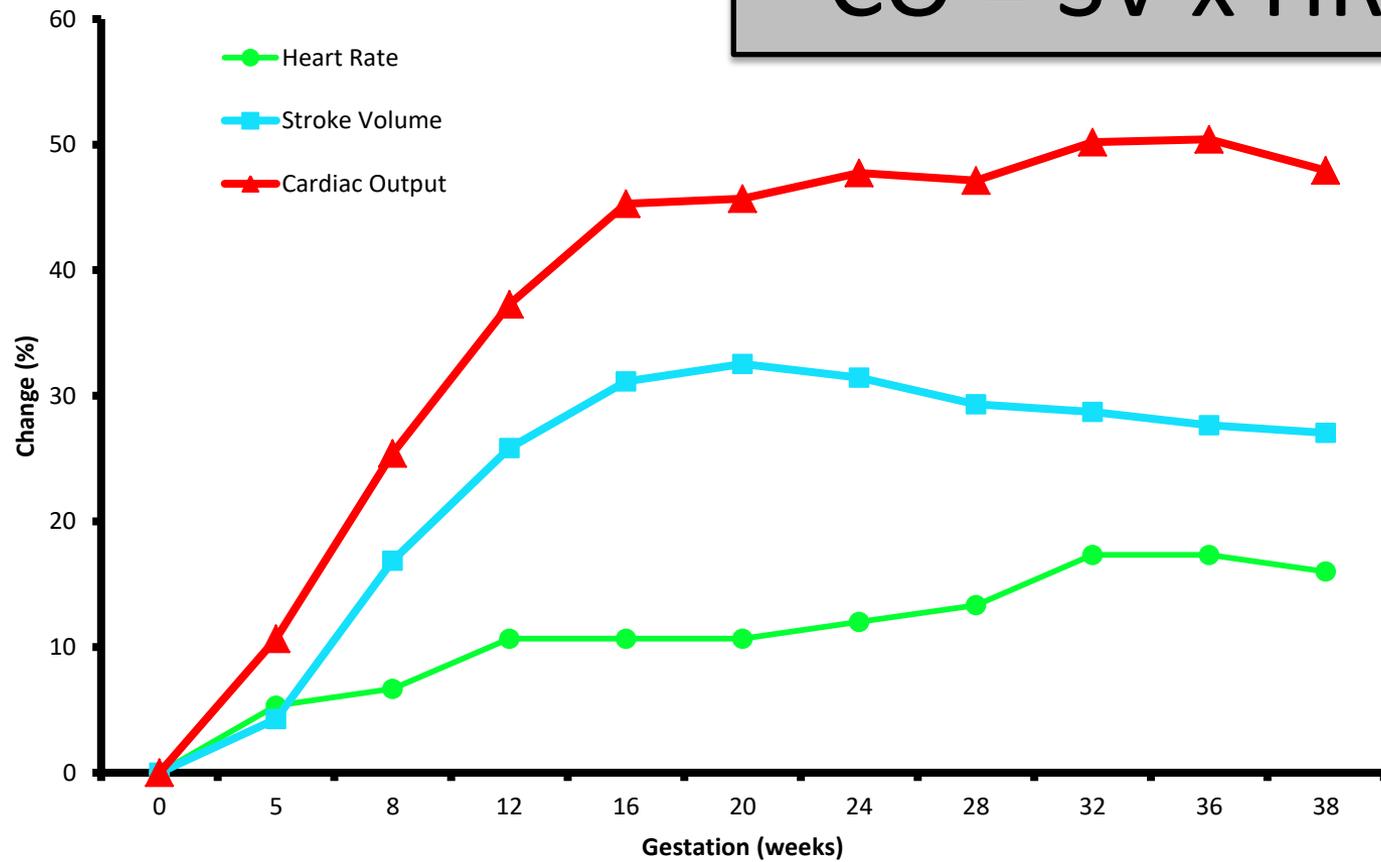


Pregnancy in women with Fontan Circulation

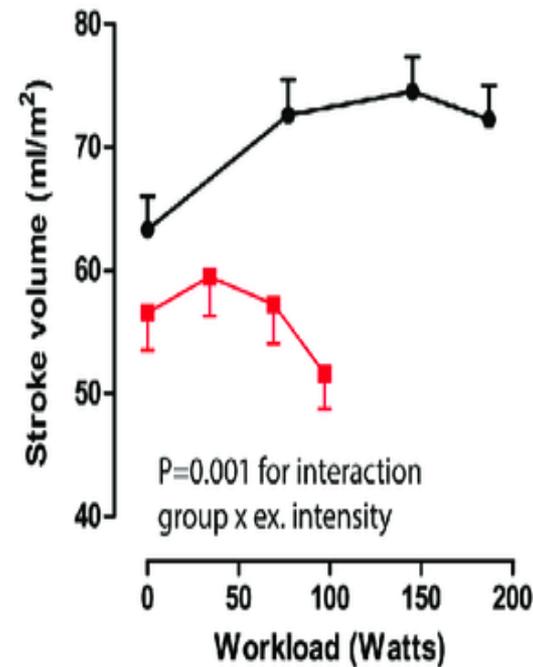
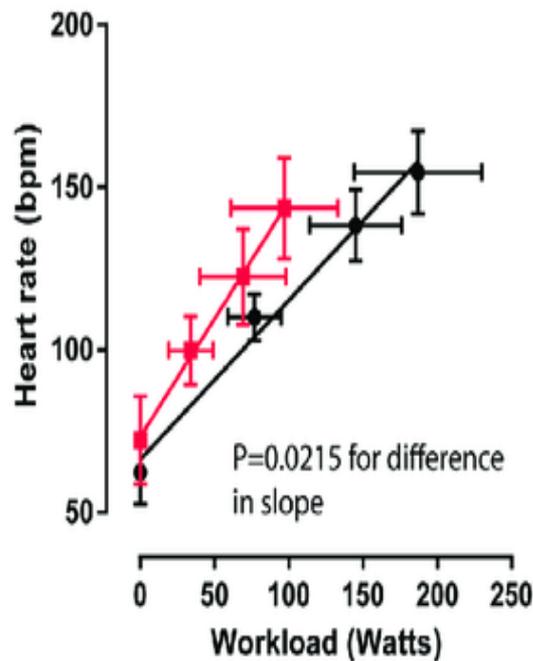
Dr Ken Hodson
Consultant Obstetrician, RVI
8th September 2020

Normal Pregnancy

$$CO = SV \times HR$$



