First and Second Trimester Ultrasound Guideline

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The latest approved version of this document is online.
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1	Initial Issue	July 2023

Engagement & Consultation

Key Individuals/Groups Involved in Developing this Document

Role / Designation
Governance Lead for Ultrasound
DAU Midwife Sonographer

Circulated to the following for Consultation

Date	Role / Designation
03/08/22	Head of Midwifery and Sexual Health, Assistant Head of Midwifery, Consultant Midwife, Midwifery Governance Lead, Head of Radiology, Governance Lead for Ultrasound, Midwife Sonographers, Powys Community Midwives, Maternity Support Workers.
03/08/22	Women and Childrens Policy Group
03/08/22	PTHB Safeguarding Team
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Date	Group
05/06/2023	Maternity Guidelines Group
19/06/2023	Women and Children's Guidelines Group
11/05/2023	Radiology Heads of Service meeting

1. Introduction

This guideline is applicable to all women who attend for a first or second trimester ultrasound scan as part of the Antenatal Screening Wales (ASW) routine screening programme. The ASW Policy, Standards and Protocols state that all women resident in Wales should be offered a dating ultrasound scan and a fetal anomaly ultrasound scan (NICE; 2021).

The standards for the routine screening can be found in the ASW Handbook for Sonographers:
http://www.antenatalscreening.wales.nhs.uk/professional/ultrasound

2. Objective

- Outline roles and responsibilities.
- Standards for storage of images and ultrasound reports.
- Provide pathways for referral and follow up care when an abnormality or deviation is suspected during an ultrasound examination.
- Requirements for training and continued professional development.
- State expectations for clinical governance including monitoring, compliance and audit.

3. Definitions

- **PTHB** Powys Teaching Health
- **BMUS** British Medical Ultrasound Society
- **DAU** Day Assessment Unit
- **DGH** District General Hospital
- **USS** Ultrasound Scan
- **ASW** Antenatal Screening Wales
- **MSW** Maternity Support Worker
- **DQASS** Downs Quality Assurance Support Service
- **IPE** Image transfer via PACS systems within Wales.
- **NT** Nuchal translucency
- **NT LEAD** Nuchal translucency leads
- **RadIS** Radiology information system
- **NICE** National Institute for Clinical Excellence
- **EDD** Estimated date of delivery
- **PACS** Central Image storage system
- **CPD** Continuous Professional Development
- **LMP** Last Menstrual Period
- **NMC** Nursing and Midwifery Council
- **FMU** Fetal Medicine Unit
- **W & C** Women and Children's Directorate

4. Role / Responsibilities

4.1 Head of Midwifery and Sexual Health

The Head of Midwifery must:

- Ensure that robust procedures are in place in order that PTHB can discharge its organisational responsibilities in the provision of safe services to the Powys population of pregnant women.
- Ensure the overall implementation of the guidance.
- Ensure all staff have access to current Powys policies
- Arrange regular review to ensure DAU staff/sonographers comply with the requirements of the service.
- Follow up on audit and performance reports as required and provide assurances to the Directorate.
- Attendance at the Governance Oversight meeting.

4.2 Assistant Head of Midwifery

- To oversee compliance with training and service development.
- To provide leadership and support.
- Be accountable for DAU service provision.
- Overseeing and dealing with the service, provision, developments and issues.

4.3 Governance Lead for Ultrasound

- To ensure all Practitioners are complying with current National and local standards and guidelines for imaging.
- Ensure staff have access to relevant training.
- Assist with preceptorship.
- Undertake regular audit for quality assurance of images.
- Provide support and leadership.
- Advise on DATIX submissions in relation to ultrasound.
- To attend clinical case reviews to assist with learning opportunities.

4.4 Midwife Sonographers

- To be a leader in developing junior staff and provide training for those on a registered obstetric ultrasound course with tailored preceptorship post qualification.
- Counsel women when required for dating and anomaly USS.
- Maintain DQASS plot and submit to NT lead 6 monthly.
- Strive to continuously develop through reflection and self-audit.
- Undertake ASW online learning and any relevant training as required for CPD.
- Store images on PACS system as required by ASW for image audit.

