Saving babies lives care bundle version 3 (SBLCBv3) – What every sonographer should know

Ellen Dyer,

Lead Research Sonographer for POPs2

The Rosie Hospital, Cambridge

UNIVERSITY OF CAMBRIDGE

pregnancy outcome prediction study 2

Rosie NHS

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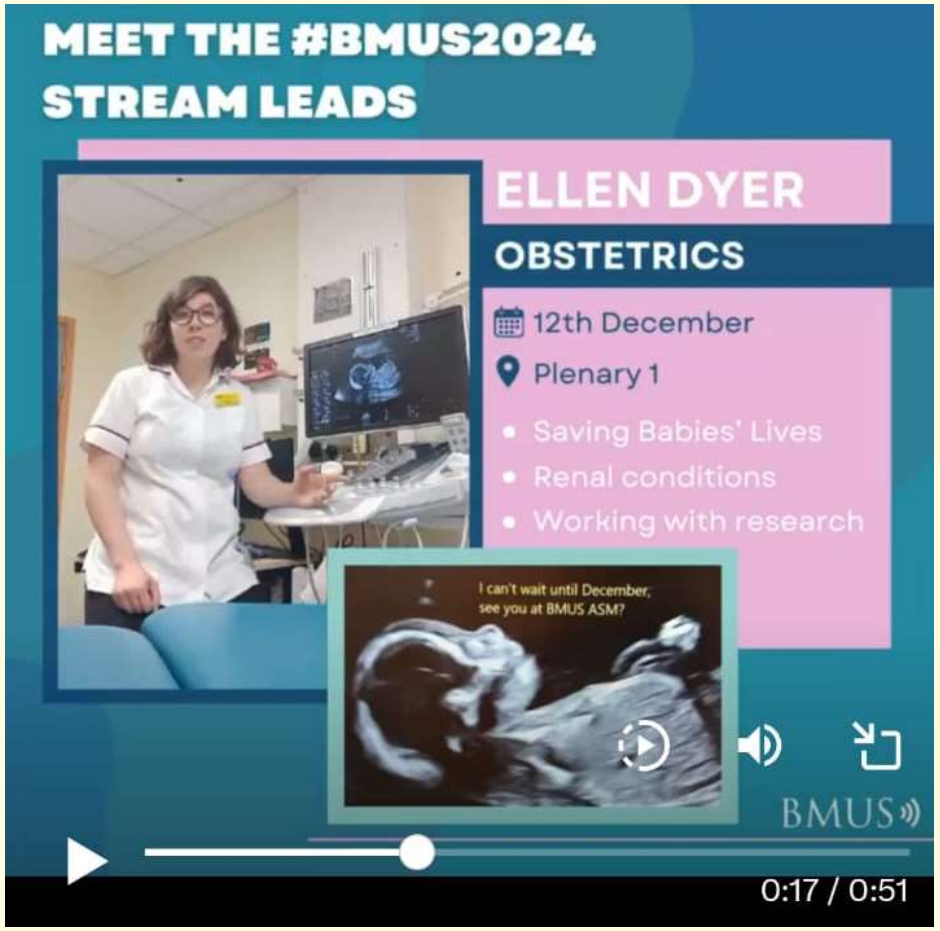
Your feedback from last year's ASM

"We want a dedicated session discussing the saving babies' lives care bundle!"



Overview

Background

Scene setting

Background to SBLv3

Overview of the care bundle elements focusing on key areas for sonography

The questions to answer

Background to SBLCB

- In 2015 the Department of Health set a target to half the national still birth rate by 2025 to 3%
- MBRRACE (2015) Perinatal Confidential Enquiry identified failure to detect poor growth as a contributing factor to poor outcome
- Led to:
  - Saving Babies' Lives care bundle (2016)
  - Many departments adopting the GROW/ GAP protocol in a bid to improve their detection of poor growth

Updates to SBLCB

- SBLCBv2 (2019) –
  - Additional element to reduce the preterm birth rate
  - Introduction of uterine artery Doppler screening for element 2

- SBLCBv3 (2023) –
  - Addition of element 6 management of diabetes in pregnancy
  - Attempts to incorporate RCOG and NICE guidance

SBLCBv3: Aims to reduce perinatal mortality

1. Reducing smoking in pregnancy
2. Fetal growth: Risk assessment, surveillance and management
3. Raising awareness of reduced fetal movement
4. Effective fetal monitoring during labour
5. Reducing preterm births and optimizing perinatal care
6. Management of pre-existing diabetes in pregnancy

Trusts are required to submit data based upon KPIs from SBLCBv3 to the Clinical Negligence scheme for trust (CNST). Compliance means more money!

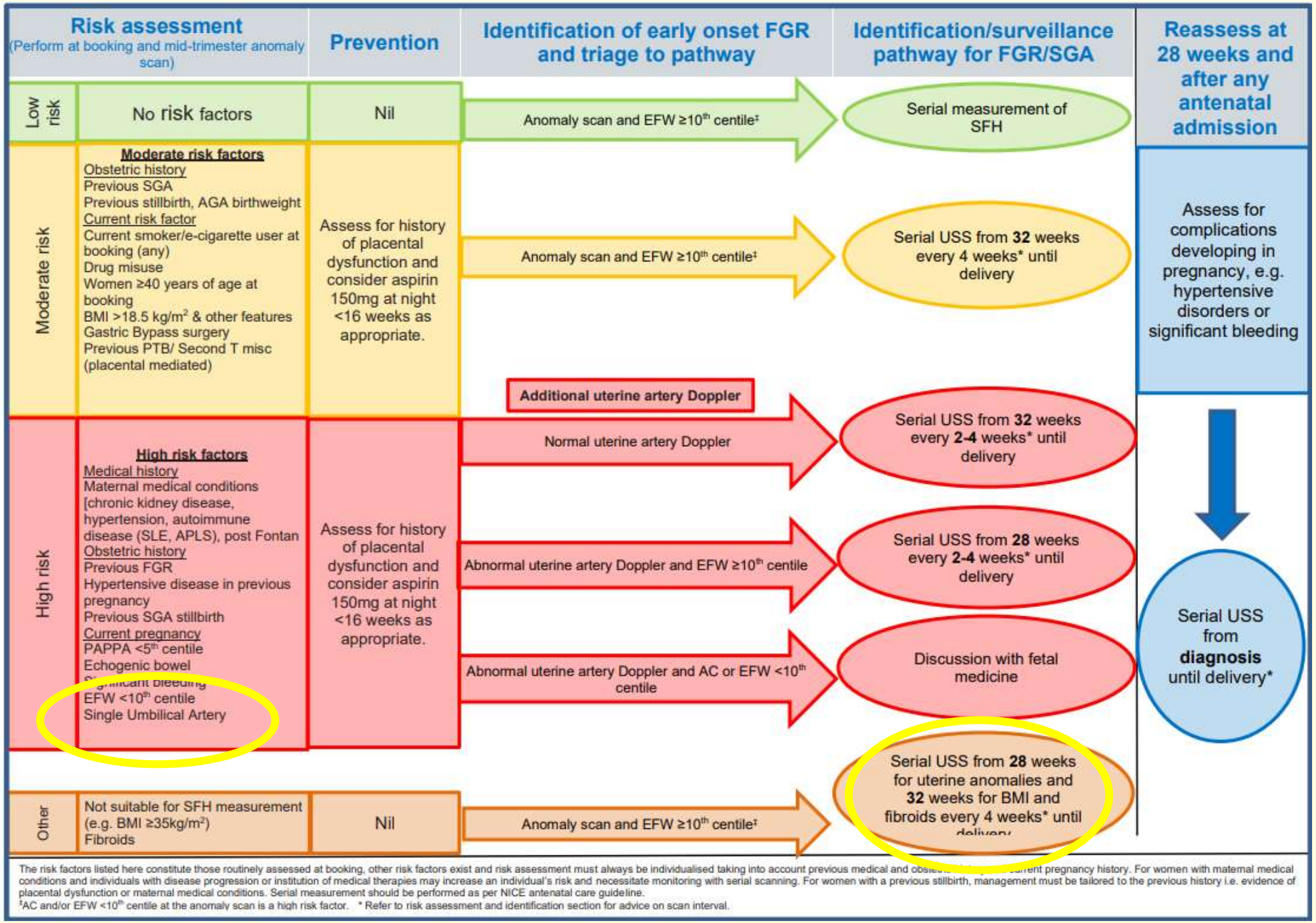
Element 2: Fetal Growth: Risk Assessment, Surveillance and Management

