possible refer to current drug chart

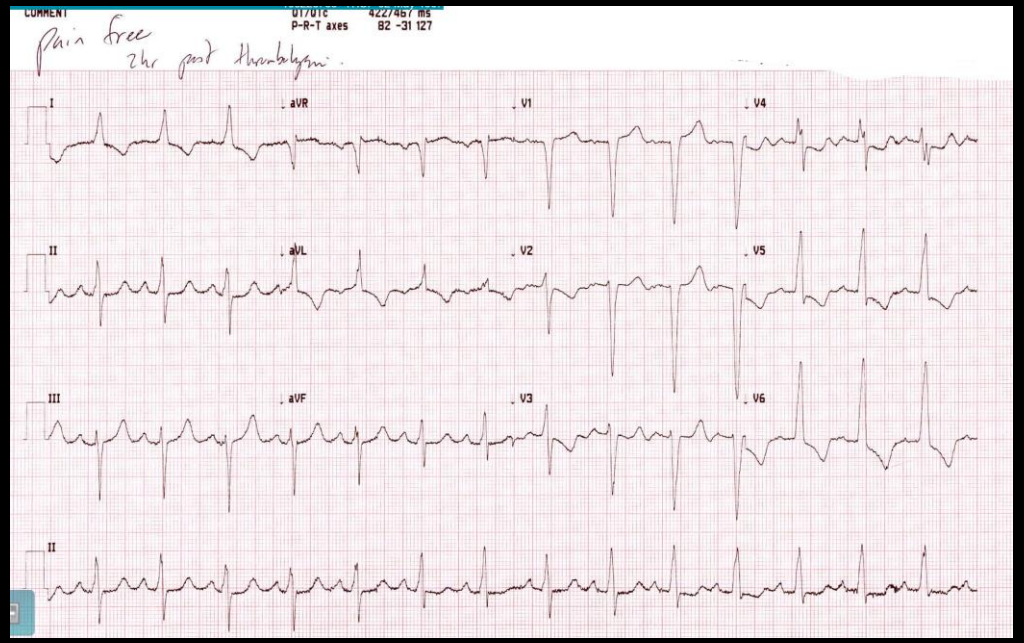
THROMBOLYSIS FOR STEMI CLINICAL PATHWAY

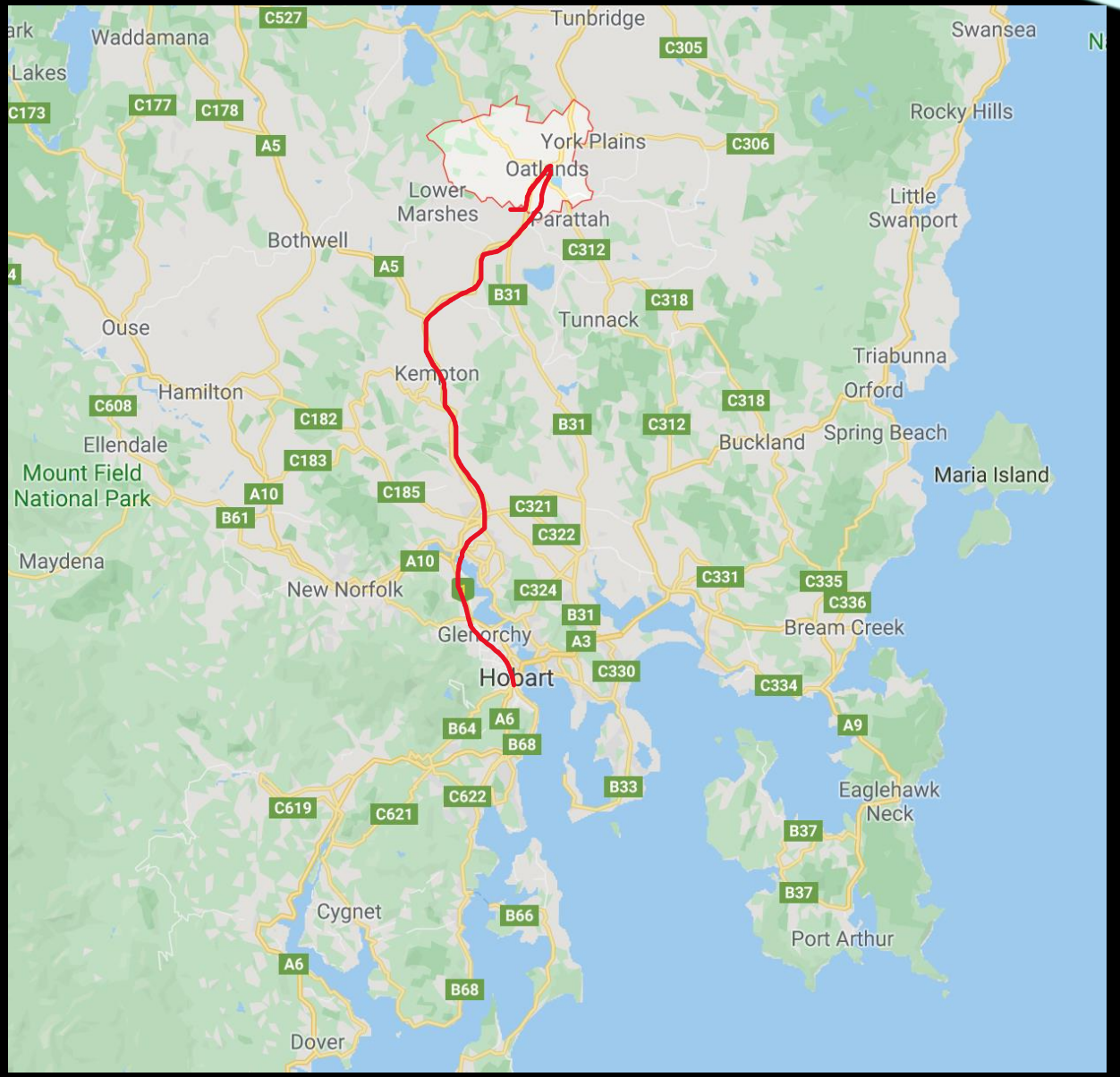



QUEENST


Abnormal ECG
Unconfirmed Report
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II


C527
Tunbridge
Swansea
Waddamana
C305
Lakes
C173
C177
C178
A5
York Plains
C306
Rocky Hills
Oatlands
Lower Marshes
Parattah
Little Swanport
Bothwell
C312
A5
B31
C318
Tunnack
Ouse
Triabunna
Kempton
Hamilton
Orford
C608
C182
C318
B31
C312
Buckland
Spring Beach
Ellendale
C183
Maria Island
Mount Field National Park
A10
C185
C321
B61
C322
Maydena
A10
C331
New Norfolk
1
C324
C335
C336
B31
Bream Creek
Glenorchy
A3
Hobart
C330
C334
A6
A9
B64
B68
B33
Eaglehawk Neck
C619
C621
C622
B37
B37
Cygnet
B66
Port Arthur
A6
B68
Dover


COMMENT
Pain free
2hr post thrombolysis
P-R-T axes 82 -31 127
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II


Waddamana
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Ellendale
Buckland
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Maria Island
Mount Field National Park
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C185
C321
B61
C322
Maydena
A10
New Norfolk
C324
C331
C335
C336
B31
Bream Creek
Glenorchy
A3
Hobart
C330
C334
A6
B64
A9
B68
B33
Eaglehawk Neck
C619
C621
C622
B37
B37
Cygnet
B66
Port Arthur
A6
B68
Dover


[redacted]
F
STUDY 1
21/06/2019
1:36:06 PM
5 - 1/81
0.00 sec
H
Royal Hobart Hospital
Dr Andrew Black
VC21C 161026
HFS
R
776 x 776
Cord Sharp LD
cm 20
A
kV 83
mA 335
D 118
LAO 44° / CAUD 2°
EE 21%
DDO 50%
WC 2055
WW 1900


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F
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Coro Sharp LD
cm 20
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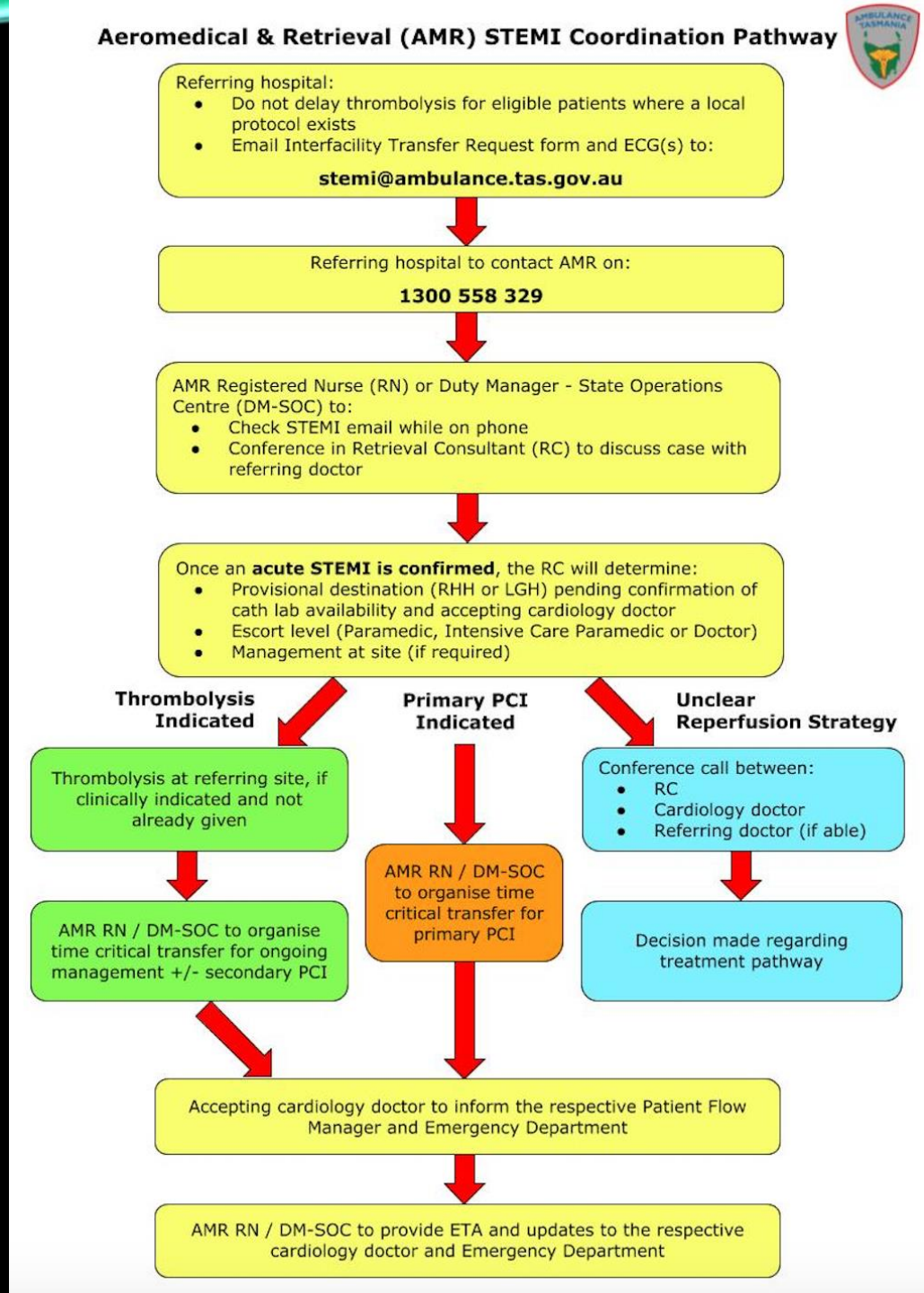
kV 80
mA 353
D 117
LAO 32° / CRAN 3°
WC 2055
WW 2100

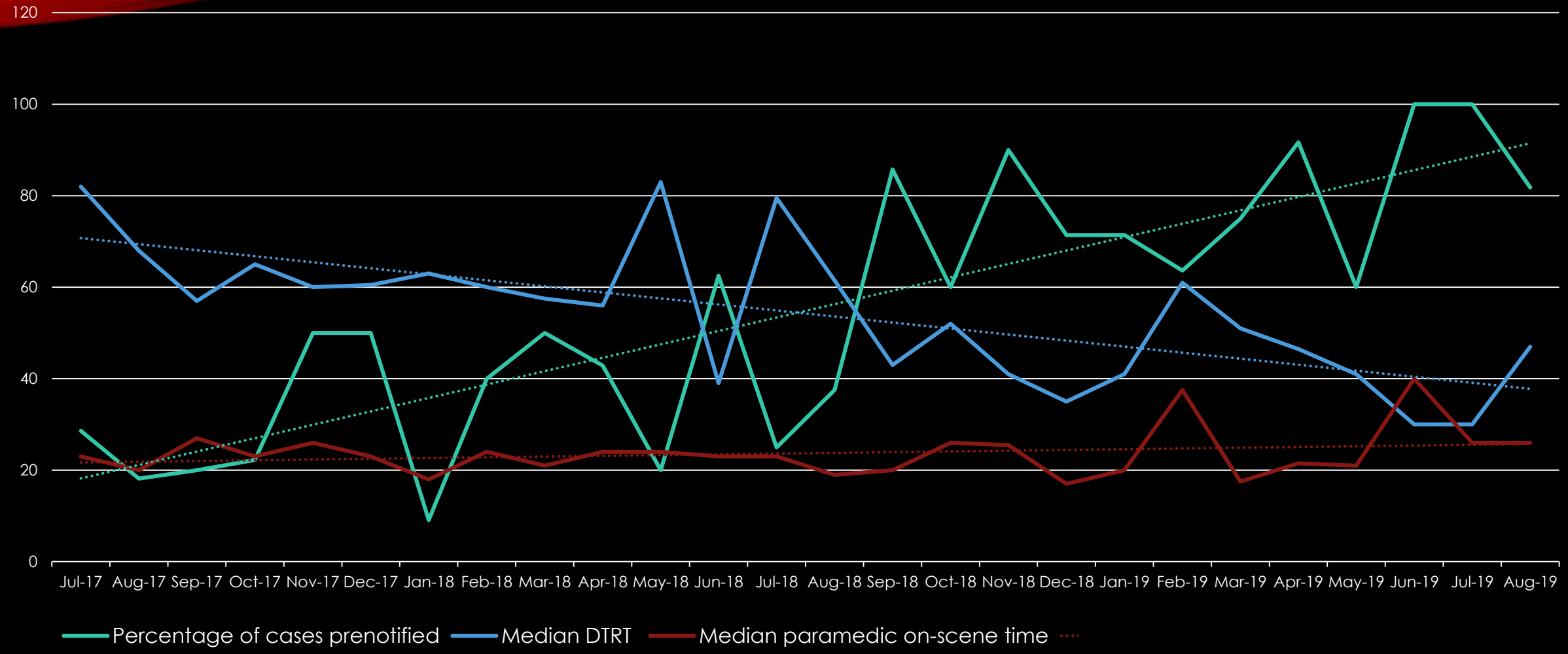
STREAMLINE RETRIEVAL

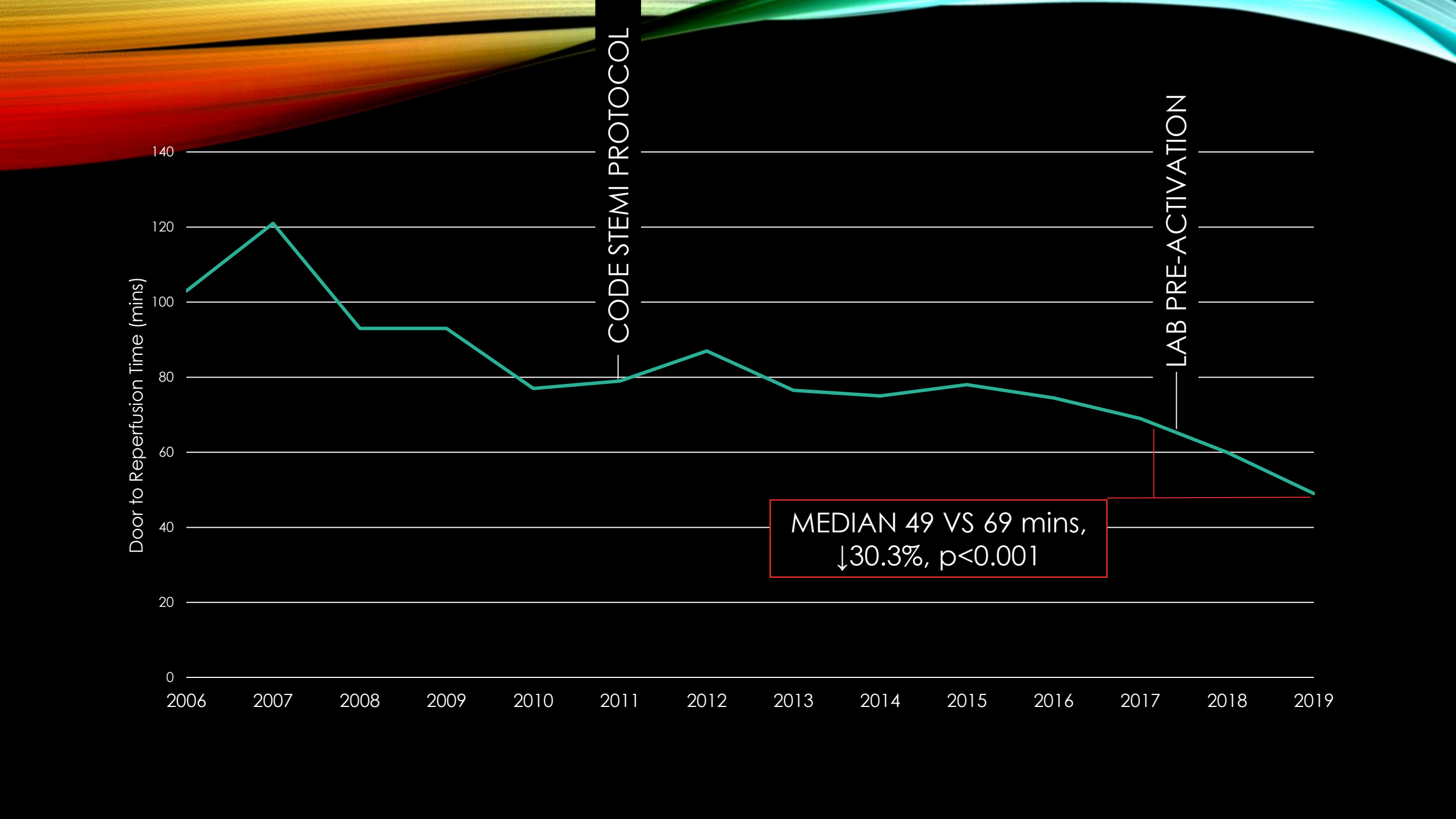
- Single call
- AMR nurse
- Time critical transfer
- Bed co-ordinators

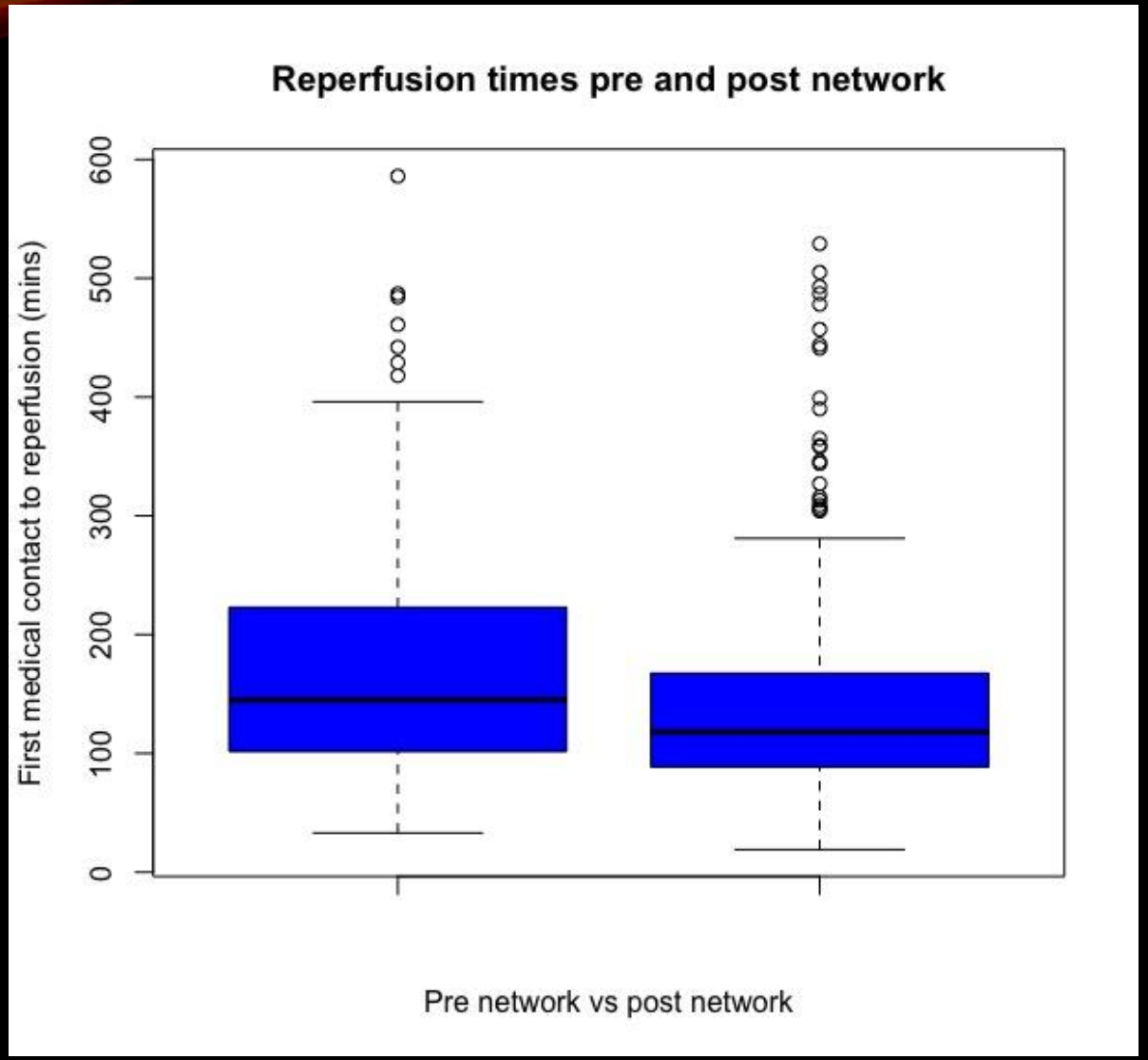


OPTIMIZE DTRT

Ambulance arrival STEMIs RHH




CODE STEMI PROTOCOL
LAB PRE-ACTIVATION
Door to Reperfusion Time (mins)
140
120
100
80
60
40
20
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
MEDIAN 49 VS 69 mins,
↓30.3%, p<0.001



Median reperfusion time:
Pre: 145.0
Post: 118.0
P<0.001
(Adjusted linear regression)

	Total STEMI population		Pre-Network		Post-Network		
Hospital	Total STEMI cases (n)	Proportion of total STEMI cases (%)	Median Reperfusion time	IQR	Median Reperfusion time	IQR	p-value
RHH	231	37.90	114	52	99	48.5	<0.01
LGH	172	28.20	132.5	75.25	130	67.25	0.97
MCH	94	15.40	224	157.25	148	135.75	<0.01
NWRH	75	12.30	166	159	137	203.75	0.54

WHERE TO?

