

## Guideline for Assessment of the “Best Estimate” of Gestational Age (Revised: June 2020)

This provincial clinical guideline has been revised to reflect the recommendations of national professional organizations and local experts, within the context of Nova Scotia perinatal care provision. As such, these guidelines may differ from those found in other jurisdictions. The RCP acknowledges the Divisions of Maternal Fetal Medicine (MFM) and Neonatal Perinatal Medicine (NPM) at the IWK Health Centre, for their collaboration in producing this guideline. For quick reference, a guideline summary can be found in the Algorithm on page 4.

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The “Best Estimate” of gestational age (GA) is calculated based on the **estimated Expected date of delivery (EDD)**, derived from the following hierarchical steps:

### **Step 1: Date of Conception**

As documented by artificial reproduction technology, the “Best Estimate” of gestational age (GA) is computed as the (date of birth) ‘minus’ (date of conception) ‘plus’ 14 days.

- In case of *in-vitro fertilization with embryo-transfer*, then the date of conception = (date of embryo-transfer) ‘minus’ (the age of the embryo (number of days) at the time of transfer).

### **Step 2: Early first trimester ultrasound (if first scan is done between 7-13 <sup>6</sup>/<sub>7</sub> weeks gestation)**

The “Best Estimate” of GA is based on the estimated EDD computed from the first trimester fetal ultrasound measurement alone.

- If more than one first trimester scan is done, then the earliest scan with a crown rump length of at least 10 mm should generally be used. If a first trimester scan is repeated and felt to be more reliable than the earlier scan as determined by the most responsible Obstetric provider (e.g. if seen in FATC by an MFM and the second scan is felt to be more reliable, or if the patient is seen locally and the repeat DI images are clearer), the best Obstetric Estimate of GA will be computed based on EDD from this most reliable scan and will be documented in the ultrasound record (please refer to Appendix).

### **Step 3: Date of the last menstrual period (LMP) corrected for cycle length and validated by fetal ultrasound (if first scan is done between 14-23 <sup>6</sup>/<sub>7</sub> weeks gestation)**

If first trimester ultrasound scan is not available and dating ultrasound is performed between 14 and 23 <sup>6</sup>/<sub>7</sub> weeks gestation, then the “Best Estimate” of GA will depend on whether the LMP is known/reliable or not\*:

- a. If LMP is known/reliable, then the “Best Estimate” of GA is computed based on the estimated EDD calculated from LMP in completed weeks, corrected for cycle length, as follows:
  - Estimated EDD corrected for cycle length = EDD ‘plus’ (average cycle length in days) ‘minus’ 28 days.
- b. If LMP is not known or unreliable, then the “Best Estimate” of GA is computed based on the estimated EDD derived from obstetric assessment of second trimester ultrasound (14-23<sup>6/7</sup> weeks).

This best Obstetric Estimate of GA will be computed based on estimated EDD from the most reliable scan, as determined by the most responsible Obstetric provider, and will be documented in the ultrasound record.

*\*The term ‘known/reliable LMP’ applies when the first day of LMP is known and cycles are regular with established cycle length, after discontinuation of contraception or following last pregnancy.*

**Step 4: Date of LMP corrected for cycle length alone (if first scan is done after 23<sup>6/7</sup> weeks gestation)**

If an early ultrasound scan is not available and dating ultrasound was done after 23<sup>6/7</sup> weeks gestation, then the “Best Estimate” of GA will depend on whether the LMP is known/reliable or not:

- a. If LMP is known/reliable, then the “Best Estimate” of GA is computed based on the estimated EDD derived from the LMP in completed weeks alone, corrected for the cycle length.
- b. If LMP is not known or unreliable, then the estimated EDD is derived from the obstetric clinical estimate of GA in completed weeks, based on clinical assessment and multiple measures from repeat late ultrasound scans. Ultrasound dating at  $\geq 24$  weeks gestation is relatively unreliable.

This best Obstetric Estimate of GA will be computed based on estimated EDD from the most reliable scan of multiple ultrasound measures and clinical assessment, as determined by the most responsible Obstetric provider, and will be documented in the ultrasound record.

