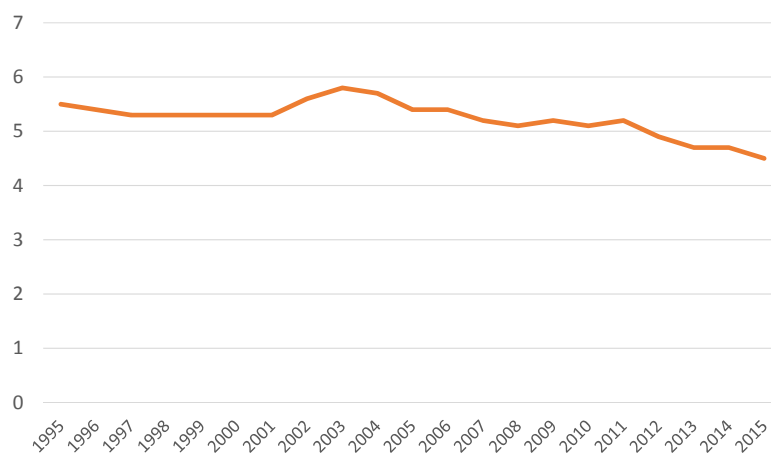


Universal Third Trimester Scan: Implementation and Impact on Resources

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Stillbirth rate in England and Wales 1995-2015



<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/stillbirths>

‘about one in three term, normally formed, antepartum stillbirths are related to abnormalities of fetal growth’

MBRRACE-UK 2015 Perinatal Confidential Enquiry Term, singleton, normally-formed, antepartum stillbirth

Saving Babies' Lives

A care bundle for reducing stillbirth

1. Reducing smoking in pregnancy
2. Risk assessment and surveillance for fetal growth restriction
3. Raising awareness of reduced fetal movement
4. Effective fetal monitoring during labour

<https://www.england.nhs.uk/wp-content/uploads/2016/03/saving-babies-lives-car-bundl.pdf>

Algorithm and Risk Assessment Tool: Screening and Surveillance of fetal growth in singleton pregnancies



<https://www.england.nhs.uk/wp-content/uploads/2016/03/saving-babies-lives-car-bundl.pdf>