What is FGR?

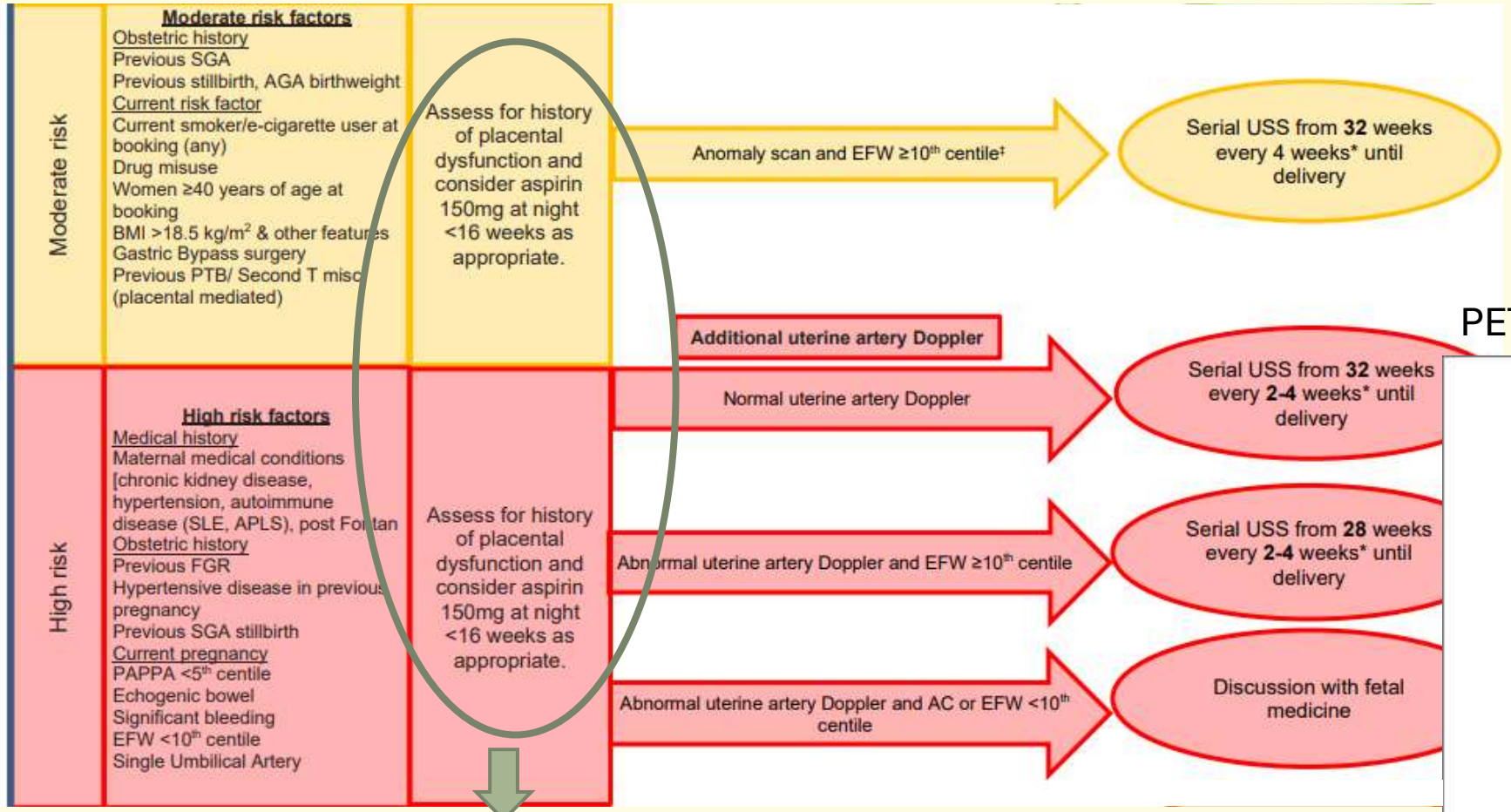
"FGR is difficult to diagnose representing those fetuses that have failed to reach their growth potential." SBLv3

Why is FGR important to identify?