- Follow the ASW Handbook for sonographers when undertaking first and second trimester ultrasound scans.
- Maintain clinical supervision and record keeping audits to include RADIS report auditing.
- Maintain ultrasound equipment and report any concerns to Assistant Head of Midwifery.
- Follow infection control in ultrasound guidance.
- DATIX health and safety concerns or incidents occurring relating to a first or second trimester USS.
- Counsel for combined screening where a twin pregnancy has been detected.
- Inform women of a high chance combined screening result and counsel women to make an informed choice regarding options for further investigation.
- Refer women appropriately where an abnormality is detected at the anomaly or dating USS.

4.5 Community Midwife

- Undertake the relevant ASW online learning at specified intervals.
- Counsel women at the booking appointment for the ASW ultrasound scans and combined screening.
- Ensure follow up is received timely in a DGH and offer additional support for women where there has been an abnormal finding at scan.

4.6 Maternity Support worked (MSW)

The role of the MSW

- To assist and act as chaperone when required.
- Enter details relayed by the Sonographer in RadIS.
- To provide the woman with the relevant ASW post-test information and provide the date for any follow-up.
- Phlebotomy for combined screening and any additional booking bloods requested by community midwife.

5. First Trimester

Dating Pregnancy Ultrasound Scan

The early pregnancy ultrasound scan ascertains the location of the pregnancy, checks for uterine abnormalities that may affect the fetal development or delivery, assesses for viability, dates the pregnancy, and if consented undertakes the combined screening. This conducted within the limitations of the ultrasound scan. Those limitations most be documented with the RADIS report.

Guidance on the first trimester ultrasound scan is in the ASW Sonographer Handbook:

http://www.antenatalscreening.wales.nhs.uk/professional/ultrasound

5.1 Abnormal First Trimester Ultrasound Examinations

- At the time the abnormality is detected verbal information regarding the abnormality should be discussed with the woman and a report placed in the woman's handheld records. The discussion should also be documented in the All Wales handheld record.
- If an abnormality is detected and the pregnancy is ongoing the woman should be able to speak to a midwife/obstetrician within 24 hours (ASW standard). A referral must be made to the relevant health professional for follow-up.
- Where the appropriate services are not available locally a referral and appointment should be made in a timely manner. Images should be sent to the appropriate DGH via IPE. If this service is not available a hard copy of the images should be printed and sent with the patient along with the appropriate scan report.
- In the incidence of an enlarged NT **(≥3.5mm)** an electronic image of the abnormality should be made available with the referral correspondence.
- If the NT is equal to or greater than **3.5mm** combined screening bloods should still be taken if the woman has consented to the combined screening test and consent gained from the woman for a TORCH screen. The blood results should be forwarded to the respective DGH once available.
- Any suspected congenital abnormality should be reported to CARIS, this can be done via Radis2 reporting module. If that is not available, then a CARIS notification card can be used. The woman's explicit consent is not required for reporting to CARIS.

5.2 Presentation of women too early for accurate dating of pregnancy.

The appearances of a normal early pregnancy are described in **Appendix A.**

The woman attends at the correct gestation in line with LMP but findings are of a much earlier pregnancy or features differ from expected. Where a pregnancy appears smaller than is expected or the sac appears empty the following guideline should be adhered to providing there is no bleeding or pain. Any bleeding or pain refer the woman to the nearest EPAU. See **Appendix B** for guidance.

A transvaginal scan should be undertaken with consent if there is any uncertainty of a fetal heartbeat. A transvaginal scan should be undertaken if within the scope of practice for the midwife sonographer. Alternatively, assistance should be sought from a senior sonographer and a follow-up appointment can be scheduled for no longer than 48 hours later. The demise of a fetus must be confirmed by two sonographers so the woman should be informed that due to the size of the fetus in early

pregnancy the EPAU will rescan to confirm findings and that she will be offered a transvaginal ultrasound scan.

See Appendix B for management of women that present for dating USS with an empty uterus.

5.3 No Fetal Heartbeat at Dating Scan

If a woman presents for dating USS and a fetal pole is present with a CRL measuring more than 7mm and no cardiac output can be identified, it is consistent with a silent miscarriage. Colour doppler should be used to assist with diagnosis. A transvaginal USS should be carried out to confirm findings if the transabdominal scan views are compromised.

