Peripartum management of Rheumatic Heart Disease

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Talk outline

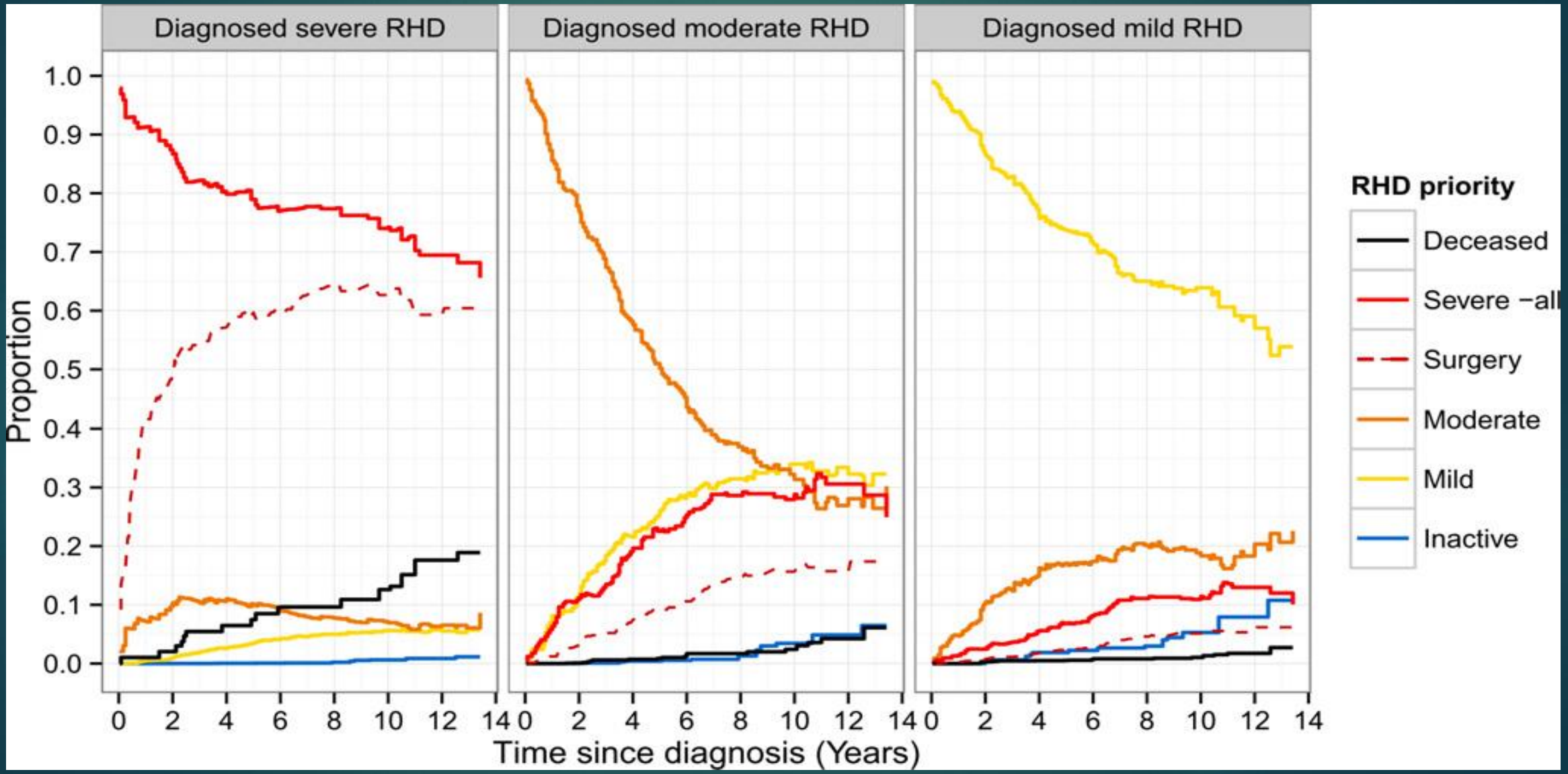
- Why (still) talk about RHD in pregnancy?
- CVS changes of pregnancy
- Case history
- RHD in pregnancy outcomes
- Risk stratification
- Management plans

Why (still) talk about RHD?