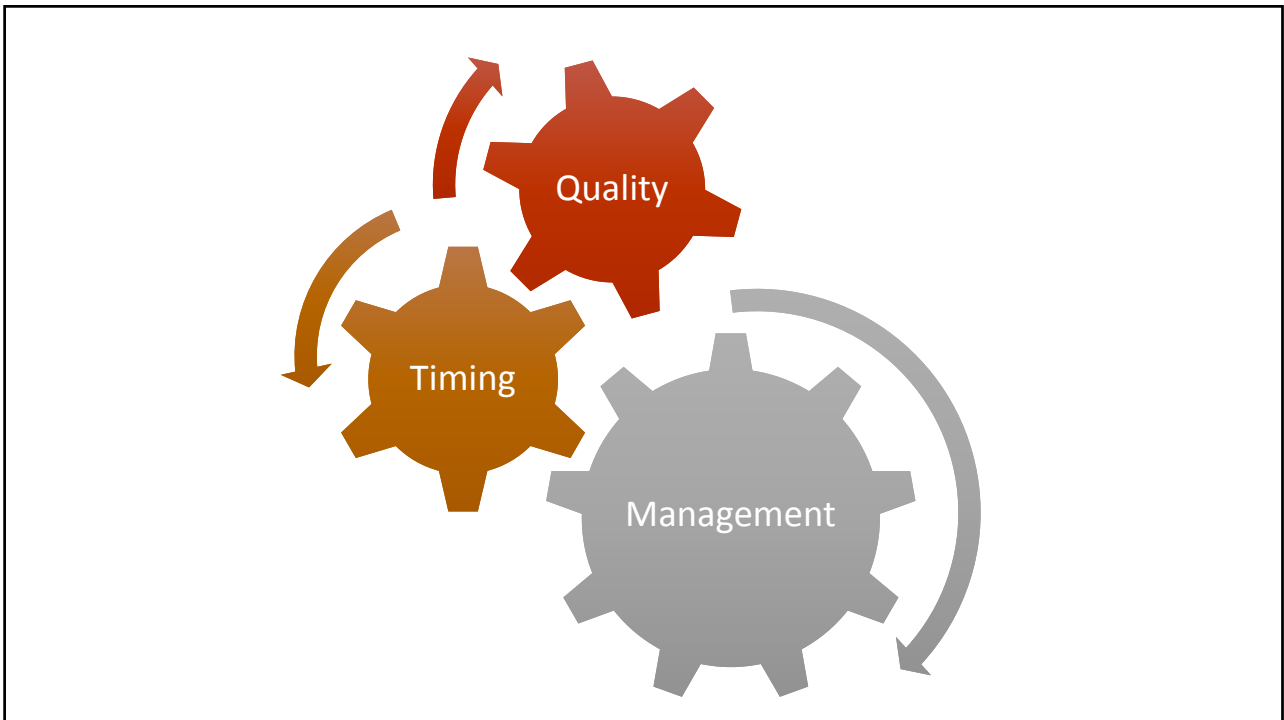
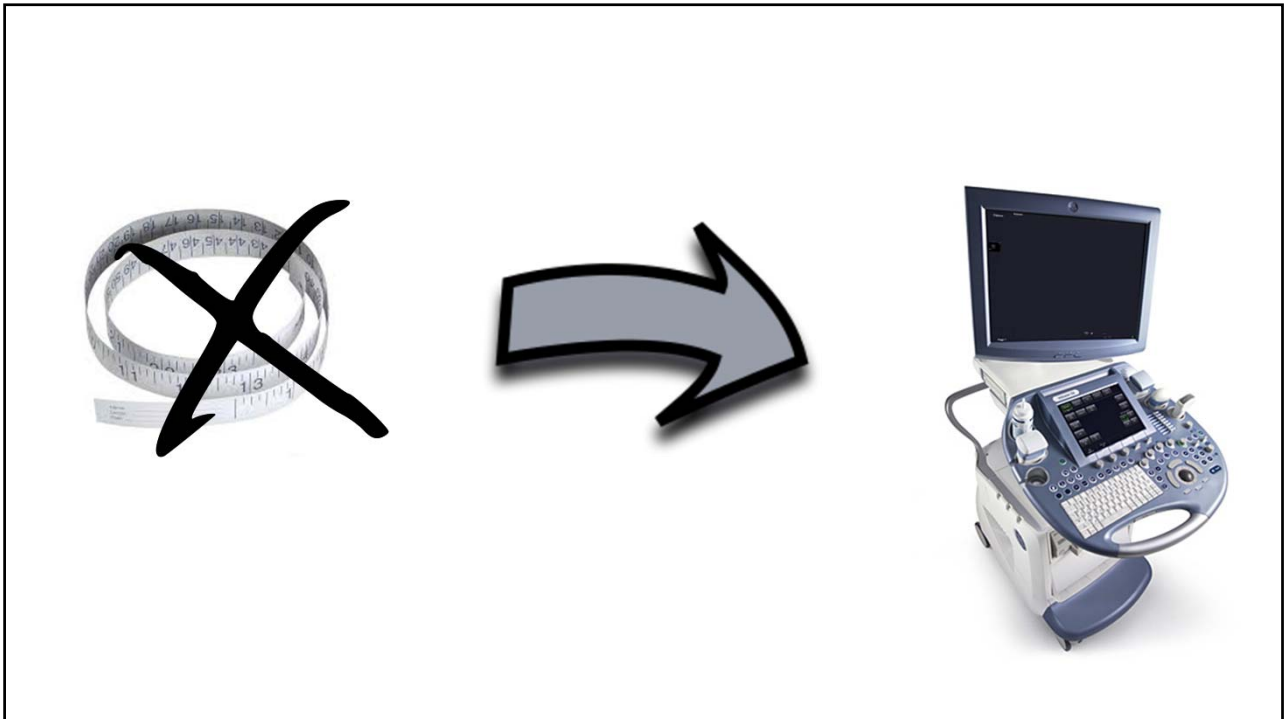
Screening for fetal growth restriction with universal third trimester ultrasonography in nulliparous women in the Pregnancy Outcome Prediction (POP) study: a prospective cohort study