The woman must be informed to attend A&E if bleeding commences and is very heavy or she feels unwell.

The Midwife Sonographer should refer to an EPAU service. Consent must be gained from the woman for a community midwife from her team to contact her following the EPAU appointment to offer additional support. The telephone numbers for the EPAU and DAU should be provided to the woman in case of additional questions or concerns.

See Appendix B for management of early pregnancy.

5.4 Continued Professional Development and Training

CPD should be provided through a variety of methods and tailored to team and individual requirements. Training should also be aligned to any National or Wales specific agendas.

Local midwifery clinical supervision should incorporate discussion of clinical cases for learning and recommendations and attended by the Image and Training Governance Lead for Ultrasound and intermittently the Supervisor of Midwives. A lead midwife sonographer will be appointed annually to attend meetings and training and report to the DAU team meeting and DAU oversight meeting.

It is expected that all sonographers undertaking first trimester ultrasound scans will comply with the ASW e-learning requirements and complete the following e-learning packages;

- Down’s syndrome, Edwards syndrome and Patau’s syndrome screening (2 yearly),
- First Trimester screening resource for sonographers (yearly).

5.5 Imaging

It is expected that the sonographer will store an image of the pregnancy location, m-mode trace of the fetal heartbeat, and a CRL measurement

along with an NT image if performed. Additional images showing any irregularities will be at the sonographer's professional discretion and clearly demonstrate the description in the RadIS report with body markers and annotation.

5.6 Reporting

The ASW codes for reporting are available in the ASW handbook for sonographers and should be used for all obstetric ultrasound scans. Information can be input by the maternity support worker but must be checked and validated by the sonographer. A copy of any first trimester ultrasound scan reports should be inserted into the maternity handheld records.

6. Second Trimester

Fetal Anomaly Ultrasound Scan

All screening tests are optional, and it is important that the woman is provided with up-to-date information so that she can make an informed choice on whether to have the screening tests.

Please see ASW Handbook for Sonographers

http://www.antenatalscreening.wales.nhs.uk/professional/ultrasound

6.1 Abnormal Fetal Anomaly Scans

If a fetal anomaly is identified, the sonographer must arrange for an appropriately trained midwife or obstetrician to discuss the findings with the woman within 24 hours. CARIS should be informed by selecting the report CARIS on the RadIS reporting system or an electronic warning report must be submitted through the CARIS website.

It is expected that all sonographers undertaking the fetal anomaly USS will follow ASW standards contained in the ASW Handbook for Sonographers

http://www.antenatalscreening.wales.nhs.uk/professional/ultrasound

6.2 No Fetal Heartbeat at Anomaly USS

Where a woman presents for a routine anomaly ultrasound scan as part of the Antenatal Screening Wales programme and it is identified that there is no fetal heartbeat the findings should be explained to the woman and those accompanying. An explanation of the requirement to continue scanning to gain important information for ongoing care should be explained and consent gained to continue with the USS. It is important to ask if the woman wishes to see the scan on the screen saver and to be shown the findings.

Images should be stored showing the fetal heart with colour doppler, presentation at time of scan and measurements of the fetus to include femur length, head circumference and abdominal circumference along with any other additional pertinent images.

The midwife sonographer must undertake a referral to the chosen DGH via the consultant on call and labour ward. The woman should be advised that the DGH will rescan to confirm findings. Telephone numbers for the DGH labour ward and DAU should be provided to the woman prior to her leaving.

The community midwife must be informed so that she can contact the woman for support. A DATIX must be submitted, and CARIS informed via RadIS of the findings. If the woman consents to a postmortem the findings should be reported to CARIS if an abnormality is identified.

Images of the fetus can be provided to the woman at her request, but care should be taken where there is degeneration of the fetus. Where it is not possible or appropriate to provide images of the fetus this should be explained to the woman.

It is important not to confuse no fetal heartbeat with a transient bradycardia. This is common in the mid-trimester, particularly during ultrasound when it is often caused by pressure on the fetus itself. This is self-limiting and not associated with haemodynamic compromise.