- > 34 million people affected and 340,000 deaths/year worldwide[1]
- 1-3% in northern Australian and NZ indigenous communities[2,3]
- Median age of 1st episode ARF is 12 years[4]
- 66% females[4]
- Preventable and manageable[1-4]

- [1]Carapetis *Eur Heart J 2015;* [2]*RHD Aust Guidelines 2012;* [3]Wilson *Heart Lung and Circulation 2010;* [4]Lawrence *Circulation 2013*

Progression of RHD
Cannon et al JAHA 2017



CVS changes of pregnancy*

Due to:

- hormonal changes and
- the utero-placental unit

Pregnancy is a:

- Hypervolaemic and
- Hyperdynamic state

*Foley M *UpToDate - last update Oct 2017;*
European Soc Cardiol Guidelines *Eur Heart J 2011*

CVS changes of pregnancy (cont'd)

- 30-50% ↑ cardiac output (CO) by 20-28 weeks
- 30-50% ↑ Blood volume
- Slight ↓ BP (10mmHg) mid-term
- Slight ↑ HR (15-20 bpm)

Specific situation:

- Caval compression 25% ↓ CO

CVS changes of pregnancy (cont'd)

Labour & Delivery:

- Further 25% ↑ CO with contractions (active stage)
- Pushing Valsalva effects:
  - Rapid changes: 50% ↑ then ↓ CO and ↑ HR
- Further 30% ↑ CO after delivery
  - uterine contraction & removal of caval compression
  - Maintained for 24 hours; mostly resolved over 2/52

Case study

- 23 yo Aboriginal woman ‘from the Cape’
- G1P0 at 30/40 gestation
- Asymptomatic but loud murmur

Case study (cont'd)

- Echo: mod MS (MVA 1.2 cm^2); mod MR; normal EF, mild PHT
- **What should be the management?**
- **What is the likely outcome?**
- **What should be the plan for delivery?**

Pregnancy outcomes with Rheumatic MV Disease

van Hagen et al *Circulation 2018*

- 390 patients 2008-2013 in emerging countries
- 2% maternal mortality
- CCF in:
  - 32% of MS (16% mild, 32% mod, 48% severe)
  - 23% of MR (mod or severe)
- No info on past Hx, EF, PAP – no risk score

