Obstetrical Ultrasound Standards

Obstetric Guideline for Health Care Providers

March 2025

Perinatal Services BC
Provincial Health Services Authority

Territory acknowledgement

We respectfully acknowledge that the document "Obstetrical Ultrasound Standards: Obstetric Guideline for Health Care Providers" was developed at Perinatal Services BC on the unceded, traditional and ancestral territories of the Coast Salish People, specifically the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish) and səl̓ílwətaɬ (Tsleil-waututh) Nations who have cared for and nurtured the lands and waters around us for all time. We give thanks for the opportunity to live, work and support care here.

A note on gender inclusion and the language of this document

This document uses gender inclusive language as health care providers play a critical role in creating a supportive environment that meets the needs of transgender and gender non-conforming (TGNC) people. We encourage all health care providers to inquire with families on first consultation what language they use when referring to their pregnancy, parenting and infant feeding as well as their pronouns.

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1. Introduction

In September 2011, the BC Patient Safety and Quality Council produced a report entitled *Investigation into Medical Imaging, Credentialing and Quality Assurance*. The report reviewed the existing structure for the licensing and credentialing of physicians in BC's health authorities, including the processes for quality assurance and peer review. Recommendation #32 in the report designated Perinatal Services BC (PSBC) to develop or adopt and promulgate standards for obstetrical ultrasound assessments in the first, second and third trimesters that are performed in community and tertiary facilities.

In 2015, PSBC published its first Obstetrical (OB) Ultrasound Assessment Standards document which was developed by a multidisciplinary committee with extensive consultation with obstetricians, family physicians, midwives and radiologists as well as representatives from the BC Radiology Society (BCRS), BC Ultrasonographers' Society (BCUS), Lower Mainland Medical Imaging Integration and the Diagnostic Accreditation Program (DAP).

In order to ensure that these provincial standards continue to align with best practices, in 2024, a review of the 2015 OB ultrasound standard was led by Perinatal Services BC and performed by a multidisciplinary group consisting of representation from different health care provider stakeholders, health authorities, and both public and private diagnostic imaging facilities. This has resulted in this revised document, 2025 PSBC Obstetrical Ultrasound Standards.

Summary of Changes

1. When clinically appropriate, the recommended gestational age (GA) window for dating scan is 11–13 weeks GA to allow for early detection of severe fetal anomalies.
2. The World Health Organization (WHO) fetal growth chart is now the standard biometry reference chart in B.C.
    a. Head circumference (HC), abdominal circumference (AC), femur length (FL) and estimated fetal weight (EFW) percentiles for corresponding gestational age are reported.
    b. Measuring and reporting of biparietal diameter (BPD) is no longer a mandatory requirement and is discouraged.
    c. Guidance regarding biometry percentile cutoffs for triggering umbilical artery (UA) Doppler assessment, referral to obstetrician-gynecologist (OBGYN), Maternal Fetal Medicine (MFM) or Fetal Diagnosis Service (FDS) and/or need to contact a health care provider is provided.
3. Early pregnancy guidance section has been expanded.
4. Exam component checklists for different exam types have been updated.
5. Previous 2012 Ministry of Health policy of fetal sex determination has been withdrawn:
    a. Assessment of fetal genitalia is now part of the routine anatomical screening checklist.[1]
    b. Individual facilities/health regions may choose to implement a policy of their choice regarding release of fetal sex information to patients.

Scope

It is the intention of these standards to ensure a consistent level of care throughout the province surrounding the provision of obstetrical ultrasound that is based on current clinical best practices. The standards provide a simple, single source of information regarding standards for obstetrical ultrasound assessment for physicians and sonographers involved in obstetric ultrasounds at diagnostic and screening sites around the province. This document is not intended to confine or limit ultrasound assessment parameters as individual diagnostic imaging sites may include additional ultrasound components dependent on available expertise, clinical indication, and health care provider requests.

The obstetrical ultrasound standards aim to define the minimum requirements for obstetrical ultrasound assessment in the first, second and third trimester of pregnancy as well as reporting standards and actions to be taken when abnormal/unexpected findings are encountered. Recommendations are aligned with the Canadian Association of Radiologists Standards for Communication of Diagnostic Imaging Findings. The obstetrical ultrasound standards for B.C. may also inform Diagnostic Accreditation Program (DAP) accreditation standards. Ultrasound report turnaround times are not discussed here and should meet DAP accreditation standards.

It is outside the scope of this document to define the required content or format of ultrasound requisitions. It is left to each facility to review their requisition to ensure that all information needed to meet the standards for reporting or action to be taken (e.g. urgent communication with ordering health care provider) is captured in the requisition.

Definitions

- **Ultrasound Report** — The document that provides the findings and interpretation of the ultrasound assessment including all of the items listed in this document. It is signed by a qualified physician and is distributed to the ordering health care provider (HCP) and other HCPs as requested.
- **Sonographer Worksheet** — A document used by the sonographer during an obstetrical (OB) ultrasound assessment. Not considered to be an Ultrasound Report (See Appendix A for examples of a worksheet for both OB ultrasound <14 weeks and ≥14 weeks).
- **Image documentation** — Images which are assessed and retained. These images are stored by the diagnostic imaging site.
- For the purposes of this document, trimesters are defined as:
  - **1st trimester** — up to and including 14wks 0d
  - **2nd trimester** — 14wks 1d – 27wks 6d
  - **3rd trimester** — after and including 28wks 0d

General Considerations

Licensure & Certification Requirements

Individuals providing obstetrical (OB) ultrasound reports and individuals performing OB ultrasounds are required to have the appropriate licensure and credentials as per the provincial regulatory authorities.

Safety Considerations

While performing an ultrasound, exposure time and acoustic output should be kept to the lowest levels consistent with obtaining diagnostic information and limited to medically indicated procedures as per their own regional procedure guideline or similar, see Appendix B as an example.

2. Minimum Required Content for all Obstetrical Ultrasound Reports

Final reports must include, but are not limited to, the following:

General Information

- Examination date
- Patient full name
- Second patient identifier (birth date, hospital identification number, health insurance number)
- Indication for examination
- Starting date of last menstrual period (LMP) if available
- GTPAL Obstetrical history summary: Gravida status, number of term and preterm deliveries, abortions/deliveries <20 weeks, number of living children
- Number of previous cesarean section deliveries
- Conception date or calculated LMP for assisted reproductive technology (ART) pregnancies
- Date of the first ultrasound at or after 7wks 0d, the crown rump length (CRL) and the corresponding gestational age at that time
- Name of requesting physician/caregiver
- List of caregivers to receive copies
- Date of final report
- Name of interpreting/reporting physician

Report Summary

The report summary/conclusion/comments must include:

- Estimate of the current gestational age based on pregnancy dating rules (described in Section 3)
- Results and interpretation of biometric measurements and amniotic fluid assessment for the current gestational age
- Results of the fetal anatomy assessment
- Result of maternal anatomical assessment, including endovaginal cervical length when indicated
- If appropriate, limitations of the ultrasound assessment (e.g. fetal position, fetal size, gestational age, oligohydramnios, maternal body habitus)
- Recommendations as appropriate
- Documentation of communication with health care provider (HCP) for urgent findings

3. Pregnancy Dating and Fetal Growth Chart

3.1 Gestational Age (GA) Determination

Accurate dating of pregnancy is paramount in multiple aspects of pregnancy care including determining viability, diagnosis and management of fetal growth restriction and post-date pregnancies.

When possible, it is recommended to delay the dating scan to **11–13 weeks** as the later gestational age offers the opportunity for basic anatomical assessment and potential for early detection of a large proportion of severe structural anomalies[2] without compromising dating accuracy nor adding to the total number of routine examinations in the pregnancy.

In assigning the gestational age to interpret the current ultrasound scan the following rules are recommended:

1. If the pregnancy is a result of timed ovulation induction (ovulation induction, Invitro fertilization (IVF), etc) then determination of the current gestational age should be based on that information.
2. If a natural conception, the first ultrasound after 7wks 0d gestation or crown rump length (CRL) ≥10 mm should be used to date the pregnancy.[3]
3. If a multiple pregnancy, the gestational age of the largest fetus should be used as the gestational age for the pregnancy.[4]

<14 Weeks Gestational Age (GA) at First Ultrasound

Crown rump length (CRL): The recommended reference chart for CRL measurement and pregnancy dating is the Robinson chart.[5] The average of 3 CRL measurements rounded off to the nearest mm is used to date pregnancies <14 weeks.

The equation used is the following version: GA(days)=8.052x(CRLx1.037)exp ½+23.73. (See Appendix C)

>14 Weeks Gestational Age (GA) at First Ultrasound

Pregnancy dating cannot be obtained by Robinson chart when the first ultrasound is performed after 14 weeks or a crown rump length (CRL) >84 mm.

When the first ultrasound is performed after 14 weeks GA, the pregnancy should be dated by the average GA of at least 3 biometric measurements (head circumference (HC), abdominal circumference (AC) and femur length (FL)) each converted to the 50th percentile gestation in weeks and days. If the average gestational age for biometric measurement is not included in the reporting package, it can be calculated by the PSBC Average GA Calculator which uses the World Health Organization (WHO) fetal growth charts.[6]

Rule: Once an estimated due date is established, it should remain as such and be the basis for all further gestational age estimates, including the Estimated Date of Delivery (EDD), unless there is compelling clinical evidence to reassign the gestational age.

3.2 Fetal Biometry Measurements

The World Health Organization (WHO) fetal growth charts[6] is the standard reference for calculation of biometry percentiles and estimated fetal weight for pregnancies 14–40 weeks gestational age (GA).*

Biometry Imaging and Reporting Standards

Head circumference (HC), abdominal circumference (AC) and femur length (FL) should be reported with the corresponding percentiles as pregnancy management is best informed by growth percentiles. *Measurement and reporting of the biparietal diameter is not required nor recommended as part of routine growth assessment*. Percentiles are readily available through the WHO Fetal Growth Online Calculator. Reference charts for the 2.5th, 5th, 10th, 50th, 90th, and 97.5th percentile for AC, HC, FL and estimated fetal weight (EFW) are available, with additional 1st percentile for HC and FL.

There is no requirement to report corresponding average gestational age (GA) for individual biometry parameters nor is this available from the WHO fetal growth chart. However, this information can be obtained from the PSBC Average GA Calculator based on WHO growth charts, and is mainly useful for dating a pregnancy presenting for a first ultrasound after 14 weeks GA. A limitation of the WHO fetal growth chart is that percentiles are not available for biometry <14 or >40 weeks GA; However, EFW can be calculated through the online calculator when biometric parameters are out of range.

Biometry measurements standards are described in the original WHO Fetal Growth chart publication[6]; the ellipse function is used to measure the head and abdominal circumferences. Fetal growth is assessed by measuring the HC, FL and AC (See Appendix D).

(EFW is calculated by including HC, AC and FL in Hadlock 1985's third formula[7] or through the WHO Fetal Growth Online Calculator.

* Information regarding the rationale for selecting the WHO fetal growth charts as the provincial standard as well as tips for implementation are available on the BC Women's Ultrasound webpage. The WHO fetal growth calculator provides the coefficients for the chart.

4. Amniotic Fluid Volume (AFV)

4.1 Gestational Age <24 Weeks

Amniotic fluid volume (AFV) is subjectively assessed when gestational age (GA) is <24 weeks. If fluid volume appears abnormal, the single deepest pocket (SDP) is measured and the AFV protocol for GA ≥24 weeks GA is followed as below.

4.2 Gestational Age ≥24 Weeks

Amniotic fluid assessment should be performed using the **Single Deepest Pocket (SDP) method**.[8]

Technique: The largest pocket of fluid free of cord and fetal parts is identified and its depth (cm) measured as close to right angles as possible *to the uterine contour (not the floor)*. The pocket must be at least 1 cm in width (width being measured perpendicular to the depth axis) at its narrowest point so that it is at least 1 cm wide throughout the measured depth axis. To avoid over-estimation of pocket depth, the transducer should not be over-angled through the pocket relative to the depth axis.

Amniotic Fluid Index (AFI) should only be measured if polyhydramnios is suspected on the basis of an SDP measurement ≥8.0 cm. An AFI greater than 25.0 cm is considered diagnostic for polyhydramnios. In addition, abnormal measurements should not be based on a single measure, but confirmed by repeated measurement.

Definitions

Oligohydramnios: SDP <2.0 cm

Normal: SDP between 2.0 and 8.0 cm[9]; measure AFI when SDP is >8.0 cm to rule out polyhydramnios. If the AFI measures less than 25.0 cm, then amniotic fluid volume is reported as normal, regardless of SDP size.

Polyhydramnios: AFI >25.0 cm. Polyhydramnios may be further categorized into mild (25–29.9 cm), moderate (30–34.9 cm), and severe (greater than 35.0 cm).