- Lysis
  - Few more sites
  - Paramedic led lysis
- Retrieval
  - Ongoing improved capacity
- PCI centres
  - Consolidation

ACKNOWLEDGMENTS

- AT Paramedics
- Tanya Murray, Project Manager, THS
- Naj Anderson & Simon Brown, Ambulance Tas
- Therese Hudson, Jacquie McElwee, Mandy Burley, Elysia Eberhardt, Luke Dare, Cath Lab, RHH
- Marielle Ruigrok, NWRH
- Mel Rose, RHH ED
- James Gray & Giorgia Hill, UTAS

TASMANIAN HEALTH SERVICE

Tasmanian Clinical Network
Improving patient care through cooperation and collaboration

AMBULANCE TASMANIA

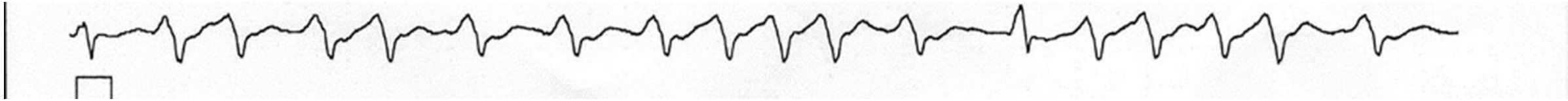
MENZIES
Institute for Medical Research

Dr Jonathan Lipton

MD, PhD, FRACP| Staff Cardiologist | Director Arrhythmia Service | Royal Hobart Hospital

Electrophysiology Service (EPS)

Provision of care for Tasmania patients with arrhythmia.



Community Cardiac Network meeting 3 Nov 2020

Jonathan Lipton, Cardiologist & Electrophysiologist

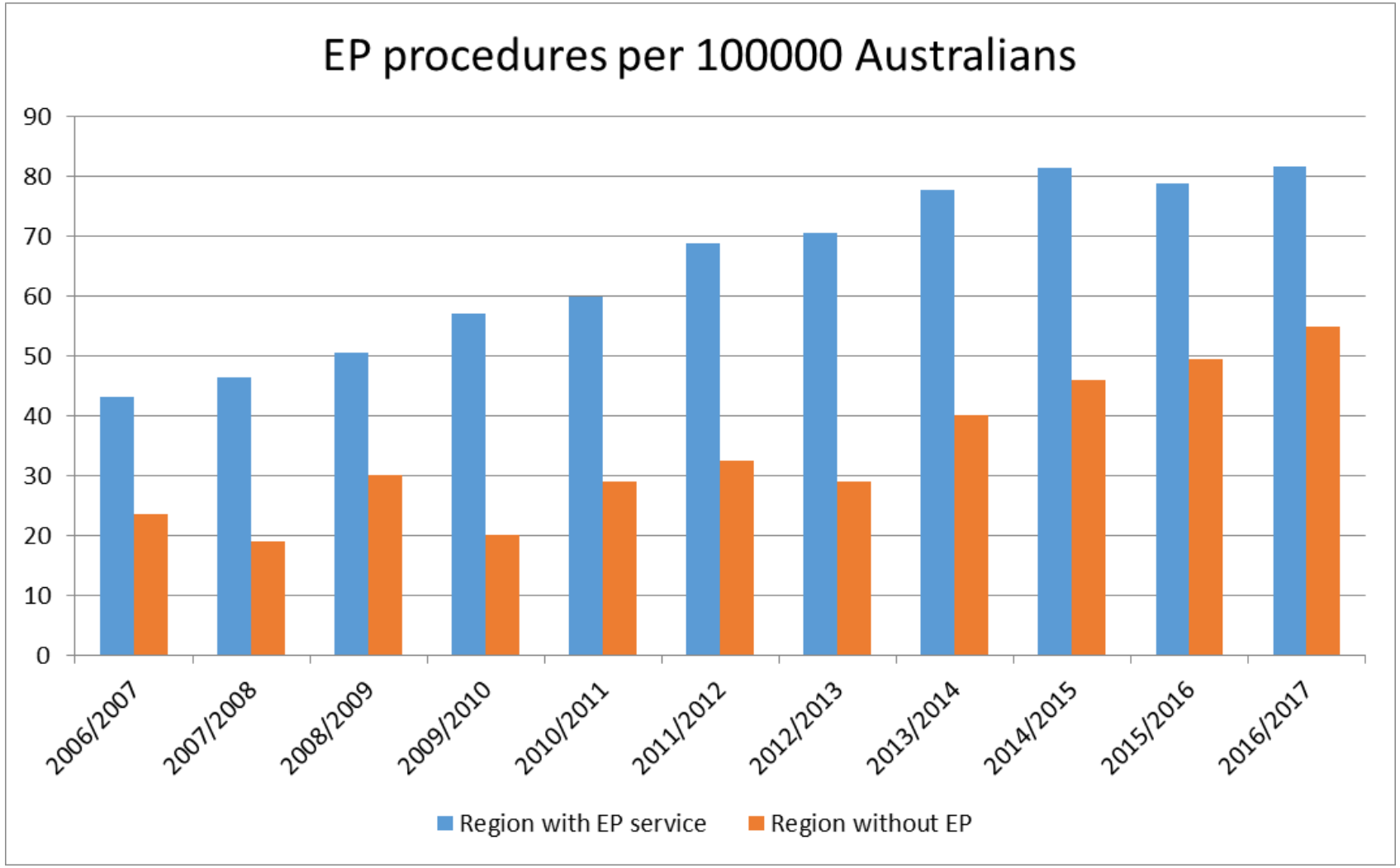
Director Arrhythmia Service Royal Hobart Hospital

Overview

- Prevalence and health care implications of arrhythmia in Tasmania
- Invasive diagnostic and treatment options for arrhythmia
- Local service provision and referral for patients with arrhythmia

Overview

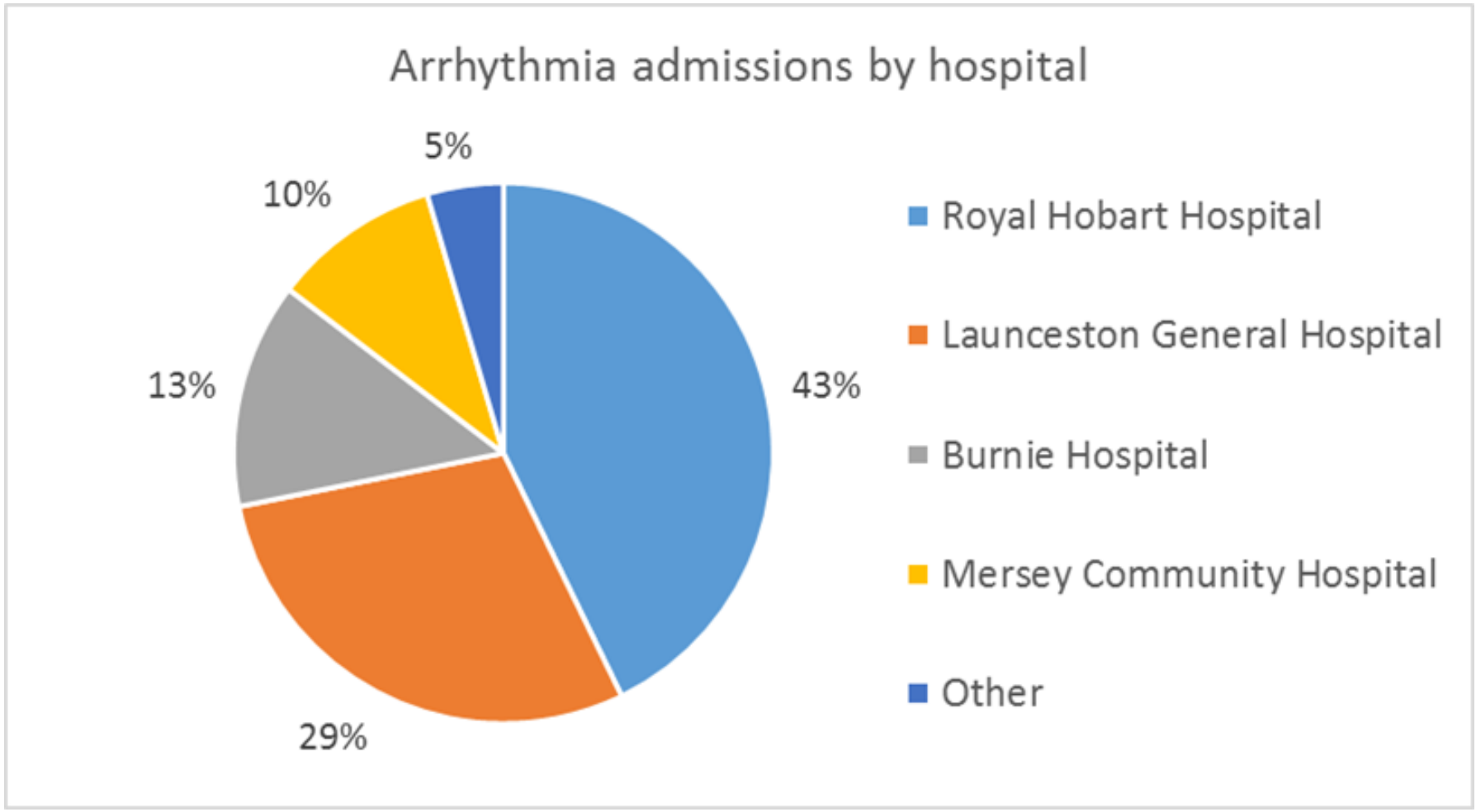
- **Prevalence and health care implications of arrhythmia in Tasmania**
- Invasive diagnostic and treatment options for arrhythmia
- Local service provision and referral for patients with arrhythmia



- Number of procedures per population is lower in areas without an EP service. (NT and TAS)

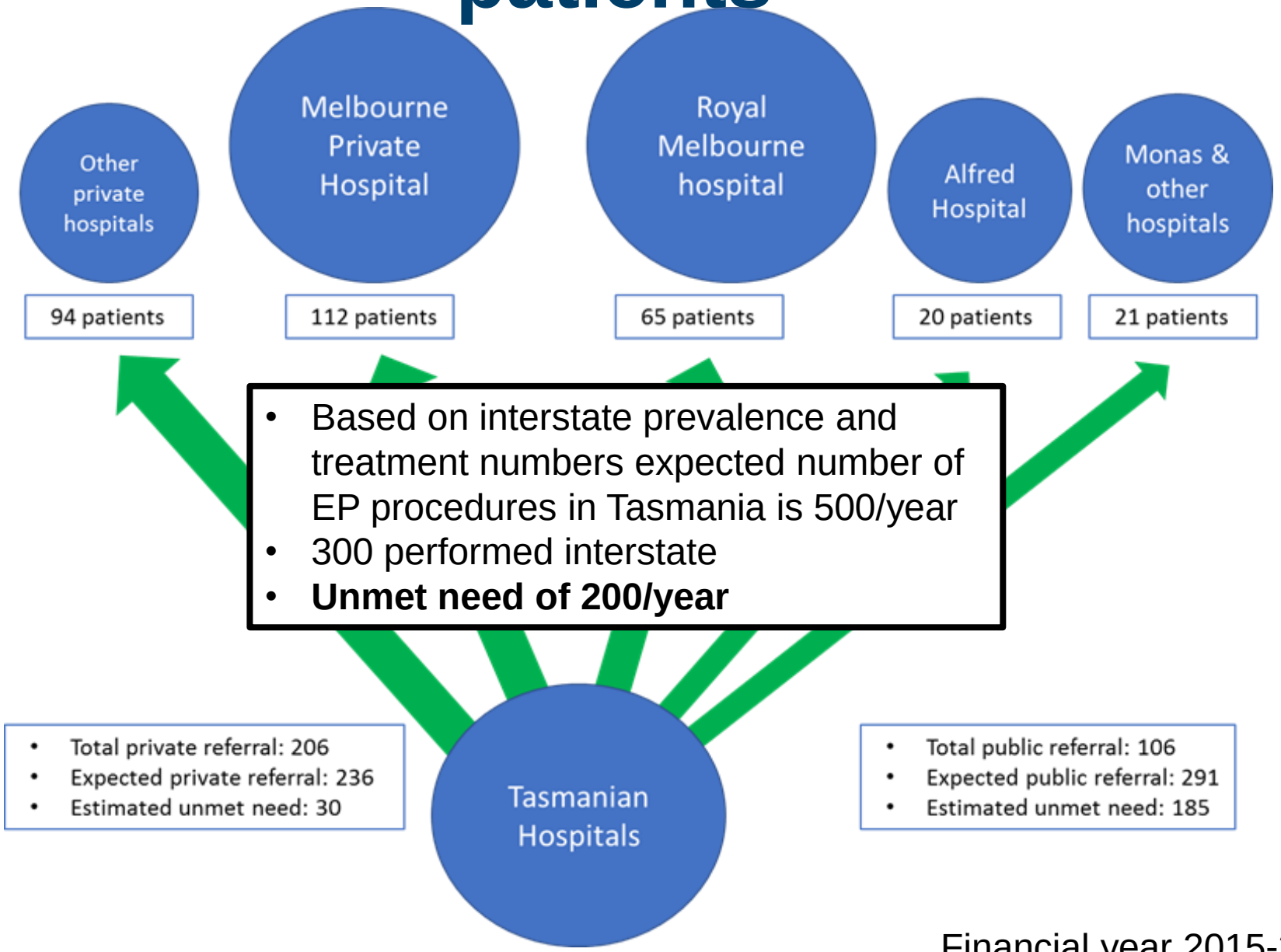
Arrhythmias in Tasmania

- Increase of 30% over past decade to over 4000 admissions/year in Tasmania.
- Almost 50% are readmissions.
- Estimated of cost per admission is $10.000-$15.000.
- EP services required interstate referral.
- Waiting time for EP procedure interstate have been 3-18 months.



2017 data, provided by DHHS

EP procedures for Tasmanian patients



Financial year 2015-2016

Overview

- Prevalence and health care implications of arrhythmia in Tasmania
- **Invasive diagnostic and treatment options for arrhythmia**
- Local service provision and referral for patients with arrhythmia

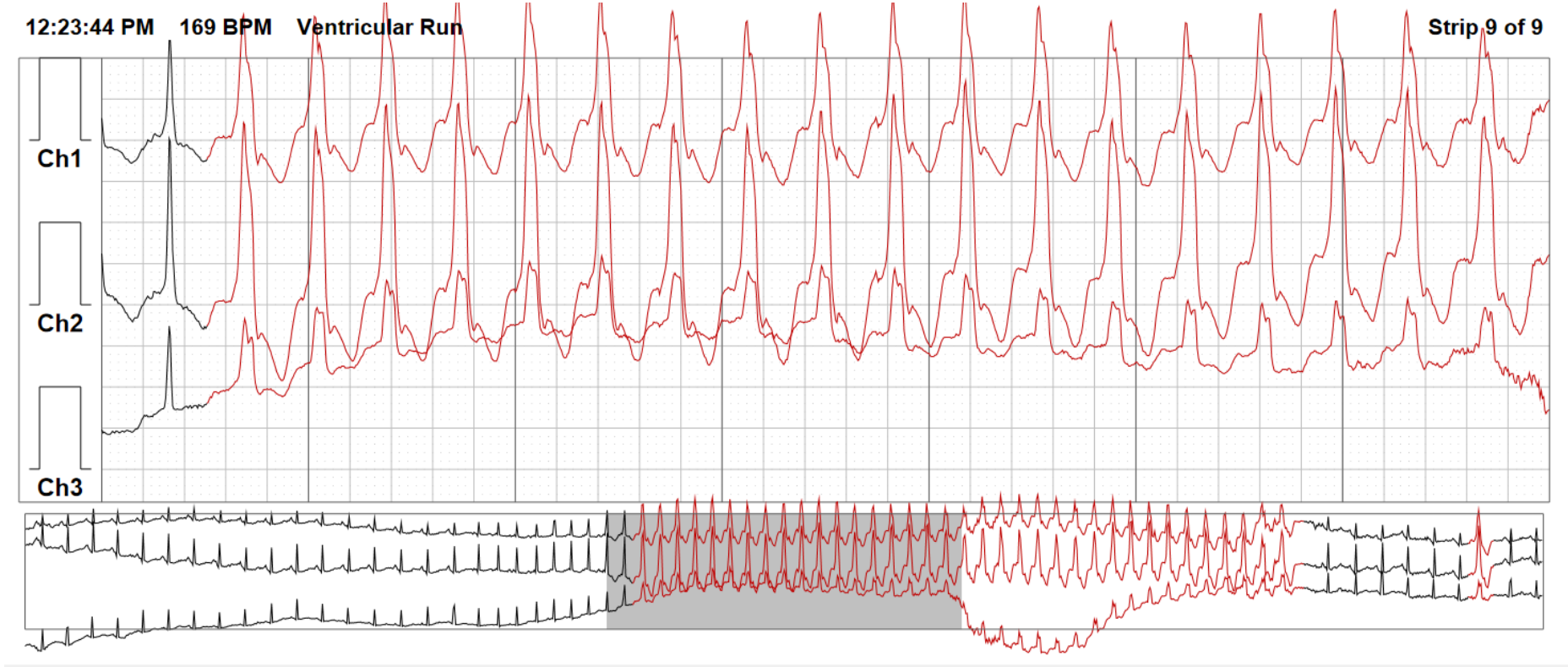
Establishment of EP Tasmania

- Jun 2016 Development of business case
- Nov 2017 Accepted by government
- Mar 2018 Arrhythmia clinic established
- Apr 2018 Electrophysiologist and cardiac physiologist appointed
- Jul 2018 First cardiac ablation
- May 2019 First zero-fluoro procedure
- Jul 2019 First left-sided ablation
- Jul 2020 New cath lab, hard-wired EP syste
- Aug 2020 250 procedures performed
  Intracardiac echo available

68 year old female

- Presentation with lightheadedness and rapid palpitations
- On Holter multiple non-sustained wide complex tachycardia
- Echo LVEF 46%
- Normal coronaries on angiogram
- No scar on cardiac MRI

Holter: 4% ventricular ectopy and



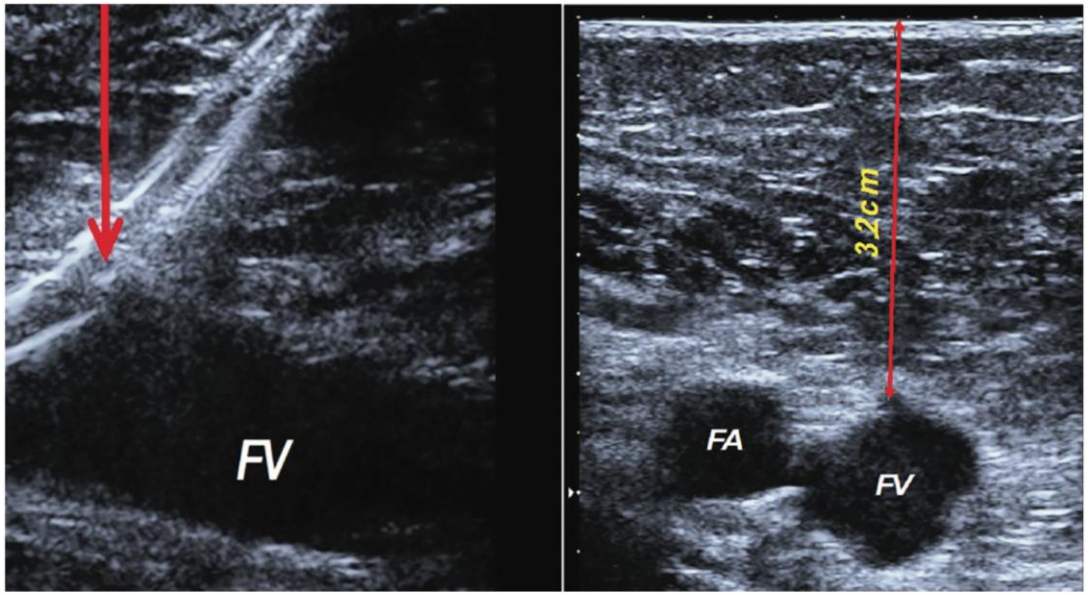
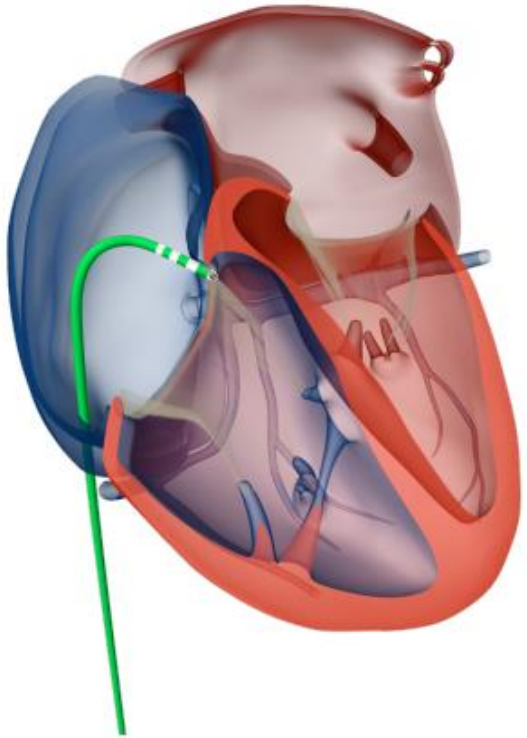
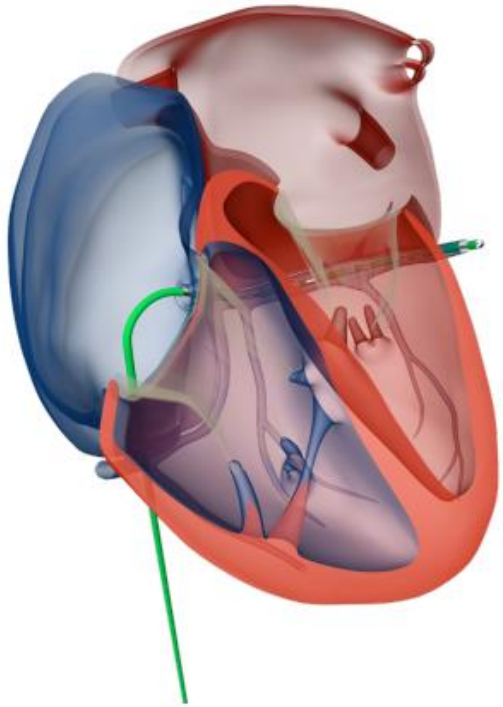


Figure 2. Short- and long-axis views: femoral vein.