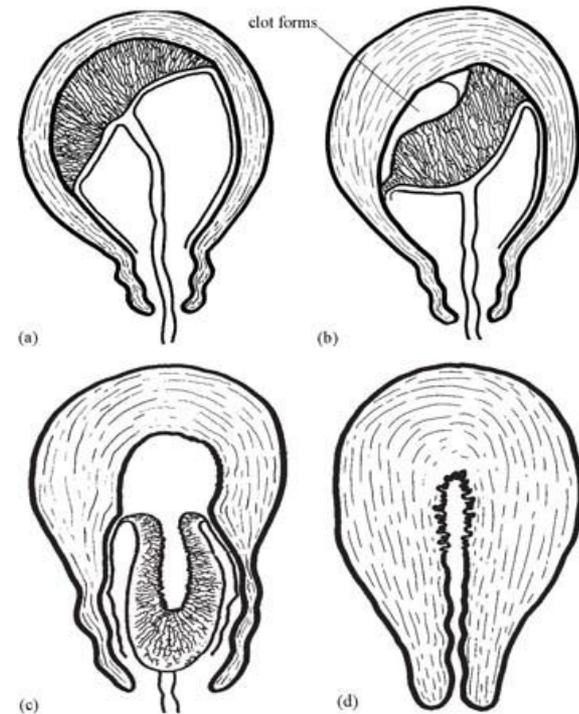
The Fontan Circulation and Exercise



Pregnancy is an exercise test

Clotting

- **Hypercoagulable state**
 - Increased clotting factors
 - Decreased fibrinolysis
 - Decreased endogenous anticoagulants (antithrombin, protein S)
- Venous stasis