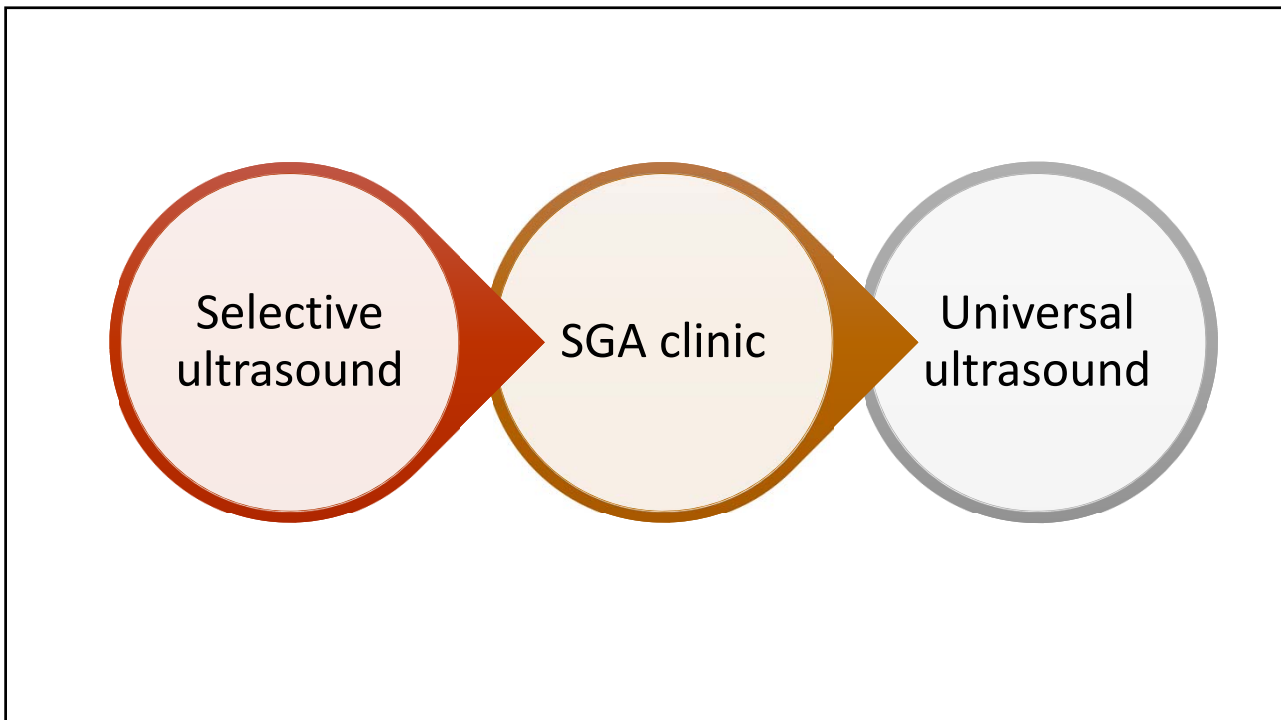
Ulla Sovio, Ian R White, Alison Dacey, Dharmindra Pasupathy, Gordon C S Smith



Lancet 2015; 386: 2089-97

Universal compared to selective ultrasonography
increased detection of SGA infants from 20% to 57%