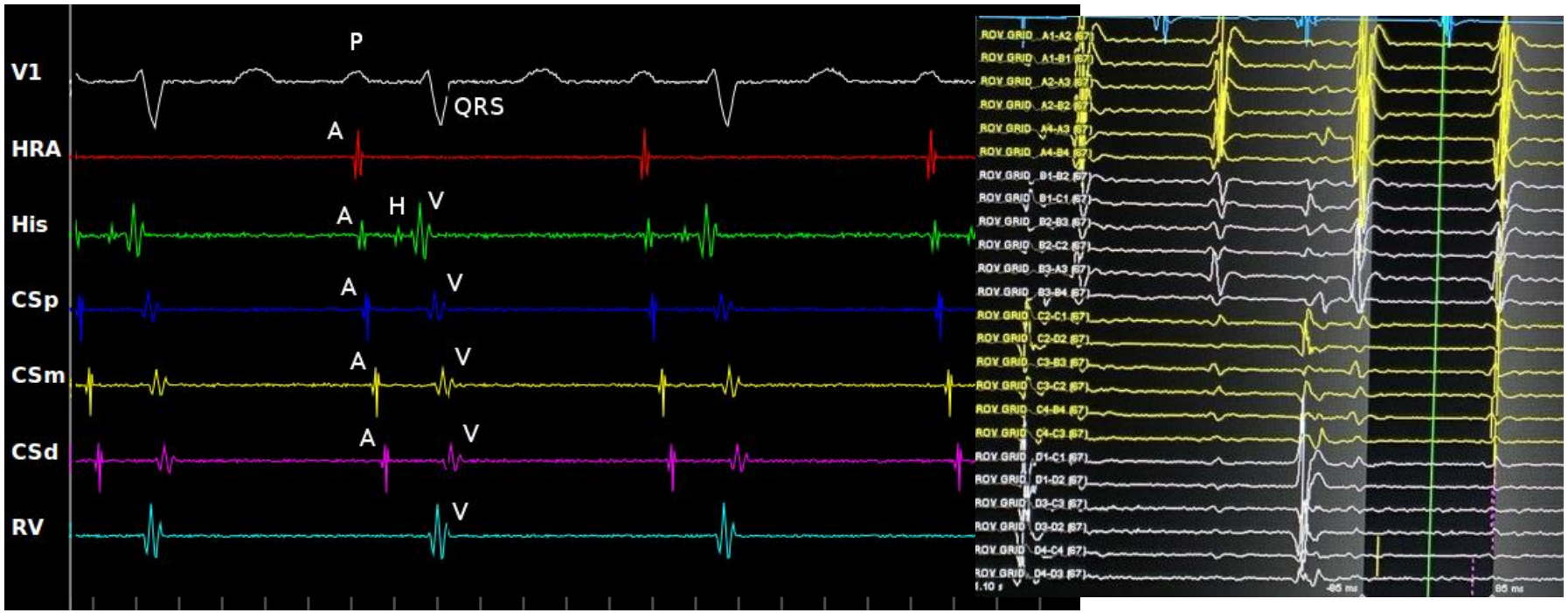
- Right femoral venous puncture
- 3 sheaths
  - 6,7,8 French
- 2 diagnostic EP catheters
- Ablation catheter

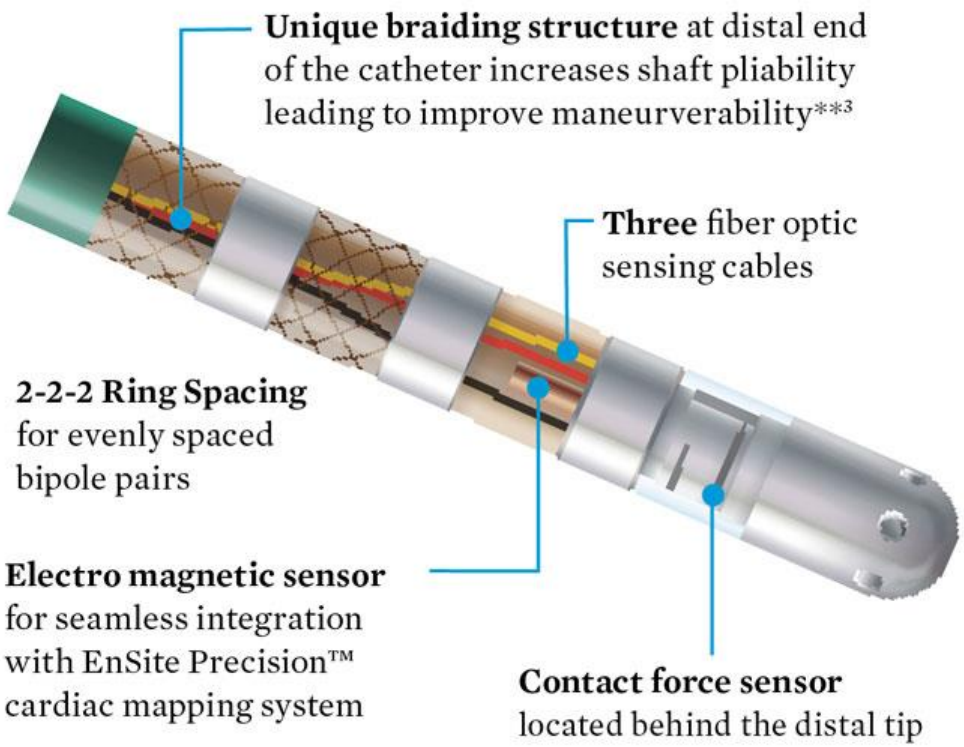


Positioned over the
His bundle

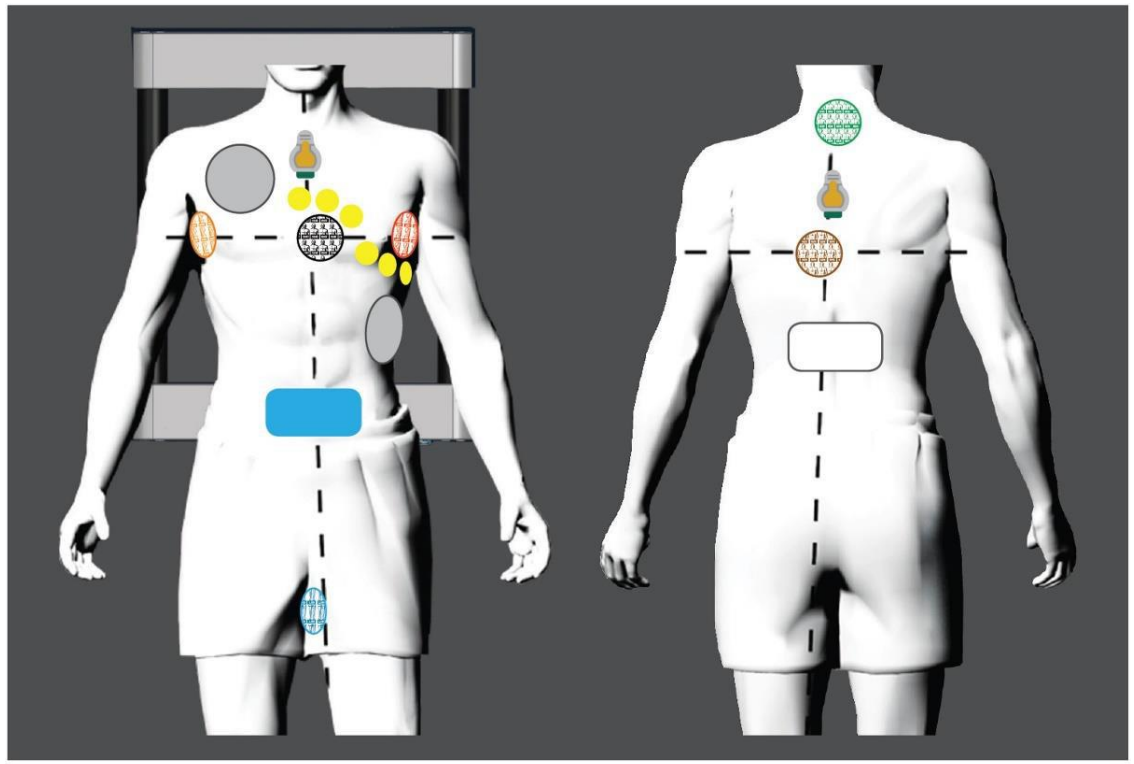


Positioned in the
Coronary Sinus


V1
HRA
His
CSp
CSm
CSd
RV
P
QRS
A
H
V


Unique braiding structure at distal end of the catheter increases shaft pliability leading to improve maneurverability**[3]
Three fiber optic sensing cables
2-2-2 Ring Spacing for evenly spaced bipole pairs
Electro magnetic sensor for seamless integration with EnSite Precision™ cardiac mapping system
Contact force sensor located behind the distal tip


FlexAbility SE



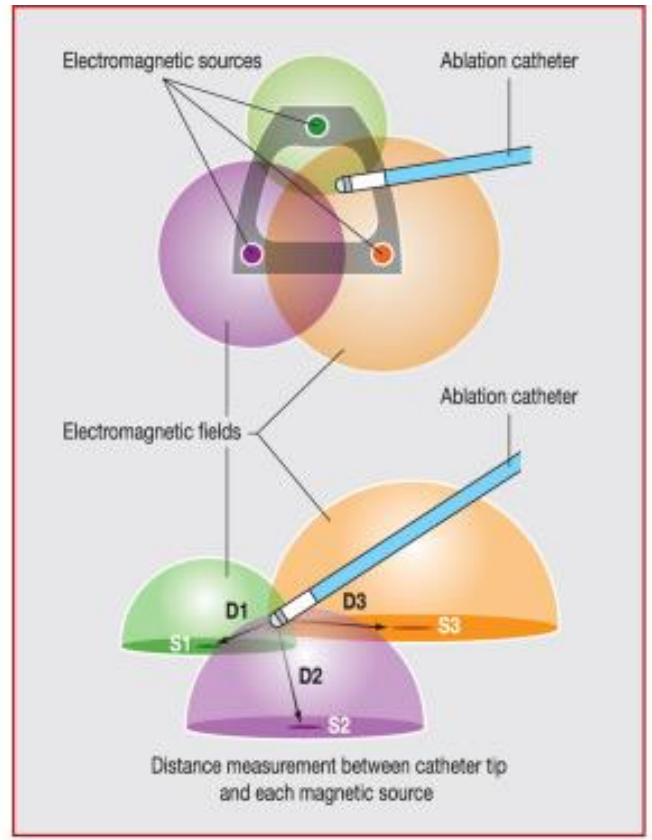
System reference electrode

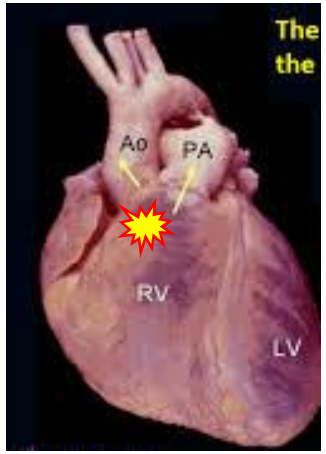
Defibrillator patch

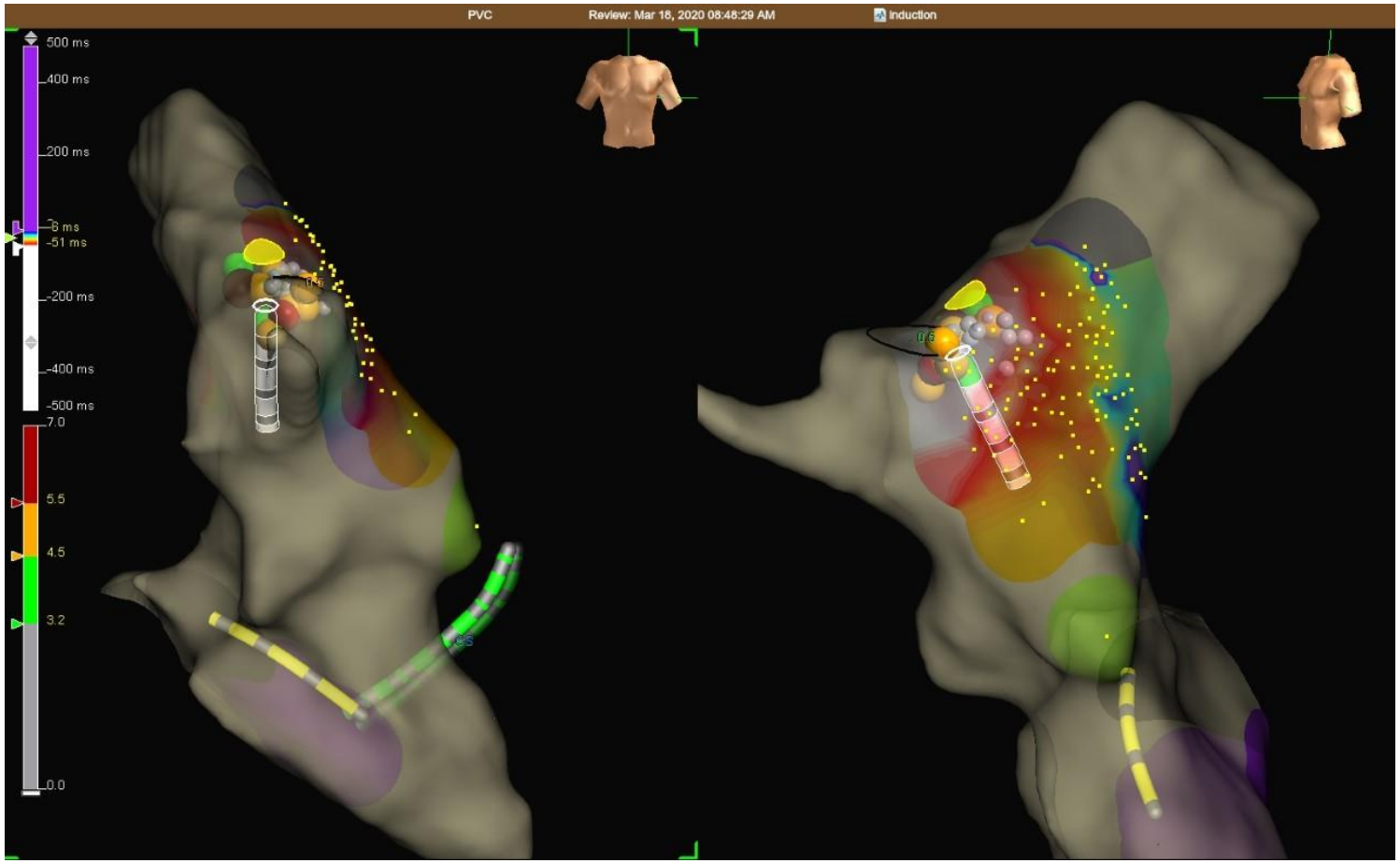
RF dispersive patch

EnSite Precision™ surface electrode

Patient reference sensor

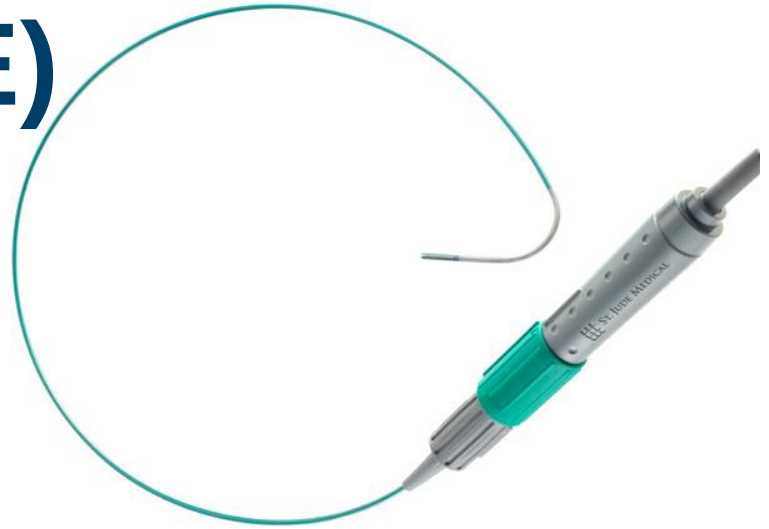


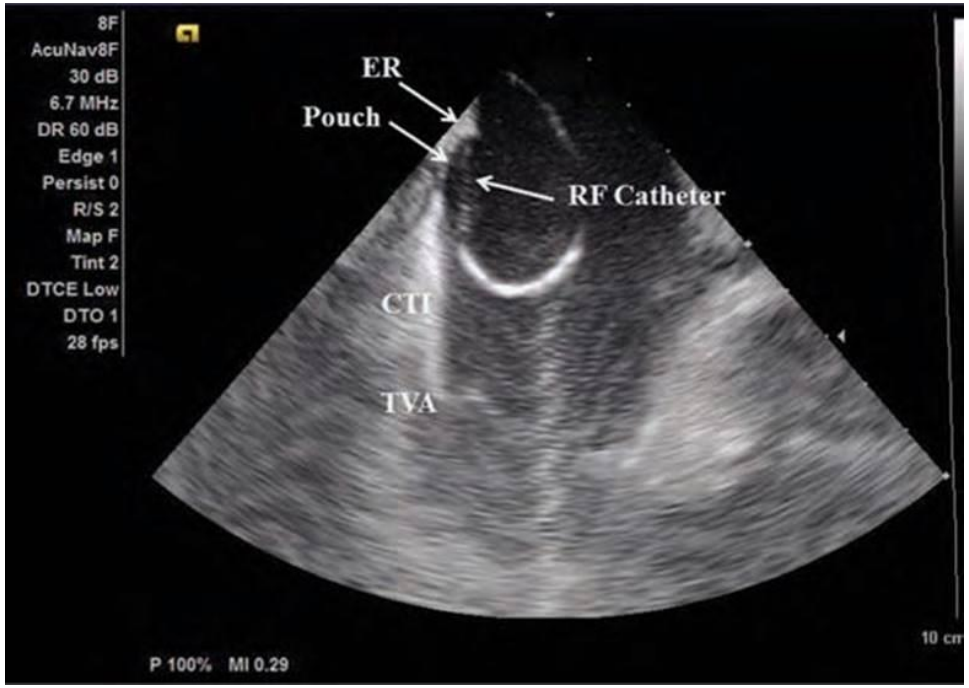

The
the
Ao
PA
RV
LV


PVC
Review: Mar 18, 2020 08:48:29 AM
Induction
500 ms
400 ms
200 ms
8 ms
-51 ms
-200 ms
-400 ms
-500 ms
7.0
5.5
4.5
3.2
0.0

Intracardiac echo (ICE)

- Visualisation for transseptal puncture without need for TOE
- Visualisation of catheter position in relation to cardiac structures



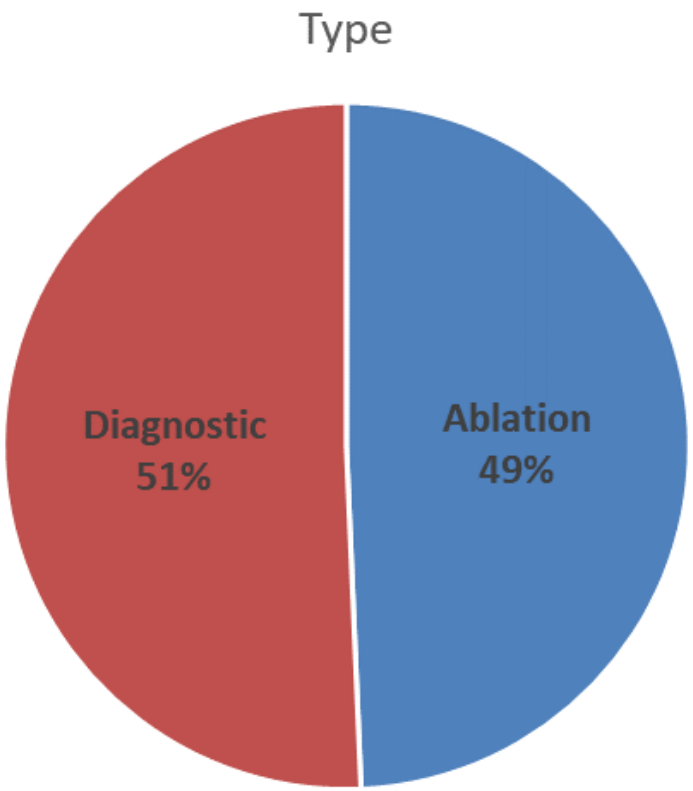


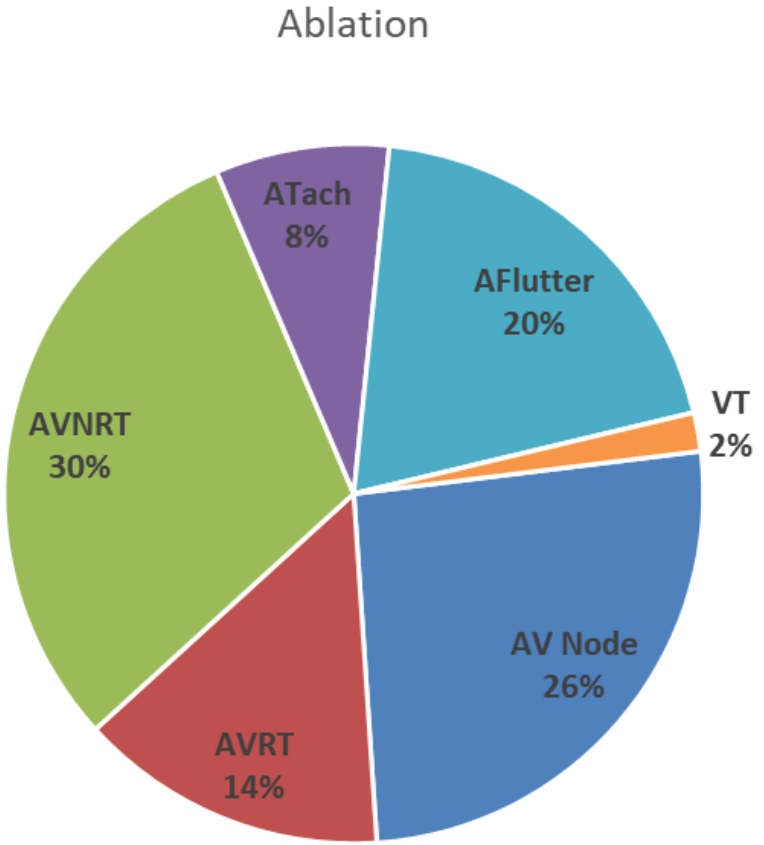
Procedures performed

Year	Procedures	Patients	
2018	21	18	
2019	154	89	
2020	51	40	(June)
Total	**226**	**147**	