- Associated increase chance of with fetal morbidity, stillbirth and neonatal death
- Element 2 identifies women most at risk of FGR caused by **placental insufficiency**
- FGR causes, however, are likely to be multi-factorial
- Enables enhanced monitoring, planning and timing of delivery to achieve the best outcome for baby


Risk assessment
(Perform at booking and mid-trimester anomaly scan)
Prevention
Identification of early onset FGR and triage to pathway
Identification/surveillance pathway for FGR/SGA
Reassess at 28 weeks and after any antenatal admission
Low risk
No risk factors
Nil
Anomaly scan and EFW ≥10th centile‡
Serial measurement of SFH
Moderate risk
Moderate risk factors
Obstetric history
Previous SGA
Previous stillbirth, AGA birthweight
Current risk factor
Current smoker/e-cigarette user at booking (any)
Drug misuse
Women ≥40 years of age at booking
BMI >18.5 kg/m² & other features
Gastric Bypass surgery
Previous PTB/ Second T misc (placental mediated)
Assess for history of placental dysfunction and consider aspirin 150mg at night <16 weeks as appropriate.
Anomaly scan and EFW ≥10th centile‡
Serial USS from 32 weeks every 4 weeks* until delivery
Assess for complications developing in pregnancy, e.g. hypertensive disorders or significant bleeding
Additional uterine artery Doppler
High risk
High risk factors
Medical history
Maternal medical conditions [chronic kidney disease, hypertension, autoimmune disease (SLE, APLS), post Fontan
Obstetric history
Previous FGR
Hypertensive disease in previous pregnancy
Previous SGA stillbirth
Current pregnancy
PAPPA <5th centile
Echogenic bowel
EFW <10th centile
Single Umbilical Artery
Assess for history of placental dysfunction and consider aspirin 150mg at night <16 weeks as appropriate.
Normal uterine artery Doppler
Serial USS from 32 weeks every 2-4 weeks* until delivery
Abnormal uterine artery Doppler and EFW ≥10th centile
Serial USS from 28 weeks every 2-4 weeks* until delivery
Abnormal uterine artery Doppler and AC or EFW <10th centile
Discussion with fetal medicine
Serial USS from diagnosis until delivery*
Other
Not suitable for SFH measurement (e.g. BMI ≥35kg/m²)
Fibroids
Nil
Anomaly scan and EFW ≥10th centile‡
Serial USS from 28 weeks for uterine anomalies and 32 weeks for BMI and fibroids every 4 weeks* until
The risk factors listed here constitute those routinely assessed at booking, other risk factors exist and risk assessment must always be individualised taking into account previous medical and
current pregnancy history. For women with maternal medical conditions and individuals with disease progression or institution of medical therapies may increase an individual's risk and necessitate monitoring with serial scanning. For women with a previous stillbirth, management must be tailored to the previous history i.e. evidence of placental dysfunction or maternal medical conditions. Serial measurement should be performed as per NICE antenatal care guideline.
‡AC and/or EFW <10th centile at the anomaly scan is a high risk factor. * Refer to risk assessment and identification section for advice on scan interval.

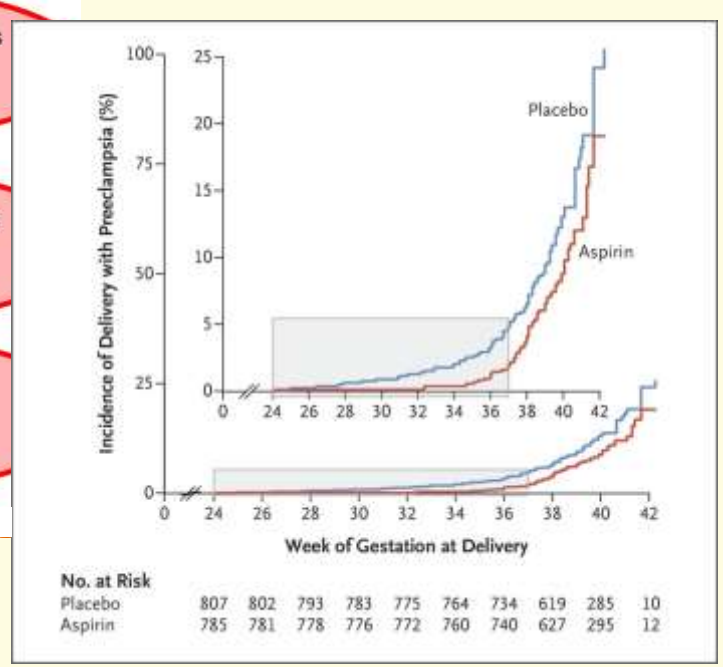
FGR and Aspirin



ASPRE (Aspirin versus Placebo in Pregnancies at High Risk for Preterm Preeclampsia trial)

Prevents platelet clumping

PET



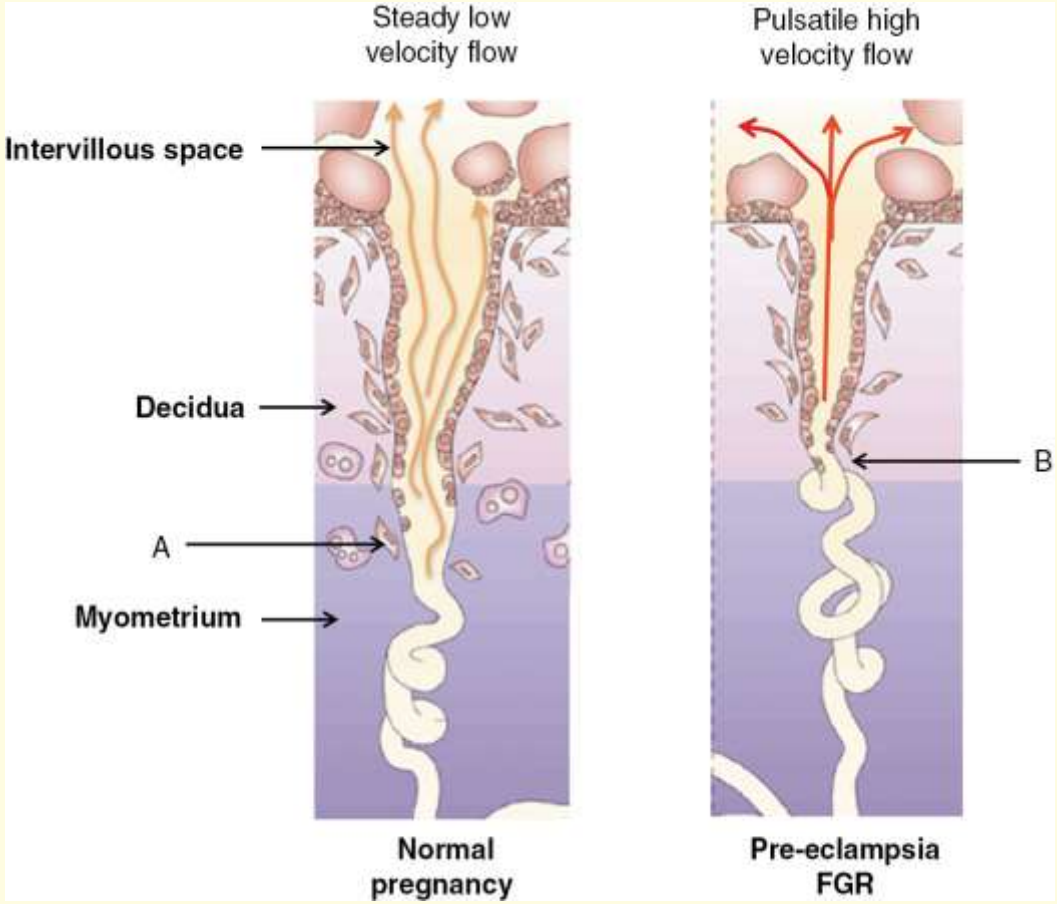
GA

What is the biology behind uterine artery screening?