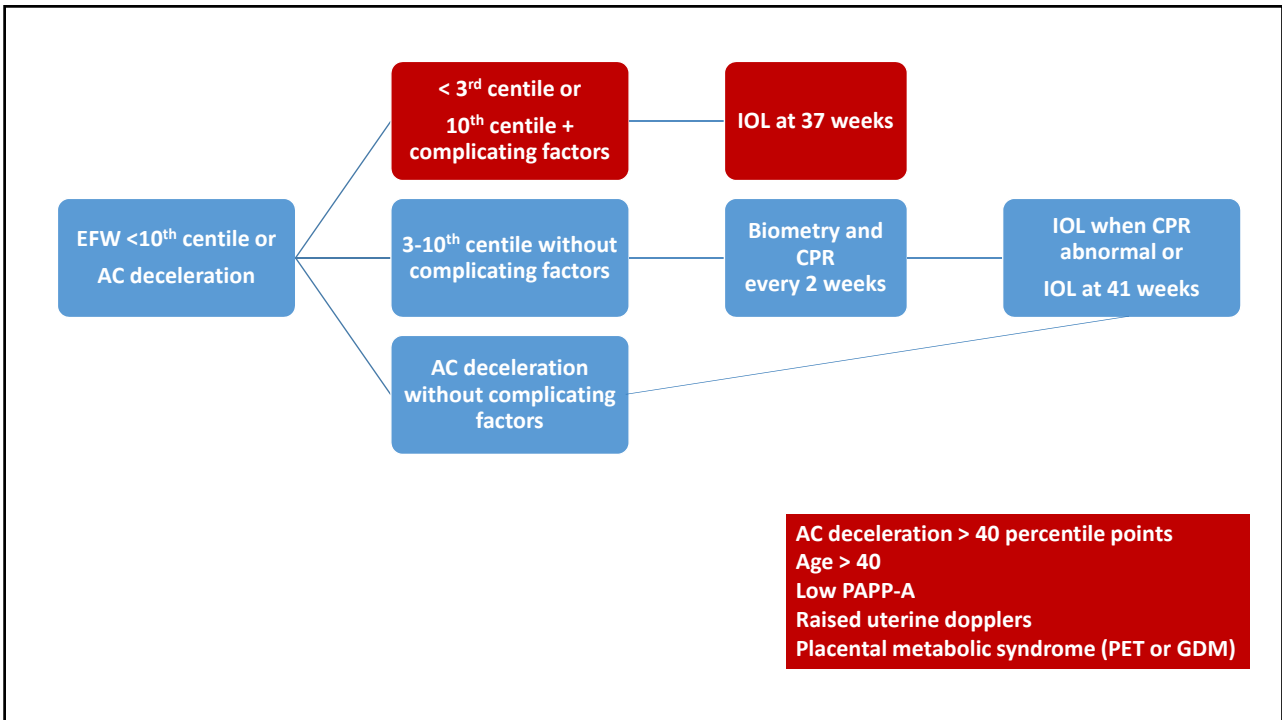
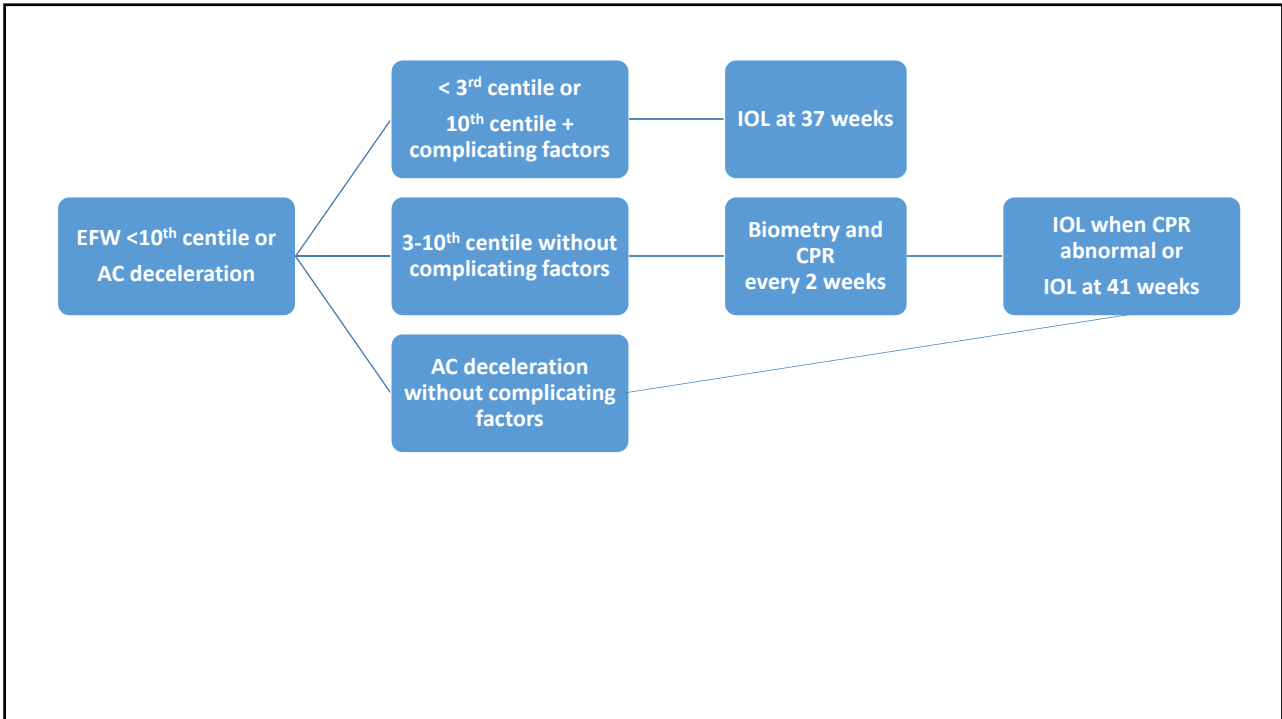