*Aug 2020 250th procedure performed

Procedures


Type
Diagnostic
51%
Ablation
49%


Ablation
ATach
8%
AFlutter
20%
VT
2%
AVNRT
30%
AV Node
26%
AVRT
14%

Outcomes

- Ablation success
  - 102/109 (94%)
    - May be lower as 100% follow-up not verified. Patients now all scheduled for 1-month FU at rhythm clinic (from North TAS now by phone)
- Procedural complications
  - 2 Vascular
  - 1 other (non-specific transient visual disturbance)
  - 4 readmissions (2 with symptoms, 2 not related to procedure)
  - Total 7 (3%, <1% serious complications)

Safety & quality

- Ultrasound guided venous punctures
- Figure of 8 stitch and 3-way tap for vascular closure
- Transoesophageal echo/ICE guided puncture of intra-atrial septum for left sided procedures
- Overnight stay for all patients undergoing ablation
- Minimal use of fluoroscopy; zero fluoro standard
  - Fluoroscopy used for transseptal puncture and in patients with pacing leads
- Shared care model with Royal Melbourne Hospital
  - Case discussions, shared care protocols, participation in meetings (Zoom) and research, complex patient referral and operator exchanges

Overview

- Prevalence and health care implications of arrhythmia in Tasmania
-
- **Local service provision and referral for patients with arrhythmia**

Referral and patient flow

- Referral Rhythm Clinic (electronic preferred)
  - Prior history (cardiac and non-cardiac)
  - Medications
  - Symptoms
  - Documented arrhythmia / ECG if available; tracings (including holters/rhythm strips etc)
  - If applicable: details of previous cardiac procedures/tests (reports if available)
- Initial consult
  - Phone/telehealth as default
- Workup
  - ECG / Holter
  - Echo
- Pre-assessment (if procedure indicated)
  - Information, bloods, ECG, review and stop of medication, consent and planning of procedure (2 weeks-1 day prior to procedure)
- Admission morning of procedure
- Procedure at RHH cathlab
  - Duration 0.5-3 hours (median 1 hour)
- Overnight stay if ablation performed
- No heavy lifting/exercise for 1 week
  - To prevent groin complications
- Follow-up 1-2 months at Rhythm clinic (phone/telehealth preferred)

Provision of care (current)

Electrophysiology Tasmania

- Diagnostic EP study
- AV node ablation
- Supraventricular tachycardia ablation
  - AVNRT, AVRT/WPW, most atrial tachycardia
- Typical atrial flutter ablation

Wait 2-6 weeks (non-GA); 3-4 months (GA)

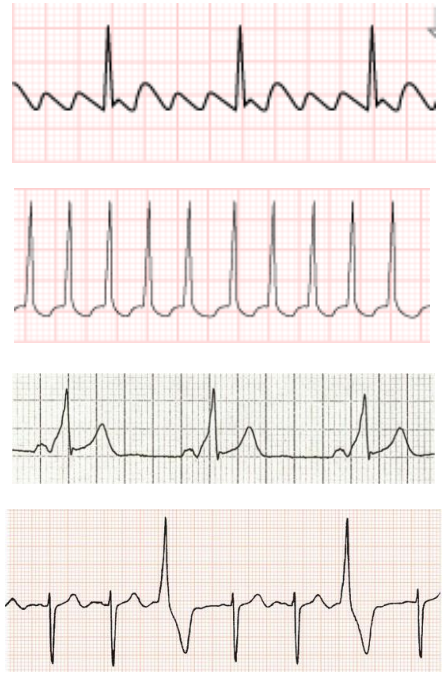
The Royal Melbourne Hospital

- Ablation for atrial fibrillation
- Atypical flutter ablation
- VT ablation in presence of scar
- Patients with congenital heart disease

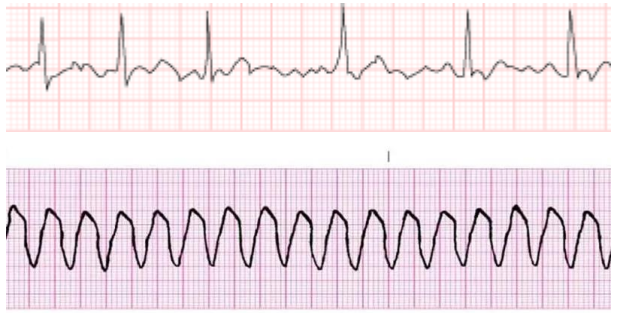
Wait 2-4 months (non-GA); 9-18 months (GA)

Provision of care (current)

Electrophysiology Tasmania



The Royal Melbourne Hospital



Impact of COVID on EP service

- 300 interstate referrals/year, approx. 200/year for atrial fibrillation ablation
- Interstate waiting times increased by at least 6 months (prior to COVID approx. 12 months)
- Interstate referral challenging for patient and state resources given need for quarantine (until at least Dec 2020)
- Increasing clinical need to move forward ability to perform AF ablation within the state
  - 40 patients on ‘local’ waiting list, approx. 5 added/week
  - Collaborative model with Royal Melbourne Hospital

Provision of care by end of 2020

Electrophysiology Tasmania

- Diagnostic EP study
- AV node ablation
- Supraventricular tachycardia ablation
  - AVNRT, AVRT/WPW, atrial tachycardia
- Typical atrial flutter ablation
- Ablation for Atrial fibrillation

The Royal Melbourne Hospital

- VT ablation in presence of scar
- Patients with congenital heart disease

Provision of care by end of 2020

Case-by-case decision:

- Redo procedures for supraventricular tachycardia
- Redo procedures for atrial fibrillation
- Atypical atrial flutter
- Ventricular ectopy/tachycardia in structurally

Possible thanks to:

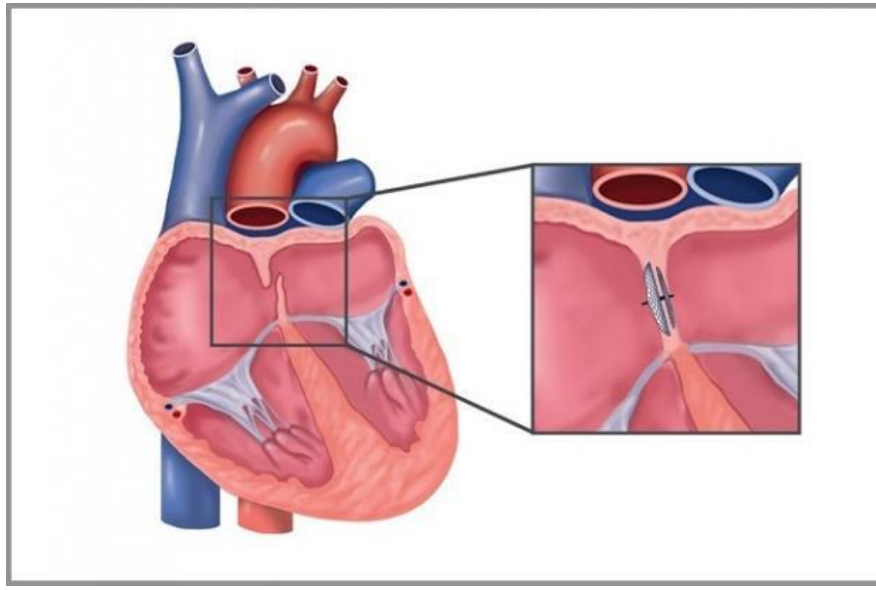
- Cath Lab Nursing Staff
  - Therese Hudson
  - Mandy Burley
- Cardiac Liaison Nurses
  - Marea Pickering, Roselyn Giles, Bec Lane
- Cardiac Physiologist
  - Rhonda McNeill, Amelia Lutwyche
- EP mapping specialist
  - Bassem Zeddine
- Cardiology Ward Staff
- Cardiology/Cardiothoracics Team
  - Paul MacIntyre
- Royal Melbourne Hospital
  - Jon Kalman, Leeanne Grigg, Joe Morton

Jonathan Lipton
0420537043
Jonathan.lipton@ths.tas.gov.au

Dr Heath Adams

BMedSci, MBBS (Hons), DipUKMP, FRACP, FCSANZ |Interventional & Structural Cardiologist |Clinical Lead for the Cardiac Catheter Laboratory & TAVI | Royal Hobart Hospital

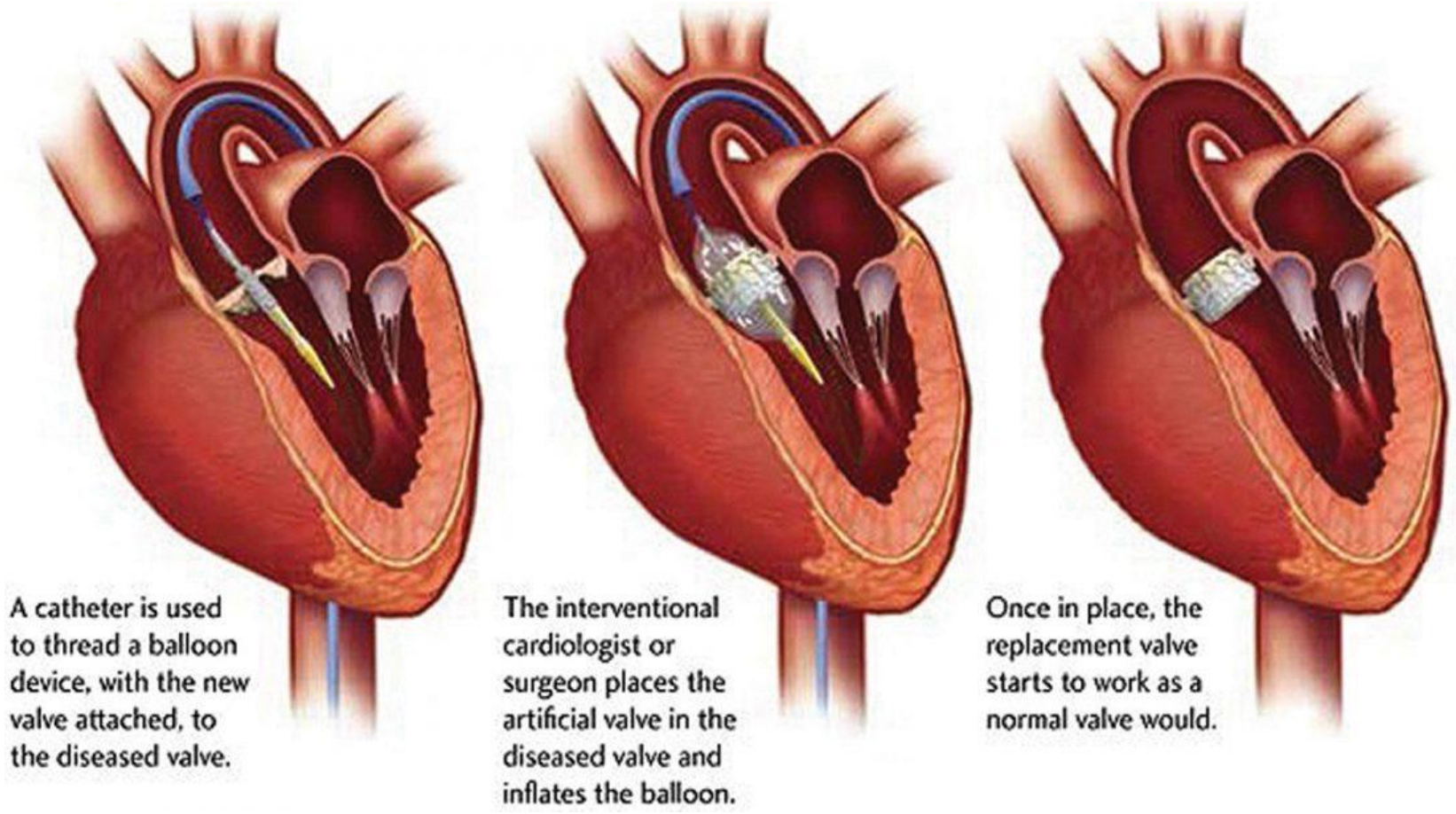
The THS TAVI Service



TAVI for Severe Aortic Stenosis
PFO Closure for Cryptogenic Stroke

Dr Heath Adams
Interventional & Structural Cardiologist
Royal Hobart Hospital
Dr MG Ciezar Memorial Scholar
University of Tasmania

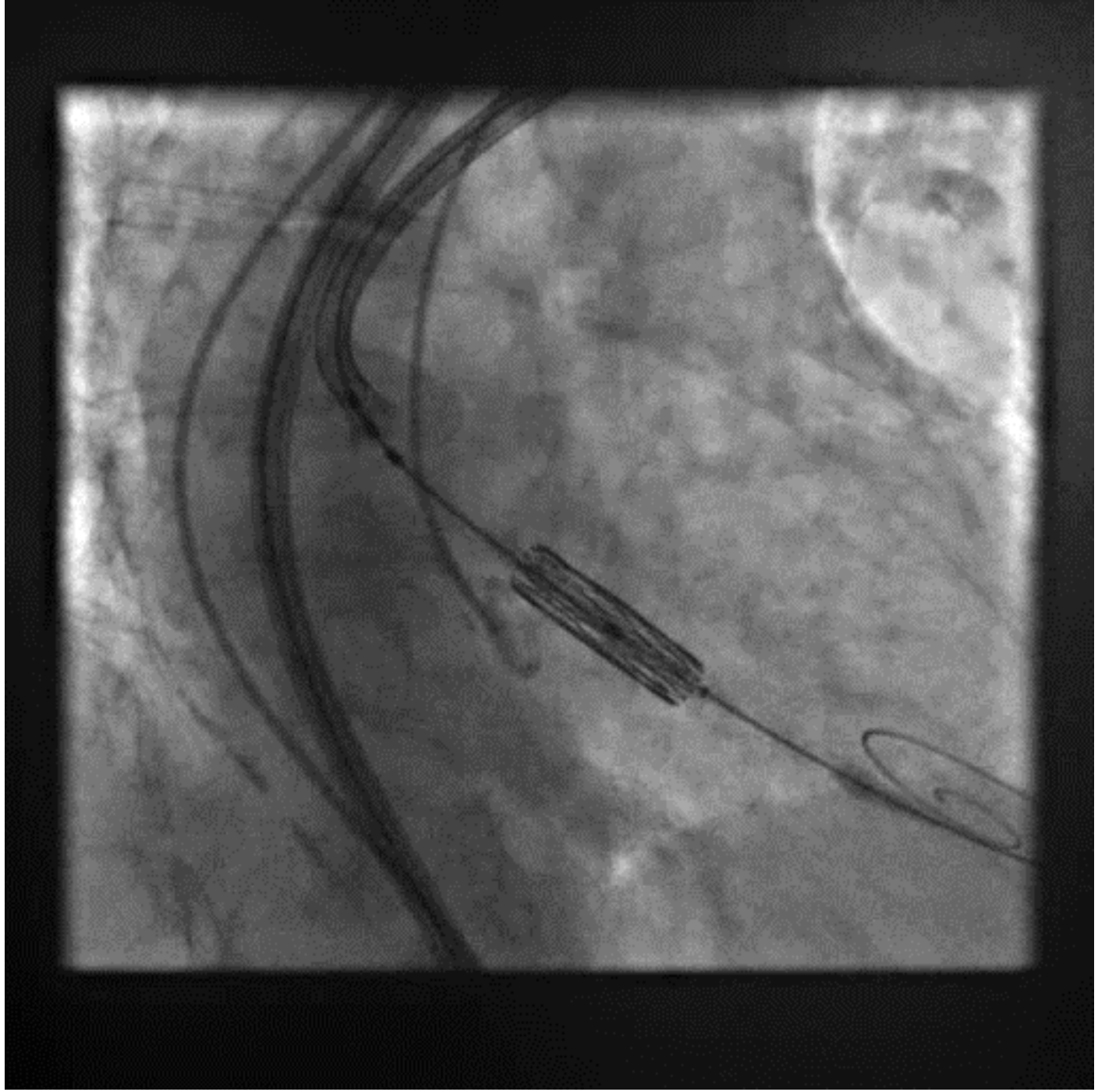
What is a TAVI?



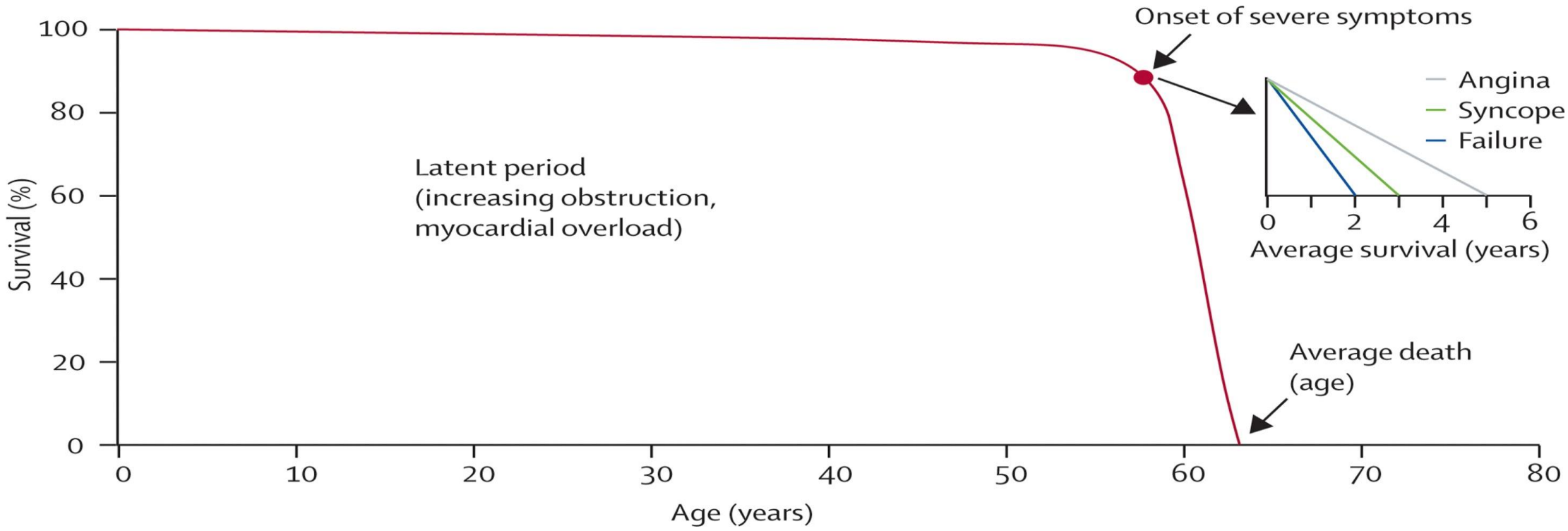
A catheter is used to thread a balloon device, with the new valve attached, to the diseased valve.

The interventional cardiologist or surgeon places the artificial valve in the diseased valve and inflates the balloon.

Once in place, the replacement valve starts to work as a normal valve would.



Severe aortic stenosis survival curve



Dr. Alain Cribier

First-in-Man PIONEER

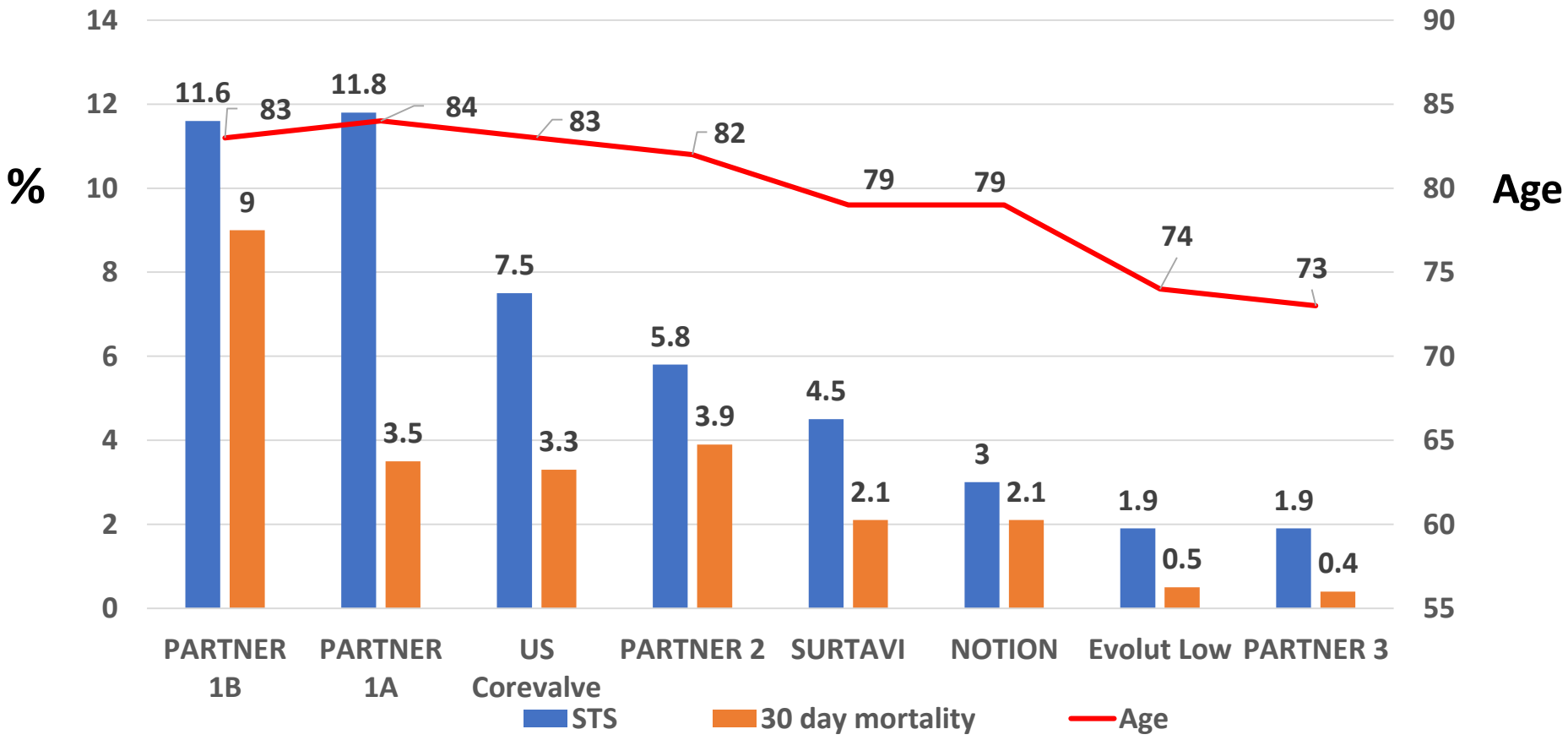
Circulation — American Heart Association. Learn and Live.