Pregnancy = High risk DVT/PE

Issues in Fontan Pregnancy

Maternal

Heart Failure

Arrhythmia

Thrombosis

HLA Sensitisation

Fetal

Miscarriage (100% if sats<85%)
Stillbirth

Prematurity/SGA

Fetal congenital HD

Proposed risk score

	Lower risk	Intermediate risk	Very high risk
NYHA class	I	II	III-IV
SaO ₂ (%)	≥ 94%	90–93%	< 90%
MVO ₂ (ml/kg/min)	>60%	50–60%	<50%
Systemic ventricular function impairment	none	mild	moderate/severe
AVVR	none/mild	moderate	severe
Fontan related complications ^a	none	none	at least one ^a
Failing Fontan ^b	no	no	yes

Can get pregnant with
CAVEATS

Pregnancy not
recommended

What are the pregnancy risks?

Miscarriage: 60-80% (100% if sats<85%)

Stillbirth: 3% (cf 0.5% normal population)

Premature delivery: median 32w gestation

Caesarean section: 60% (cf 28% RVI)

- Worsening NYHA class
- Arrhythmia
- Life expectancy

Preconception Counselling

Risk assessment + discussion

? Life expectancy

? Family/Social circumstances

? **Contraception**

? Alternatives: adoption, surrogacy

Antenatal Care

- Cardiac Centre:
 - Obstetric medicine
 - ACHD
 - Anaesthetics
 - ITU/HDU
 - Fetal Medicine/SCBU
- Regular ANC visits (monthly)
 - Maternal assessment
 - Echo
 - Fetal assessment
- Fetal echo 22/40
- Anticoagulation
- Plan labour/delivery
 - MDT
- Communication

Intrapartum Care

Elective delivery

- Timing of delivery
- Mode of delivery
 - IOL
 - Planned LSCS
- Anaesthesia - epidural
- Second stage (50% ↑CO)
 - Limit or assist?
- Third stage
 - AVOID bolus syntocinon
 - AVOID haemorrhage

Emergency delivery

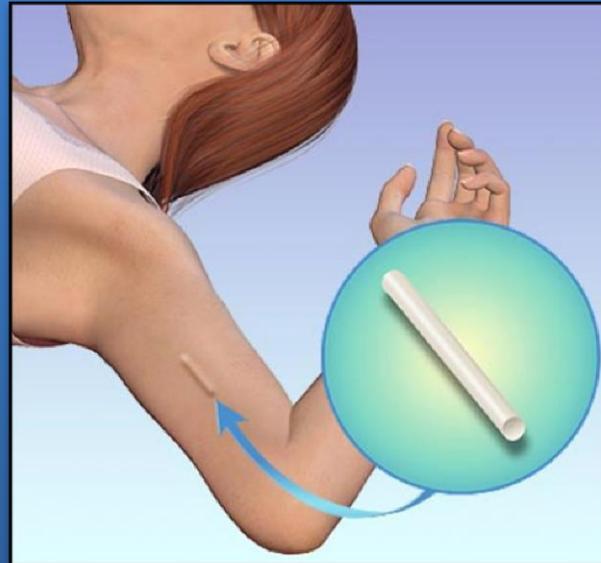
- Anaesthetic plan
- Haemorrhage plan
- Arrhythmia/HF plan

Postpartum Care



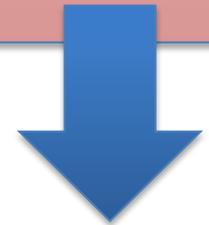
Contraception

LARCs



Beware: Vasovagal: Tertiary Centre

POP



No Oestrogen

Contraception - unreliable



Take Home Messages

- Fontan pregnancy is high risk
- Careful assessment and counselling is key
- Avoid dropping pre-load
- The risk isn't over once the baby is out
- Contraception, contraception, contraception