5. Standards for 1st Trimester Ultrasound

5.1 <11 Weeks Exam Components, Documentation and Reporting (up to 10wks 6d)

FETAL ANATOMY SURVEY — MINIMUM REQUIREMENTS AND DOCUMENTATION
General
Location of gestational sac (intrauterine vs. extrauterine vs. unusual location) • If concerns about unusual location (i.e. interstitial, cervical, or cesarean section scar ectopic), please refer to section on ectopic pregnancies
Mean gestational sac measurement: 3 orthogonal planes if fetal pole not identified
Yolk sac (presence or absence if fetal pole not identified)
Fetal number — if multiple, report chorionicity and amnionicity
Free fluid if applicable (e.g. hemoperitoneum)
Biometry
Crown rump length (CRL): average of 3 measurements
Chest and heart
Cardiac activity — presence or absence
Fetal heart rate (FHR) if able to measure
Maternal anatomy
Comment on any major abnormalities
Uterus — presence and measurement of clinically relevant fibroids (submucosal or cervical fibroids)
Adnexa

Include for all definite and suspected ectopic pregnancies:

- Definite ectopic pregnancy
  - Location of ectopic pregnancy
  - Mean sac diameter (MSD)
  - +/- yolk sac
  - +/- embryo with CRL
  - +/- cardiac activity
  - Free fluid if applicable
- Probable ectopic pregnancy
  - Location of adnexal lesion
  - Size of adnexal lesion
  - Doppler pattern
  - Free fluid if applicable

Abnormal / Unexpected Findings

Twin or Higher Multiple Pregnancies

See Section 8

Non Viable Pregnancy / Pregnancy Failure

Findings diagnostic of Pregnancy Failure via transvaginal ultrasonography[10]:

Any of the following:

- Crown rump length (CRL) ≥7 mm and no heartbeat
- Mean sac diameter (MSD) ≥25 mm and no heartbeat
- Absence of embryo with a heartbeat ≥2 weeks after a scan that showed a gestational sac without a yolk sac
- Absence of an embryo with a heartbeat ≥11 days after a scan that showed a gestational sac with a yolk sac

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report. Some facilities may choose to notify the patient to follow up with HCP.

Intrauterine Pregnancy of Uncertain Viability

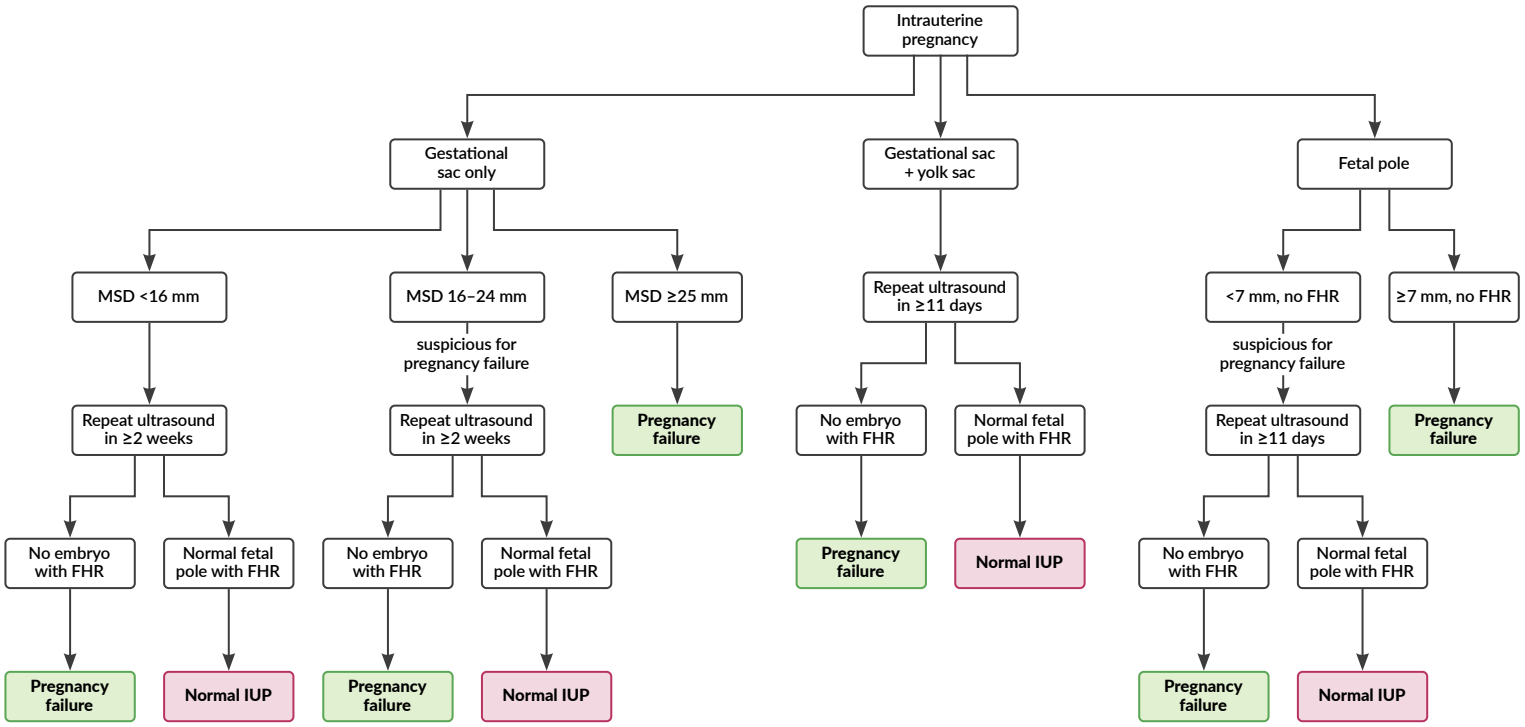
Intrauterine pregnancy of uncertain viability is defined via transvaginal ultrasonography by the presence of an intrauterine gestational sac with no embryonic heartbeat but not meeting criteria for definite pregnancy failure (see previous section).

Findings diagnostic of Pregnancy of Uncertain Viability[10]:

- Crown rump length (CRL) <7 mm and no heartbeat
- Mean sac diameter (MSD) 16–24 mm and no embryo
- Absence of embryo with heartbeat 7–13 days after a scan that showed a gestational sac without a yolk sac
- Absence of embryo with heartbeat 7–10 days after a scan that showed a gestational sac with a yolk sac
- Absence of embryo ≥6 weeks after last menstrual period
- Empty amnion (amnion seen adjacent to yolk sac, with no visible embryo)
- Enlarged yolk sac (≥7 mm)
- Small gestational sac in relation to the size of the embryo (<5 mm difference between MSD and CRL)

Action: Urgent report should be sent to the health care provider (HCP) with a process in place to verify receipt of the report.

Reporting recommendation: Timing of follow up ultrasound to be ordered by referring HCP should be indicated as per the flowchart below.



Pregnancy of Unknown Location

A pregnancy of unknown location (PUL) is a transient state defined by an elevated β-hCG but a transvaginal ultrasound where neither an intrauterine nor extrauterine pregnancy is identified.[11]

Four different potential outcomes include:

1. Intrauterine pregnancy (IUP) (34–40%): viable or non-viable IUP
2. Failed PUL (44–69%): serum β-hCG falls without intervention and location of pregnancy is never confirmed
3. Persistent PUL (2%): elevated serum β-hCG over serial measurements without visualized pregnancy on ultrasound
4. Ectopic pregnancy (8–14%): pregnancy outside of the uterine cavity, most commonly within the fallopian tube (93–95%)

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Involvement of gynecology is recommended. The risk of an ectopic pregnancy should be evaluated. The need for and timing of the next ultrasound to be determined by HCP/gynecologist.

(See Appendix E for more clinical details).

Ectopic Pregnancies

Tubal pregnancy: pregnancy located in fallopian tube (most common form of ectopic pregnancy).

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. If the patient is symptomatic or unstable, send the patient to emergency with appropriate documentation.

Reporting recommendation: Involvement of gynecology is recommended.

Note: There are uncommon ectopic pregnancies (interstitial, cesarean section scar, cervical, ovarian, abdominal and heterotopic) which require specific considerations but due to their infrequent occurrence, these are outside the scope of this document. Information about diagnostic findings in these uncommon ectopic pregnancies can be found in the Society of Obstetricians and Gynaecologists of Canada (SOGC) Guideline No. 414.[11]

Molar Pregnancy

Gestational trophoblastic disease (GTD) includes a group of conditions characterized by abnormal proliferation of the placental trophoblast. Hydatidiform moles are a premalignant form of GTD resulting from an excess of paternal haploid chromosome sets in gestation.[12] The subtypes include:

1. Complete hydatidiform moles
2. Partial hydatidiform moles

Typical findings:[13]

Complete hydatidiform moles

- Enlarged uterus filled with a heterogeneous predominantly echogenic mass with several hypoechoic foci ("snowstorm" appearance)
- Uterine mass with multiple small anechoic cystic spaces measuring 1–30 mm ("cluster of grapes") appearance
- Typically, absent fetus or fetal parts (provided it is not a twin gestation)

Partial hydatidiform moles

- Empty gestational sac or one containing amorphous echoes representing fetal parts
- Elongated or ovoid gestational sac (ratio of transverse to anterior posterior (AP) dimension of gestational sac >1.5)
- Fetal demise, anomalies, or growth restriction
- Oligohydramnios
- Enlarged placenta relative to the size of the uterus with internal cystic change producing a "Swiss cheese pattern"

Note: May be difficult to differentiate from a non-viable pregnancy as the findings are non-specific and beta-hCG trend is often required to differentiate from a non-viable pregnancy.

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. If the patient is unstable, send the patient to emergency with appropriate documentation.

Reporting recommendations:

1. Correlation with beta-hCG and clinical findings is recommended.
2. Involvement of gynecology is recommended.

5.2 11–14 Weeks 0d Exam Components, Documentation and Reporting

FETAL ANATOMY SURVEY — MINIMUM REQUIREMENTS AND DOCUMENTATION
General
Fetal number — if multiple, report chorionicity and amnionicity
Head
Cranium (head circumference (HC) view)
Choroid plexus filled ventricles
Chest and heart
Fetal heart rate (FHR) if able to measure
Cardiac situs
Symmetrical lung fields
Abdomen
Stomach
Abdominal wall cord insertion
Bladder
Extremeties
Presence of 4 limbs, each with 3 segments
Biometry
Crown rump length (CRL): average of 3 measurements
Maternal anatomy
Comment on any major abnormalities
Uterus — presence and measurement of clinically relevant fibroids (submucosal or cervical fibroids)
Adnexa

Abnormal / Unexpected Findings

Twin or Higher Order Multiple Pregnancies

See Section 8

Fetal Structural Anomalies

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

See Appendix F for FDS contact info and referral criteria.

5.3 Nuchal Translucency (NT) Ultrasound (11wks 0d – 13wks 6d)

Eligibility for nuchal translucency (NT) ultrasound is as per the BC Prenatal Genetic Screening Guideline.

The NT ultrasound should include all the components to be examined and reported for all US done between 11–14 weeks as per Section 5.2 in addition to the NT measurement in mm to one decimal and the Fetal Medicine Foundation (FMF) # of the person performing the NT measurement. The NT ultrasound should be done by a sonographer certified by FMF UK and done according to the following FMF UK protocol.

Action: Normal NT ultrasound reports (NT <3 mm) should be faxed to the Prenatal Biochemistry Laboratory (fax # 604-875-3008).

Reporting recommendation: The NT measurement is within the normal range. The risk of Down syndrome associated with this NT measurement will be integrated with other parameters (maternal age, first trimester (PAPP-A) and second trimester (AFP, uE3, HCG, inhibin A) blood test results) to generate a pregnancy specific risk level for Down syndrome (trisomy 21).

The BC Children's and Women's Prenatal Biochemistry Laboratory will issue this report after receiving the second blood sample (to be ideally collected between 15wks – 16wks 6d gestation). See www.psbchealthhub.ca/screening-programs for more information and to download a lab requisition. A routine detailed fetal ultrasound is recommended at 19–21 weeks.

Abnormal Findings

Nuchal Translucency (NT) ≥3.0 mm

An NT ≥3 mm is associated with a significant risk of trisomies.

Action: The Prenatal Biochemistry Laboratory genetic counselor should be called (604-875-2331) and report faxed to them the same day (fax # 604-875-3008).

Reporting recommendation: The NT measurement is 3.0 mm or above. An immediate risk assessment for Down syndrome and trisomy 18 will be determined by the BC Children's and Women's Prenatal Biochemistry Laboratory based on age and the NT only, OR age, NT, and PAPP-A (as part 1 serum availability permits). If screen risk for Down syndrome and/or trisomy 18 is positive (≥1/300), a lab report will be sent to the ordering health care provider.

NT ≥3.5 mm

An NT ≥3.5 mm is associated with a significant risk of trisomies, congenital heart defect and genetic syndromes.

Action: The Prenatal Biochemistry Laboratory genetic counsellor should be called (604-875-2331) and report faxed to them the same day (fax # 604-875-3008).

Reporting recommendation: In addition to a comment for >3 mm, add: An NT measurement greater than or equal to 3.5 mm is a risk factor for a congenital heart defect, or other genetic conditions. A referral to the department of Medical Genetics (Vancouver or Victoria), and a detailed fetal ultrasound and echocardiogram at 19–21 weeks gestation at a Maternal Fetal Medicine (MFM) site are recommended.