Spiral arteries are “re-modelled” by trophoblastic invasion

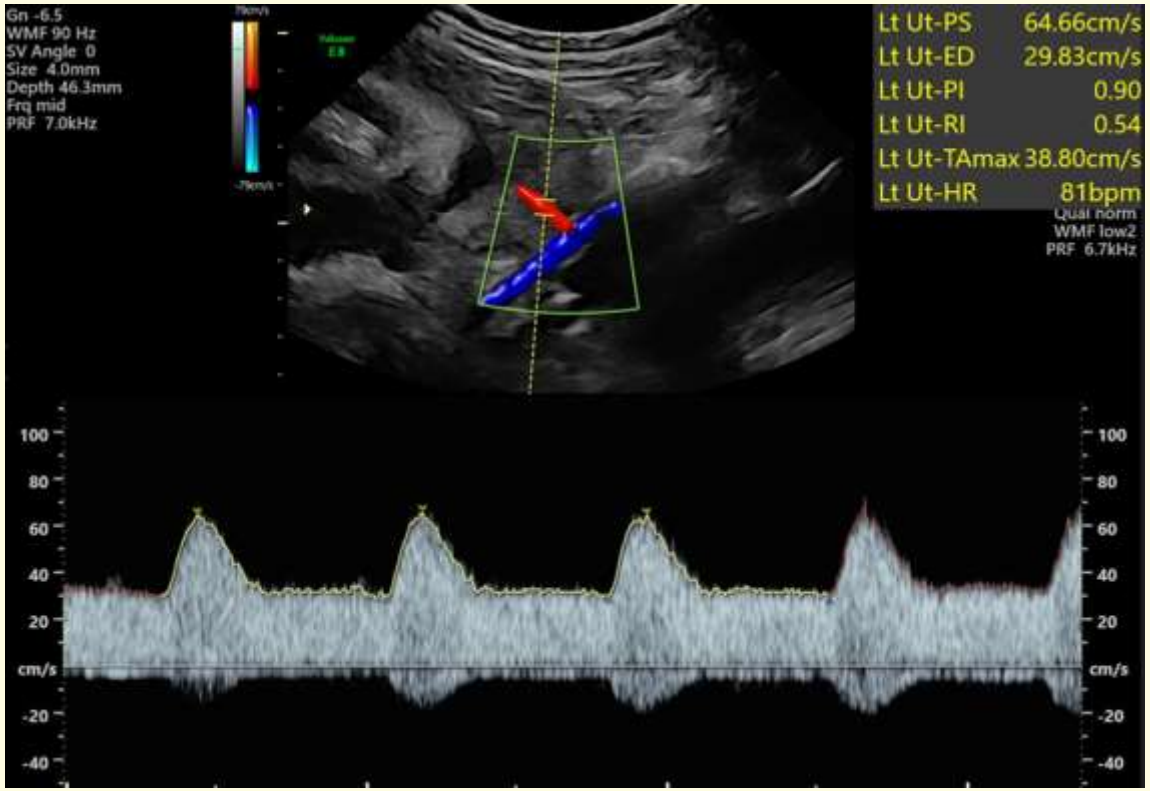
In normal pregnancy they change from a tight coil to funnel like opening in placenta

Results in low resistance to flow upstream – in uterine artery



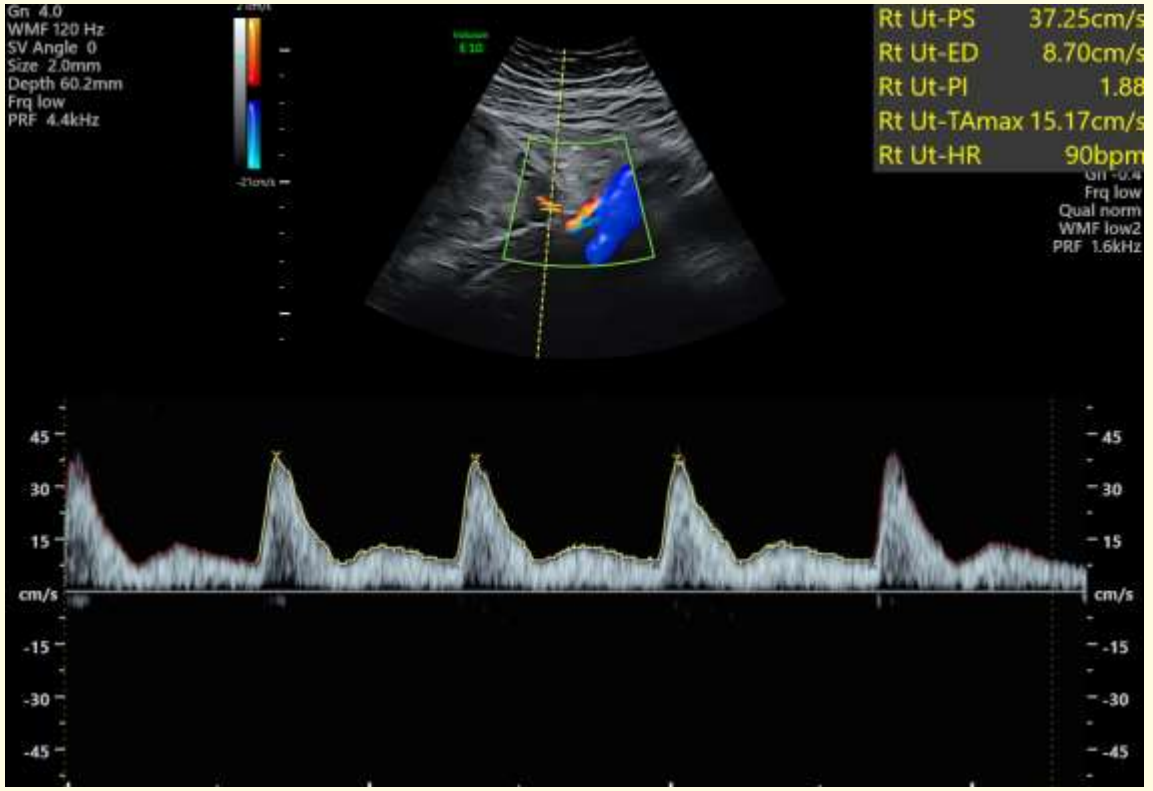
Uterine artery Doppler interpretation

Normal



PI under 95th centile normal

Abnormal



PI over 95th centile abnormal

Uterine artery Doppler chart

Ultrasound Obstet Gynecol 2008; **32**: 128–132
Published online 6 May 2008 in Wiley InterScience (www.interscience.wiley.com). **DOI:** 10.1002/uog.5315