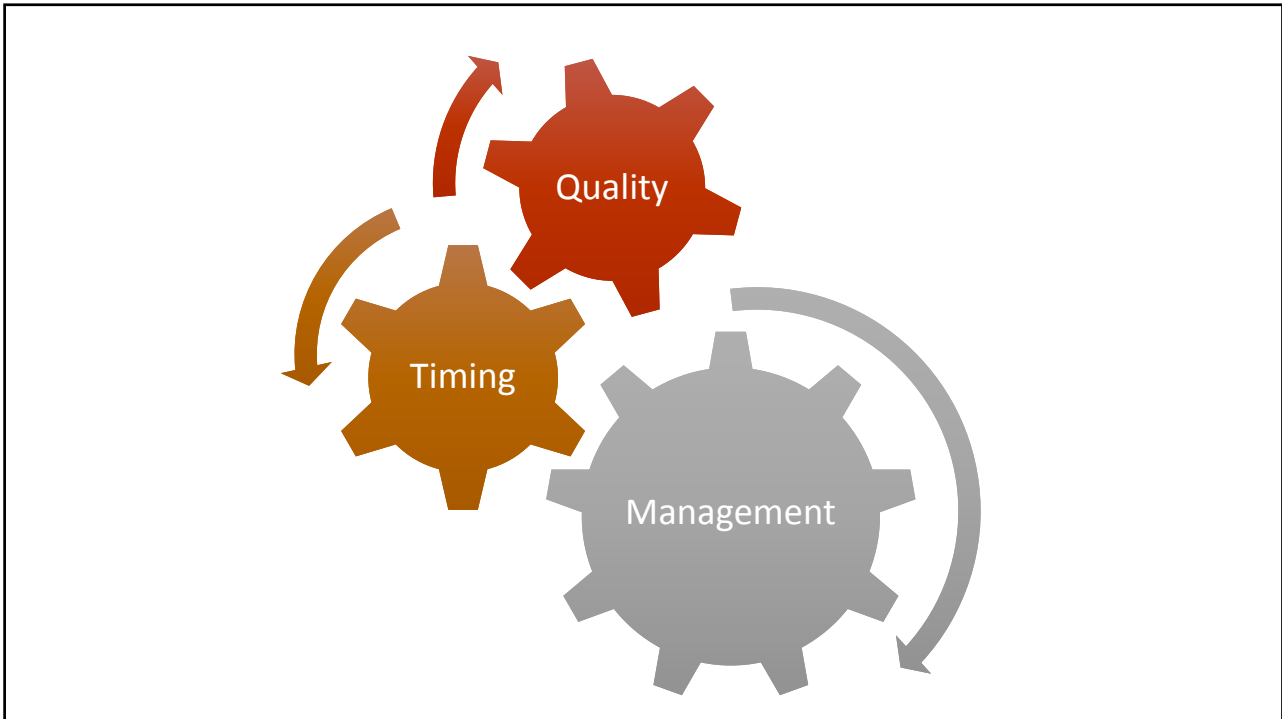


Not all SGA fetuses require induction of labour at 37 weeks

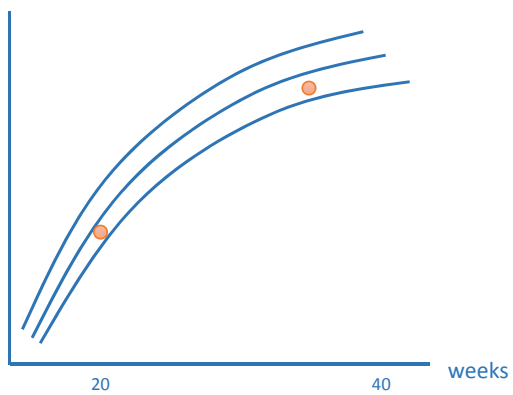
Novel markers of placental insufficiency such as the **AC growth velocity** and **cerebroplacental ratio** can be used in order to identify fetuses requiring early intervention

Centralised management using latest Fetal Medicine evidence





Timing and frequency



Out of protocol scan requests
triaged daily by
Fetal Medicine Consultant

At least half of the requests are rejected

Oxford University Hospitals **NHS**
NHS Foundation Trust

Patient ID _____

Before your anomaly scan:
Please answer the questions in the top half of this page. This will help us to make decisions about how best to monitor your baby's growth during your pregnancy.

Q		Yes	No
1	Have you had a baby that weighed less than 2.5kg (5lbs 8oz)?		
2	Are you 40 or over and having your first baby?		
3	Do you smoke 10 or more cigarettes a day?		

I confirm that I have read and understood the leaflet 'The Mid-Pregnancy Anomaly Scan - Information for Patients' and consent to have the anomaly scan performed.

Signed: _____ Date: _____

^^ Ultrasound Staff Use Only ^^

Q		Yes	No
4	Low PAPP-A (<0.3MoMs)		

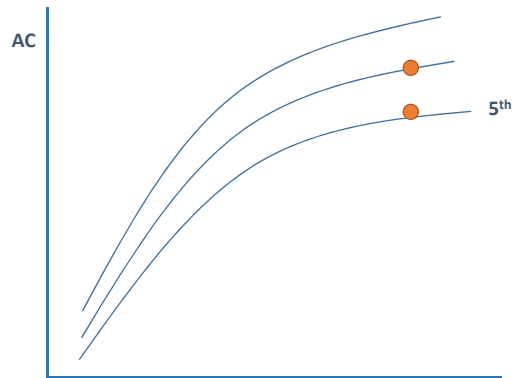
NB: Low result will be flagged on Viewpoint
NB: If only 1 x UtA Doppler obtained use PI = 1.25 as threshold.