6. Standards for 2nd Trimester Ultrasound

6.1 Second Trimester Fetal Anatomy Survey (19wks 0d – 21wks 0d gestation)

Second trimester anatomical ultrasound is part of routine antenatal care. The purpose of the examination is to: (1) date the pregnancy if there has been no earlier scan, (2) assess fetal biometry/growth and amniotic fluid volume, (3) screen for structural anatomical abnormality, (4) assess for the presence of soft markers of aneuploidy where indicated (See Appendix G), (5) assess and determine placental location, (6) assess relevant maternal anatomy: uterine cervix, myometrium and adnexae.

For optimal visualization and to reduce the chance for an incomplete study, the exam should ideally be performed after 19wks 0d gestation and, ideally prior to 21wks 0d gestation. Completion within this time frame allows for timely referral to subspecialty care if an abnormality is detected. If a patient presents later in gestation for their first ultrasound assessment, every attempt should be made to complete the fetal anatomy survey at that time.

The report must include the items listed in "Minimum Required Content for all Obstetrical Ultrasound Reports" (from Section 2) in addition to the following below. Checklist items with ✚ denote those where a cineclip is required for documentation in addition to still images.

Diagnostic imaging providers are responsible for arranging recall examinations for incomplete assessments with no suspicion of anomaly based on limited views. A second attempt should be made to complete the fetal anatomy survey within 1–2 weeks. If the fetal anatomy survey remains incomplete after recall assessment, referral to Maternal Fetal Medicine (MFM) is recommended.

FETAL ANATOMY SURVEY — MINIMUM REQUIREMENTS AND DOCUMENTATION
General
Fetal number — if multiple, report chorionicity and amnionicity
Fetal activity/movement
Presentation
Qualitative interpretation of amniotic fluid volume — if abnormal, measure and report single deepest pocket
Head
Intact cranium/normal head shape
Midline falx
Cavum septi pellucidi
Lateral cerebral ventricles, measure if subjectively abnormal/enlarged
Choroid plexus
Cerebellum, measure if subjectively abnormal (See growth chart in Appendix H)
Cisterna magna, measure if subjectively abnormal/enlarged

FETAL ANATOMY SURVEY — MINIMUM REQUIREMENTS AND DOCUMENTATION
Face and neck
Upper lip
Mid-sagittal profile (including presence of nasal bone)
Orbits
Nuchal fold thickness
Chest and heart
Cardiac activity/fetal heart rate
Cardiac situs, axis and position
4-chamber view ✚
Outflow tracts: ✚ Left ventricular outflow tract Right ventricular outflow tract
3-vessel view
Diaphragm
Abdomen
Stomach
Bowel
Kidneys
Urinary bladder
Cord insertion into fetal abdomen
Number of cord vessels
Spine
Cervical, thoracic, lumbar and sacral ✚

FETAL ANATOMY SURVEY — MINIMUM REQUIREMENTS AND DOCUMENTATION
Extremities
Arms
Hands
Legs
Feet
Genitalia
Genitalia
Placenta
Location
Relationship to internal os
Placental cord insertion
Appearance
Biometry
Head circumference (include percentile for gestational age (GA))
Abdominal circumference (include percentile)
Femur length (include percentile)
Estimated fetal weight (include percentile)
Maternal anatomy
Cervix and cervical length
Uterus
Ovaries/adnexa if visible

See Appendix I for the details of the second trimester ultrasound imaging protocol.

Abnormal / Unexpected Findings

Fetal Soft Markers

Nuchal fold, echogenic bowel, pyelactasis, nasal bone and lateral ventricles should be assessed regardless of the patient's prenatal genetic screening choice as those have implications beyond informing risk of aneuploidy.

If the ultrasound identifies any of the following: Choroid plexus cyst, echogenic intracardiac focus, pyelectasis, short femur (abnormal femur/foot ratio ≤0.9 or femur length less than the 5th percentile for gestational age), absent nasal bone or ventriculomegaly:

Reporting recommendation: Management of the pregnancy should follow the recommendations of the Prenatal Genetic Screening guideline.

Appendix J provides the Prenatal Genetic Screening Program's recommendations on soft markers.

Fetal Growth

1. Abdominal circumference (AC) or estimated fetal weight (EFW) measures <10th %ile for gestational age

   Action:

   - Umbilical artery Doppler assessment is performed
   - Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation:

   - Gestational age (GA) <32wks 0d: Referral to Maternal Fetal Medicine (MFM) at BC Women's Hospital, Fraser Health Authority (FHA) MFM center, Victoria General Hospital, or University Hospital of Northern BC (UHNBC) depending on patient location is recommended.
   - GA >32wks 0d: refer to local obstetrician/gynecologist (OBGYN) or MFM as per provincial MFM small fetus pathway

2. Isolated head circumference (HC) <10th %ile

   Action: Fetal intracranial anatomy is assessed.

   a. If intracranial anatomy abnormal or HC measures less than the 1st %ile (according to chart)

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the MFM service at Victoria General Hospital depending on the location of the patient.

   b. If intracranial anatomy normal and HC measures between the 1st and the 10th %ile for GA:

      Reporting recommendation: A follow up to assess HC interval growth in 3–4 weeks locally is recommended as per small fetal head biometry referral pathway

3. Isolated femur length (FL) <5th %ile for GA

   a. If FL measures between 1–5th %ile (according to chart) with normal shape and mineralization

      Reporting recommendation: Follow up biometry at 28–30 weeks to ensure adequate interval growth is recommended.

   b. If FL <1 %ile for GA (according to chart) or has abnormal shape or mineralization:

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to FDS at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the MFM service at Victoria General Hospital depending on the location of the patient.

Fluid Abnormalities

1. Oligohydramnios: Single deepest pocket (SDP) <2.0 cm and new finding <24 weeks gestational age (GA)

   Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

2. Oligohydramnios: SDP <2.0 cm and new finding >24 weeks gestational age

   Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation: Referral to obstetrician/gynecologist (OBGYN) is recommended. Consider MFM referral if clinically indicated.

3. Mild or moderate Polyhydramnios: new finding, amniotic fluid index (AFI) 25.0 cm–35.0 cm

   a. If fetal structural anomaly or small biometry/fetal growth restriction (FGR) or placental anomaly detected:

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to FDS at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the MFM service at Victoria General Hospital depending on the location of the patient.

   b. If isolated finding and normal fetal growth or large for gestational age (LGA):

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to OBGYN is recommended if mild (25–30 cm); if moderate (30–35 cm) refer to MFM. Follow up amniotic fluid volume (AFV) assessments recommended in 1–2 weeks.

4. Severe Polyhydramnios: new finding AFI >35.0 cm

   Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation: Referral to FDS at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the MFM service at Victoria General Hospital depending on the location of the patient.

Fetal Structural Anomalies

1. Fetal structural abnormality identified:

   Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

2. Single umbilical artery identified:

   Reporting recommendation: Follow up ultrasound at 32 weeks to assess fetal growth.

Placental Anomalies

1. Low lying placenta (lower edge <2 cm from the internal os) or placenta previa identified:

   Action: Careful assessment of placental cord insertion to evaluate risk for vasa previa is recommended.

   Reporting recommendation: Follow up for placental location recommended at 32–34 weeks.

2. Suspected vasa previa:

   Reporting recommendation: Referral to Maternal Fetal Medicine (MFM) center for image review +/- MFM consultation.

3. Anterior placenta previa in the context of a previous cesarean section or findings suspicious for placenta accreta spectrum (PAS):

   Reporting recommendation: Referral to MFM center for image review +/- MFM consultation.

4. Marginal <5 mm or velamentous placental cord insertion identified:

   Action: Careful assessment of placental cord insertion to evaluate risk for vasa previa is recommended.

   Reporting recommendation: Follow up for growth assessment recommended at 32–34 weeks.

5. Suspected placental anomaly excluding placental lakes, marginal or velamentous cord insertion:

   Reporting recommendation: Referral to MFM center for image review +/- MFM consultation.

Cervical Length ≥15 mm and <25 mm at Gestational Age (GA) <24 Weeks

Action: Communicate directly with the referring health care provider HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to obstetrician/gynecologist (OBGYN) or Maternal Fetal Medicine (MFM) recommended.

Cervical Length <15 mm at Gestational Age (GA) <24 Weeks

Action: Communicate directly with the referring health care provider (HCP) or representative by phone and await instructions from HCP prior to discharging patient from the ultrasound unit.

Reporting recommendation: Urgent referral to obstetrician/gynecologist (OBGYN) or Maternal Fetal Medicine (MFM) recommended.

6.2 Obstetrical Ultrasounds Performed Before 19 Weeks

For ultrasound assessments performed between 14wks 0d and 19wks 0d gestation, detailed fetal anatomical review is not expected to be complete but an attempt to assess as many anatomical details as possible should be made as many congenital anomalies can be diagnosed in the late first and early second trimester.

When anatomical details are incomplete, a follow-up assessment should be arranged at the optimal gestational age (19wks 0d to 21wks 0d) to complete the fetal anatomical survey.

Abnormal findings related to fetal growth, fetal structural anomalies, or fluid abnormalities

Follow appropriate actions and recommendations as per the Second Trimester Fetal Anatomy Survey (See Section 6.1).

7. Standards for Late 2nd or 3rd Trimester Ultrasound

When performing an ultrasound examination in the late second or third trimester and a fetal anatomy ultrasound in the 2nd trimester has not been performed, every effort should be made to assess and adequately document all structures listed in the minimum requirements for the detailed assessment of fetal anatomy.

Fetal growth assessments should not be performed at less than 14-day intervals as the amount of potential fetal growth falls within the range of ultrasound inter-observer error.

While routine third trimester ultrasound screening is not recommended, there are numerous indications for a 2nd/3rd trimester obstetric ultrasound. Some of the most common indications are:

- High-risk for developing fetal growth restriction: maternal hypertensive disorder, systemic lupus erythematosus (SLE), antiphospholipid antibody syndrome (APAS)
- Fetal growth restriction in the current pregnancy
- Diabetes
- Maternal body mass index (BMI) >35 [14]
- Reassessment of placental location
- Fetal malpresentation
- Abdominal pain
- Antepartum hemorrhage
- Follow-up assessment for fetal abnormality
- Follow-up assessment for trisomy 21 pregnancies
- Amniotic fluid abnormalities
- Multiple pregnancy
- Reduced fetal movements
- Single umbilical artery
- Velamentous cord insertion
- Isolated femur length <5th %ile for gestational age at 2nd trimester detail scan
- Suspected macrosomia

When there is clinical suspicion or significant risk factors for either late onset fetal growth restriction or macrosomia, fetal growth is best assessed between 32 and 37wks 0d gestational age (GA).

Accuracy of fetal biometry and estimated fetal weight (EFW) at term is largely limited by technical factors; management is best informed by the overall pregnancy risk factor profile and clinical findings.

7.1 Minimum Exam Components, Documentation and Reporting (28wks 0d – term)

When performing a clinically indicated 3rd trimester ultrasound, an attempt should be made to reassess the following fetal anatomical structures (anatomy documented once in the third trimester is sufficient). For structures indicated with *, if unable to adequately visualize and previously documented as normal, the patient does not need follow-up ultrasound to reassess.

The report must include "Minimum Required Content for all Obstetrical Ultrasound Reports" (from Section 2) in addition to the following:

LATE 2ND OR 3RD TRIMESTER ULTRASOUND — MINIMUM REQUIREMENTS AND DOCUMENTATION
General
Fetal number — if multiple, report chorionicity and amnionicity
Fetal activity/movement
Presentation
Amniotic fluid volume (single deepest pocket)
Head *
Intact cranium/normal head shape
Midline falx
Cavum septi pellucidi
Lateral cerebral ventricles
Chest and heart
Cardiac activity/fetal heart rate
Cardiac situs, axis and position
4-chamber view* ✚
Outflow tracts:* ✚ Left ventricular outflow tract Right ventricular outflow tract
3-vessel view*

LATE 2ND OR 3RD TRIMESTER ULTRASOUND — MINIMUM REQUIREMENTS AND DOCUMENTATION
Abdomen
Stomach*
Kidneys*
Urinary bladder*
Placenta
Location
Relationship to internal os
Appearance
Biometry
Head circumference (include percentile)
Abdominal circumference (include percentile)
Femur length (include percentile)
Estimated fetal weight (include percentile)
Maternal anatomy
Cervix if <32 weeks gestation
Uterus
Ovaries/adnexa if visible

* If unable to adequately visualize and previously documented as normal, the patient does not need follow-up ultrasound to reassess.

Checklist items with **+** denote those where a cineclip is required for documentation in addition to still images.

See Appendix I for the details of the third trimester ultrasound imaging protocol.

Abnormal / Unexpected Findings

Fetal Growth

1. Abdominal circumference (AC) or estimated fetal weight (EFW) measures <10th %ile for gestational age

   Action:

   - Umbilical artery Doppler assessment is performed
   - Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation:

   - Gestational age (GA) <32wks 0d: Referral to Maternal Fetal Medicine (MFM) at BC Women's Hospital, Fraser Health Authority (FHA) MFM center, Victoria General Hospital, or University Hospital of Northern BC (UHNBC) depending on patient location is recommended.
   - GA >32wks 0d: refer to local obstetrician/gynecologist (OBGYN) or MFM as per provincial MFM small fetus pathway

2. Isolated head circumference (HC) <10th %ile

   Action: Fetal intracranial anatomy is assessed.

   a. If intracranial anatomy abnormal or HC measures less than the 1st %ile (according to chart)

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

   b. If intracranial anatomy normal and HC measures between the 1st and the 10th %ile for GA:

      Reporting recommendation: A follow up to assess HC interval growth in 3–4 weeks locally is recommended as per small fetal head biometry referral pathway.