Reference ranges for uterine artery mean pulsatility index at 11–41 weeks of gestation

O. GÓMEZ, F. FIGUERAS, S. FERNÁNDEZ, M. BENNASAR, J. M. MARTÍNEZ, B. PUERTO and E. GRATACÓS

PI has to be very high to be abnormal, most women will not need an additional 28-week scan

Table 2 Reference intervals for mean uterine artery pulsatility index

GA (weeks)	*5th centile*	*50th centile*	*95th centile*
11	1.18	1.79	2.70
12	1.11	1.68	2.53
13	1.05	1.58	2.38
14	0.99	1.49	2.24
15	0.94	1.41	2.11
16	0.89	1.33	1.99
17	0.85	1.27	1.88
18	0.81	1.20	1.79
19	0.78	1.15	1.70
20	0.74	1.10	1.61
21	0.71	1.05	1.54
22	0.69	1.00	1.47
23	0.66	0.96	1.41
24	0.64	0.93	1.35
25	0.62	0.89	1.30
26	0.60	0.86	1.25
27	0.58	0.84	1.21
28	0.56	0.81	1.17
29	0.55	0.79	1.13
30	0.54	0.77	1.10
31	0.52	0.75	1.06
32	0.51	0.73	1.04
33	0.50	0.71	1.01
34	0.50	0.70	0.99
35	0.49	0.69	0.97
36	0.48	0.68	0.95
37	0.48	0.67	0.94
38	0.47	0.66	0.92
39	0.47	0.65	0.91
40	0.47	0.65	0.90
41	0.47	0.65	0.89

Transvaginal and transabdominal ultrasound examinations were performed on pregnancies at 11–14 weeks and 15–41 weeks, respectively. GA, gestational age.

How does combining maternal factors and uterine artery Doppler improve the detection of PET/FGR?

Table II Comparison of predictive models in development and validation group in relation to ultrasound and maternal predictors of preeclampsia

	Both US and maternal		US alone			Maternal alone			
	Development Sample area under ROC curve	Validation sample	Development Sample area under ROC curve	Validation sample	US vs both *P* =	Development sample area under ROC curve	Validation sample	Maternal vs both *P* =	Maternal vs US *P* =
PET (all)	0.833	0.834	0.780	0.777	< .0001	0.721	0.719	< .0001	.006
PET <34 wk	0.954	0.945	0.938	0.922	.27	0.798	0.741	< .0001	< .0001
PET ≥34 wk	0.800	0.798	0.736	0.729	< .0001	0.708	0.712	< .0001	.48

PET, preeclampsia.

Nearer the area under the curve is to 1, the better the test!

Yu CK, Smith GC, Papageorghiou AT, Cacho AM, Nicolaides KH; Fetal Medicine Foundation Second Trimester Screening Group. An integrated model for the prediction of preeclampsia using maternal factors and uterine artery Doppler velocimetry in unselected low-risk women. Am J Obstet Gynecol. 2005 Aug;193(2):429-36. doi: 10.1016/j.ajog.2004.12.014. PMID: 16098866.er

Chart dilemmas

Which EFW chart should I use?

Currently no recommended chart for EFW by RCOG, ISUOG or SBLv3

BMUS third trimester guideline recommends Hadlock

Some argue IG21 or WHO charts better as they also have corresponding birthweight charts

Customised charts?

GROW/GAP from perinatal institute, lack of high-quality evidence

SBLCB neither recommends nor advises against customized charts – a decision for individual units

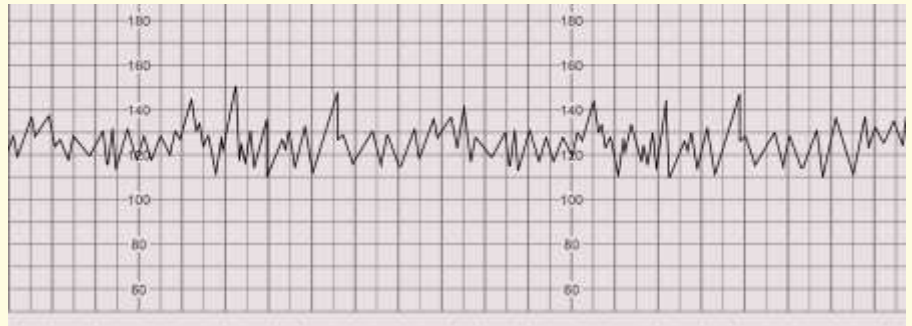
DESIGN study 2022: large RCT concluded GAP had no impact on the detection of SGA compared to standard care

Element 3 – Reduced fetal movements

- Recurrent RFM after 28 week are associated with an increased risk of still birth
- 1st episode RFM no scan required if cCTG normal
- Recurrent RFM after 28 week = growth scan
- No agreed definition of recurrent RFM

"two or more episodes of RFM occurring within a 21-day period after 26 weeks' gestation"

- Induction of labour recommended prior to 39 for women with recurrent RFM and evidence of fetal compromise



Why are fetal movements important?