- Percutaneous Transcatheter Implantation of an Aortic Valve Prosthesis for Calcific Aortic Stenosis
- First Human Case Description
- Alain Cribier, MD; Helene Eltchaninoff, MD; Assaf Bash, PhD; Nicolas Borenstein, MD; Christophe Tron, MD; Fabrice Bauer, MD; Genevieve Derumeaux, MD; Frederic Anselme, MD; François Laborde, MD; Martin B. Leon, MD

Conclusions – "Nonsurgical implantation of a prosthetic heart valve can be successfully achieved with immediate and midterm hemodynamic and clinical improvement."

April 16, 2002

Evolving Risk Profile in TAVI Randomised Trials



Clinical Evidence Across Risk Categories

PARTNER 1A

PARTNER 1B

CoreValve ER

CoreValve HR

PARTNER 2A

NOTION I

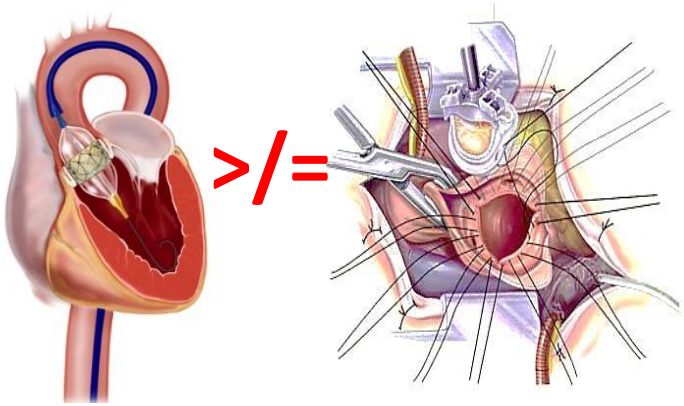
SURTAVI

PARTNER 3

Evolut LOW RISK

2011 2012 2014 2016 2017 2019

Low



Drivers of Success

- Multi-disciplinary Heart Team
- Evidence-based medicine
- Rapid improvements in device design
- Simplification of the procedure
- Reduction in complications

The Low-Risk TAVI Trials for Severe Aortic Stenosis: Future Implications for Australian and New Zealand Heart Teams

Heath Adams, MBBS, FRACP [a,b,c,*],
Ross Roberts-Thomson, MBBS, FRACP [a,d],
Tiffany Patterson, MBBS, PhD, MRCP [a,e],
Bernard Prendergast, DM, FRCP, FESC [a],
Simon Redwood, MD, FRCP, FACC [a,e]

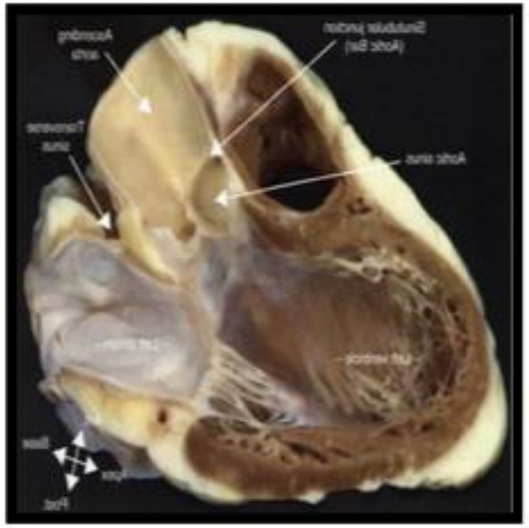
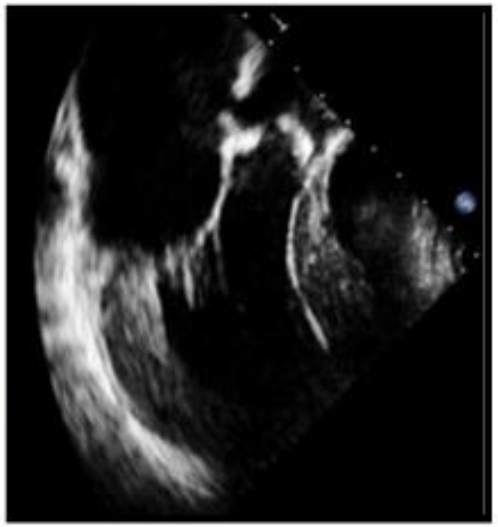
Table 1 Evidence TAVI from Major RCT's & Mortality Outcomes.

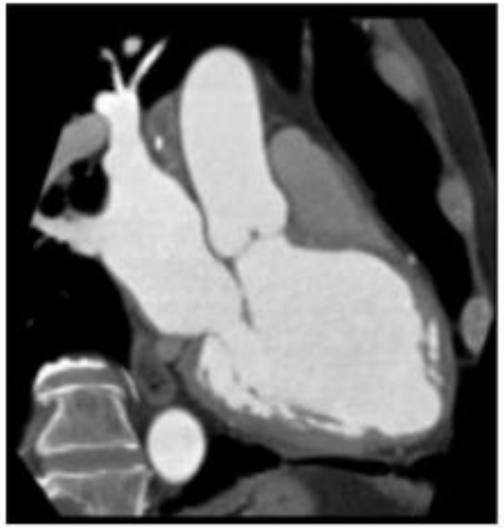
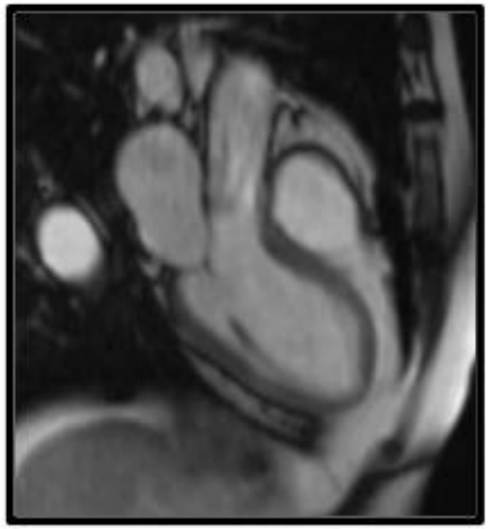
Name Publication Year	Number of patients	Comparison group	Surgical risk average (STS %)	Primary outcome	Mortality outcome TAVI at specified timepoint (%)	Mortality comparison group (%)	Mortality p-value 95% CI and/or HR	TAVI approach
PARTNER 1B trial 2010 [1]	358	Medical Management	11.6	All-cause mortality at 1 year	30.7	50.7	HR 0.55 (95% CI 0.40-0.74), p<0.001	TF
PARTNER 1A trial 2011 [2]	699	SAVR	11.7	All-cause mortality at 1 year	24.2	26.8	p=0.44	TF and TA
PARTNER 2 2016 [3]	2,032	SAVR	5.8	All-cause mortality + disabling stroke at 2 years	16.7	18.0	p=0.45	TF and TA
SURTAVI 2017 [4]	1,746	SAVR	4.5	All-cause mortality + disabling stroke at 2 years	11.4	11.6	(95% CI -3.8 to 3.3)	TF, TS and TAo
NOTION 2016 [5]	280	SAVR	3.0	All-cause mortality + disabling stroke at 1 year	4.9	7.5	p=0.38	TF and TS
PARTNER 3 2019 [6]	950	SAVR	1.9	All-cause mortality, disabling stroke or rehospitalisation at 1 year	1.0	2.5	HR 0.41 (95% CI 0.14-1.17)	TF
Evolut Low-risk Trial 2019 [7]	1,403	SAVR	1.9	All-cause mortality + disabling stroke at 2 years	4.5	4.5	(95% CI -3.2-3.2)	TF

Abbreviations: STS, Society of Thoracic Surgeons; TA, transapical; TAo, transaortic; TF, transfemoral; TS, transsubclavian; SAVR, surgical aortic valve replacement; TAVI, transcatheter aortic valve replacement; HR, heart rate; SURTAVI, Surgical Replacement and Transcatheter Aortic Valve Implantation; NOTION, Nordic Aortic Valve Intervention; PARTNER, Placement of AoRTic TraNscathetER Valve Trials.

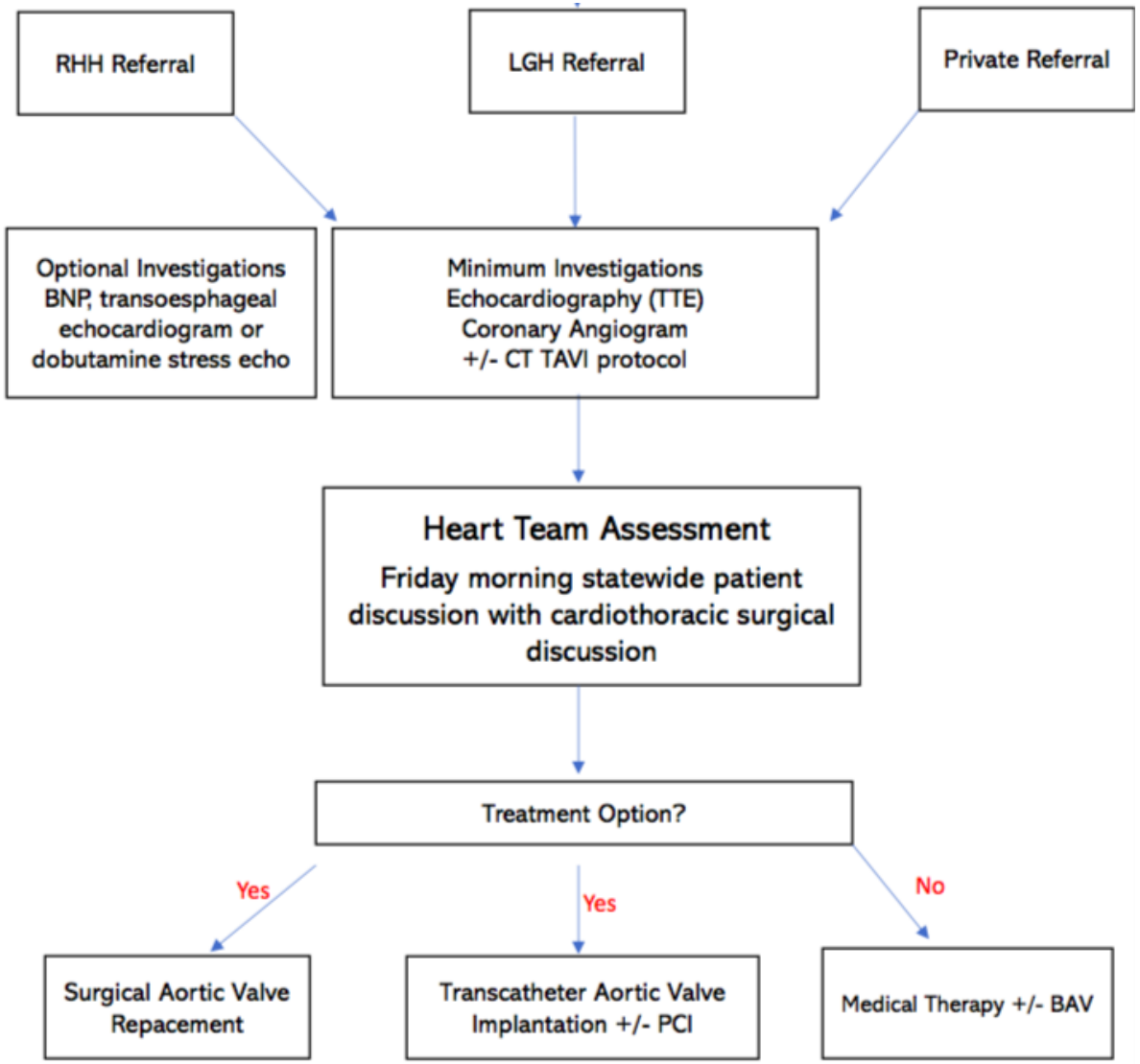
Prior Preparation Prevents Poor TAVI Performance

Multimodality Imaging

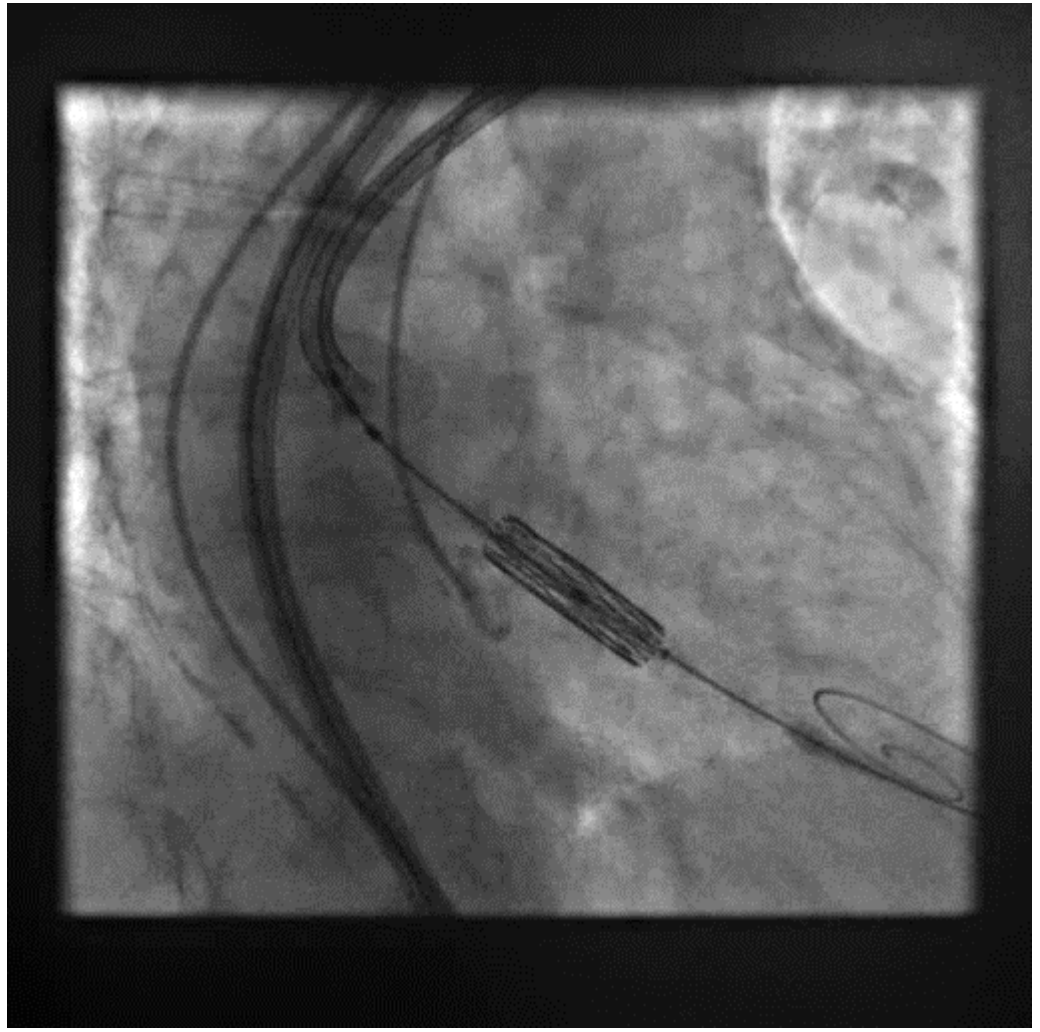



Severe AS Patients



Streamlined TAVI (90% of cases)

- Local anaesthetic and light sedation
- One operator, one fellow, one nurse (6 people in the room)
- Bifemoral arterial access
  - one 6 F for pigtail,
  - one 14-16 F for valve delivery
- No need for balloon valvuloplasty
- Occasional cerebral protection
- One rapid pacing run to deliver valve
- Percutaneous closure
- In hospital 1-2 days post procedure
- Mobilise evening of procedure
- Average case time 30min skin to skin



Intra Procedural Nursing Notes

SEE ANESTHETIC CHART

Sedation Score	Tick	Time
0 = none (alert)		
S = Sleeping normally		
1 = Mild (occas. drowsy but easy to rouse)		
2 = Moderate (freq. drowsy but easy to rouse)		
3 = severe (somnolent, difficult to rouse)		

LEFT

6F - arterial

angioseal @ 1123

Angio-Seal™ VIP
REF 610132
LOT 06082554

26 mm (+2) valve ☑ 1118

Edwards Lifesciences
REF 9600TFX26
Edwards SAPIEN 3 Transcatheter Heart Valve
2019-12-08 Implant Date
SN 5553835
Lot No. S-17M6403
Surgeon
(01)07612989037484
(17)191208(21)5553635
Patient

RIGHT

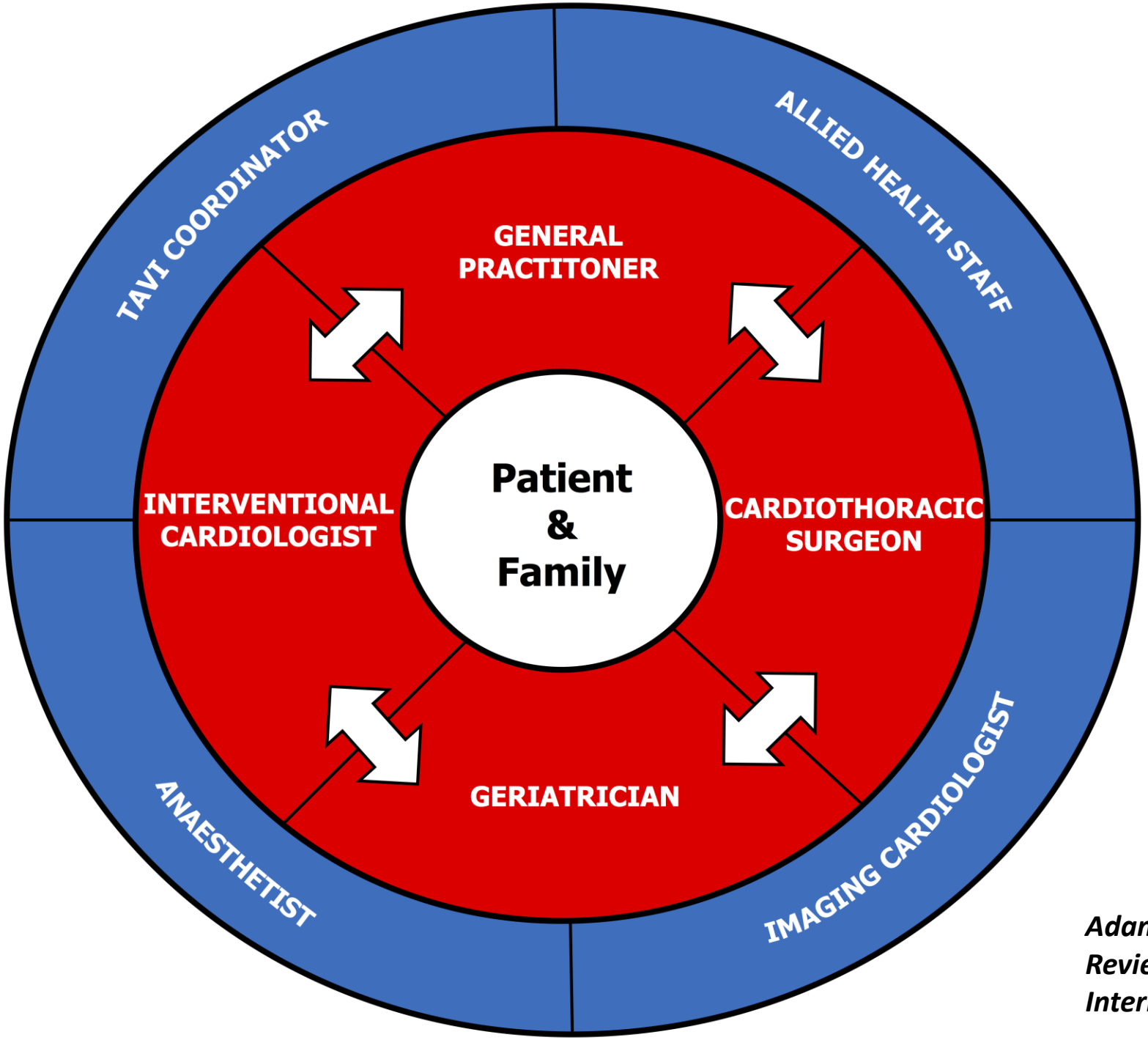
8F - arterial → 14F eSheath

X2 proglide inserted @1110 closed @1120

Runner Nurse's Signature: _____

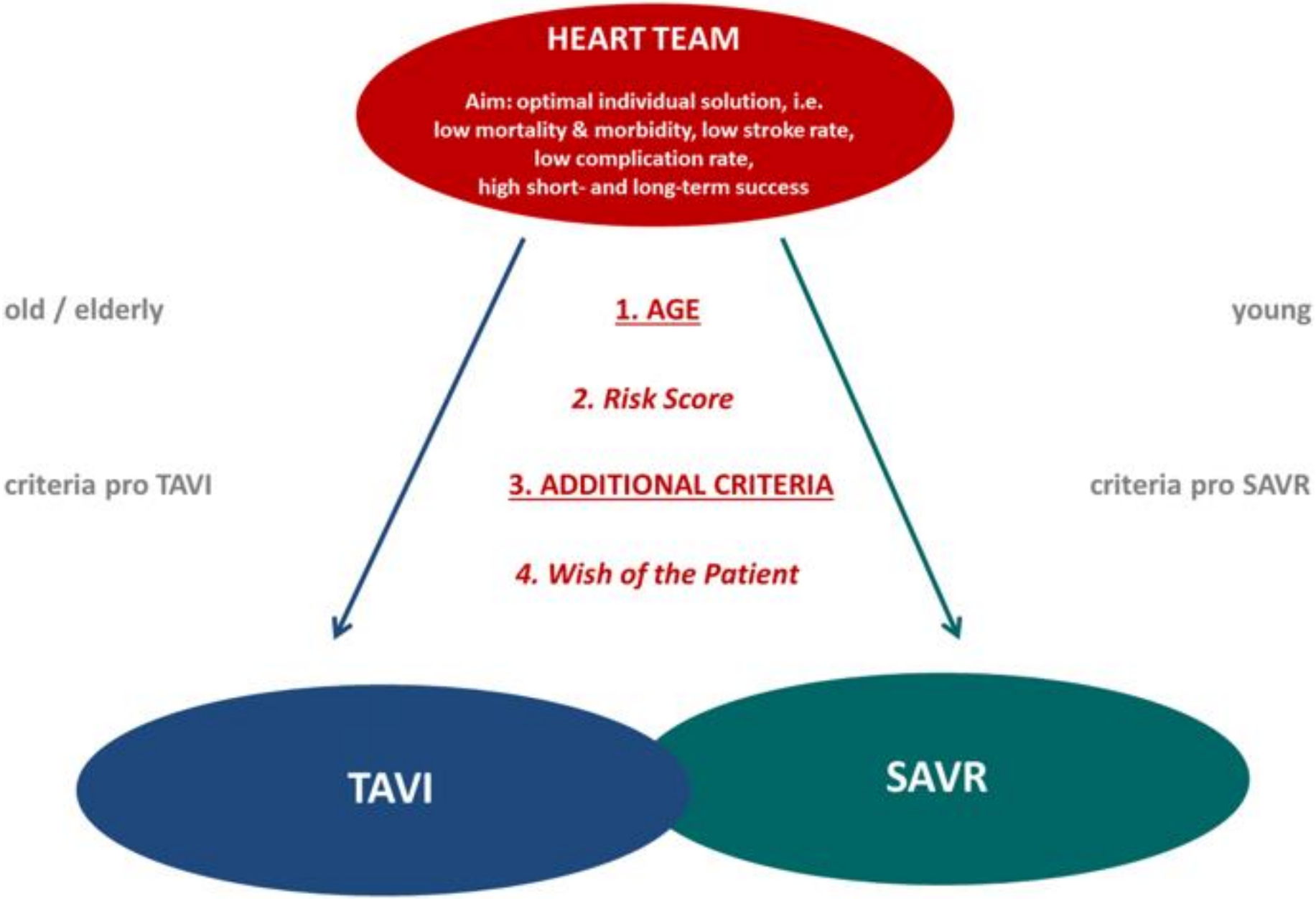
Time out of Lab: _____

*(R) femoral incision closed with Vicryl 2-0 Self absorbable Suture *



Adams H et al, A Contemporary Review of Severe Aortic Stenosis, Intern Med J, doi: 10.1111/imj.14071

Choice of Treatment in Symptomatic Aortic Stenosis



Frailty

Physician's Guide

- Cognition
- Get up and go
- Gait speed
- Hand grip
- Weight loss
- Window watching
- Family support

Frailty

Comprised of 6 components giving a total score of 7

- Mini-mental State Exam <27 (worth 2 points)
- Unable to perform basic ADLs (worth 1 point)
- Unable to perform instrumental ADLs (worth 1 point)
- Mini nutritional assessment (worth 1 point)
- Timed up and go test (worth 1 point)
- Pre clinical assessment “eye ball” test (worth 1 point)

If a person scores 3 or greater they are considered frail, with validated poorer outcomes with both TAVI or SAVR

Shoenberger et al, European Heart Journal 2013

Clinical Frailty Scale*

1 **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 **Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

3 **Managing Well** – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.