INTERNAL MEDICINE JOURNAL 2012 Sep;42(9):978-84

ORIGINAL ARTICLES

Rheumatic heart disease in pregnancy: cardiac and obstetric outcomes

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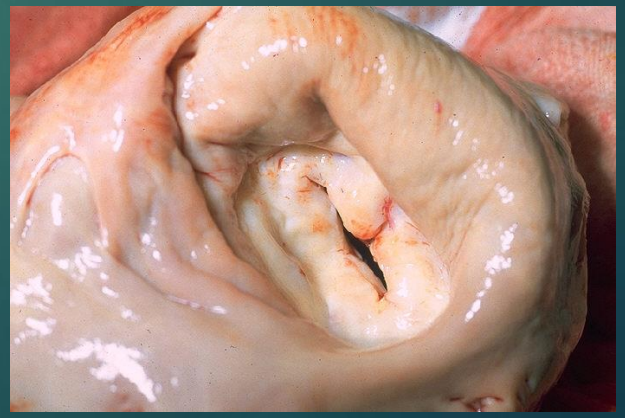
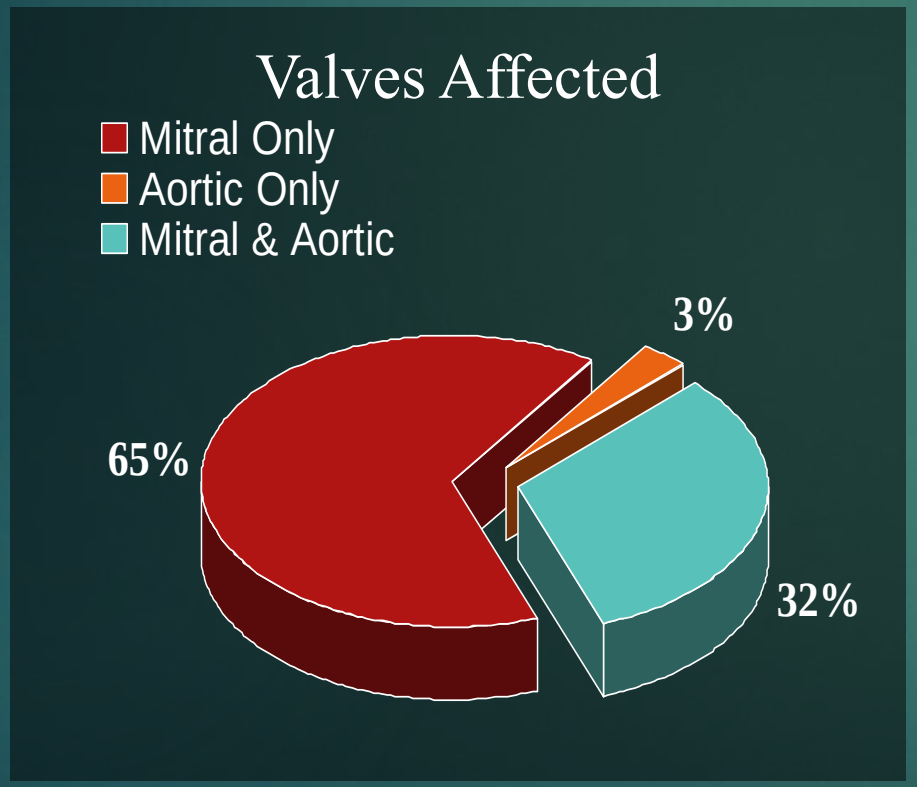
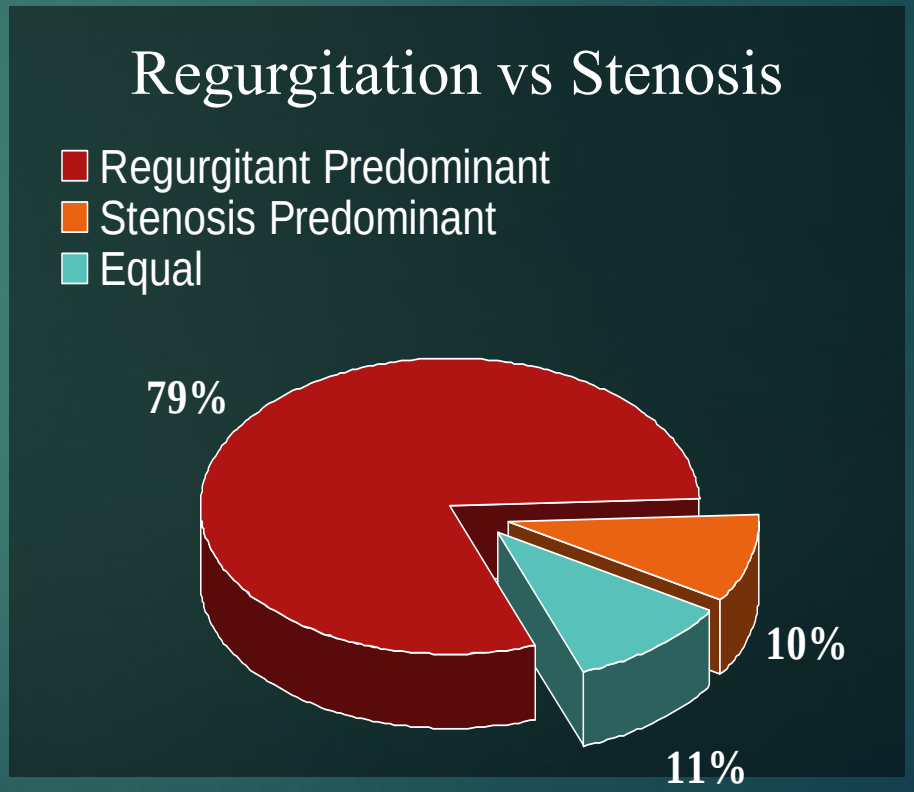
- Observational series over 11 years
- 95 confinements in 54 women
- Clinical and Echo assessment
- Cardiac and obstetric outcomes



RHD at Cairns Hospital (CH)