Total PI < 2.5		Total PI ≥ 2.5		
EDD: _____	No to all Os	Yes to any Os	Yes to any Os OR Multiple Pregnancy	
Signed: _____				
Pathway	A <input type="checkbox"/>	C <input type="checkbox"/>	B <input type="checkbox"/>	D <input type="checkbox"/>
Growth Scans Date and Time	28/40	28/40	28/40	32/40
	36/40	36/40	36/40	36/40

ANC Follow up	No action required	No action required	<input type="checkbox"/> Check seeing MW or Cono 25/40 OR <input type="checkbox"/> If under 55, check 24/40 appt	<input type="checkbox"/> Check under Cons care <input type="checkbox"/> Check seeing MW or Cono 25/40 OR <input type="checkbox"/> If under 55, check 24/40 appt
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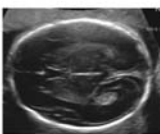
Interobserver variation	(mm)	(%)	(Percentiles)
AC	21	9%	41 percentiles!!!



The main anatomic landmarks can be easily recognized between 14 weeks and term gestation.

Remember:

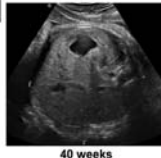
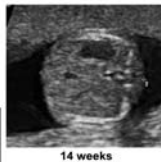
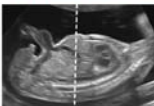
- Level of the thalami
- Horizontal plane
- Oval shape
- Symmetrical
- Central position of falx cerebri
- Cavum septum pellucidum in anterior third
- Magnification
- Correct calliper placement



The main anatomic landmarks can be easily recognized between 14 weeks and term gestation.

