BC WOMEN'S HOSPITAL+ HEALTH CENTRE
An agency of the Provincial Health Services Authority

MEMO

To: BC and YT Obstetrical care providers

From: BC MFM (BCW, FHA and VIHA MFM)

Date: August 30, 2021

Re: **Provincial MFM Diagnosis and Referral pathway for the small fetus**

The FHA, VIHA and BCW Divisions of Maternal fetal Medicine are seeking to standardize the referral process for small and/or growth restricted fetuses identified by ultrasound.

The proposed diagnostic criteria and the initial management algorithms are based on recently published guidelines[1,2] and are intended to be a minimal standard easily applicable in the community setting. The intent is to start integrating them into our practice as of September 1 2021.

What is new?

- Definition of "small fetus" is based on either an abdominal circumference (AC) *or* Estimated fetal weight (EFW) less than the 10th percentile for gestational age (GA).
- Referral pathway is based on:
    - Gestational age at diagnosis: prior to or after 32 weeks GA
    - Biometry: AC or EFW < 3rd %ile versus between the 3rd and 10th %ile
    - Umbilical artery Doppler pulsatility Index (PI) for gestational age
- The algorithm attempts to differentiate between the small for gestational age (SGA) fetus where "smallness" is likely constitutional and fetal growth restriction (FGR) where "smallness" is likely pathological and due to underlying placental insufficiency
- Frequency of monitoring is based on a combination of the biometric measurements and umbilical artery PI values

Explanatory notes and frequently asked questions:

1. **What if percentiles are not listed on the ultrasound report?**
   The Lessoway chart is currently the most widely used fetal growth chart in BC for fetal biometry and can be used to determine if abdominal circumference measurements are less than the 10th percentile for gestational age.

   Some ultrasound departments may have other charts built into their reporting packages. The WHO fetal growth charts can be used as alternative to the Lessoway chart to determine if fetal biometry falls less than the 3rd or 10th percentiles.

J. Andrews, H. Bos, J. Burrows, J. Liauw, K. Lim and C. Mayer *on behalf of BC MFM group*

2. **How do I refer to Maternal Fetal Medicine?**
   BC Women's MFM referral:
   Fraser Health Authority MFM referral:
   VIHA MFM: referral to Dr Hailey Bos, Jerome Dansereau, MacDonald or Dr James Hayward

3. **What if the patient lives in a remote location and does not wish to travel?**
   In some circumstances, a limited, virtual consult with review of local ultrasound images may be adequate. BCW MFM offers this service for patients located outside of Fraser and Vancouver Island health authorities where clinically appropriate.

   Please specify on the referral that this is requested and this will be triaged by one the MFM docs.

4. **Is there a standard protocol for umbilical artery Doppler waveform acquisition?**
   BC Women's Umbilical artery Doppler protocol with reference for PI values are posted on the BCW US page.

5. **What is the Cebrebroplacental ratio (CPR) and should it be used routinely in the evaluation of the small fetus?**

   The cerebroplacental ratio is the ratio between the middle cerebral artery pulsatility index (MCA-PI) and the umbilical artery pulsatility index (UA-PI). A low CPR is suggestive of fetal blood redistribution, or "brain sparing" in the fetal circulation. An abnormally low CPR ratio has been associated with adverse perinatal outcomes in the growth restricted fetus[3].

   Some recent guidelines[1] advocate for the routine use of CPR to help differentiate SGA from FGR while other do not recommend its use[2]. While there is data showing that a low CPR is associated with a higher risk for adverse outcomes compared with a normal CPR, there remains several questions to consider prior to widespread use in clinical practice. These include determining which threshold values should indicate an abnormal result and how management should change in the face of an abnormal result[4].

   In the small fetus suspected of FGR after 32 weeks, a low CPR is supportive of placental insufficiency as the underlying cause for a small fetus. While this may inform frequency of monitoring, there is insufficient evidence that it should be a sole indication for delivery. In fetuses <10th centile with normal UA dopplers, delivery is currently recommended at 37-38 weeks. Where CPR is available, addition of CPR measurement 1-2 times per week may help identify those fetuses in which delivery may be deferred to 39 weeks gestation.

References:
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2. SMFM, Gevaerd martins J, Biggio, JR, Abuhamad, A. *Society for Maternal-Fetal Medicine Consult Series #52: Diagnosis and management of fetal growth restriction.* Am J Obstet Gynecol. 2020 Oct;223(4):B2-B17
3. Conde-Agudelo A, Villar J, Kennedy SH, Papageorghiou AT. Predictive accuracy of cerebroplacental ratio for adverse perinatal and neurodevelopmental outcomes in suspected fetal growth restriction: systematic review and meta-analysis. Ultrasound Obstet Gynecol. 2018 Oct;52(4):430-441. doi: 10.1002/uog.19117. Epub 2018 Sep 5. PMID: 29920817
4. Vollgraff Heidweiller-Schreurs CA, van Osch IR, Heymans MW, Ganzevoort W, Schoonmade LJ, Bax CJ, Mol B, de Groot C, Bossuyt P, de Boer MA; CPR IPD Study Group. Cerebroplacental ratio in predicting adverse perinatal outcome: a meta-analysis of individual participant data. BJOG. 2021 Jan;128(2):226-235. doi: 10.1111/1471-0528.16287. Epub 2020 Jun 8. PMID: 32363701; PMCID: PMC7818434