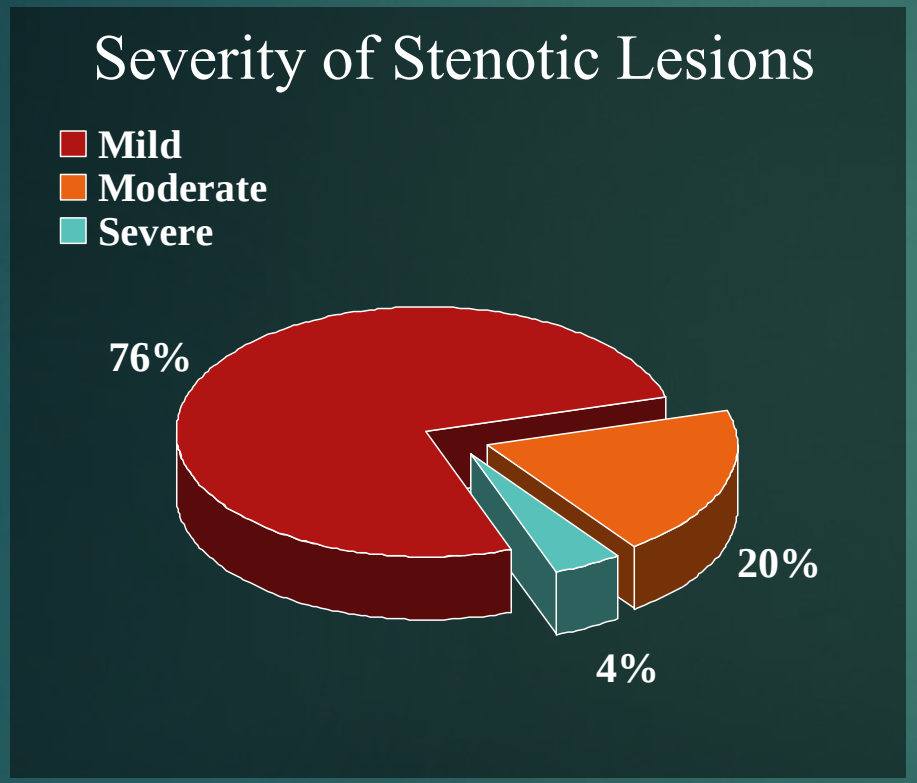
Echocardiographic Findings (1)

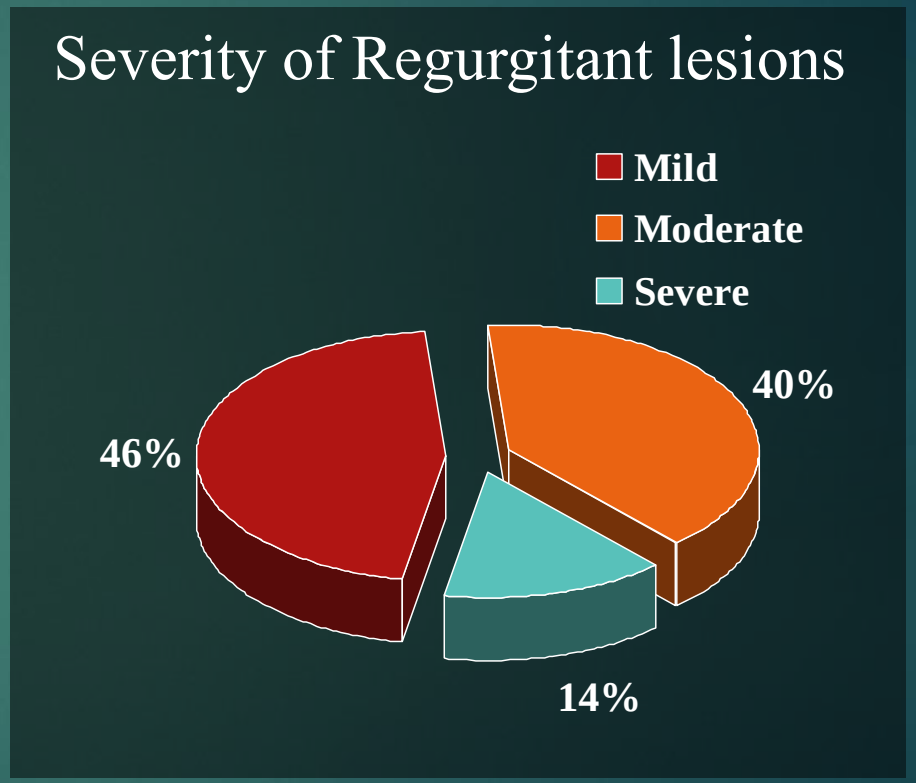




Tricuspid 11%

RHD at CH
Echocardiographic Findings (2)