3. Isolated femur length (FL) <5th %ile for GA

   a. If FL measures between 1–5th %ile (according to chart) with normal shape and mineralization:

      Reporting recommendation: Follow up biometry in 4–6 weeks to ensure adequate interval growth is recommended.

   b. If FL<1 %ile for GA (according to chart) or has abnormal shape or mineralization:

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to FDS at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the MFM service at Victoria General Hospital depending on the location of the patient.

Fluid Abnormalities

1. Oligohydramnios: SDP <2.0 cm and new finding >24 weeks gestational age

   Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation: Referral to obstetrician/gynecologist (OBGYN) is recommended. Consider Maternal Fetal Medicine (MFM) referral if clinically indicated.

2. Mild to moderate Polyhydramnios: new finding, amniotic fluid index (AFI) 25.0 cm – 35.0 cm

   a. If fetal structural anomaly or small biometry/fetal growth restriction (FGR) or placental anomaly detected:

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

   b. If isolated finding and normal fetal growth or large for gestational age (LGA):

      Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

      Reporting recommendation: Referral to OBGYN is recommended if mild (25–30 cm); if moderate (30–35 cm) refer to MFM. Follow up amniotic fluid volume (AFV) assessments recommended in 1–2 weeks.

3. Severe Polyhydramnios: new finding AFI >35.0 cm

   Action: Communicate directly with the referring HCP or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

   Reporting recommendation: Referral to FDS at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the MFM service at Victoria General Hospital depending on the location of the patient.

Fetal Structural Anomalies

Action: When a structural fetal abnormality is identified, communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

8. Twin or Higher Order Multiple Pregnancies

8.1 Reporting Recommendations When First Detected

Reporting recommendation for all multiple pregnancies:

- Chorionicity and amnionicity must be reported.
- Additional comment on first trimester reporting: If a patient opts for funded screening for trisomy 21, a nuchal translucency (NT) ultrasound should be booked between 11 weeks 0 days to 13 weeks 6 days gestational age (GA) regardless of maternal age as the patient qualifies for integrated prenatal screening (IPS) based on multiple pregnancy.

Reporting recommendations for dichorionic pregnancy:

- Follow up for growth, anatomical details and transvaginal cervical length assessment at 19–21 weeks then serial growth assessment every 3–4 weeks, more frequently if clinically indicated.
- Referral to obstetrician (OB) recommended if not currently involved.[15]

Reporting recommendations for monochorionic pregnancy:

- Ultrasound follow up at 16 weeks for growth, fluid and umbilical artery (UA) Doppler pulsatility index (PI) and middle cerebral artery (MCA) peak systolic velocity (PSV) or assessment for signs of advanced twin anemia polycythemia sequence (TAPS) every 2 weeks until delivery.
- Follow up for anatomical details, extended heart views and transvaginal cervical length assessment at 19–21 weeks.
- Referral to OB recommended if not currently involved.[15]

Reporting recommendations for triplet or higher order multiple pregnancy:
Referral to Maternal Fetal Medicine (MFM) service recommended. If a patient opts for funded screening for trisomy 21, an NT ultrasound should be booked between 11wks 0d to 13wks 6d GA regardless of maternal age.

8.2 Ultrasound Schedule and Requirements for Multiple Pregnancies

Dichorionic Multiple Pregnancies

- An ultrasound assessment to monitor fetal growth is performed every 3–4 weeks from the time of the routine fetal anatomy examination until delivery.[15]
- Cervical length is assessed by endovaginal scan at time of anatomy scan and, if measures ≥25 mm and less than 30 mm, follow up 3–4 weeks later. If cervical length is >30 mm at anatomy scan, repeat measurement is not necessary if cervix appears normal transabdominally at subsequent scans, unless indicated by other risk factors.

Monochorionic Diamniotic Twin Pregnancies

- An ultrasound assessment to monitor fetal growth, amniotic fluid volume (AFV) (screening for twin twin transfusion syndrome (TTTS)) and umbilical artery (UA) Doppler is performed every 2 weeks starting at 16 weeks gestational age (GA) until delivery, ideally at an Maternal Fetal Medicine (MFM) center:
    - Where possible, routine screening for twin anemia polycythemia sequence (TAPS) either through middle cerebral artery (MCA) Doppler peak systolic velocity (PSV) assessment or through assessing for signs of advanced TAPS (placental dichotomy, cardiomegaly, hydrops, starry sky liver) is performed at the time of growth assessment.
        - An example protocol for TAPS screening is available
    - If screening for TAPS is not possible locally, a referral to a MFM site for assessment at 30–32 weeks for otherwise uncomplicated Monochorionic dichorionic twins may be considered.
        - If the patient is unable to travel, referral for MFM telehealth or image review consultation can be requested by the health care provider (HCP).
    - A referral to MFM site for extended heart views in addition to anatomical screening views is recommended between 20–24 weeks GA.
        - If the patient is unable to travel, referral for MFM telehealth or image review consultation can be requested by the HCP.
- Cervical length is assessed by endovaginal scan at time of anatomy scan and, if measures ≥25 mm and less than 30 mm, follow up 3–4 weeks later.
- If cervical length is >30 mm at anatomy scan, repeat measurement is not necessary if the cervix appears normal transabdominally at subsequent scans.

8.3 Abnormal / Unexpected Findings

Cervical Length ≥15 mm and <25 mm at Gestational Age (GA) <24 Weeks

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to obstetrician/gynecologist (OBGYN) or Maternal Fetal Medicine (MFM) recommended.

Cervical Length <15 mm at Gestational Age (GA) <24 Weeks

Action: Communicate directly with the referring health care provider (HCP) or representative by phone and await instructions from HCP prior to discharging patient from the ultrasound unit.

Reporting recommendation: Urgent referral to obstetrician/gynecologist (OBGYN) or Maternal Fetal Medicine (MFM) recommended.

Abnormal Fetal Growth, Amniotic Fluid Volume (AFV) or Fetal Structural Abnormality for Either Twin or Both in a Dichorionic Pregnancy

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to MFM and/or Fetal Diagnosis Service (FDS) as per criteria for singleton (see Section 6.1).

Fetal Structural Abnormality in One or Both Twins of Monochorionic Pregnancy

Action: When a structural fetal abnormality is identified, communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

Complex Monochorionic Twins Defined by Any of the Following

- Fetal growth restriction (FGR) of one or both twins (as defined as either abdominal circumference (AC) or estimated fetal weight (EFW) <10th %ile)
- EFW discordance between twins >20%
    - EFW discordance= EFW largest twin - EFW smallest twin/ EFW largest twin x 100%
- Absent end-diastolic flow (AEDF) or reversed end-diastolic flow (REDF) in the umbilical artery (UA) of either twin
- Amniotic fluid deepest vertical pocket (DVP) discordance between twins with:
    - Gestational age (GA) 16 to 19wks 6d: >4 cm absolute difference between DVPs
    - GA 20 weeks 0 days and up: >6 cm absolute difference between DVPs
    - GA 20 weeks 0 days and up: DVP >10 cm in either twin

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to Maternal Fetal Medicine (MFM) for urgent consult and triage is recommended.

Twin Twin Transfusion Syndrome (TTTS) (Monochorionic Pregnancy)

- Oligohydramnios with single deepest pocket (SDP) <2.0 cm in one twin AND polyhydramnios with SDP >8.0 cm in other twin

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to Maternal Fetal Medicine (MFM) for urgent consult and triage is recommended.

Twin Anemia Polycythemia Sequence (TAPS) (Monochorionic Pregnancy)

- Middle cerebral artery (MCA) peak systolic velocity (PSV) Criteria:
  - Combination of "donor" twin: MCA-PSV ≥1.5 MoM and "recipient" twin MCA-PSV ≤0.8 MoM

    OR
  - PSV discordance of ≥1.0 MoM

  OR
- Signs of advanced TAPS: placental dichotomy, cardiomegaly, hydrops, starry sky liver as per example TAPS screening protocol.

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to Maternal Fetal Medicine (MFM) for urgent consult and triage is recommended.

Twin Reversed Arterial Perfusion (TRAP) Sequence (Monochorionic Pregnancy)

Twin reversed arterial perfusion (TRAP) sequence is a rare complication of monochorionic twins where one of the fetuses has an absent or rudimentary heart (acardiac twin). The acardiac twin receives retrograde blood flow in its umbilical artery from the co-twin (pump twin) via a placental anastomosis. The "pump twin" typically has normal anatomy whereas the "acardiac twin" demonstrates severe congenital anomalies including variable degree of abnormal development of the upper body and head.

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

Conjoined Twins

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Reporting recommendation: Referral to the Fetal Diagnosis Service (FDS) at BC Women's Hospital or Jim Pattison Outpatient Care and Surgery Centre (Fraser Health), or the Maternal Fetal Medicine (MFM) service at Victoria General Hospital depending on the location of the patient.

9. Specialized Exams

9.1 Umbilical Artery (UA) Doppler

Umbilical artery (UA) Doppler is **not a minimum assessment requirement** and is only done when clinically indicated.

Indications for UA Doppler assessment:

- Singleton with abdominal circumference (AC) or estimated fetal weight (EFW) <10th %ile by World Health Organization (WHO) chart at gestational age (GA) 18wks 0d and over
- Dichorionic twins and higher order multiples: perform UA Doppler on **all** fetuses when at least one fetus has AC or EFW <10th %ile by WHO chart at 18wks 0d GA and over
- Monochorionic twins: on each fetus at gestational age 16wks 0d and over for **all** monochorionic twins
- Pregnancy complicated by preeclampsia or gestational hypertension
- At the request of the reporting physician in select cases. For example where there is decreased interval growth as defined by a drop >50 %ile in the AC or EFW %iles over serial assessment, or when biometry is borderline in the presence of clinical risk factors for fetal growth restriction

Image acquisition: An example of a local technical protocol on how to perform UA Doppler interrogation is available.

Image interpretation: The waveform is assessed qualitatively according to the presence, absence or reversed end diastolic flow. Quantitative assessment is through measurement of the pulsatility index (PI). Acharya et al is the recommended reference for PI when performing UA Doppler in a free loop of the umbilical cord.[16]

Normal finding: UA Doppler waveform is normal when there is qualitatively positive flow through the cycle and the PI value measures <95th %ile for GA.

Abnormal finding: The PI value is greater than the 95th %ile for GA.

Action: Communicate directly with the referring health care provider (HCP) or representative by phone. Alternatively if HCP can not be reached, sending a report by fax, text or email is acceptable if there is a way to verify receipt of the report.

Recommendation: Follow-up as per provincial Maternal Fetal Medicine (MFM) small fetus pathway.

Critical finding: Absent end-diastolic flow (AEDF) or reversed end-diastolic flow (REDF)

Action: Communicate directly with the referring health care provider (HCP) or representative by phone and await instructions from HCP prior to discharging patient from the ultrasound unit.

Reporting recommendation: Urgent obstetrician (OB) or MFM referral if not already involved.

9.2 Middle Cerebral Artery (MCA) Doppler

Middle cerebral artery Doppler is **not a minimum assessment requirement** and is only done when clinically indicated. In B.C., MCA Doppler is usually ordered, performed and interpreted at Maternal Fetal Medicine (MFM) centers. MCA Doppler studies performed at other sites are usually reviewed by MFM through either telehealth or post-exam image review.

Indications for MCA Doppler assessment:

- MCA peak systolic velocity (PSV);
  - Fetus at risk for severe fetal anemia (e.g. alloimmunization)
  - Monochorionic pregnancy: screening for twin anemia polycythemia sequence (TAPS)
- MCA pulsatility index (PI):
  - Small fetus or fetal growth restriction at/near term, or other at MFM's discretion, under MFM guidance.

Image acquisition: See reference guideline on how to perform middle cerebral artery (MCA) doppler.

Image interpretation:

a. **Fetus at risk for severe anemia:**

   MCA PSV >1.5 multiples of median (MoM) for gestational age has a sensitivity approaching 100% for severe fetal anemia with a false positive of 12%, which increases further after 35 weeks gestational age (GA).

   In B.C., screening for fetal anemia in the fetus at increased risk is either performed at MFM sites or in conjunction with MFM consult and image review or telehealth consult.

   Action: Follow up schedule and/or need for in person assessment at BC Women's Hospital is to be determined by the consulting MFM.

b. **Screening for TAPS in monochorionic pregnancy:**

   TAPS is strongly suspected when the MCA-PSV is >1.5 MoM in one twin (suggestive of moderate to severe anemia) and <0.8 MoM in the other twin (suggestive of polycythemia) or when ultrasound findings suggestive of advanced TAPS are identified.

   Action: When findings suggestive of TAPS are identified, communicate directly with the referring HCP or representative by phone and await instructions from HCP prior to discharging patient from the ultrasound unit.

   Reporting recommendation: Urgent MFM referral if not already involved.

c. **MCA PI in the small/growth restricted fetus at 36 weeks or greater:**

   MCA PI is performed in conjunction with umbilical artery PI in order to calculate the Cerebroplacental ratio (CPR), the ratio of MCA PI over umbilical artery PI. A low CPR value is supportive of a diagnosis of placental insufficiency and is associated with adverse outcomes in the small fetus and can be used to optimize timing of delivery.