4 **Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being "slowed up", and/or being tired during the day.

5 **Mildly Frail** – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 **Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 **Severely Frail – Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. **Terminally Ill** - Approaching the end of life. This category applies to people with **a life expectancy <6 months**, who are **not otherwise evidently frail.**

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

DALHOUSIE UNIVERSITY
Inspiring Minds

Journal of Medical Imaging and Radiation Oncology •• (2019) ••–••

MEDICAL IMAGING—ORIGINAL ARTICLE

Outcomes of incidental findings on multi-detector computed tomography for transcatheter aortic valve implantation assessment: A single-centre study and review of the literature

Francis J Ha,[1] Jodie Li Mei Tham,[1,2] Sarang Paleri,[1] Christine Wright,[1] Kelvin K Yap,[3] Heath SL Adams,[1,4] Robert J Whitbourn[1,2] and Sonny C Palmer[1,2]

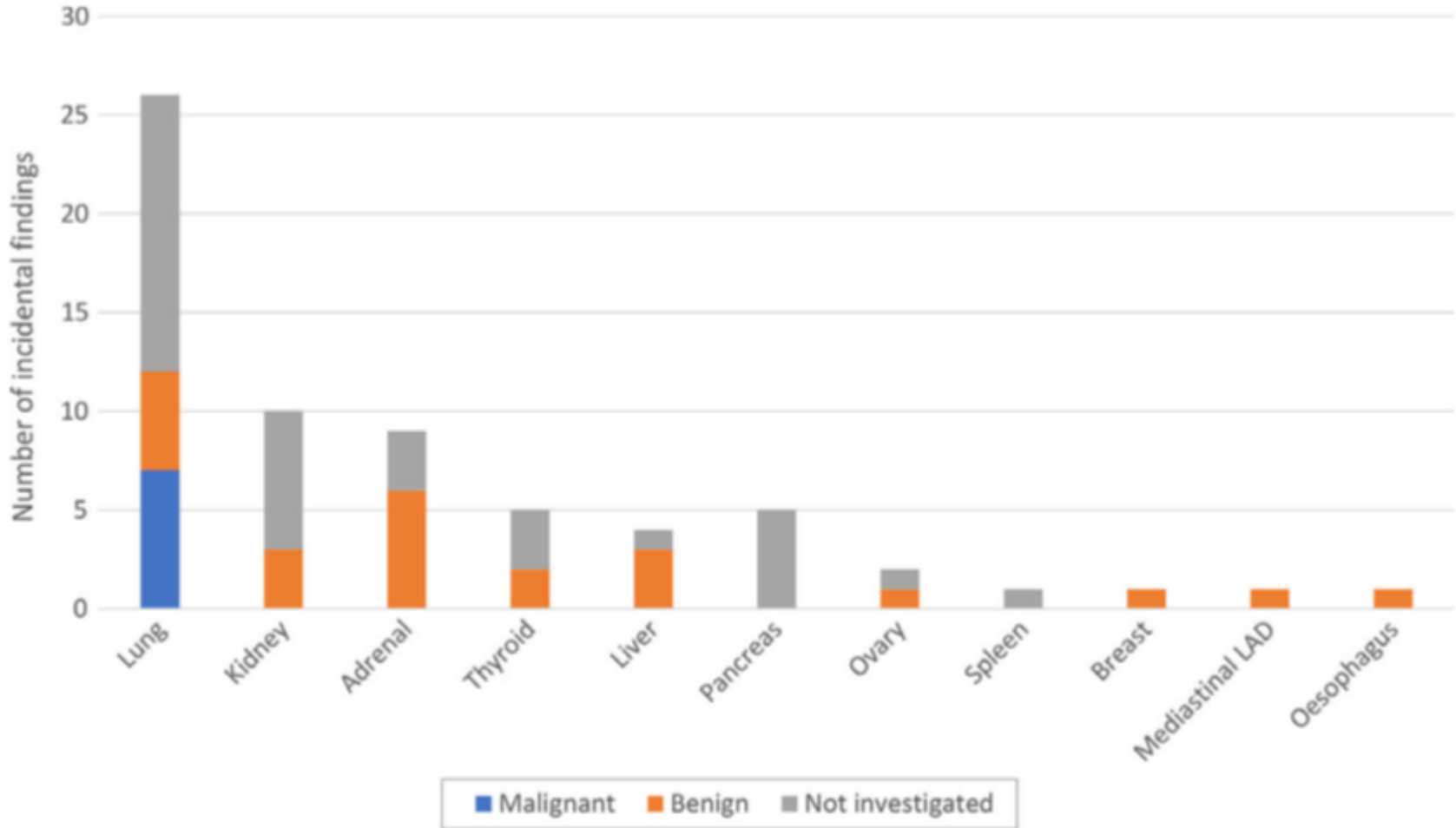


Fig. 1. Outcome of incidental findings of immediate and non-immediate clinical significance.

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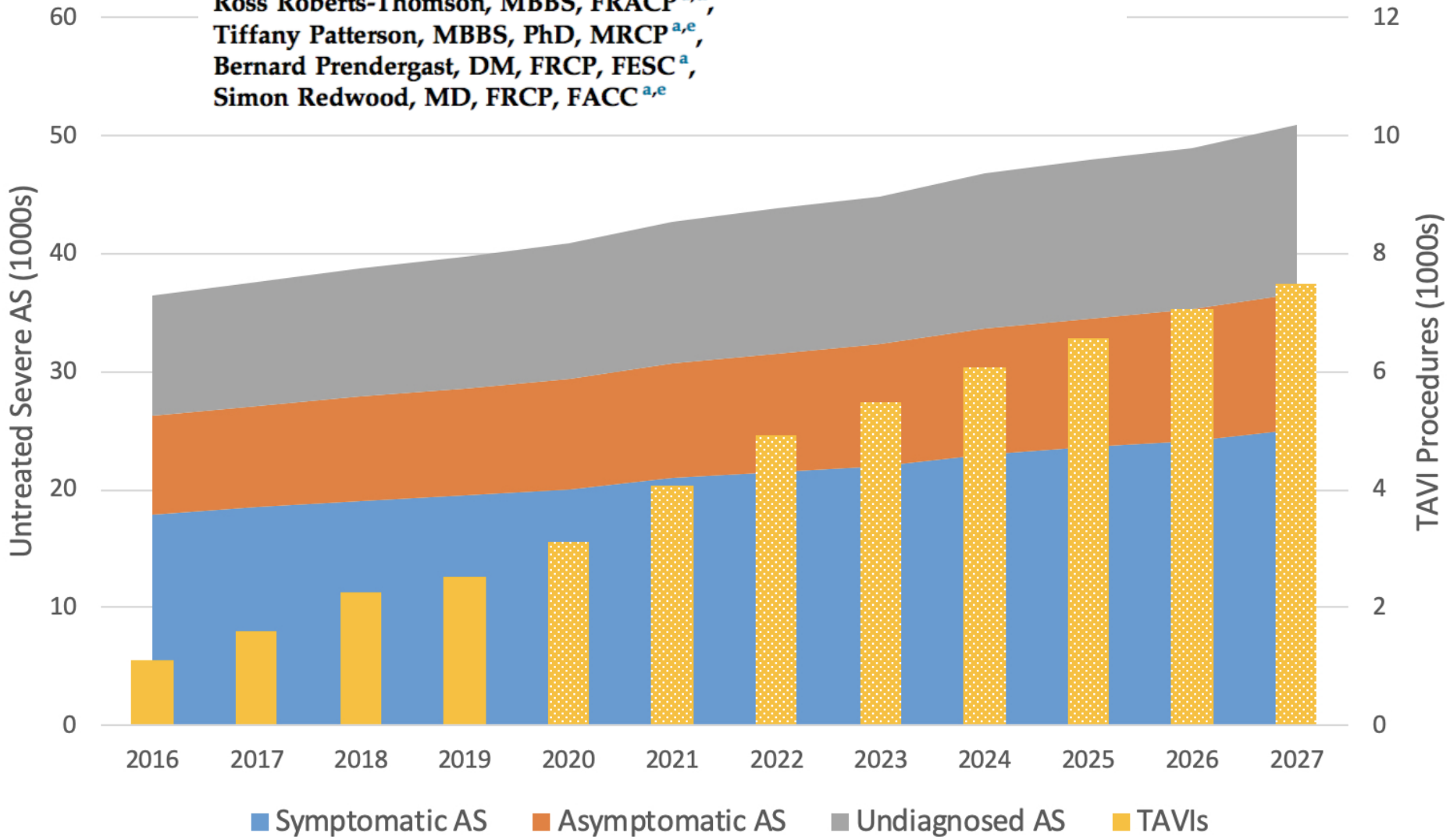
Fig. 1. Outcome of incidental findings of immediate and non-immediate clinical significance.

RHH Data

- 20 patients all transfemoral TAVI
- All Tasmanian patients, admitted day of surgery
- Average age 84.5 years
- Length of stay 1.5 days post op
- No vascular complications, no PPM, no deaths
- All alive at follow up with improvement in NYHA class

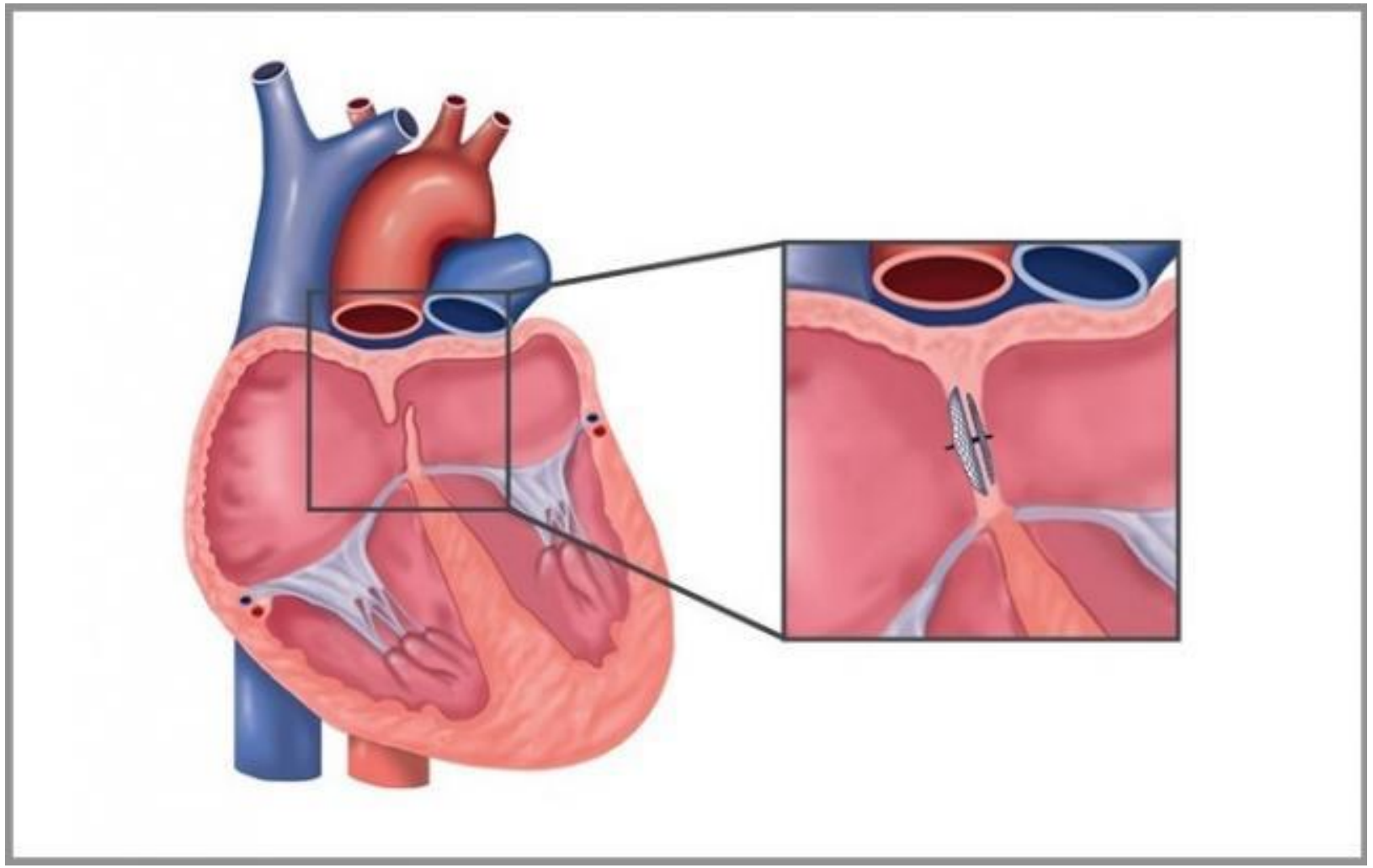
The Low-Risk TAVI Trials for Severe Aortic Stenosis: Future Implications for Australian and New Zealand Heart Teams

Heath Adams, MBBS, FRACP [a,b,c,*],
Ross Roberts-Thomson, MBBS, FRACP [a,d],
Tiffany Patterson, MBBS, PhD, MRCP [a,e],
Bernard Prendergast, DM, FRCP, FESC [a],
Simon Redwood, MD, FRCP, FACC [a,e]



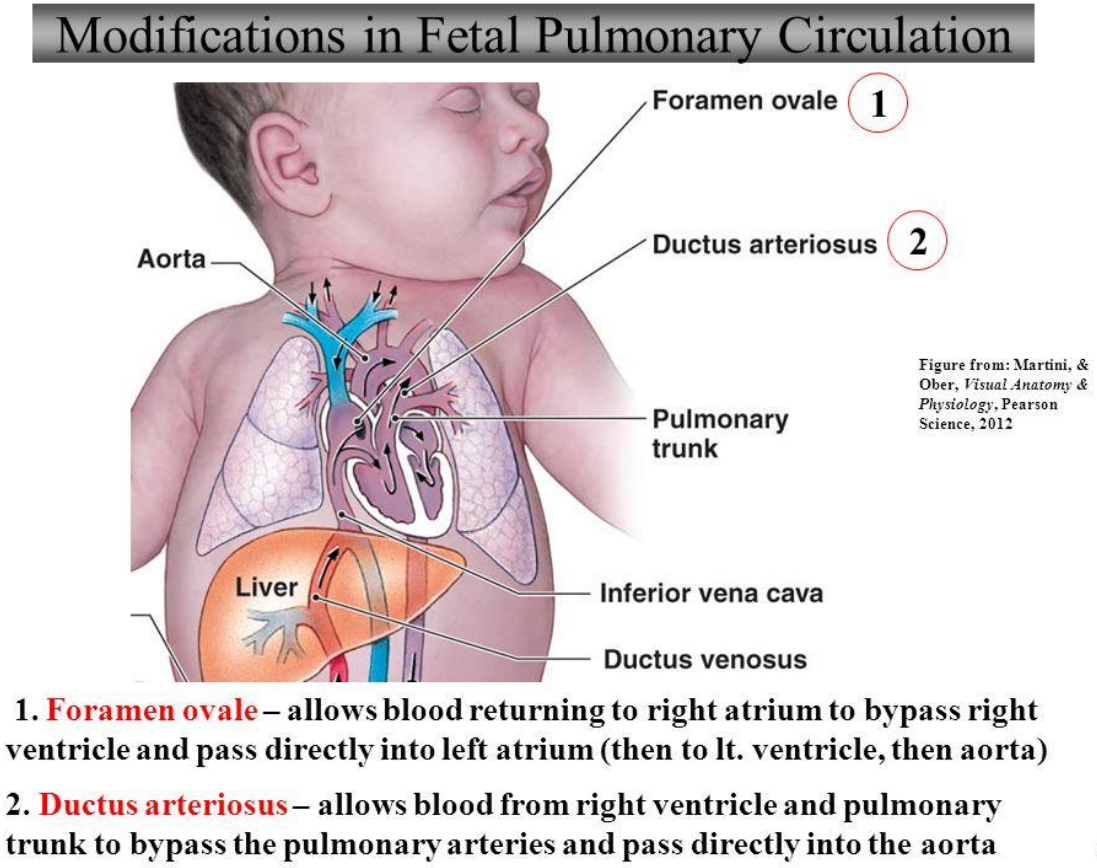
Cryptogenic Stoke and PFO

Dr Nathan Dwyer and Dr Heath Adams



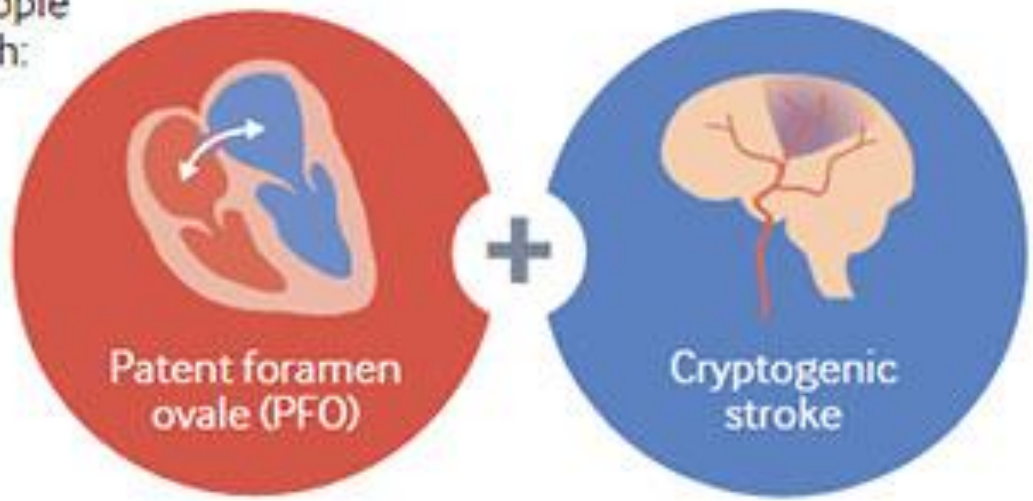
Foetus and Foramen Ovale

- During foetal life lungs do not receive blood flow
  - Oxygenated blood (placental) returning to RA shunted to LA via foramen ovale
- **PFO present in 25%** of the population
  - Haemodynamically insignificant



Population

People with:



- No atrial fibrillation
- No aortic disease
- No left sided heart disease
- No cerebrovascular disease

Treatment options:

- PFO closure
- Anticoagulants
- Antiplatelets

The Facts

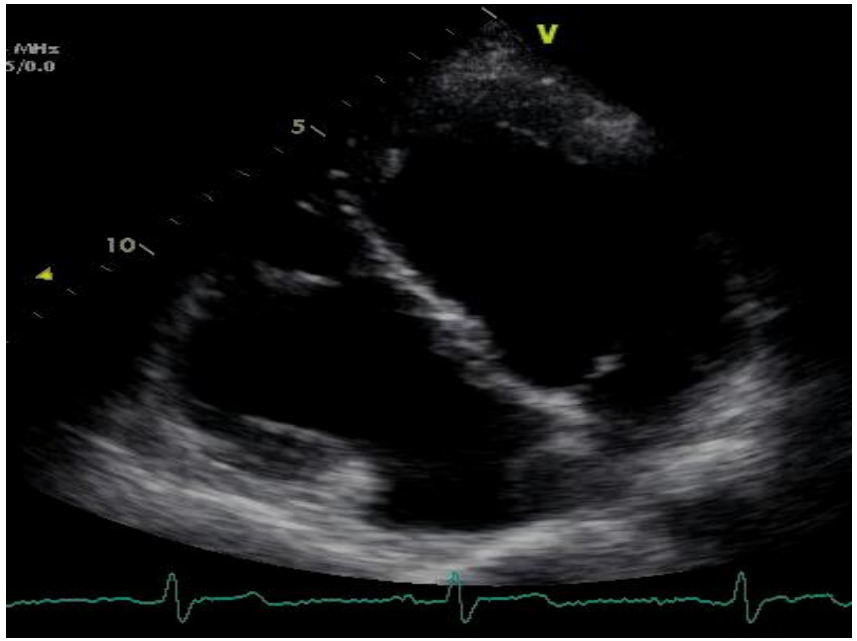
of people have an open (or patent) foramen ovale (PFO), a type of "hole" in their hearts[1]