Remember:

- As circular as possible
- Short umbilical vein in anterior third
- Stomach bubble visible
- Kidneys and bladder NOT visible
- Magnification
- Correct calliper placement



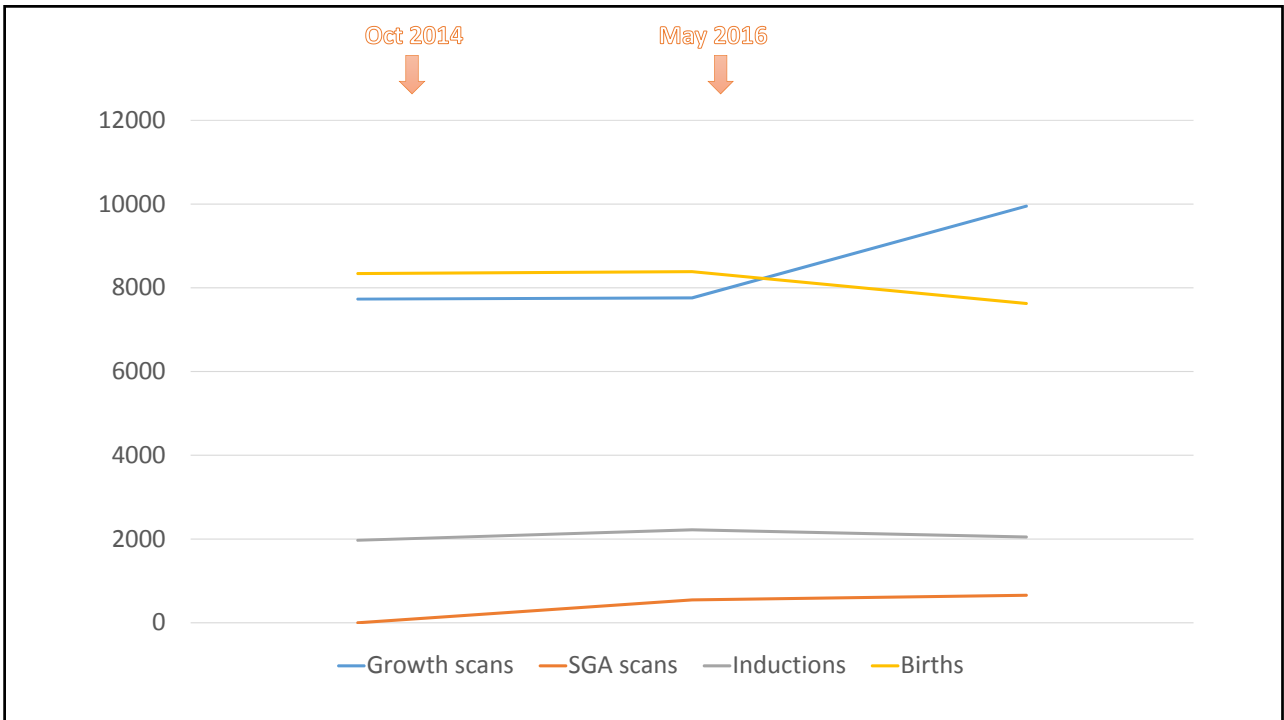
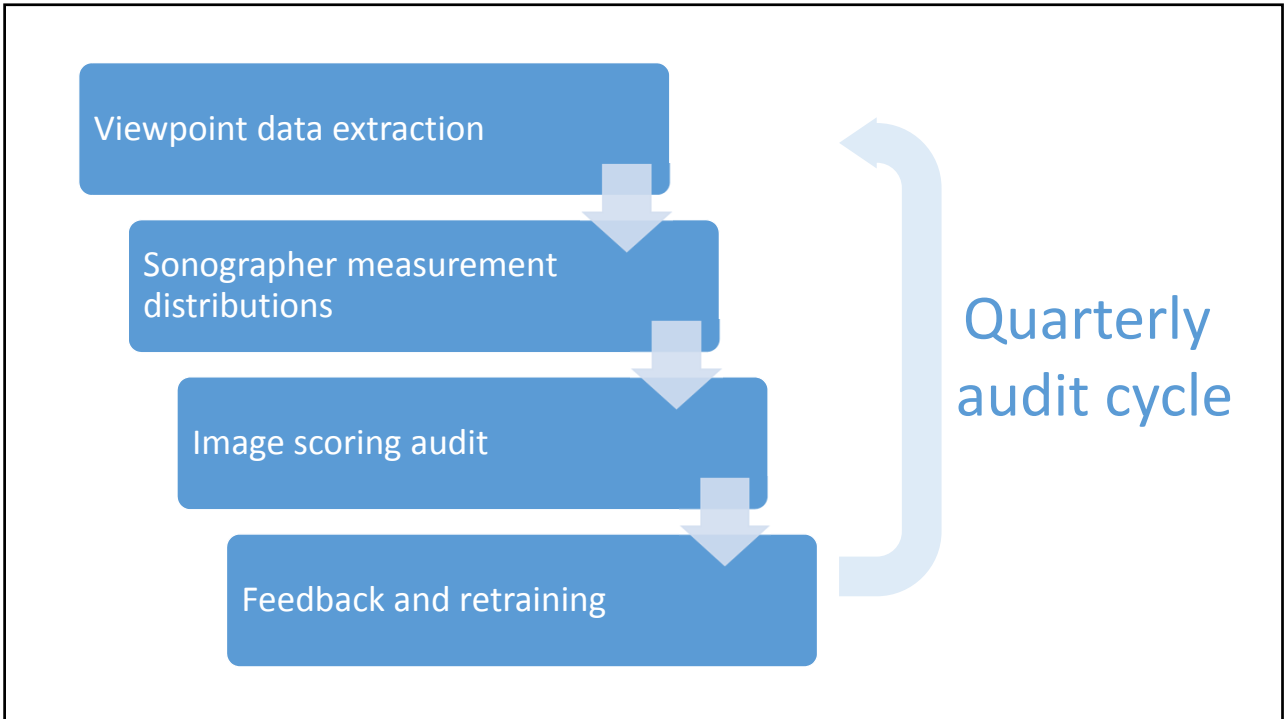
The femur can be easily recognized between 14 weeks and term gestation