For steps 3 & 4, if no early ultrasound scan is available and LMP is not known/unreliable then the estimated EDD based on late ultrasound should be validated by clinical neonatal examination after birth using Ballard score as follows:

- a. If GA based on EDD is within 20 days of the clinical estimate of GA from the neonatal physical exam, then the GA at birth is based on the EDD (LMP corrected for cycle length or late ultrasound).

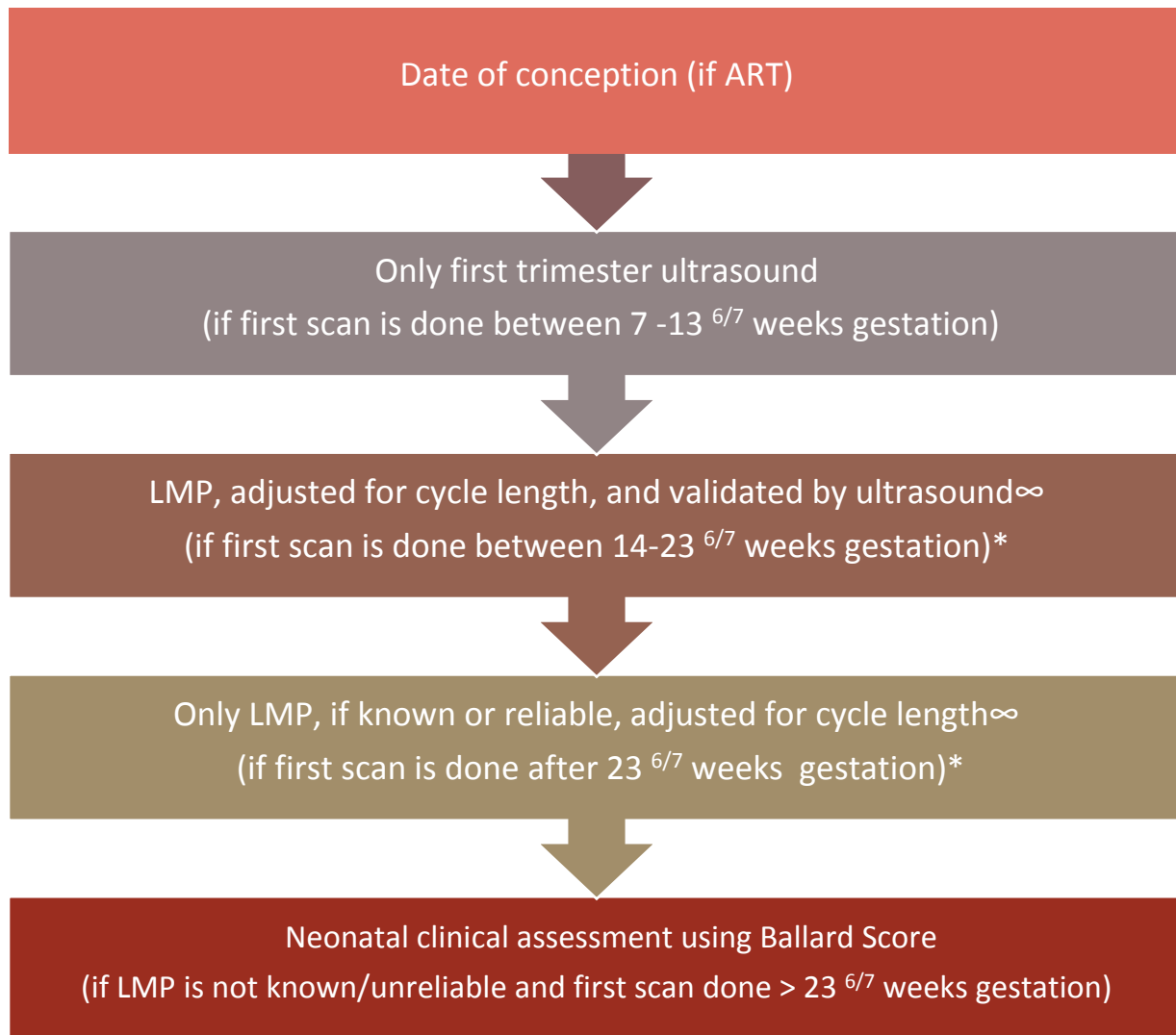
- b. If GA based on EDD is not within 20 days of that based on the neonatal physical exam, then the best estimate of GA is based on the clinical estimate of gestational age from the neonatal physical exam.