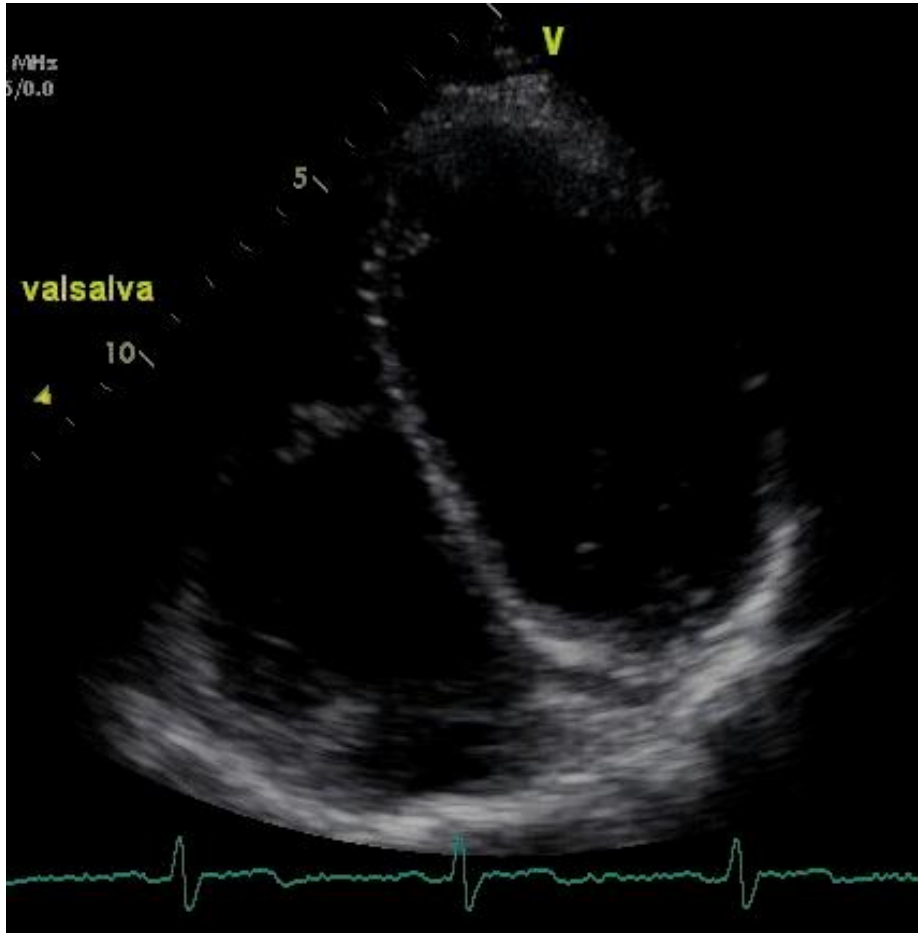
of all strokes are ischemic, or caused by blood clot blocking a blood vessel[2]

of all ischemic strokes are of an unknown cause (a cryptogenic stroke)[2]

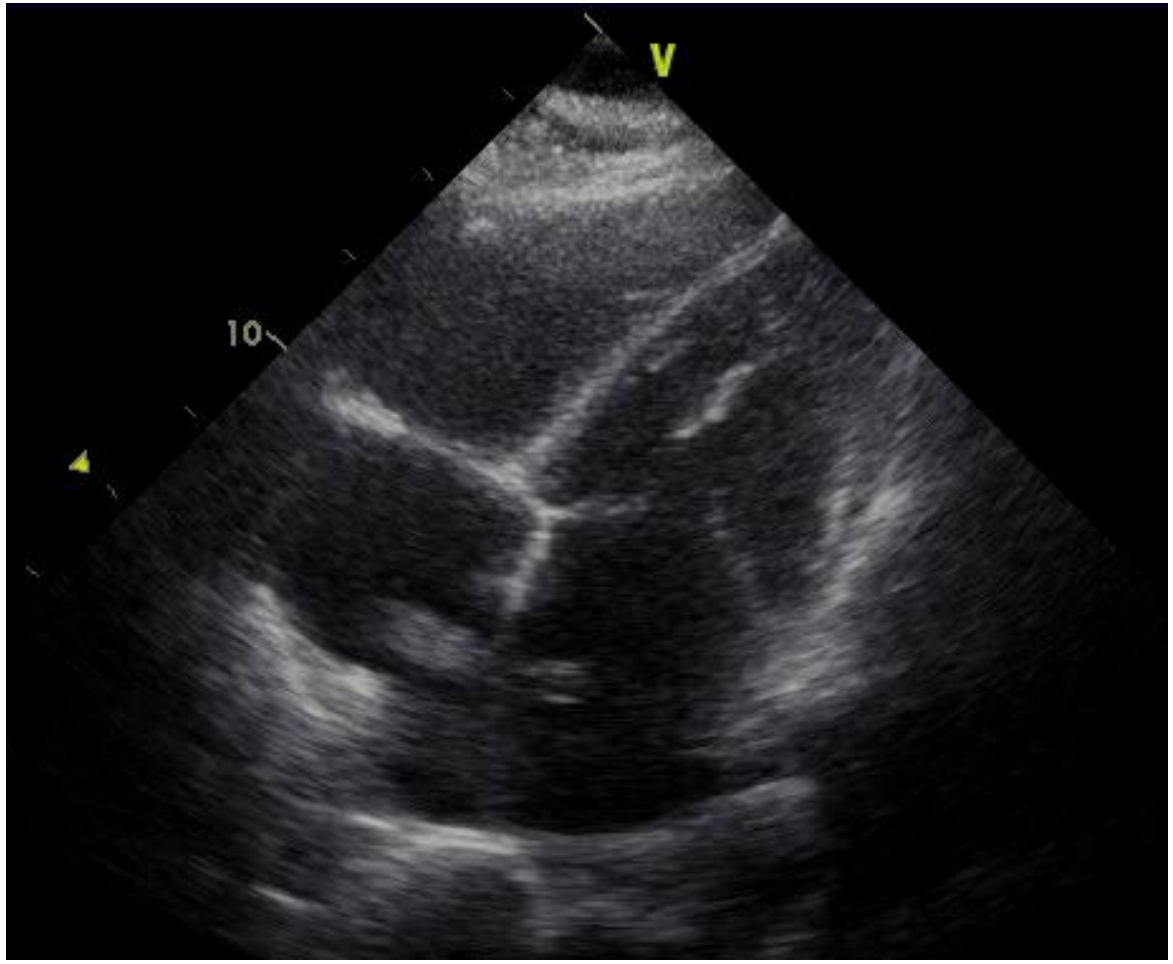
of people having a stroke with an unknown cause (a cryptogenic stroke) including younger people, have a PFO[1]

Bubble study





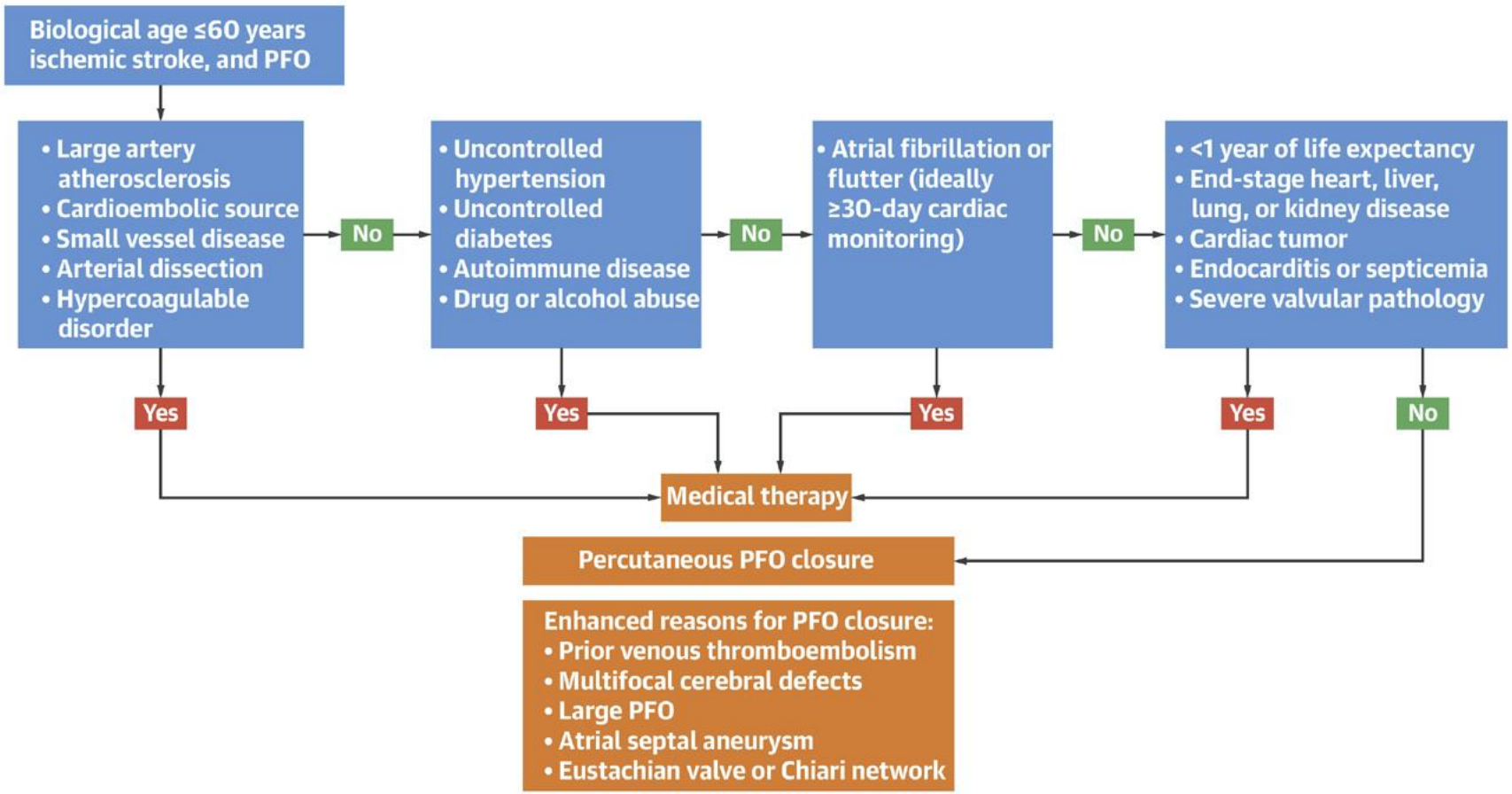
Paradoxical Embolism



Clinical Correlations of PFO

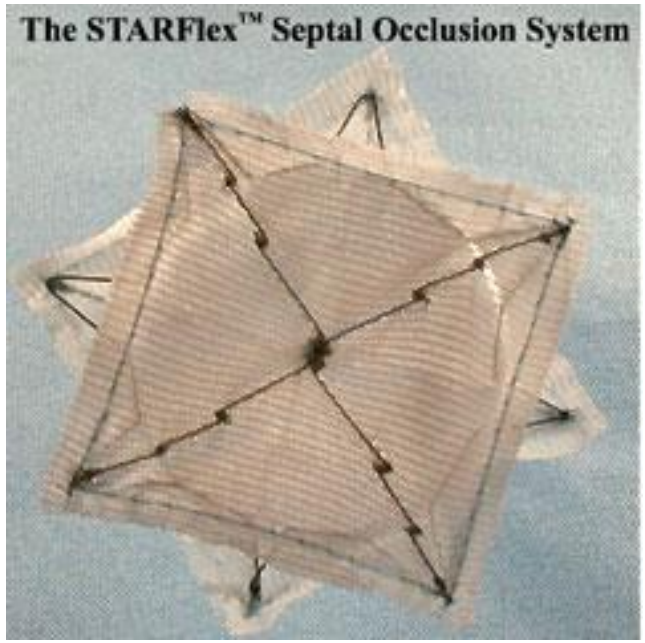
- Cryptogenic Stroke secondary to paradoxical embolism
- Migraine and vascular headache
  - MIST TRIAL: High prevalence of right to left shunt in migraine with aura (~60%)
  - **No evidence of significant clinical benefit with PFO closure**
  - Possible reduction in headache free days…
- Decompression sickness and air embolism
- Risk increased with:
  - Larger PFOs
  - Those that travel via air within 12-48hrs after diving
- Platypnoea-orthodeoxia syndrome
  - Dyspnoea and arterial desaturation in upright position with improvement when supine
  - **Two components required:**
    - Inter-atrial shunt or intra-pulmonary shunt
    - Functional component that promotes abnormal shunting
      - Deformity in inter-atrial septum or RA that increases flow through defect

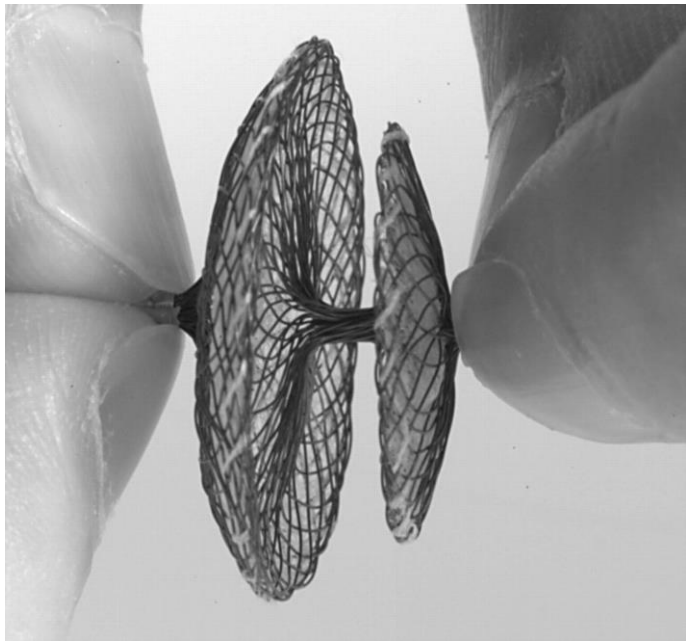
CENTRAL ILLUSTRATION: Evidence-Based Algorithm for PFO Closure in Ischemic Stroke Patients for Highest Clinical Yield, Based on Randomized Trials



Mojadidi, M.K. et al. J Am Coll Cardiol. 2018;71(9):1035–43.

Percutaneous Closure





PFO Closure vs Medical Therapy

The NEW ENGLAND JOURNAL of MEDICINE

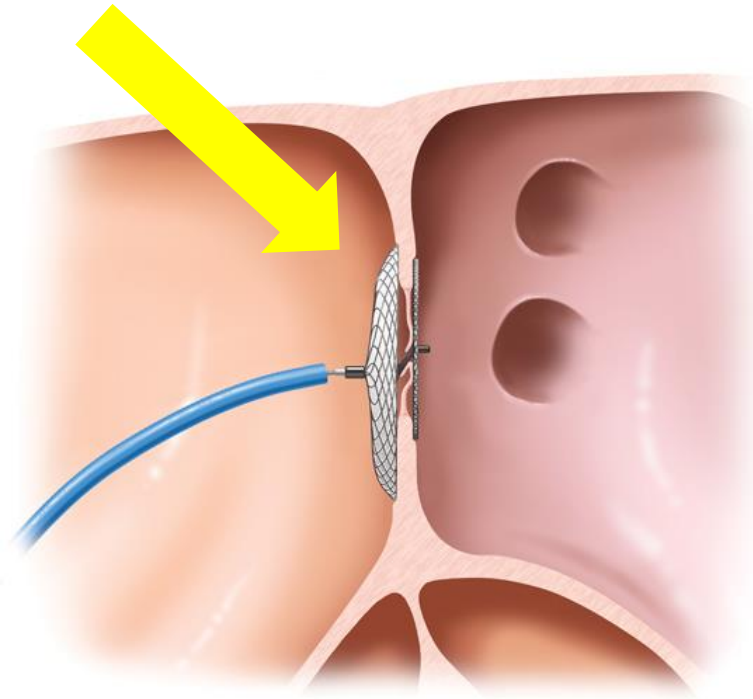
ORIGINAL ARTICLE

Closure of Patent Foramen Ovale versus Medical Therapy after Cryptogenic Stroke

John D. Carroll, M.D., Jeffrey L. Saver, M.D., David E. Thaler, M.D., Ph.D., Richard W. Smalling, M.D., Ph.D., Scott Berry, Ph.D., Lee A. MacDonald, M.D., David S. Marks, M.D., and David L. Tirschwell, M.D., for the RESPECT Investigators*

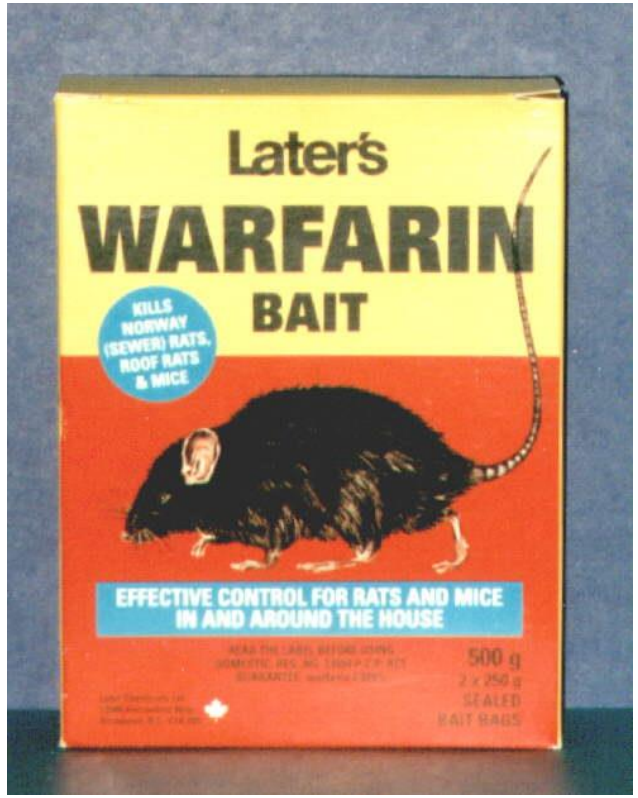
RESPECT Trial

- Prospective, multi-centre, **randomised trial**
- **980 patients**
- **Followed-up for median 2.6 years** +/- 2.0 years
- Patients randomised 1:1 to:
  - Medical therapy
  - Percutaneous PFO closure



RESPECT Trial - Method

- **Medical Therapy**
  - Aspirin
  - Aspirin + dipyridamole
  - Clopidogrel
  - Warfarin



- **Interventional Therapy**
  - Amplatzer PFO occluder
    - Within 21 days of randomisation
    - Aspirin + clopidogrel for 1 month then aspirin monotherapy for further 5 months

RESPECT Trial - Method

- Inclusion criteria
  - 18-60 years
  - Cryptogenic ischaemic stroke
  - PFO identified on TOE
  - Randomised within 270 days of stroke

<30 days post implantation of device
<45 days after randomisation

- **Primary end-point**
  - Composite of recurrent ischaemic stroke and early death
- **Secondary end-points**
  - Complete closure of PFO on 6 month TOE
  - Absence of TIA
  - Cardiovascular death

Table 1. Characteristics of the Patients at Baseline.*

Characteristic	Closure Group (N=499)	Medical Group (N=481)	All Patients (N=980)
Age — yr	45.7±9.7	46.2±10.0	45.9±9.9
Male sex — no. (%)	268 (53.7)	268 (55.7)	536 (54.7)
Medical history — no./total no. (%)			
Diabetes mellitus	33/499 (6.6)	40/481 (8.3)	73/980 (7.4)
Systemic hypertension	158/499 (31.7)	150/481 (31.2)	308/980 (31.4)
Smoking status			
Current smoker	75/499 (15.0)	55/481 (11.4)	130/980 (13.3)
Former smoker	134/499 (26.9)	143/481 (29.7)	277/980 (28.3)
Hypercholesterolemia	194/499 (38.9)	193/481 (40.1)	387/980 (39.5)
Coronary artery disease	19/499 (3.8)	9/481 (1.9)	28/980 (2.9)
Previous myocardial infarction	5/499 (1.0)	2/481 (0.4)	7/980 (0.7)
Peripheral vascular disease	5/499 (1.0)	1/481 (0.2)	6/980 (0.6)
Previous transient ischemic attack	58/499 (11.6)	61/481 (12.7)	119/980 (12.1)
Previous stroke	53/498 (10.6)	51/481 (10.6)	104/979 (10.6)
Family history of stroke	135/495 (27.3)	108/480 (22.5)	243/975 (24.9)
Migraine	195/499 (39.1)	185/481 (38.5)	380/980 (38.8)
Deep-vein thrombosis	20/499 (4.0)	15/481 (3.1)	35/980 (3.6)
Congestive heart failure	3/499 (0.6)	0/481 (0)	3/980 (0.3)
Chronic obstructive pulmonary disease	4/499 (0.8)	7/481 (1.5)	11/980 (1.1)
Birth control or hormone-replacement therapy	41/499 (8.2)	52/481 (10.8)	93/980 (9.5)