6.3 Gender Reveal at Anomaly

The gender of the fetus may be revealed verbally to the mother at the time of the examination at the mother's request but should not be revealed to another person or written down.

Powys THB policy on determining the fetal gender should be clearly displayed in the ultrasound room and advance warning given to the woman and her partner by incorporating this as part of the invitation for a dating scan letter. The woman should be made aware that the findings are not conclusive and do not form part of the ASW anomaly screening list.

6.4 Continued Professional Development and Training

CPD should be provided through a variety of methods and tailored to team and individual requirements. Training should also be aligned to any National or Wales specific agendas.

Image reviews undertaken by the Governance Lead for ultrasound will feed back to the individual midwife sonographers for continuous improvement and learning.

All midwife sonographers are expected to present clinical cases for discussion at the monthly supervision meetings. Recommendations and learning outcomes will be taken from these discussions to the DAU oversight meeting.

It is mandatory that all midwife sonographers attend a fetal medicine and fetal cardiology clinic for continuing professional development. A midwife sonographer will be allocated annually to attend any ASW fetal cardiac learning and updates and ASW obstetric meetings.

It is expected that all sonographers undertaking the anomaly ultrasound scans will comply with the ASW e-learning requirements and complete the following e-learning packages;

- Fetal Anomaly USS (Completed once then used as a supportive resource),
- Fetal Cardiac (2 yearly).

6.5 Imaging

ASW in the sonographer's handbook give clear guidance on the images that are to be stored and the image requirements. There are 8 images required by ASW:

- Midline longitudinal section to include internal os,
- Head circumference,
- Femur length,
- Transverse section of the kidneys,
- Nose, lips and chin,
- Four chamber heart view,
- Three vessel trachea view,
- Sagittal spine.

Additional images showing any irregularities will be at the sonographer's professional discretion and clearly demonstrate the description in the RADIS report with body markers and annotation.

6.6 Reporting

Findings should be reported using the codes specified in the ASW Sonographer's Handbook. The RadIS anomaly reporting framework should be used to ensure all fetal areas have been examined. Scan limitations, although in the RadIS framework, should be noted as a scan limitation in the additional reporting box along with any specific explanation of findings and any follow-up required.

7. Monitoring Compliance / Audit *(Mandatory section header)*

The first trimester quality assurance and image audit will be carried out by the Governance lead for ultrasound. Three sets of ultrasound scan images chosen at random for each sonographer will be checked monthly and the

audit results will be fed back to the individual (monthly), Head of Midwifery and the DAU oversight meeting (quarterly). The governance lead will have her image review carried out independently. The Antenatal Screening Wales (ASW) proforma will be used to benchmark images.

The Governance Lead for ultrasound will audit monthly three sets of ultrasound scan images for each sonographer undertaking anomaly scans. The images will be chosen at random and benchmarked using the ASW proforma. The Governance Lead will give feedback to the individual (Monthly), Head of Midwifery and the DAU oversight meeting (quarterly).

If a concern is identified by the Governance Lead for Ultrasound this will be raised urgently with the Head of Midwifery and Assistant Head of Midwifery so that appropriate action can be undertaken promptly and a DATIX submitted.

The NT lead is responsible for carrying out audit and monitoring performance of the sonographers for the early pregnancy scans. The role of the NT lead is described in the ASW ultrasound handbook. The role of the Cardiac and Obstetric leads is also stated within the sonographer's handbook and are required to disseminate the information to the rest of the sonographer team.

The sonographers are also responsible for their own performance as laid out in the role for the sonographer in the ASW ultrasound handbook.

Any baby born with a missed abnormality during the antenatal period should have a DATIX and CARIS report submitted by the community midwife for further investigation.

8. Review and Change Control *(Mandatory section header)*

This document should be updated following any updates to the ASW screening standards.

This document is reviewed every 3 years or earlier should audit results or legislation/practice within PTHB indicate otherwise.