**Step 5: If none of the above information is available, then the “Best Estimate” of GA is equal to the neonatal clinical assessment of GA, in completed weeks, derived from the neonatal physical examination using Ballard score.**

**Step 6: If none of the above information is available, then the estimate of GA is recorded as unknown.**

### Algorithm for Determining the “Best Estimate” of Gestational Age

The best estimate for gestational age (GA) is calculated based on the estimated expected date of delivery (EDD) using the following hierarchy. Please confirm GA assessment using the algorithm provided, if the patient was not followed in FATC at the IWK Health Centre. If the patient was followed in FATC, please use the best Obstetric Estimate of GA which is the assigned GA on the fetal ultrasound report.



\* Please use the best Obstetric Estimate of GA that is calculated based on EDD from the most reliable scan, as determined by the most responsible Obstetric provider, and documented in the patient’s record

∞ If LMP is unknown/not reliable, and 1<sup>st</sup> scan was done at 14-23<sup>6/7</sup> weeks, the best estimate of GA is calculated based on EDD from the 2<sup>nd</sup> trimester scan. If LMP is unknown/not reliable, and 1<sup>st</sup> scan was done after 23<sup>6/7</sup> weeks, the best Obstetric Estimate of GA will be calculated based on the most reliable scan, as determined by the most responsible Obstetric provider, and documented in the patient’s record

## Appendix

### Use of Ultrasound for Determination of Gestational Age

- Accurate assessment of GA is crucial to determine viability of extreme preterm birth, to properly interpret maternal serum screening for aneuploidy, to prevent post term induction of labor and to optimize the obstetric care including avoiding inappropriate perinatal interventions.
- Studies have shown that a first trimester ultrasound scan, of high quality and precision, may be superior to menstrual dates, particularly if the LMP is uncertain or unreliable, in determining gestational age when performed between 7 and 13<sup>6/7</sup> weeks gestation using the crown-rump length measures. Scans performed prior to 7 weeks gestation are considered unreliable.
- In multiple gestations, one study found the ultrasound measurement of the larger fetus to be more reflective of GA of the pregnancy. This is standard practice, to avoid missing a fetus that is small for gestational age or growth restricted.
- In conditions where fetal size is affected by an underlying disorder such as hydrops fetalis, or where there are large differences in estimates of GA, ultrasound dating may not be appropriate.
- There is controversy about the accuracy of second trimester ultrasound in determining gestational age. It is recommended that clinical information and measures from multiple parameters be used to estimate the EDD based on second trimester ultrasound. If the first ultrasound scan was done after 13<sup>6/7</sup> weeks gestation, then the best Obstetric Estimate of GA will be computed using the estimated EDD calculated from the date of LMP in completed weeks, corrected for cycle length, and validated by second trimester scan as follows:

If first ultrasound is done at 14 to 17 <sup>6/7</sup> completed weeks (based on LMP)	Adjust the estimated EDD, if >7 days of that computed from the fetal ultrasound measurement
If first ultrasound is done at 18 to 20 <sup>6/7</sup> completed weeks (based on LMP)	Adjust the estimated EDD, if >10 days of that computed from the fetal ultrasound measurement.
If ultrasound is done at 21 to 23 <sup>6/7</sup> completed weeks (based on LMP)	Adjust the estimated EDD, if >14 days of that computed from the fetal ultrasound measurement

- Generally, ultrasound scans done after 23<sup>6/7</sup> completed weeks are not useful in determining gestational age.

## References

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