Mitral stenosis 41
Aortic stenosis 5

Mitral regurgitation 87
Aortic regurgitation 31
Tricuspid regurgitation 11

RHD at CH
Maternal Cardiac Complications

- No deaths (and no fetal deaths)
- No arrhythmias
- 7 of 91 patients with known RHD:
  - 4 APO; 2 worsening SOB
  - 2 tertiary transfer, 1 PBMV
- 4 new presentations of RHD:
  - all APO

Cardiac Risk Score in RHD*

- Risk factors:
- Previous APO
- Left heart obstruction
  - moderate or severe mitral or aortic stenosis (valve area ≤ 1.5cm^2)
- Pulmonary hypertension
  - systolic PA Pressure >50mmHg
- Impaired contractility (Ejection fraction <60%)

*Sartain et al 2012, modified from Siu et al 2001

RHD at CH
Cardiac Risk Score factors

Of 91 patients with known RHD:

- History of APO 10 patients
- Left heart obstruction 9
- Pulmonary hypertension 6
- Impaired ejection fraction 2

RHD at CH

Medication during pregnancy

- To prevent ARF
  - Benzathine penicillin 4-weekly
- Cardiac medications:
  - CRS=0 9 of 72 (12.5%)
  - CRS≥1 12 of 19 (68%)
- Specific drugs:
  - Frusemide
  - Metoprolol
  - Anticoagulation (for prosthetic valves)

RHD at Cairns Hospital

Maternal Cardiac Complications 1999 - 2010

Cardiac Risk Score (CRS)	Number of Patients	Patients with Cardiac Complications
0	70	0
1	17	5 (29%)
>1	4	2 (50%)

RHD at CH

Maternal Cardiac Complications

- Timing - post-partum in 5 of 11 (45%)
- Precipitating factors - in 9 of 11 (82%)
  - Pre-eclampsia
  - Sepsis
  - Large IV fluid loads

RHD at Cairn Hospital
Has anything changed?

- Preliminary audit data 2012-2017*
- 24 patients with RHD and pregnancy

*Dr Sharrath Devappa, FRACP

RHD at Cairns Hospital
Preliminary audit data 2012-2017

Cardiac Risk Score (CRS)	Number of Patients	Specific Risk Factors
1	10	4 ↓EF 1 Hx APO 3 mod MS 1 sev MS
>1	2	a. Sev MS, ↓EF, mod PHT b. Sev MS, ↓EF (+ mod AR)

RHD at Cairns Hospital

Maternal Cardiac Complications 2012-2017

Cardiac Risk Score (CRS)	Number of Patients	Patients with Cardiac Complications
0	12	0
1	10	1 (10%) (1 transfer)
>1	2	2 (100%) (both transferred; 1 APO)

RHD at Cairn Hospital
Preliminary audit data 2012-2017

24 patients:

- 1 APO (4%)
- 5 Hx of cardiac intervention:
  - 3 PBMV, 1 MV repair, 1 AVR/MVR
- Peripartum transfers:
  - 3 ante-partum - 1 then MVR
  - (+ one 3/12 post-partum for MVR)

Case study

- 23 yo Aboriginal woman from the Cape
- G1P0 at 30/40 gestation
- Asymptomatic but loud murmur
- Echo: mod MS (MVA 1.2 cm^2); mod MR; normal EF, mild PHT
- **What should be the management?**
- **What is the likely outcome?**
- **What should be the plan for delivery?**

Patients with RHD
Overall management plan*

- Assessment of severity (CRS=1)
- Regular cardiological review
- Medication or intervention as required
- Collaboration with other disciplines
- Planning of delivery
  - Appropriate mode and location (eg Cairns!)
- Clear documentation of care plan