Remember:

- Horizontal as possible
- Measure the bone closest to the probe.
- See the full length of the bone
- The bone is not obscured by shadows
- Magnification
- Correct calliper placement
- Do not include greater trochanter



<http://www.medscinet.net/Intergrowth/patientinfodocs/US%20Manual%20FINAL.pdf>



In a tertiary unit with 8200 deliveries p.a. ...

Prior policy of selective third trimester growth scanning already resulted in 7760 growth scans p.a.

Introduction of universal growth scan resulted in:

- c Growth scan to birth ratio increased **93% to 139%**
- c 25% of extra growth scans performed by FM doctors
- c Increased induction rate **23.6% to 26.9%**

Impact in clinical outcomes

Management by a dedicated SGA clinic resulted in **increased gestational age at birth** and a **reduction in labour inductions**

Small for gestational age babies after 37 weeks: an impact study of a risk stratification protocol. Veglia M, Cavallaro A, Papageorghiou A, Black R, Impey L. Accepted Ultrasound Obstet Gynecol 2017

Abdominal growth velocity can be calculated using a simple equation and its reference range can be used to identify fetuses at risk

A reference range of fetal abdominal circumference growth velocity between 20 and 36 weeks gestation. Vannuccini S, Ioannou C, Cavallaro A, Volpe G, Ruiz-Martinez S, Impey L. Accepted Prenat Diagn 2017

In SGA fetuses a reduction in abdominal growth velocity and a CPR less than the 5th centile are significant independent **predictors of adverse neonatal outcome**

Fetal abdominal circumference growth velocity and cerebroplacental ratio as predictors of perinatal outcome in small for gestational age fetuses. Cavallaro A, Veglia M, Svirko E, Vannuccini S, Volpe G, Impey L. Submitted Ultrasound Obstet Gynecol 2017

Summary

Improving the detection of fetuses at risk of stillbirth is likely to increase ultrasound and obstetric workload

First step is to develop a dedicated Consultant-led service for the management of SGA fetuses...

... a universal 3rd trimester ultrasound policy is then feasible with modest impact on resources, provided there are quality assurance mechanisms and strict policing of ultrasound requests

Acknowledgements

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G Volpe, S Ruiz-Martinez

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