   At present, it is recommended that MCA PI and CPR be evaluated in the community only under the guidance of an MFM physician.

9.3 Fetal Wellbeing Assessment

Fetal well being assessments by means of biophysical profile (BPP), modified biophysical profile (mBPP) as described below may be requested in pregnancies with increased risk for stillbirth, such as post-date pregnancies or where there is a small or growth restricted fetus.[17] Umbilical artery (UA) Doppler assessment may also be performed in select circumstances (see Section 9.1).

Both the BPP and the mBPP tests have equivalent performance in terms of prediction of stillbirth within one week of testing.[18]

Where obstetrical ultrasound resources are limited, it is recommended that units use the mBPP for fetal well being assessment due its simplicity and reduced amount of time required for completion.

If a BPP is being used for assessment of fetal wellbeing, the Society of Obstetricians and Gynaecologists of Canada (SOGC) recommends that it be performed in a facility with adequate experience in interpreting BPPs in the context of gestational age and clinical factors, and only when there is a specific indication. This may avoid false-positive results which may lead to unnecessary interventions.

Biophysical Profile (BPP)

The BPP is a tool that combines a 4-component ultrasound assessment of fetal behaviors and amniotic fluid volume (AFV), with or without a non-stress test (NST). Each component is counted as 2 points toward a total of 10 possible points. Interpretation depends on the score obtained. If a score of 8 can be achieved with ultrasound alone, then an NST is not necessary. Because the acute parameters of the BPP are subject to fetal sleep-wake cycles, **the fetus should be observed continuously for at least 30 minutes before assigning 0 points for any acute parameter.**

COMPONENTS OF A FETAL BIOPHYSICAL PROFILE

Component	Criteria
Breathing movements	At least one episode continuing more than 30 seconds
Movements	At least 3 body or limb movements
Tone	An episode of active extension with return to flexion a limb or trunk, or opening and closing of the hand
AFV	Single deepest pocket (SDP) ≥ 2 cm x 1 cm with no cord or fetal parts present
NST	Normal classification

Modified Biophysical Profile (BPP)

The modified BPP was developed to simplify the examination and reduce the time necessary to complete testing by focusing on those components of the BPP that are most predictive of outcome: NST and AFV. Amniotic fluid is assessed by SDP and reported as per criteria above: oligohydramnios is defined as SDP <2.0 cm.

FETAL WELLBEING ASSESSMENT EXAM COMPONENTS	
In addition to either mBPP or BPP:	
Fetal number	
Fetal cardiac activity	Document fetal heart rate and rhythm
Fetal activity	Abnormal positioning, unusually restricted or persistently absent fetal movements may suggest abnormal fetal conditions
Fetal presentation	
AFV	Measure SDP
Doppler	Perform only if indicated (see Doppler section)
Lower edge of the placenta	Only if not previously documented to be >2 cm from the internal os

10. References

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This document has been endorsed by the Provincial Medical Imaging Advisory Committee (MIAC).

12. Appendices

Appendix A: Sample Sonographer Worksheet — OB US <14 Weeks

SAMPLE SONOGRAPHER WORKSHEET – OB US <14 WEEKS

PATIENT INFORMATION AND HISTORY

Patient Full Name: _____ Today's Examination Date: _____ DD-MON-YYYY

PHN: _____ DOB: _____ DD-MON-YYYY

Indication for examination: _____

Ordering Provider: _____

Other Care Providers to Receive Copy of Report: _____

LMP: _____

G _____ T _____P _____A _____L

Number of previous cesarean section deliveries: _____

GA based on: ☐ Previous ultrasound (≥7 weeks)
☐ Today's ultrasound (1st ultrasound)
☐ IVF

Date of ultrasound: _____ DD-MON-YYYY CRL: _____mm

Assigned GA: _____ weeks _____ days

Conception Date: _____ or Calculated LMP: _____

GA today: _____weeks _____days

EDD: _____ DD-MON-YYYY

FETAL FINDINGS AND ANATOMY

Gestational Sac Location: _____ CRL: _____ mm (avg of 3 measurements)

Mean gestational sac: _____mm (avg of 3 measurements)

Yolk sac (if fetal pole not identified): ☐ Present ☐ Absent

For NT Ultrasounds:

NT: _____ mm (to 1 decimal pt) FMF ID#: _____

Free fluid (if applicable): _____

Fetal number: _____

Cardiac Activity: ☐ Present ☐ Absent FHR: _____ bpm

If multiples:

Chorionicity/Amnionicity: _____

	Normal	NWS	Abn		Normal	NWS	Abn
Cranium	☐	☐	☐	Stomach	☐	☐	☐
Choroid Plexus	☐	☐	☐	Abdominal Cord Insertion	☐	☐	☐
Cardiac Situs	☐	☐	☐	Bladder	☐	☐	☐
Symmetrical Lung Fields	☐	☐	☐	4 Limbs (3 segments each)	☐	☐	☐

MATERNAL ANATOMY

Uterus (position): _____

If present, measurement of clinically relevant fibroids/adenomyomas

_____

Adnexa (L) ☐ Normal ☐ Abn

Adnexa (R) ☐ Normal ☐ Abn

Comments: _____

Sonographer Initials: _____ Date of final report: _____ Reporting Physician: _____

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Appendix A: Sample Sonographer Worksheet — OB US ≥14 Weeks

SAMPLE SONOGRAPHER WORKSHEET – OB US ≥14 WEEKS

PATIENT INFORMATION AND HISTORY

Patient Full Name: _____ Today's Examination Date: _____ (DD-MON-YYYY)

PHN: _____ DOB: _____ (DD-MON-YYYY)

Indication for examination: _____

Ordering Provider: _____

Other Care Providers to Receive Copy of Report: _____

G _____ T _____ P _____ A _____ L

Number of previous cesarean section deliveries: _____

GA based on:
- ☐ Previous ultrasound (≥7 weeks)
- ☐ Today's ultrasound (1st ultrasound)
- ☐ IVF

GA today: _____ weeks _____ days

EDD: _____ (DD-MON-YYYY)

Date of ultrasound: _____ (DD-MON-YYYY) CRL: _____ mm

Assigned GA: _____ weeks _____ days

Conception Date: _____ or Calculated LMP: _____

FETAL FINDINGS

Fetal number: _____

If multiples:

Chorionicity/Amnionicity: _____

Fetal Movement ☐ Present ☐ Absent

Fetal Position: _____

FHR: _____ bpm ☐ Present ☐ Absent

Amniotic Fluid Volume ☐ Normal ☐ Abn

If <24 weeks GA but AFV appears abnormal SDP: _____ mm

If ≥24 weeks GA: SDP: _____ mm

If SDP Abnormal: Amniotic Fluid Index: _____ mm

BIOMETRY

Head Circumference	_____ mm	_____ %
Abdominal Circumference	_____ mm	_____ %
Femur Length	_____ mm	_____ %
Estimated Fetal Weight	_____ g	_____ %

FETAL SOFT MARKERS

	None Seen	Present		None Seen	Present	
Echogenic Intracardiac Focus	☐	☐	Pyelectasis	☐	☐	_____ mm
Echogenic Bowel	☐	☐	Nasal Bone	☐	☐	
Choroid Plexus Cyst	☐	☐	Short Femur	Femur to Foot Ratio: _____		
☐ Bi / ☐ Uni lateral _____ mm (record largest)			Nuchal Fold: * _____ mm			

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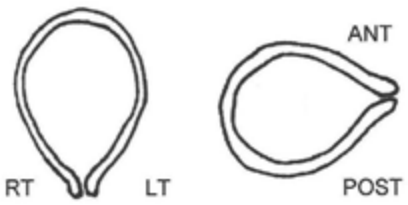
FETAL ANATOMY

	Normal	NWS	Abn
Cranium	☐	☐	☐
Midline Falx	☐	☐	☐
Cavum Septi Pellucidi	☐	☐	☐
Lateral Ventricles	☐	☐	☐
If Abn: _____ mm			
Choroid Plexus *	☐	☐	☐
Cerebellum *	☐	☐	☐
If Abn: _____ mm			
Cisterna Magna *	☐	☐	☐
If Abn: _____ mm			
Upper Lip *	☐	☐	☐
Mid-Sagittal Profile* (including presence of nasal bone)	☐	☐	☐
Orbits *	☐	☐	☐
Cardiac Situs	☐	☐	☐
4 Chamber View +	☐	☐	☐
LVOT +	☐	☐	☐
RVOT +	☐	☐	☐
3-Vessel View	☐	☐	☐
Diaphragm *	☐	☐	☐
Stomach	☐	☐	☐
Bowel *	☐	☐	☐
Kidneys	☐	☐	☐
Urinary Bladder	☐	☐	☐
Fetal Cord Insertion *	☐	☐	☐
3 Vessel Cord *	☐	☐	☐

	Normal	NWS	Abn
Cervical, thoracic, lumbar and sacral * +	☐	☐	☐
Arms *	☐	☐	☐
Hands *	☐	☐	☐
Legs *	☐	☐	☐
Feet *	☐	☐	☐
GENITALIA	**Normal**	**NWS**	**Abn**
☐ M ☐ F	☐	☐	☐
Comments: _____			
PLACENTA	**Normal**	**NWS**	**Abn**
Position	☐	☐	☐
Placenta Cord Insertion *	☐	☐	☐
Relationship to Internal OS	☐	☐	☐
If Abn: _____ cm from os			
Appearance	☐	☐	☐
Comments: _____			

Umbilical Artery Doppler: PI: ☐ Normal ☐ Abn (≥95%)



** Components specifically for 2nd trimester anatomical ultrasound scan only*

+ Components where a cineclip is required for documentation in addition to still images

MATERNAL ANATOMY

Uterus (Presence and measurement of clinically relevant fibroids): _____

Adnexa: _____

Cervix (<32 weeks):	Normal	NWS	Abn	
Transabdominal	☐	☐	☐	*If Abn or NWS:* Endovaginal: _____ cm

Comments: _____

Sonographer Initials: _____ Date of final report: _____ Reporting Physician: _____

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Provincial Health Services Authority

Appendix B: Acoustic Output Levels in Ultrasound Examinations

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Acoustic Output Levels in Ultrasound Examinations

Purpose

To ensure that the As Low As Reasonably Achievable (**ALARA**) principle is followed when ultrasound scans are performed. The guidance in this document should assist equipment operators to identify exposures that are potentially hazardous and to ensure that the exposure used are justified.

Practice Level

Profession:	Responsibilities:
Sonographer, Radiologist, Perinatologist, Cardiologist	• Follow suggested acoustic outputs techniques to ensure **ALARA** principles are consistently applied

Need to Know

The potential benefits and risks of each examination should be considered when adjusting controls that affect the acoustic output - Thermal Index (TI) and Mechanical Index (MI).

Acoustic output should be observed in conjunction with the transducer dwell time and overall scanning time. Practicing **ALARA** requires that users do all of the following:

a) Apply correct examination pre-sets if built into the diagnostic ultrasound device.
b) Adjust the power to the lowest available setting that provides diagnostic-quality images.
c) Monitor the MI and TI.
d) Know the recommended upper limit of the MI, TI, and related duration limitations for the type of examination being performed. (Appendix A: AIUM Recommended Dwell Time and T1 Ranges)
   - **TI** is the potential for tissue heating
   - **MI** is the likelihood and magnitude of non thermal effects
e) Move/lift the transducer when stationary imaging is not necessary to reduce dwell time on a particular anatomic structure.
f) Minimize the overall scanning time needed to obtain the required diagnostic information.

Procedure

General Ultrasound Examination
1. TI and MI have been designed to inform the user of conditions which might give rise to safety concerns during any ultrasound examination.
2. MI and TI are generally kept below 1.0 to reflect minimal risk.
3. Users should regularly check both indices while scanning and should adjust the machine controls to keep the **ALARA** principle without compromising the diagnostic value of the examination.
4. Where low values cannot be achieved, examination times should be kept as short as possible.

Effective date: 24-JUN-2024; *adapted from SHOP Procedure ABCD-21-12-90240*

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Obstetrical Examination	
Extra vigilance is recommended when scanning critical fetal structures at any stage in pregnancy. Based on current scientific evidence regarding ultrasound-induced biological effects, there is no reason for abstaining from diagnostic scanning during pregnancy, as long as it is medically indicated and is administered cautiously by fully trained operators. All obstetric ultrasound examinations should begin at a displayed TI of 0.7 (with max <1.0). Higher outputs should be used only to obtain adequate diagnostic images and in accordance with the **ALARA** principle.	
Fetal Heart Rate	1. Spectral doppler imaging should not be used to document fetal heart rate unless clinically indicated 2. Recommendation to use M-mode or a B-mode scan to document fetal heart rate
Use of Doppler in Embryonic Period (Conception to 10 weeks 6 days)	Pulsed Doppler (Spectral, power and colour doppler) modalities should not be used routinely in the embryonic period. If use of doppler is clinically indicated, then the exposure time should be kept to a minimum.
Use of Doppler in the Fetal Period (11 weeks to 14 weeks)	Pulsed Doppler (Spectral, power and colour doppler) modalities may be used routinely for certain clinical indications, such as screening for trisomy and cardiac anomalies. When performing doppler ultrasound, the displayed TI should be ≤ 0.7 with max <1.0 and exposure time should be kept as short as possible (usually no longer than 5-10 minutes)
Uterine Artery Doppler	Scanning maternal uterine arteries at any point in the first trimester (embryonic and fetal period), there are unlikely to be any fetal safety implications as long as the embryo/fetus lies outside the doppler ultrasound beam
Education, Research, Teaching and Training Purposes	The displayed TI should be ≤0.7 with max <1.0 and exposure time should be kept as short as possible (usually no longer than 5-10 minutes) and not exceed 60 minutes. Informed consent should be obtained

Exceptions

At the discretion of the supervising radiologist, perinatologist or cardiologist, deviations to these guidelines are permitted to accurately assess the extent and severity of an abnormality based on the clinical indications or pathology present.