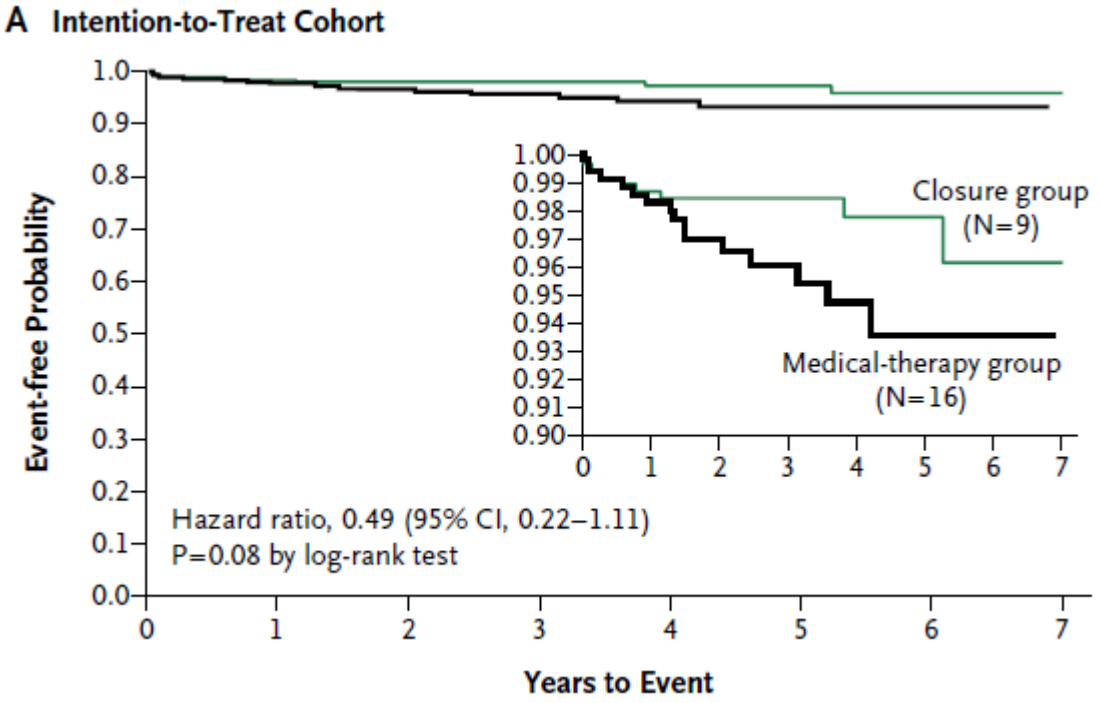
RESPECT Trial - Results

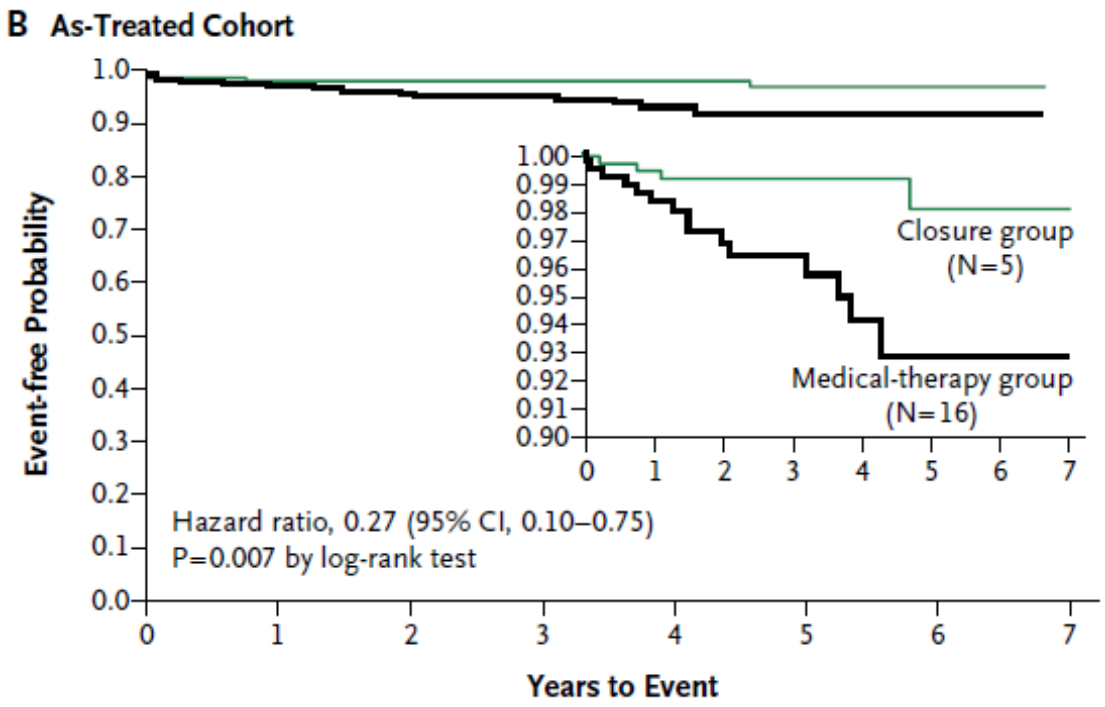
- Median time from index stroke to randomisation = 120 days

- Medical therapy group
  - **46.5%** - Aspirin alone
  - **8.1%** - Aspirin + dipyridamole
  - **14.0%** - Clopidogrel alone
  - **25.2%** - Warfarin

RESPECT Trial - Results

- 25 primary endpoints – all non-fatal ischaemic strokes





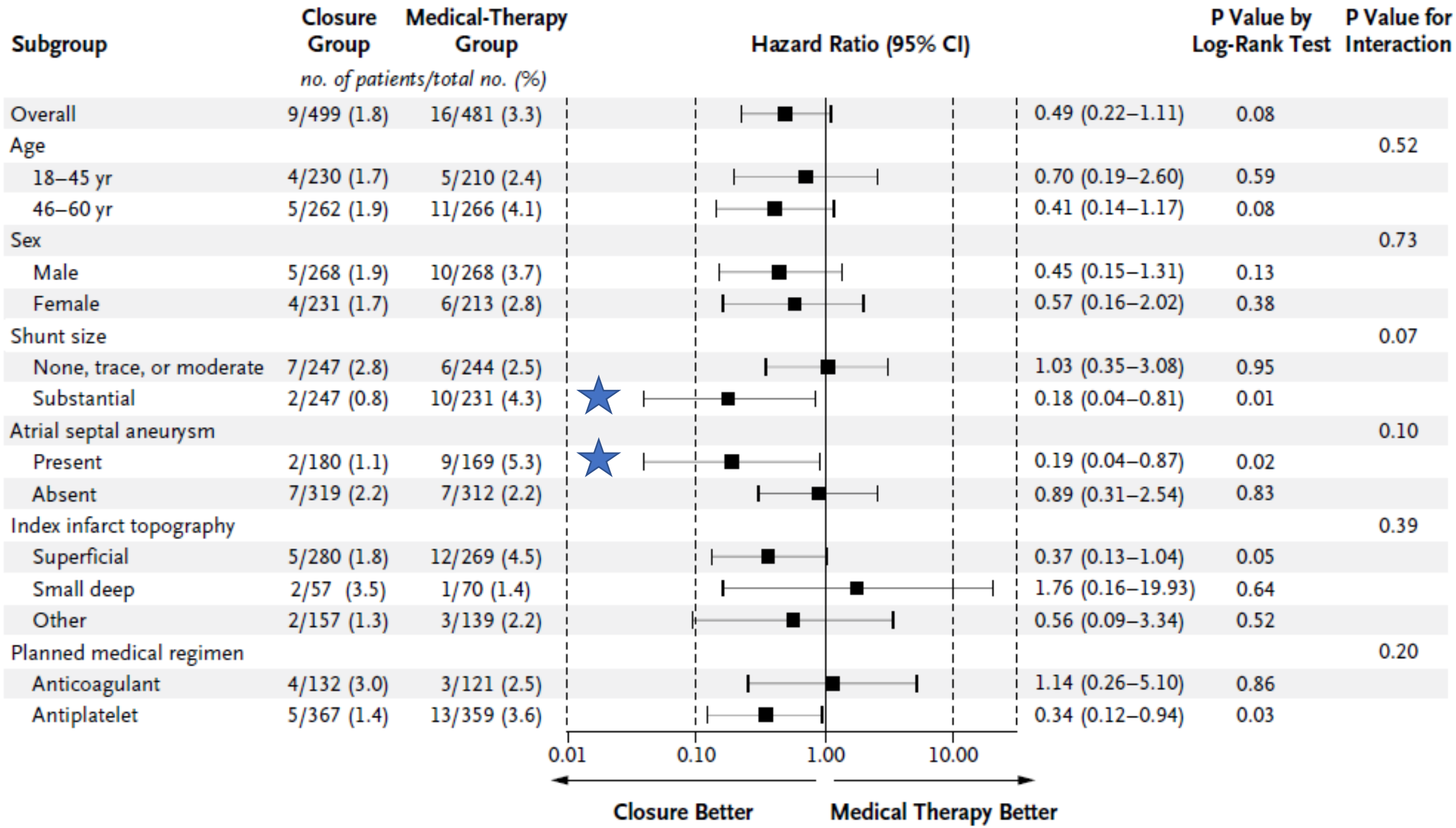

Subgroup
Closure Group
Medical-Therapy Group
no. of patients/total no. (%)
Hazard Ratio (95% CI)
P Value by Log-Rank Test
P Value for Interaction
Overall 9/499 (1.8) 16/481 (3.3) 0.49 (0.22–1.11) 0.08
Age 0.52
18–45 yr 4/230 (1.7) 5/210 (2.4) 0.70 (0.19–2.60) 0.59
46–60 yr 5/262 (1.9) 11/266 (4.1) 0.41 (0.14–1.17) 0.08
Sex 0.73
Male 5/268 (1.9) 10/268 (3.7) 0.45 (0.15–1.31) 0.13
Female 4/231 (1.7) 6/213 (2.8) 0.57 (0.16–2.02) 0.38
Shunt size 0.07
None, trace, or moderate 7/247 (2.8) 6/244 (2.5) 1.03 (0.35–3.08) 0.95
Substantial 2/247 (0.8) 10/231 (4.3) 0.18 (0.04–0.81) 0.01
Atrial septal aneurysm 0.10
Present 2/180 (1.1) 9/169 (5.3) 0.19 (0.04–0.87) 0.02
Absent 7/319 (2.2) 7/312 (2.2) 0.89 (0.31–2.54) 0.83
Index infarct topography 0.39
Superficial 5/280 (1.8) 12/269 (4.5) 0.37 (0.13–1.04) 0.05
Small deep 2/57 (3.5) 1/70 (1.4) 1.76 (0.16–19.93) 0.64
Other 2/157 (1.3) 3/139 (2.2) 0.56 (0.09–3.34) 0.52
Planned medical regimen 0.20
Anticoagulant 4/132 (3.0) 3/121 (2.5) 1.14 (0.26–5.10) 0.86
Antiplatelet 5/367 (1.4) 13/359 (3.6) 0.34 (0.12–0.94) 0.03
0.01
0.10
1.00
10.00
Closure Better
Medical Therapy Better

Table 2. Serious Adverse Events Related to the Procedure or Device among the 499 Patients in the Closure Group.*

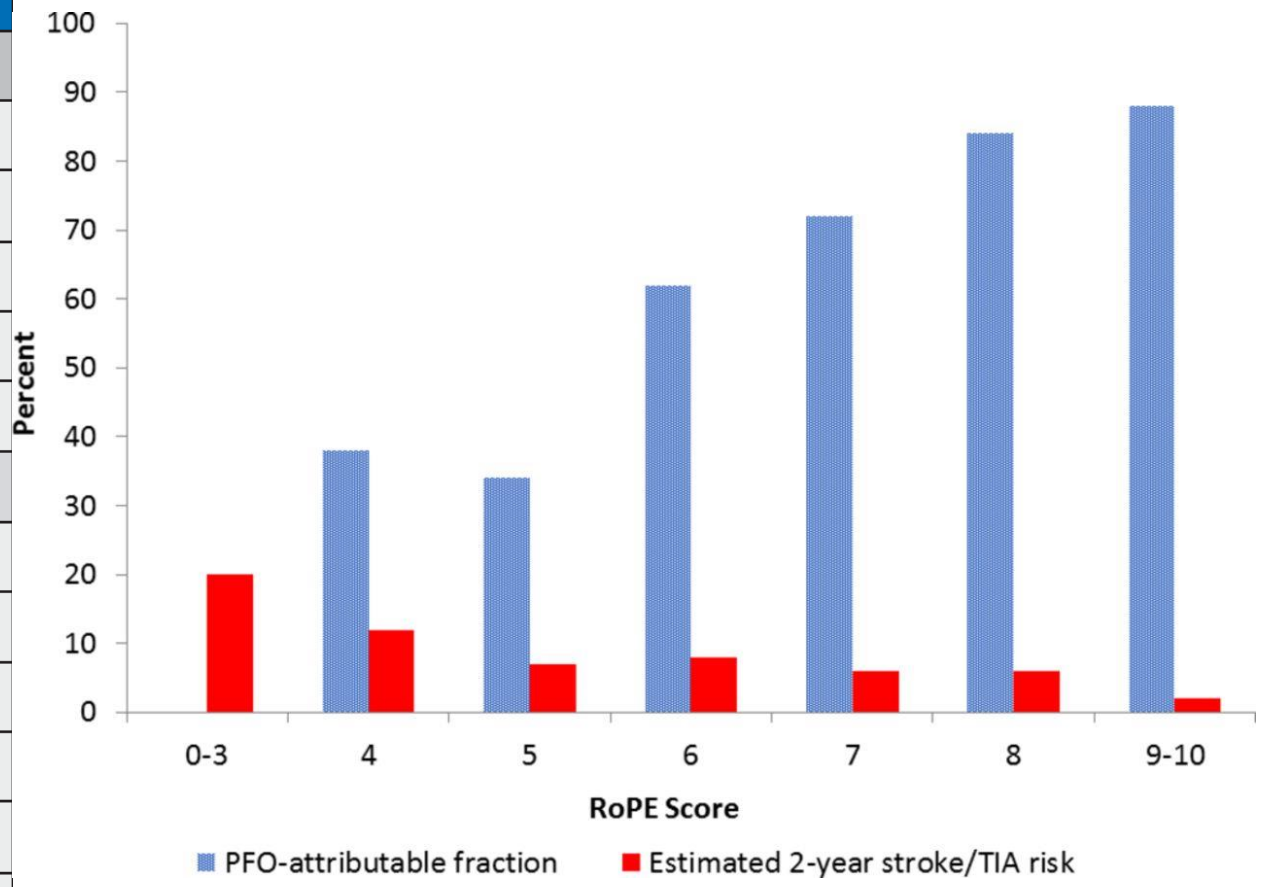
Serious Adverse Event	Patients with Event	Total No. of Events	Procedure-Related Events	Device-Related Events
	no. (%)		*no. (%)*	
Allergic drug reaction	1 (0.2)	1	1 (0.2)	—
Atrial fibrillation	1 (0.2)	1	1 (0.2)	—
Atrial flutter	1 (0.2)	1	—	1 (0.2)
Cardiac perforation	1 (0.2)	1	1 (0.2)	—
Cardiac thrombus	2 (0.4)	2	1 (0.2)	1 (0.2)
Chest tightness	1 (0.2)	1	—	1 (0.2)
Deep-vein thrombosis	1 (0.2)	1	1 (0.2)	—
Infective or bacterial endocarditis	1 (0.2)	1	—	1 (0.2)
Ischemic stroke	2 (0.4)	2	—	2 (0.4)
Pericardial effusion	1 (0.2)	1	1 (0.2)	—
Pericardial tamponade	2 (0.4)	2	2 (0.4)	—
Pulmonary embolism	1 (0.2)	1	—	1 (0.2)
Residual shunt requiring closure	1 (0.2)	1	—	1 (0.2)
Sepsis	1 (0.2)	1	—	1 (0.2)
Nonsustained ventricular tachycardia	1 (0.2)	1	—	1 (0.2)
Major vascular complications				
Bleeding	2 (0.4)	2	2 (0.4)	—
Hematoma	1 (0.2)	1	1 (0.2)	—
Vasovagal reaction	1 (0.2)	1	1 (0.2)	—
Total	21 (4.2)	22	12 (2.4)	10 (2.0)

RESPECT Trial - Conclusion

- **PFO closure not superior to medical therapy**
- Unanswered
  - Large PFOs
  - Different devices
  - Recurrent strokes despite medical therapy
  - Optimal type and duration of anti-platelet therapy with device

RoPE Score

TABLE 1. RoPE SCORE CALCULATOR	
Patient Characteristic	**Points**
No history of hypertension	+1
No history of diabetes	+1
No history of stroke or TIA	+1
Nonsmoker	+1
Cortical infarct on imaging	+1
Age (y)	
18–29	+5
30–39	+4
40–49	+3
50–59	+2
69–69	+1
≥ 70	+0
Total RoPE score	0–10



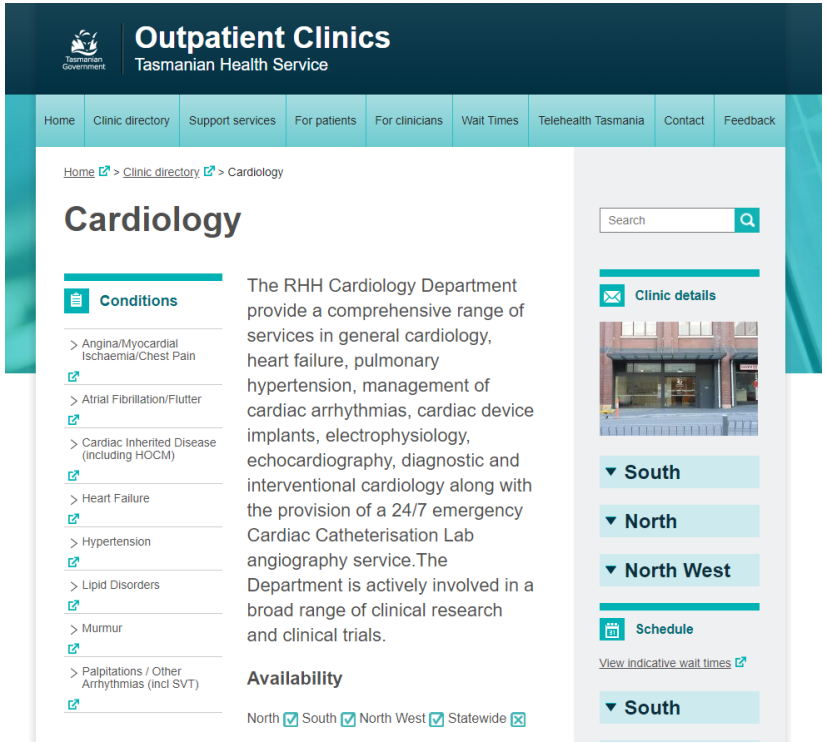
Referral (Any Cardiologist)

- Most come from inpatient neurologist or CVA physicians
- GP referral
- MRI-B showing stroke
- <60 years of age and no AF, controlled BP, normal carotids, no hypercoagulable state, no vasculitis, (normal) lipids
- ECG, 24 Hour Holter, hypercoagulable screen, lipids, carotid USS, ECHO with bubble study --> need to request
- All patients will be discussed for appropriateness and combined MDT

The THS Outpatients website

The THS Outpatients Website

Outpatients.tas.gov.au/clinics/cardiology



What is the Outpatients website?

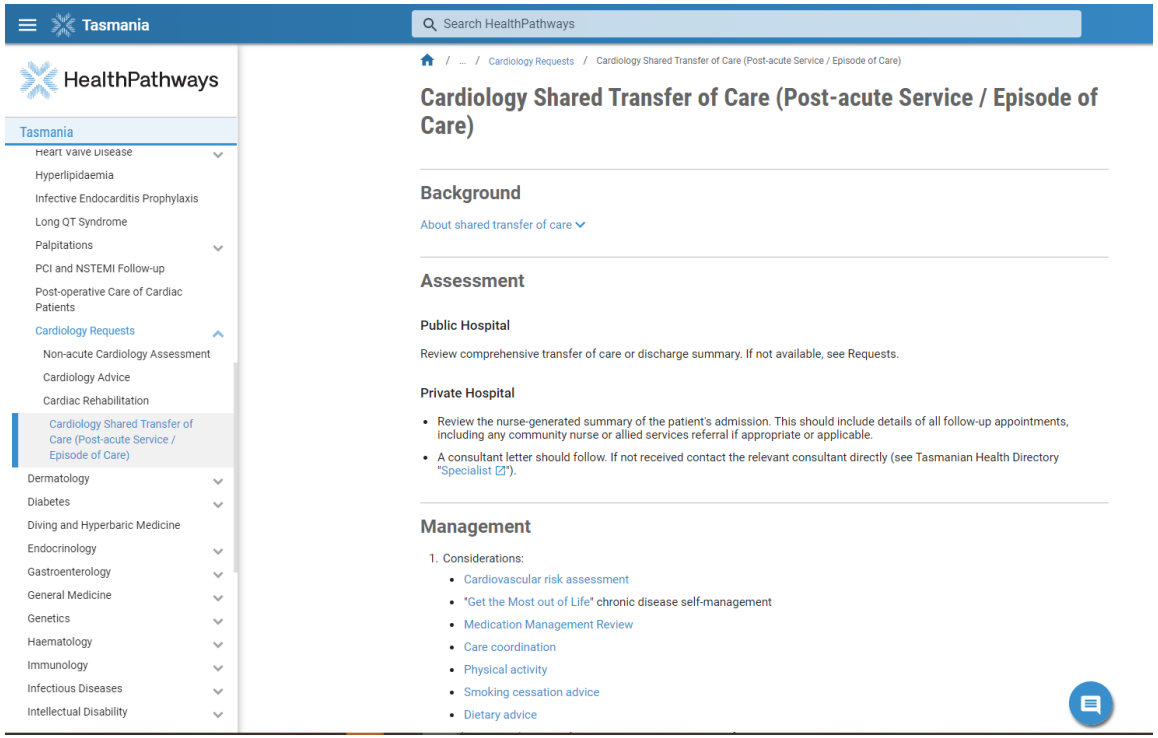
- THS referral requirements
- Clinic contact information
- Waiting times

Accessible directly at outpatients.tas.gov.au or via Tasmanian HealthPathways

Tasmanian HealthPathways

tasmania.communityhealthpathways.org

Login with ‘connectingcare’ and pwd ‘health’



What is HealthPathways?

- HealthPathways offers clinicians locally agreed information to make the right decisions, together with patients, at the point of care.
- Content is developed collaboratively by general practitioners, hospital clinicians, and a wide range of other health professionals. Each pathway is evidence-informed, but also reflects local reality, and aims to preserve clinical autonomy and patient choice. HealthPathways serves to reduce unwarranted variation and accelerate evidence into practice.

Tasmanian HealthPathways relevant to tonights presentations

- Cardiology general pathway: https://tasmania.communityhealthpathways.org/25270.htm
- Post-PCI/NSTEMI: https://tasmania.communityhealthpathways.org/95619.htm
- Prosthetic valve follow-up: https://tasmania.communityhealthpathways.org/55205.htm though
- Palpitation pathway: https://tasmania.communityhealthpathways.org/25273.htm
- ACS the acute chest pain pathway: https://tasmania.communityhealthpathways.org/27916.htm

Username ‘connectingcare’ | password ‘health’

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