9. References / Bibliography

1. Antenatal Screening Wales (2020) *'Obstetric Ultrasound Handbook for Sonographers Delivering the Antenatal Screening Programme in Wales'.* Edition 4, Version 6.
2. National Institute for Clinical Excellence (2021) NG201 ' *Antenatal Care'*
3. ISUOG(2013) *ISUOG Practice Guidelines of first trimester fetal ultrasound scan, Ultrasound Obstetrics and Gynecology.* Vol 41 Page 102-113
4. Antenatal Screening Wales (2020) *E-learning training requirements by staff group.*

5. *Society of Radiographers and BMUS (2014) Standards for the provision of an ultrasound service*
6. *Society of Radiographers and BMUS (2021) Guidelines for professional ultrasound practice.*
7. Society of Radiographers (2019) *NHS Obstetric Ultrasound Examinations: Guidance on sale of images, fetal sexing, commercial considerations and requests to record.*

Bwrdd Iechyd Addysgu Powys
Powys Teaching Health Board

Appendix A

Appendix A Fetal Development

Gestational age	Anatomical landmarks	Comments
4 weeks 2 days	Eccentrically placed Gestational sac with GSD 2-3mm	May represent pseudosac 10-20% of ectopic pregnancies have an intrauterine pseudo GS
5th week	Double decidual sac	Results from approximation of decidua capsularis and decidua vera. May be present in one third ectopics.
5th week	GSD 5mm Yolk sac (YS) Size varies from 3-8mm (average 5mm)	Confirms IUP Large YS > 10mm – poor prognosis.
6th week	GSD 10mm Embryo 2-3mm Cardiac activity (CA)	Confirms IUP Confirms viability (97% of embryos with CA have a normal outcome)
7th week	GSD 20mm Head and trunk distinguishable	GS > 20mm, if no YS – poor prognosis
8th week	GSD 25mm Head size = YS Limb buds Midgut herniation Rhombencephalon	GS > 25mm, if no embryo – poor prognosis
9th week	Choroid plexus, spine, limbs	
10 weeks	Cardiac chambers, Stomach, bladder, Skeletal ossification	
11 weeks	Gut returning Most structures identified	

Appendix B

A Guide to Management of Early Pregnancy.

Ultrasound appearance	Diagnosis	Management plan
Intrauterine gestational sac (GS), embryo and cardiac activity (CA)	Viable pregnancy	If CRL <45mm rescan for accurate dating
Intrauterine gestational sac (GS), embryo and unsure of cardiac activity (CA)	? viability	Rescan in 2 weeks or TV scan if appropriate.
If actively bleeding	Threatened miscarriage Incomplete miscarriage Complete miscarriage	Refer to EPAU for definitive diagnosis
Gestation sac no fetal pole but yolk sac present irrespective of sac diameter	Possible viable	Repeat in two weeks
Gestation sac <25mm – no fetal pole by TV	Possible early pregnancy	Rescan 2 week later
GS >25mm or equal to 25 mm – no fetal pole	Possible silent miscarriage	Referral to EPAU
Crown Rump Length (CRL) <7mm CA not demonstrated by TV.	Possible viable	Rescan 1-2 week if no change after 2 weeks appearance of silent miscarriage
CRL >7mm or equal to 7 mm CA not demonstrated	Likely missed miscarriage	Referral to EPAU
CRL => 15mm No CA	Appearance of silent miscarriage	Refer to EPAU
CRL=<15mm No CA	Possible viable TV scan required	Refer to EPAU

Empty uterus with No-adnexal abnormality	Inconclusive scan <u>Negative pregnancy test</u> complete miscarriage or never pregnant. <u>Positive pregnancy test</u> possible early pregnancy. possible ectopic pregnancy. possible complete miscarriage	Refer to EPAU
Empty uterus Adnexal mass Fluid in Pouch of Douglas (POD) Pain	Tubal Miscarriage/ Ruptured ectopic pregnancy	Immediate transfer to DGH EPAU
Empty uterus Adnexal mass <3cm No other findings/symptoms Pregnancy of Unknown Location (PUL)	Un-ruptured ectopic pregnancy	Immediate transfer to EPAU
Endometrium thickness >15mm	Incomplete miscarriage	Referral to DGH EPAU
Mixed echo mass grape like appearance mass within the uterus	Suspect trophoblastic disease	Referral to EPAU