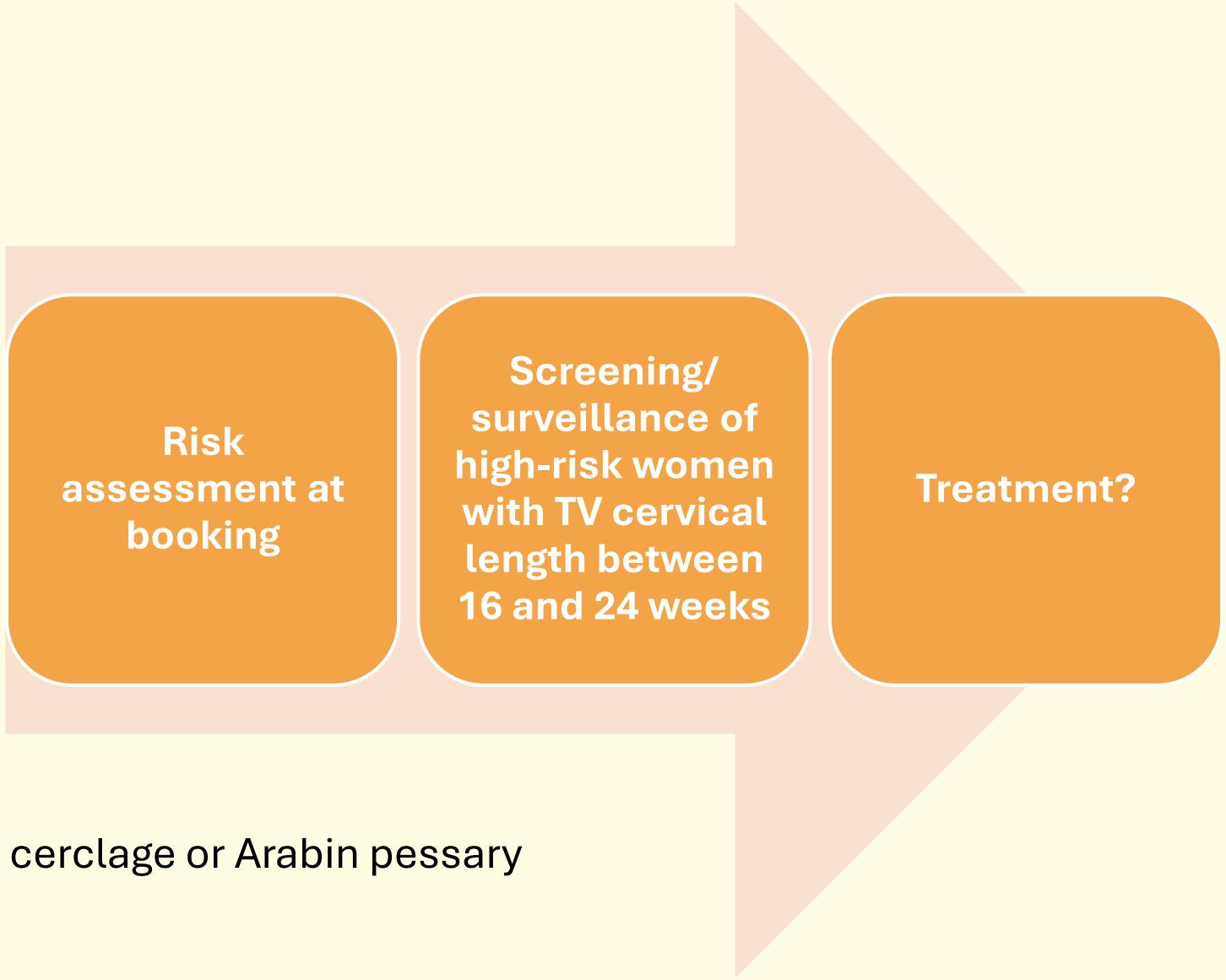
Awareness of fetal movements and care package to reduce fetal mortality (AFFIRM): a stepped wedge, cluster-randomised trial

2018

Jane E Norman, Alexander E P Heazell, Aryelly Rodriguez, Christopher J Weir, Sarah J E Stock, Catherine J Calderwood, Sarah Cunningham Burley, J Frederik Frøen, Michael Geary, Fionnuala Breathnach, Alyson Hunter, Fionnuala M McAuliffe, Mary F Higgins, Edile Murdoch, Mary Ross-Davie, Janet Scott, Sonia Whyte, for the AFFIRM investigators

- Trialled the introduction of a care package to reduce still births
- All women with RFM after 26 weeks were scanned
- Small drop in the rate of stillbirth but not significant
- Did show reduction in small for gestational age babies born at term

Element 5 Reducing preterm birth



Short cervix:<25mm
Treatment: NICE progesterone, cerclage or Arabin pessary

SBLCBv3 - Element 5

Risk assessment	Risk factors	Screening/surveillance
High	• Previous preterm birth or mid-trimester loss (16-34wks) • Previous preterm prelabour of membranes <34wks • Previous cervical cerclage • Known uterine variant • Intrauterine adhesions • H/O trachelectomy (for cervical cancer)	• Refer to preterm birth prevention clinic (PTBPC) by 12weeks • TV cervical length every 2-4wks, between 16 and 24 weeks
Intermediate	• Previous CS at full dilatation • H/O significant cervical excision event **(>15mm)**	• Refer to PTBPC by 12wks • Single TV cervical length between 18-22wks

Why 25mm cut-off?