References

American Institute of Ultrasound in Medicine (AIUM). (2020, May 19). A prudent use and safety of diagnostic ultrasound in pregnancy. AIUM. https://www.aium.org/resources/official-statements/view/prudent-use-and-safety-of-diagnostic-ultrasound-in-pregnancy

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Appendices

- Appendix A: AIUM Recommended Dwell Time and T1 Ranges

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Appendix A: AIUM Recommended Dwell Time and TI Ranges

Obstetric, Neonatal Transcranial and Neonatal Spinal Ultrasound Examinations ***Note: For obstetrical exams, monitoring the TI is recommended up to 10 weeks from the last menstrual period or a crown-rump length of about 33-34mm. Dwell times should be reduced by 33% for acoustic radiation force impulse (ARFI) and pulsed doppler examinations when bone is near the transducer focus.***	
TI Range	**Max Dwell Time (minutes)**
TI >3.0	Not recommended
2.5 < TI < 3.0	<1
2.0 < TI ≤ 2.5	<4
1.5 < TI ≤ 2.0	<15
1.0 < TI ≤ 1.5	<30
0.7 < TI ≤ 1.0	<60
TI ≤ 0.7	No time limit
Adult Transcranial, General Abdominal, Peripheral Vascular, Neonatal (except head and spine) and other examinations (except the eye). ***Note: Dwell times should be reduced by 33% for acoustic radiation force impulse (ARFI) and pulsed doppler examinations when bone is near the transducer focus.***	
TI Range	**Max Dwell Time (minutes)**
TI >6.0	Not recommended
5.0 < TI < 6.0	<0.25 (15 seconds)
4.0 < TI ≤ 5.0	<1
3.0 < TI ≤ 4.0	<4
2.5< TI ≤ 3.0	<15
2.0< TI ≤ 2.5	<60
1.5 < TI ≤ 2.0	<120
TI ≤ 1.5	No time limit

Appendix C: Robinson CRL Chart

Gestational Age Estimation by Crown-Rump Length

CRL (mm)	GA (days)	GA (weeks / days)	CRL (mm)	GA (days)	GA (weeks / days)
5	42	6w 0d	46	79	11w 2d
6	44	6w 2d	47	80	11w 3d
7	45	6w 3d	48	81	11w 4d
8	47	6w 5d	49	81	11w 4d
9	48	6w 6d	50	82	11w 5d
10	50	7w 1d	51	82	11w 5d
11	51	7w 2d	52	83	11w 6d
12	52	7w 3d	53	83	11w 6d
13	53	7w 4d	54	84	12w 0d
14	54	7w 5d	55	85	12w 1d
15	55	7w 6d	56	85	12w 1d
16	57	8w 1d	57	86	12w 2d
17	58	8w 2d	58	86	12w 2d
18	59	8w 3d	59	87	12w 3d
19	59	8w 3d	60	87	12w 3d
20	60	8w 4d	61	88	12w 4d
21	61	8w 5d	62	88	12w 4d
22	62	8w 6d	63	89	12w 5d
23	63	9w 0d	64	89	12w 5d
24	64	9w 1d	65	90	12w 6d
25	65	9w 2d	66	90	12w 6d
26	66	9w 3d	67	91	13w 0d
27	66	9w 3d	68	91	13w 0d
28	67	9w 4d	69	92	13w 1d
29	68	9w 5d	70	92	13w 1d
30	69	9w 6d	71	93	13w 2d
31	69	9w 6d	72	93	13w 2d
32	70	10w 0d	73	94	13w 3d
33	71	10w 1d	74	94	13w 3d
34	72	10w 2d	75	95	13w 4d
35	72	10w 2d	76	95	13w 4d
36	73	10w 3d	77	96	13w 5d
37	74	10w 4d	78	96	13w 5d
38	74	10w 4d	79	97	13w 6d
39	75	10w 5d	80	97	13w 6d
40	76	10w 6d	81	98	14w 0d
41	76	10w 6d	82	98	14w 0d
42	77	11w 0d	83	98	14w 0d
43	77	11w 0d	84	99	14w 1d
44	78	11w 1d	85	99	14w 1d
45	79	11w 2d			

CRL crown rump length
GA gestational age

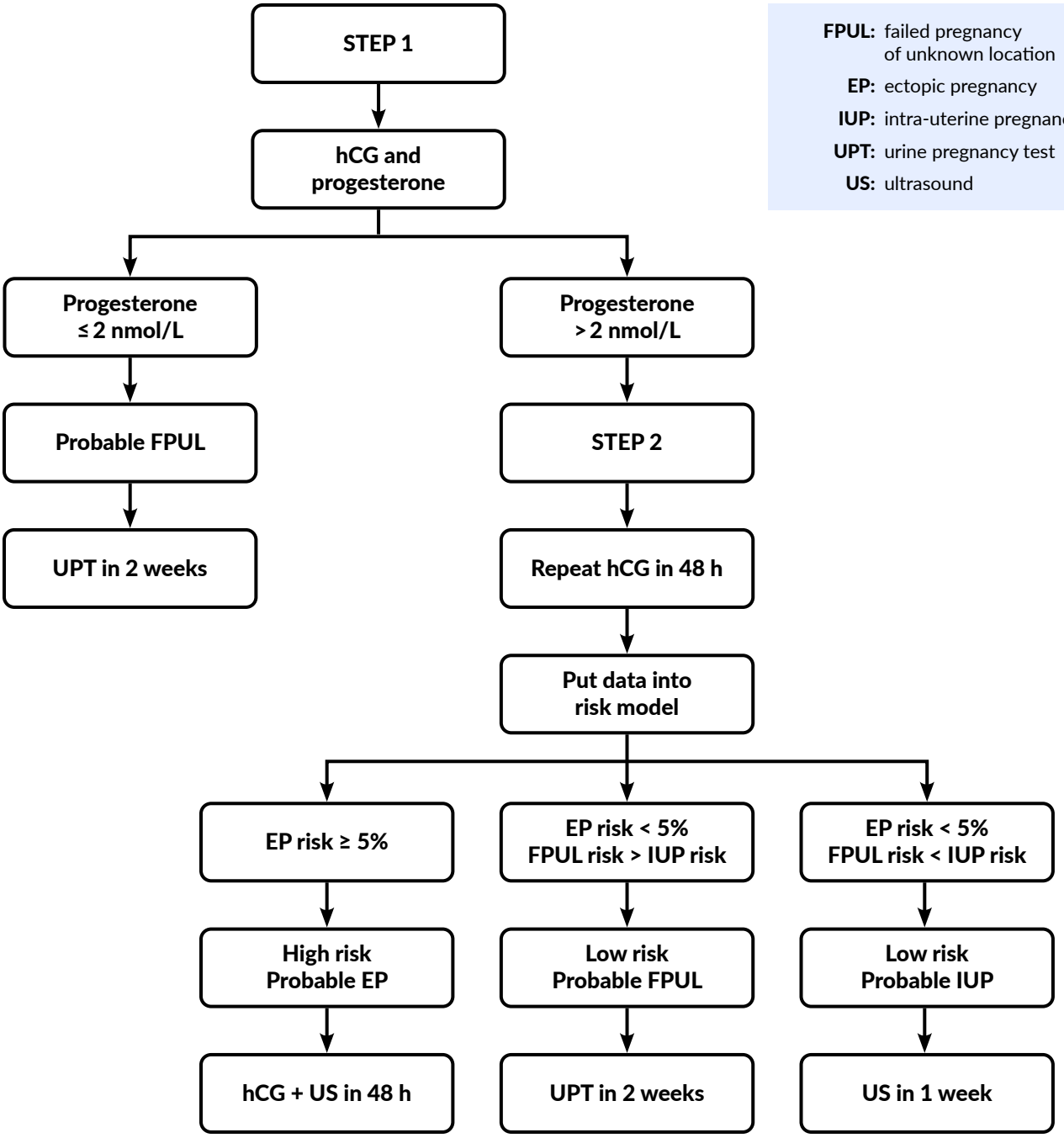
Source: Robinson H, Fleming J. A critical evaluation of sonar "crown-rump length" measurements. Br J Obstet Gynaecol 1975;82(9):702-710.

Appendix D: Biometry Measurement and Reporting Standards

Biometry Measurement and Reporting Standards

- Report measurements (mm) **and** corresponding percentiles for gestational age (GA) (using World Health Organization (WHO) fetal growth standard) for the following:
  - **Head circumference (HC)**
    - Measure in transverse plane at the level of the thalami
    - Ensure symmetrical appearance of both hemispheres
    - Thalami and CSP should be visible; cerebellum should **not** be visible
    - Head should occupy >50% of the total image
    - Use ellipse function and fit calipers around the outer edge of the skull bones
  - **Femur length (FL)**
    - Both ends of the bone should be clearly visible
    - Femur should be as horizontal as possible (perpendicular to the beam)
    - Femur should occupy >50% of the total image
    - Longest axis is measured
    - Place calipers at the ends of the ossified diaphysis (exclude distal epiphysis if visible)
  - **Abdominal circumference (AC)**
    - Measure in transverse symmetrical plane with abdomen as round as possible
    - Stomach and umbilical vein (at the level of the portal sinus) should be visible
    - Kidneys should not be visible
    - Abdomen should occupy >50% of the total image
    - Use ellipse function and fit calipers around the outer skin edge
- Report estimated fetal weight (EFW) in grams **and** corresponding percentile for gestational age (using WHO fetal growth standard)
  - Use Hadlock-3 formula (HC, AC, FL) to calculate EFW

Appendix E: Pregnancy of Unknown Location — M6 Model



FPUL: failed pregnancy of unknown location
EP: ectopic pregnancy
IUP: intra-uterine pregnancy
UPT: urine pregnancy test
US: ultrasound

Reference:

Christodoulou E, Bobdiwala S, Kyriacou C, et al. External validation of models to predict the outcome of pregnancies of unknown location: a multicentre cohort study. BJOG. 2021;128(3):552-562.

Appendix F: MFM and FDS Referral Criteria and Contact Information

MFM and FDS Referral Criteria and Contact Information

MATERNAL FETAL MEDICINE CLINIC		
BC Women's Hospital		Telephone: 604-875-2162 Fax: 604-875-3255
Fraser Health Maternal-Fetal Medicine Clinics:		*Central intake, please fax all referrals to: 604-582-3798
• Jim Pattison Outpatient Care and Surgery Centre (Surrey)		Telephone: 604-582-4558 x763995 Fax: 604-582-3798
• Royal Columbian Hospital (New Westminster)		Telephone: 604-520-4132 Fax: 604-520-4140
Victoria General Hospital		Telephone 250-727-4501 Fax 250-727-4441
University Hospital of Northern British Columbia		

FETAL DIAGNOSIS SERVICE (FDS)		
BC Women's Hospital and Fraser Health Jim Pattison Outpatient Care and Surgery Centre For all referrals (excluding Vancouver Island)	FDS Referral Form and Criteria	Telephone: 604-875-2848 Toll free: 1-888-663-3887 Fax: 604-875-3484
Victoria General Hospital (for Island referrals)	Same FDS criteria Antenatal Assessment Unit (AAU) Referral Form	Telephone: 250-727-4501 Fax: 250-727-4441

Appendix G: Assessing Soft Markers for Aneuploidy

Assessing Soft Markers for Aneuploidy

Echogenic Intracardiac Focus (EIF):

An EIF is defined as a small (<6 mm) echogenic area in either the cardiac ventricle that is **as bright or brighter than the surrounding bone** and visualized in at least 2 separate planes. Using an appropriate transducer frequency (≤5 MHz) and appropriate gain setting, it is normally visualized in the four-chambers view of the heart and usually, it does not have acoustic shadow.

Note: Echogenic focus (foci) that is/are not as bright as bone should not be reported.

Echogenic bowel:

Echogenic bowel is diagnosed when the fetal bowel displays **echogenicity equal to or greater than** that of the surrounding fetal bone, typically the iliac wing. Transducer frequency and acoustic gain setting can influence the diagnosis because higher frequency transducers and higher gain settings tend to exaggerate the finding. Therefore, a lower frequency transducer (≤5 MHz) with harmonic imaging turned off and set at a lower gain should be used to confirm the diagnosis.