*ESC Guidelines Eur Heart J 2011;
Sartain et al Int Med J 2012

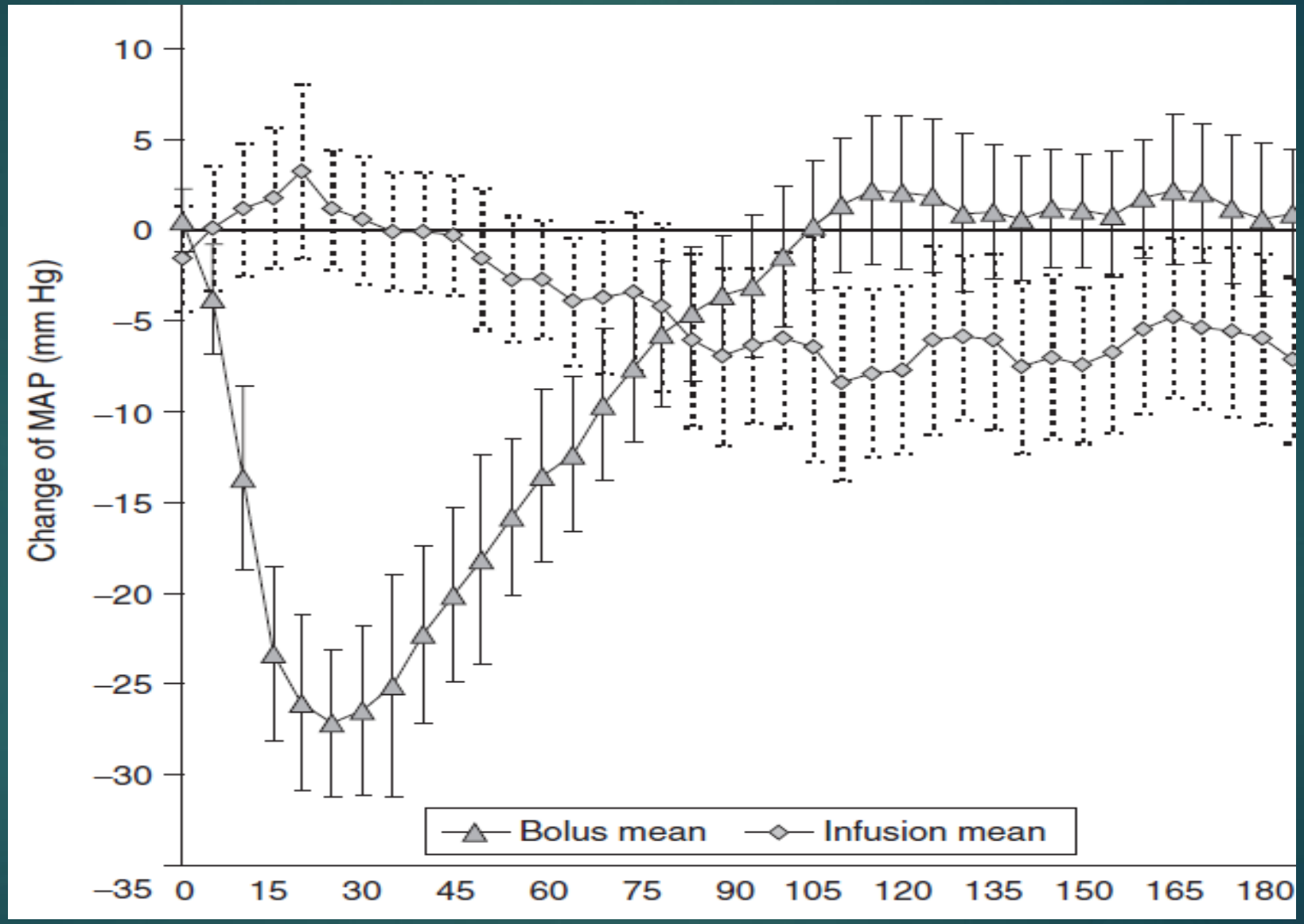
Patients with RHD
Planning of Delivery (if CRS = 1)

- Vaginal delivery (unless obstetric reasons)
- Birth suite location
- Epidural pain relief
- Wedged or lateral position
- Limited IV fluids
- Antibiotic prophylaxis just for obstetrics reasons

Patients with RHD
Management of Delivery (if CRS = 1)

- (Assisted) vaginal delivery
- Anaesthetist present for delivery?
- Avoid ergometrine
- Oxytocin 1unit increments IV
- Oxytocin infusion eg 0.5 – 1U/min initially (eg 10U in 100ml @ 300ml/hour)

Effect of Oxytocin on MAP at C Section*



*Thomas et al BJA 2007

Patients with RHD
Management Post Delivery (if CRS ≥ 1)

- IV fluids to replace blood loss only
- Cease IV fluids once bleeding stopped
- Consider frusemide IV or orally
- Observation in HDU/ICU for 12-24 hours

Patients with RHD

Alternative Management Plan