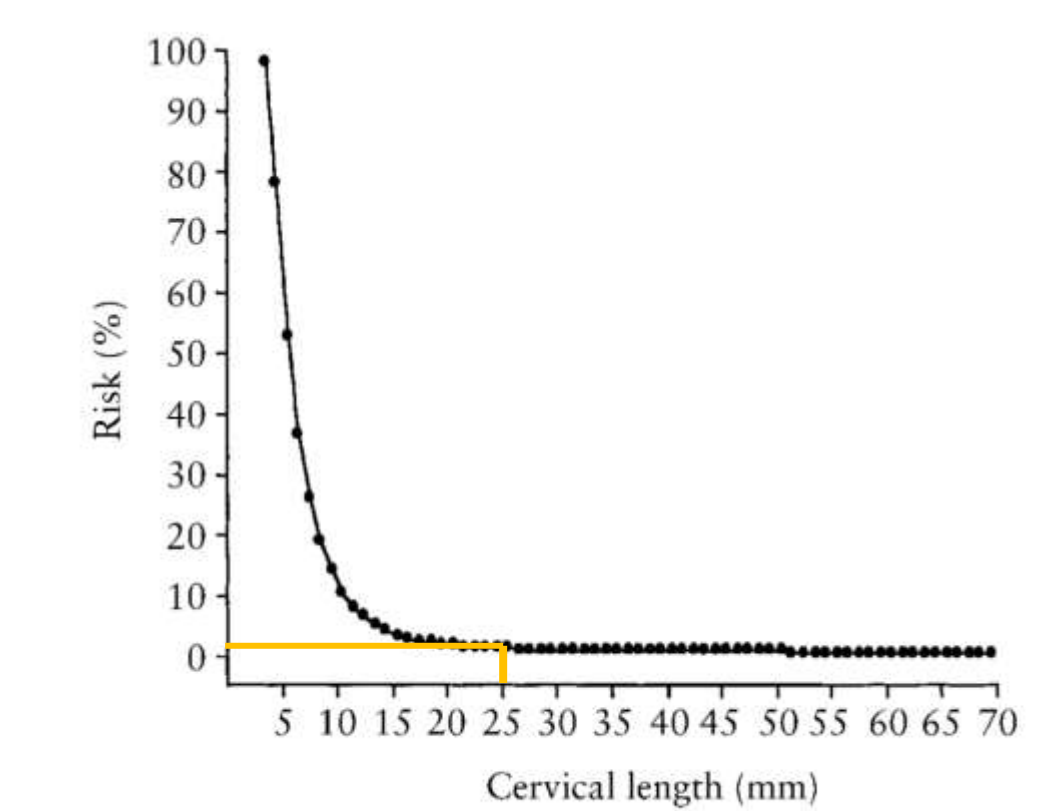
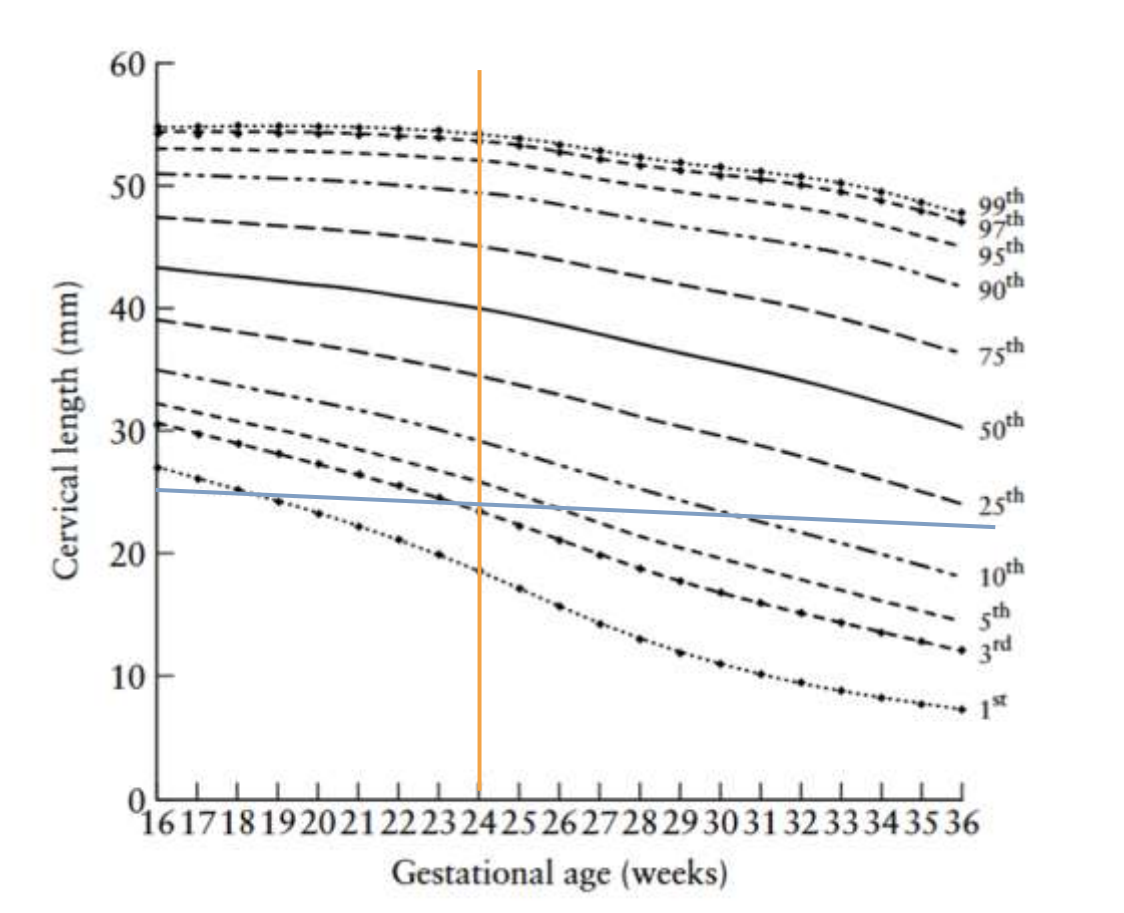


Figure 5 Risk for spontaneous delivery at ≤ 32 weeks according to cervical length at 23 weeks of gestation

Heath et al 1998

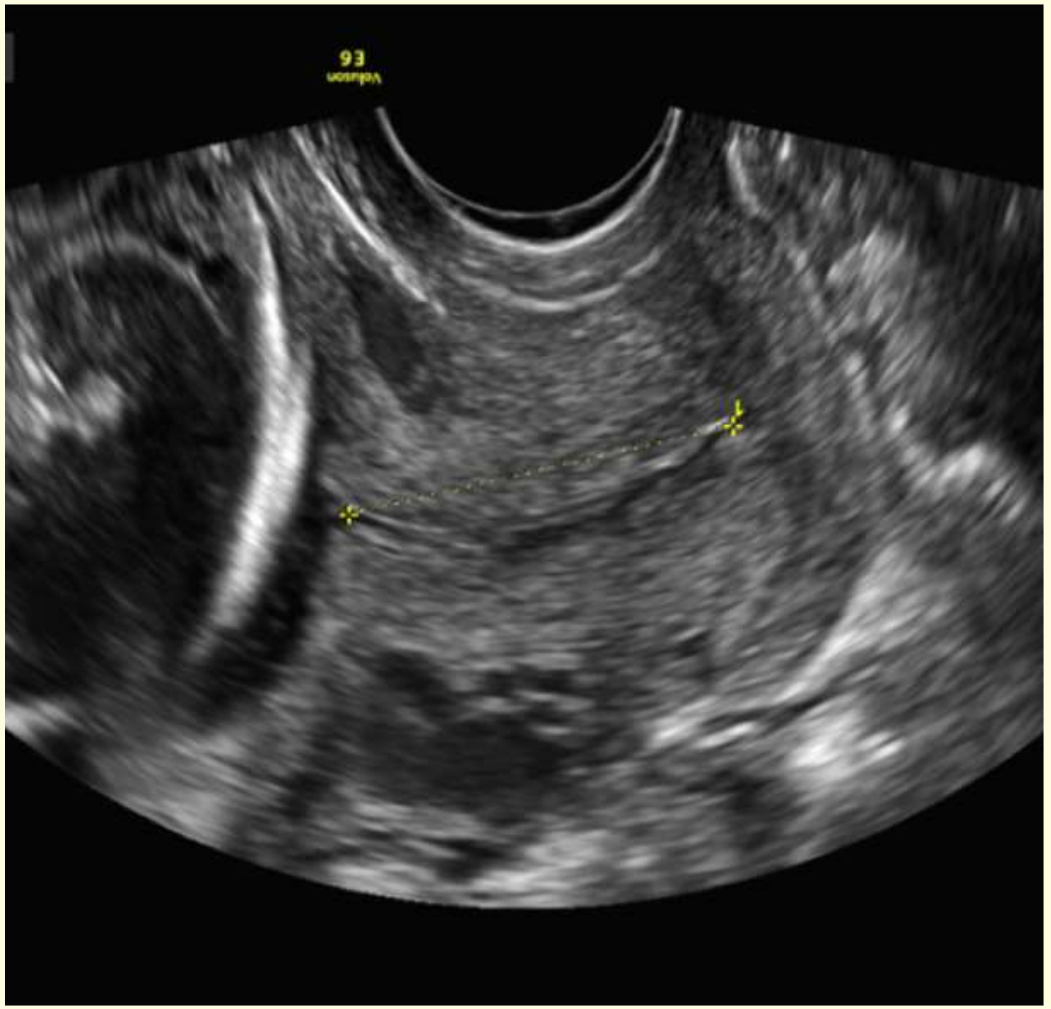
- 2567 women scanned at 23 weeks
- Below 15mm risk of spontaneous birth before 32 weeks 58%
- **At 25mm risk of spontaneous birth ~ 3%**