Pyelectasis:

Mild pyelectasis (mild urinary tract dilation) is defined as a hypoechoic spherical or elliptical space within the renal pelvis that measures **greater than or equal 5 mm and less than 10 mm**. Although the Society for Maternal Fetal Medicine (SMFM) guideline uses a cut-off of 4mm to define pyelectasis, a cut-off of **5 mm** as per the Society of Obstetricians and Gynaecologists of Canada (SOGC) has been chosen to decrease the rate of false positives and the numbers of pregnancies having unnecessary follow up scans.

The measurement is taken on a transverse section through the fetal renal pelvis using the maximum anterior-to- posterior measurement.

Note: Measurements less than 5 mm are normal, should not be designated as pyelectasis, and should not be reported.

Short femur:

Short femur has been variably defined throughout the literature. As per SMFM, it is defined as a ratio of observed femoral length to expected femoral length (based on biparietal diameter) of less ≤0.91. However, in other studies, it has been defined as femur length less than the 5th percentile, and others have defined it as a femur to foot ratio ≤0.9. Given the obstetrical (OB) ultrasound standard no longer requires a biparietal diameter (BPD) to be measured, the definition of short femur to be used is a **femur to foot ratio ≤0.9 or femur length less than the 5th percentile.**

Increased nuchal fold:

An increased (thickened) nuchal fold is defined in the literature as **≥5 mm** between 15 and 17wks 6d and greater than **6 mm between 18 to 23wks 6d** (SOGC recommendation).

The nuchal fold is imaged in the transverse plane of the fetal head, angled caudally to capture the cerebellum and occipital bone, and calipers are placed between the outer edge of the skin and the outer edge of the occipital bone directly in the midline.

Absent nasal bone:

A true midsagittal view of the fetal profile is obtained and magnified to fill the majority of the image space. The nasal bone is imaged perpendicular to the longitudinal axis of the nose, in this midsagittal plane of the fetal face. The nasal bone appears as an echogenic linear structure below the skin edge. The nasal bone is considered absent when it is not visualized.

Ventriculomegaly:

Mild ventriculomegaly is defined as a lateral cerebral ventricle(s) diameter of **≥10 mm and ≤15 mm.**

The measurement of the cerebral ventricle is in a true axial plane (in which the cerebral hemispheres are symmetric in appearance) ABOVE the level of the thalami and third ventricle. Landmarks anteriorly include the CSP or fornix. Posterior landmark is the V-shaped ambient cistern. Care should be taken to avoid any obliquity in the view of the ventricle since this will falsely increase the measurement.

The atrium of the far-field ventricle is measured in line with the parieto-occipital sulcus. Calipers are placed on the internal medial and lateral borders of the lateral ventricle. See figure 5 in ISUOG Guideline: ISUOG Practice Guidelines (updated): sonographic examination of the fetal central nervous system. Part 1: performance of screening examination and indications for targeted neurosonography.

Choroid plexus cyst(s) (CPC):

A CPC is a small, fluid-filled structure within the choroid of the lateral ventricles of the fetal brain measuring greater or equal to 3 mm. On ultrasound, CPCs appear as echolucent cysts within the echogenic choroid. CPCs may be single or multiple, unilateral or bilateral, and most often are <10 mm in diameter.

Imaging of the choroid plexus is performed in the transverse plane of the fetal head at the same level that the lateral cerebral ventricle is evaluated.

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Appendix H: Cerebellum Growth Chart

Cerebellum Growth Chart

TCD OF CENTILES BY GESTATIONAL AGE					
Gestational age (wk)	Centiles of TCD values (cm)				
	5th	10th	50th	90th	95th
15	1.42	1.45	1.58	1.71	1.74
16	1.46	1.50	1.65	1.79	1.83
17	1.52	1.56	1.73	1.89	1.93
18	1.59	1.64	1.82	1.99	2.05
19	1.68	1.73	1.92	2.11	2.17
20	1.77	1.83	2.04	2.24	2.30
21	1.88	1.94	2.16	2.38	2.45
22	1.99	2.05	2.30	2.53	2.60
23	2.12	2.18	2.44	2.68	2.76
24	2.25	2.32	2.59	2.85	2.93
25	2.39	2.46	2.74	3.02	3.10
26	2.53	2.60	2.91	3.19	3.28
27	2.67	2.76	3.07	3.38	3.47
28	2.82	2.91	3.24	3.56	3.66
29	2.98	3.07	3.42	3.75	3.86
30	3.13	3.22	3.59	3.95	4.06
31	3.28	3.38	3.77	4.15	4.26
32	3.44	3.54	3.95	4.34	4.47
33	3.59	3.70	4.13	4.54	4.67
34	3.73	3.85	4.31	4.74	4.88
35	3.88	4.00	4.48	4.95	5.09
36	4.01	4.14	4.65	5.14	5.30
37	4.14	4.28	4.82	5.34	5.50
38	4.27	4.41	4.99	5.54	5.71

Reference:

Chavez MR, Ananth CV, Smulian JC, Lashley S, Kontopoulos EV, Vintzileos AM. Fetal transcerebellar diameter nomogram in singleton gestations with special emphasis in the third trimester: a comparison with previously published nomograms. *Am J Obstet Gynecol*. 2003;189(4):1021-5.

Appendix I: Second and Third Trimester Anatomical Assessment: Protocol Details

Second and Third Trimester Anatomical Assessment: Protocol Details

When performing an ultrasound scan in the second or third trimester and a **Fetal Anatomy Ultrasound in the 2nd trimester has not been performed**, every effort should be made to assess and adequately document all structures listed in the minimum requirements for the detailed assessment of fetal anatomy between 19wks 0d and 21wks 0d.

1. **Fetal number**
    - If multiple, report chorionicity and amnionicity
        - Chorionicity is best assessed in the first trimester

2. **Fetal cardiac activity**
    - Document presence or absence of cardiac activity and fetal heart rate
        - Fetal heart rate consistently <110 beats per minute (bpm) or >160 bpm during the exam is considered abnormal

3. **Biometry**
    - Refer to Appendix D

4. **Placenta**
    - Ask patient about previous cesarean sections, if positive history document placental location in relation to the uterine scar
        - Patients with a history of prior uterine surgery and a low anterior placenta or placenta previa are at increased risk for placenta accreta spectrum (PAS)
            - If PAS is suspected, specialist referral to Maternal Fetal Medicine (MFM) or the PAS clinic is recommended based on local practice patterns
    - Image the placenta in transverse and longitudinal planes
        - Assess for lesions such as subchorionic hemorrhage, echogenic cystic lesions/infarction, placental masses. Placental lakes identified at the routine detail scan are considered a normal finding; no further follow up is required based on this finding alone.
        - Assess placental shape and thickness (uniformly <4 cm in thickness is abnormal)
    - Document and report location — anterior, posterior, fundal, lateral etc.

- Measure the distance of the inferior placental edge to the internal os if the placenta appears low
  - Classification and terminology
    - Placenta previa: placenta covering the cervical os
    - Low-lying placenta: edge located ≤2 cm from cervical os (report the measured distance)
    - Normally located placenta: edge >2 cm from cervical os
  - A full bladder can simulate a low-lying placenta by compressing the lower segment — if in doubt, have the patient empty their bladder and reassess
    - Perform transvaginal scan if the lower edge of the placenta is not well visualized
  - Placenta previa or low-lying placenta should be assessed with transvaginal ultrasound to clearly define placental location (including laterality) and associated findings
  - Diagnosis of placenta previa should not be made prior to 18 weeks gestation
  - Provisional diagnosis of placenta previa should be confirmed >32 weeks gestation
- Assess and document the location of umbilical cord insertion site
  - If velamentous cord insertion, succenturiate lobe, low-lying placenta or placenta previa, assess for possible vasa previa

5. Amniotic fluid volume (AFV)

- Subjective assessment initially if <24 weeks gestation — if fluid volume appears abnormal, measure single deepest pocket (SDP)
- Measure SDP if >24 weeks gestation
- See Section 4

6. Maternal structures

- Measure and document location of clinically relevant fibroids
- Adnexae if visualized
- Cervical length (CL)
  - Screen with transabdominal view to assess CL (if gestational age (GA) <32 weeks)
  - If funneling present, cervix appears short, measures <3 cm or is not well seen transabdominally, assess CL with transvaginal ultrasound examination after patient empties their bladder

7. Fetal anatomical survey — at a minimum, the following should be assessed and documented:

Head

- Head circumference (see biometry section above)
- Skull
  - Normal head shape is oval without any focal protrusions or defects
  - Abnormal shapes (lemon, strawberry, cloverleaf) should prompt referral
  - Normal mineralization results in continuous echogenic structure interrupted only by sutures; unusually clear visualization of the fetal brain, *specifically in the near field* may indicate poor mineralization
- Nuchal fold measurement (assess if between 18wks 0d to 22wks 6d)
  - Measure in the plane of the cavum septum pellucidum
  - Normal is <6 mm
- Choroid plexus
- Midline falx
- Cavum septum pellucidum (CSP)
- Lateral cerebral ventricles
  - Assess dependent ventricle
  - Measure the width of the posterior horn (normal is <10 mm)
- Cerebellum
  - Assess overall appearance and shape: 2 cerebellar hemispheres joined by echogenic vermis
  - Measure the **transcerebellar diameter** (TCD) if appears abnormal. Cerebellar growth chart is provided in Appendix H.
- Cisterna magna (CM)
  - Measure the depth of the cisterna magna if appears enlarged (normal is <10 mm AP)

For detailed information and a resource on the sonographic examination of the fetal central nervous system, see the ISUOG Practice Guidelines (updated): sonographic examination of the fetal central nervous system. Part 1: performance of screening examination and indications for targeted neurosonography.

Face

- Orbits
  - Both visible with normal position and separation
- Nose and upper lip (coronal)
- Mid sagittal profile
  - Note the presence or absence of the nasal bone

Abdomen

- Abdominal circumference
- Stomach
  - Check and document situs
  - Usually occupies 1/3 of the left half of the transverse view of the abdomen
  - Abnormality in position, persistent non-visualization, presence of 'double bubble' should prompt referral
- Kidneys
  - Transverse and longitudinal views
  - Measure renal pelvis (AP diameter) if suspect dilation
- Bladder
  - Fetal bladder should not reach the level of the cord insertion
  - Abnormally enlarged fetal bladder or persistent failure to visualize the bladder should prompt referral
- Diaphragm
  - Assess right and left sides (ideally assessed with sagittal views)
  - Document stomach below the diaphragm
- Bowel
  - Contained within the abdomen
  - Document and report echogenic bowel only if echogenicity is as bright or brighter than bone (otherwise do not comment on bowel echogenicity); ensure gain is turned down when evaluating for echogenic bowel
- Umbilical cord insertion site
  - Examine for integrity and to rule out defect such as gastroschisis or omphalocele

Heart

- Optimize machine settings for assessment of the fetal heart to maximize frame rate
  - Narrow sector with single focal zone
  - Magnify until heart fills at least 50% of the screen
- Check and document situs
  - Levocardia and apex points to the left
  - Stomach in abdomen in upper left quadrant
- Fetal heart rate and rhythm
- 4-chamber view — record 3 second cine clip

The following findings are representative of a normal 4-chamber view:

- Axis: 45 +/– 20 degrees
- Size: approximately 1/3 of chest area
- Position: apex to the left
- 4-chambers are balanced (right ventricle = left ventricle in size)
- Moderator band in right ventricle (RV)
- Crux is present and septum appears intact
- Two separate atrioventricular (AV) valves
- Contractility is symmetric
- Outflow tracts — record 3 second cine clip
  - Number and origin of each vessel — assess the aortic and pulmonary outflows
  - Relative size — normal appearing great vessels are approximately equal in size
  - Relationship (crossing) — great vessels should cross as they exit their respective ventricles
    - Outflow tracts arising in parallel from the ventricles should raise suspicion of transposition of the great arteries necessitating specialist referral
- Three-vessel view (3VV) / three-vessel-trachea view (3VT)

The following findings are representative of a normal 3VV:

- Size of vessels: pulmonary artery (PA) > aorta (Ao) > superior vena cava (SVC)
- Even spacing between vessels
- 3 vessels all in a line
- Only 3 vessels seen

For detailed information and a resource on fetal heart assessment, see the ISUOG Practice Guidelines (updated): fetal cardiac screening.

Thorax

- Shape should be regular with a smooth transition to the abdomen
- Ribs should have a normal curvature without deformity
- Both lungs should appear homogenous in texture without evidence of mediastinal shift or masses
- Assess integrity of the diaphragm, visualized as a hypoechoic line between the abdomen and thorax
- Stomach identified below the diaphragm

Spine

- Assess in at least two planes with cine clips (sagittal, coronal and/or transverse) including skin line and sacrum

Umbilical cord

- Document and report number of vessels in the umbilical cord

Extremities

- Assess all long bones — subjectively assess bone shape and mineralization
- Arms (upper arm and forearm)
- Hands
- Legs (upper leg and lower leg)
- Feet/ankle
- Assess position of feet

Genitalia

- Check and document normal appearance of external genitalia
- Report genitalia as normal, abnormal or not well seen. Report sex as: male, female or not reported at parent's request.

For detailed resource including example image acquisition for screening anatomical details, see the ISUOG Practice Guidelines (updated): performance of the routine mid-trimester fetal ultrasound scan.

