

Serum analyte levels and risk of neural tube defects will no longer be reported from 1 March 2023

Current situation

- First trimester combined screening for Down syndrome and other conditions consists of two maternal serum analytes (PAPP-A and β hCG) and ultrasound scan measurements of nuchal translucency and crown rump length. Second trimester screening consists of four serum analytes (β hCG, AFP, uE3, Inhibin A).
- The serum analytes and scan measurements are combined with demographic data (eg, maternal weight, age) to provide the chance of trisomies 21, 18 and 13.
- From 15 weeks gestation, α -fetoprotein (AFP) can be used to screen for neural tube defects (NTDs) such as spina bifida.
- Currently, serum analyte multiples of the median (MoMs) and chance of NTD are included on the laboratory report, along with the chance of aneuploidy.

What is changing

- Following review of the latest evidence/literature and careful consideration of the harms versus benefits, it has been decided that the laboratory report will no longer include serum analyte MoMs and NTD risk from 1 March 2023.
- Serum analytes will still be part of the risk calculation algorithm for screening for Down syndrome and other conditions.

Rationale for change

The main purpose of this screening is to provide a risk estimate for trisomies 21, 18 and 13.

Unusual serum analytes as predictors of risk for adverse pregnancy outcomes

- Serum analytes on their own have been shown to have poor clinical utility as population screening tools for adverse pregnancy outcomes such as preeclampsia and small for gestation age (SGA).
- There is an association between unusual serum analyte levels and adverse pregnancy outcomes, however, as stand-alone screening tools the sensitivity is low, false positive rates are high and there is no clear management protocol to improve outcomes.
- We note that the SGA Guideline Group have removed references to low PAPP-A as a risk factor for SGA/FGR from the upcoming revised New Zealand SGA Guideline.

Neural tube defects

- NTDs are most effectively identified during the ultrasound scan performed at 18 to 20 weeks gestation.
- While elevated levels of AFP can indicate the presence of NTDs, the use of AFP as a screening tool is not very sensitive or specific and so is not considered best practice internationally.

Calculation of gestational age – change from the Robinson to the ASUM equation

Since screening started in New Zealand, the 'Robinson equation' has been used for calculation of gestational age from crown-rump length (CRL), as part of the risk calculation algorithm.

From 1 March 2023, the risk calculation algorithm will be updated to use the equation adopted as the gold standard by the Australasian Society for Ultrasound in Medicine – referred to as the 'ASUM equation'. This will align screening with current clinical practice.

Please note:

- These changes have been recommended by the Antenatal Screening for Down Syndrome and Other Conditions Technical Working Group and endorsed by the National Screening Unit (NSU).
- The *Antenatal Screening for Down Syndrome and Other Conditions Guidelines for Health Practitioners* are currently being reviewed, and updated guidelines are expected to be available online in 2023. We will also be updating the NSU website and other resources with this new information.

- **If you have any questions about these changes, please email:**
antenatalnewbornscreening@health.govt.nz
- **For any queries about the screening results, you can phone the laboratory. This will be LabPLUS for Taupō and north of Taupō and Canterbury Health Laboratories (CHL) for everywhere south of Taupō:**
 - **LabPLUS:** phone (09) 307 8995 **or** 0800 522 7587 (0800 LABPLUS)
 - **CHL:** phone (03) 364 0300 **or** 0800 843 522 (0800 THE LAB)

Background evidence

- [Maternal Blood Biomarkers of Placentation to Predict Low-Birth-Weight Newborns: A Meta-Analysis - PubMed \(nih.gov\)](#)
- [Association of serum PAPP-A levels in first trimester with small for gestational age and adverse pregnancy outcomes: systematic review and meta-analysis - PubMed \(nih.gov\)](#)
- [Obstetrical complications associated with abnormal maternal serum markers analytes - PubMed \(nih.gov\)](#)
- <https://view-health-screening-recommendations.service.gov.uk/neural-tube-defect/>