Cervical length and gestational age

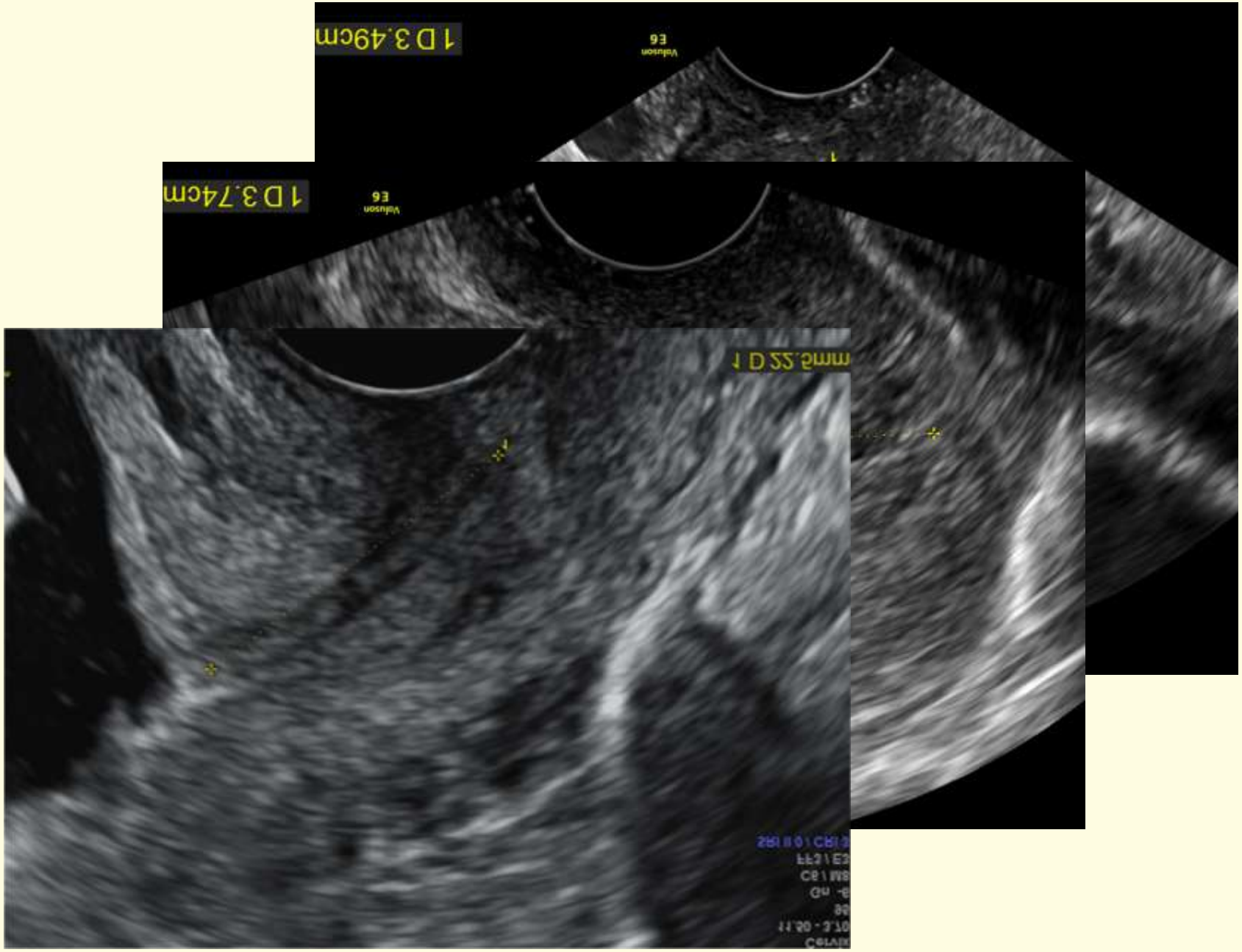


Salomon et al, 2009

- 6614 scans between 16 and 36 weeks for pregnancy
- Awareness of normal range useful to avoid over measurement
- Rationale of not measuring the cervix beyond 24 week


93
E6
Volusion

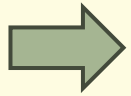
Easy?



Cervical length is key to accurate screening and management

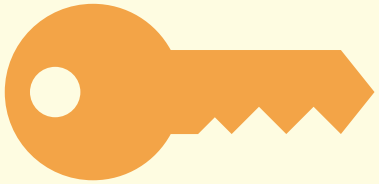
- Cervical length remains the most effective way of screening
- Accuracy of measurements matters
- Practitioners need appropriate training
- Regular peer review is recommended

elfh
elearning for healthcare



The Fetal Medicine Foundation

Conclusions



Sonographers have a key role to play in the successful delivery of the SBLCB

Understanding the rationale behind each SBLCB element is definitely useful

Questions for the morning.....

- Is the care bundle working? Is it preventing mortality and morbidity? How do we know?
- What can we do to tackle health inequalities amongst pregnant women?
- How can we better target interventions to distinguish between the “small and well” and the “small and struggling” baby?
- Where does the SBLCB sit within the wider maternity vision for improvements to care? Is it a priority?
- How can we all work together to improve pregnancy outcomes? Should sonographers be more involved in policy making?

Thank you for listening!

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Stand 24

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