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Appendix J: Soft Markers PGSP Recommendations

PRENATAL SCREENING FOR DOWN SYNDROME, TRISOMY 18, AND OPEN NEURAL TUBE DEFECTS

Obstetric Guideline for
Health Care Providers

Appendix 5: Soft Markers Identified on Detailed Ultrasound

Several markers identified on second-trimester ultrasound examination are associated with increased chance of Down syndrome. The markers are not equally suggestive of Down syndrome. Based on the presence or absence of these markers, positive or negative likelihood ratios can be applied to the calculation of chance of Down syndrome from SIPS / IPS / Quad or maternal age allowing modification of a patient's chance.[10] Some markers are also indicative of increased chance of condition(s) other than Down syndrome.

Markers that significantly increase the chance of Down syndrome include:

- increased nuchal thickness (NTh) ≥ 6 mm
- echogenic bowel (equal or greater than bone)
- ventriculomegaly
- **absent** nasal bone (second trimester) (not routinely looked for)
- aberrant right subclavian artery (not routinely looked for)

Markers with only a small impact on the chance of Down syndrome include:

- echogenic intracardiac focus (EICF)
- pyelectasis (5 mm – 10 mm)
- short femur (abnormal femur/foot ratio ≤ 0.9 or femur length less than the 5th percentile for gestational age).

Markers that increase the chance of condition(s) other than Down syndrome include:

- increased nuchal thickness (NTh) ≥ 6 mm
- echogenic bowel
- ventriculomegaly
- pyelectasis (5 mm – 10 mm)

Recommended management:

1. If ultrasound detects **absent** nasal bone (second trimester), aberrant right subclavian artery, or more than one marker, consult with or refer to Medical Genetics.
2. If ultrasound detects ventriculomegaly, referral to the Fetal Diagnosis Service (BCWH) or Victoria MFM is recommended.
3. If ultrasound detects increased nuchal thickness:
    - If NTh is between 6 – 7mm and cardiac views are reported as normal and patient had negative NIPT screen, no further testing is recommended.
    - If NTh is between 6 – 7mm and cardiac views are reported as normal and patient had SIPS/IPS/Quad, or no screen, the chance of Down syndrome should be recalculated using the Trisomy21 calculator (www.psbchealthhub.ca/screening-programs/82). Medical Genetics can be consulted for help with calculation as needed. If revised chance of Down syndrome is greater than 1 in 300, patient qualifies for amniocentesis or funded NIPT. If patient chooses funded NIPT, contact medical genetics (604-875-2157 BCWH, or 250-727-4461 Victoria) for NIPT code.

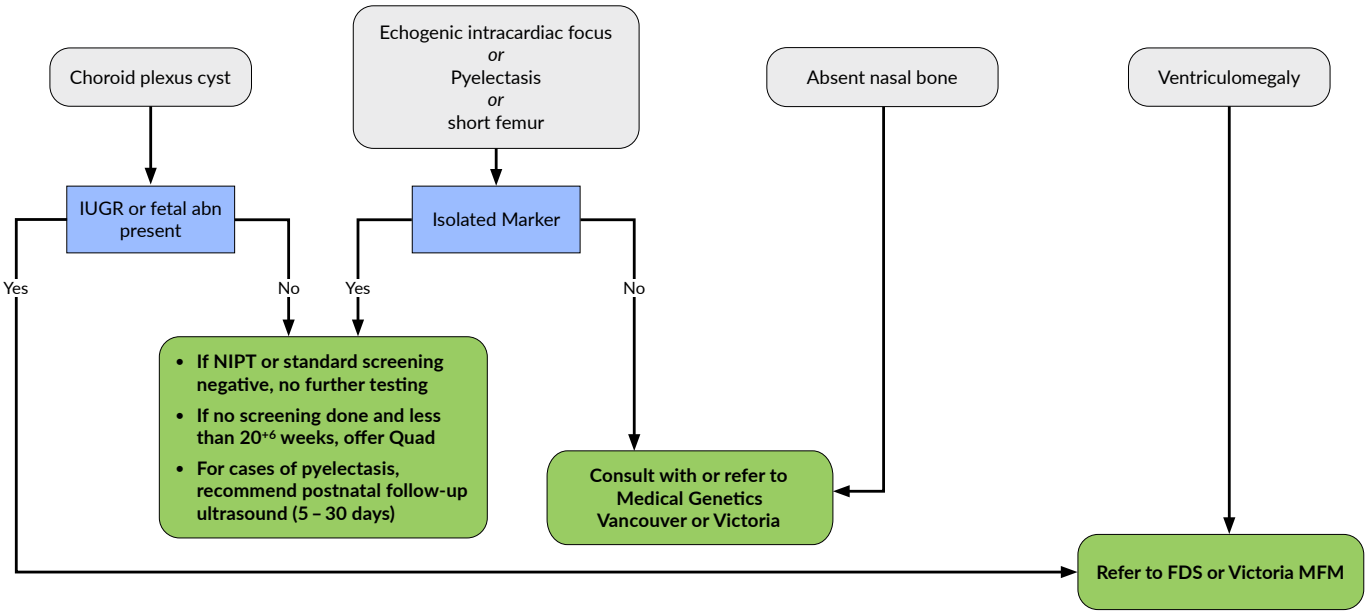
- If NTh is between 6 – 7mm and cardiac views are reported as not well seen, in addition to recalculation of the chance of Down syndrome using the Trisomy21 calculator, a prompt reassessment of the cardiac views is needed. For patients from VCH, NHA, IHA, this can be facilitated through referral to Medical Genetics at BCWH; for patients from FHA, referral to the Jim Pattison Maternal Fetal Medicine Service is recommended; for VIHA patients, referral to Medical Genetics at Victoria General Hospital is recommended.
- If NTh is 7mm or greater, referral to Medical Genetics (Vancouver or Victoria) is recommended.

4. If ultrasound detects echogenic bowel:
   - If associated dilated bowel loops, referral to the Fetal Diagnosis Service (FDS) is recommended.
   - If isolated echogenic bowel as bright as bone:
     - Chance of an intrauterine infection is increased. Recommend serology IgM and IgG for CMV, Toxoplasmosis and Parvovirus.
     - Chance of Down syndrome is increased. If patient had negative NIPT, chance of Down syndrome remains low. If patient had SIPS/IPS/Quad or no screen, the chance of Down syndrome should be recalculated using the Trisomy21 calculator (www.psbchealthhub.ca/screening-programs/82). Medical Genetics can be consulted for help with calculation as needed. If revised chance of Down syndrome is greater than 1 in 300, patient qualifies for amniocentesis or funded NIPT. If patient chooses funded NIPT, contact medical genetics for NIPT code.
     - Chance of cystic fibrosis is increased for Caucasian couples. Offer CF carrier screening on patient and partner (requisition available at www.genebc.ca). For midwifery patients, this can be facilitated through referral to Medical Genetics.
     - Risk of developing IUGR in third trimester is increased. A follow up ultrasound around 30 – 32 weeks gestation is recommended.
5. If ultrasound detects isolated pyelectasis, short femur (abnormal femur/foot ratio ≤0.9 or femur length less than the 5th percentile for gestational age) or echogenic intracardiac focus (EICF), and the Down syndrome screen (SIPS /IPS /Quad or NIPT) showed a negative screen (low chance), no further prenatal testing is recommended. If no screening has been done and patient is less than 21 weeks and 6 days gestation, Quad screening should be offered. For patients with an ultrasound finding of pyelectasis, a postnatal renal ultrasound between 5–30 days of age is recommended.
6. If Choroid plexus cyst (CPC) is detected, referral to Medical Genetics is recommended only if CPC is seen in combination with structural abnormalities or growth restriction. No further testing is indicated if CPC is identified in isolation and the patient's SIPS /IPS /Quad or NIPT is screen negative for trisomy 18 (for SIPS/ IPS/Quad, risk only appears on report when screen positive). If no screening has been done and patient is less than 20 weeks and 6 days gestation, Quad screening should be offered.

Medical Genetics		Fetal Diagnosis Service (FDS)	Maternal Fetal Medicine	
Vancouver: T: 604-875-2818 F: 604-875-3484	**Victoria:** T: 250-727-4461 F: 250-727-4295	T: 604-875-2848 F: 604-875-3484	**BC Women's Hospital:** T: 604-875-2162 F: 604-875-3255	**Surrey Jim Pattison:** T: 604-582-4558 ext. 763995 F: 604-582-3798
			Prince George: Starting mid 2025	**Victoria General:** T: 250-727-4266 F: 250-727-4441

10 Agathokleous M, Chaveeva P, Poon LCY, Koosinski P, Nicolaides KH. Meta-analysis of second trimester markers for trisomy 21. Ultrasound Obstet Gynecol 2013; 41:247-261.

Soft Markers on 2nd Trimester Ultrasound



NIPT: Also known as Prenatal cell free DNA screening

Medical Genetics		Fetal Diagnosis Service (FDS)	Maternal Fetal Medicine			
Vancouver: T: 604-875-2818 F: 604-875-3484	**Victoria:** T: 250-727-4461 F: 250-727-4295	T: 604-875-2848 F: 604-875-3484	**BC Women's Hospital:** T: 604-875-2162 F: 604-875-3255	**Prince George:** Starting mid 2025	**Surrey Jim Pattison:** T: 604-582-4558 ext. 763995 F: 604-582-3798	**Victoria General:** T: 250-727-4266 F: 250-727-4441

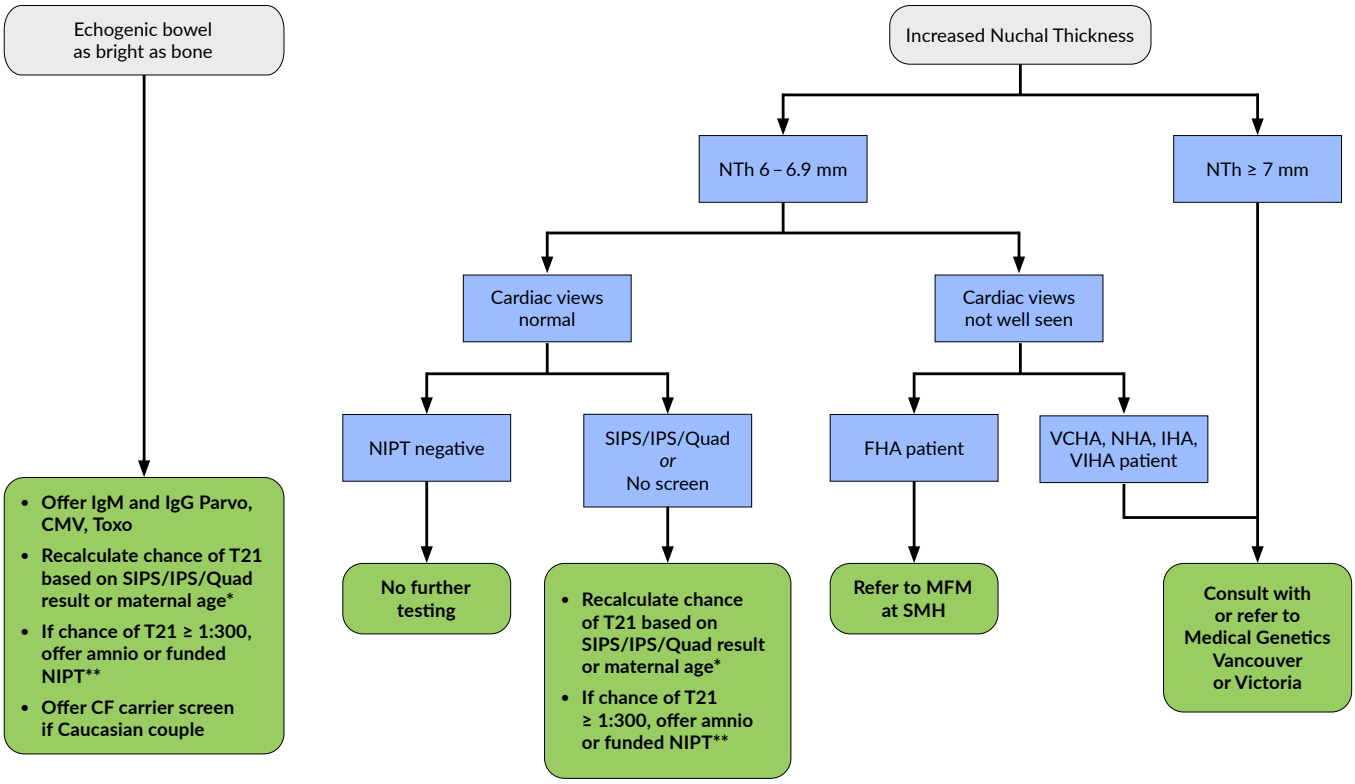
BC Prenatal Genetic Screening Program

Perinatal Services BC
Provincial Health Services Authority

Provincial Health Services Authority

March 2025

Soft Markers on 2nd Trimester Ultrasound



NIPT: Also known as Prenatal cell free DNA screening

* Use T21 risk calculator on PSBC website or consult medical genetics.

** Contact medical genetics (604-875-2157 BCWH, or 250-727-4461 Victoria) for NIPT code.

BC Prenatal Genetic Screening Program

Perinatal Services BC
Provincial Health Services Authority

Provincial Health Services Authority

March 2025

Perinatal Services BC
Provincial Health Services Authority

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