

SOUTH AUSTRALIAN & TASMANIAN MATERNAL SERUM ANTENATAL SCREENING PROGRAM<sup>®</sup>

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**First Trimester Screening NT Provider Progress Report 5**

01/03/06

Dear Colleague,

Your NT Provider Code is

You are receiving this progress report on behalf of your practice. Please review and discuss with your group. Results are confidential and coded so that only you know your code. To maintain confidentiality, your code may have changed from the previous report. If you wish to nominate another individual from within your organisation to receive these reports please let us know. Code 20 is a collective group for those NT providers with too few measurements to be displayed individually.

**Nuchal Translucency Measurements**

Enclosed are graphical representations of nuchal translucency (NT) measurements submitted to the SAMSAS program from South Australia, Tasmania and Northern Territory, for the 2005 Calendar year during which 10,832 valid combined risk assessments were issued.

See Appendix A for information on gestation, box plots and multiples of the population median (MoM).

Figure 1 shows the NT MoM distributions for each NT provider. From this display one is able to compare measurements between groups. Ideally, for each group, the median measurement should be 1 MoM with 50% of measurements falling between 0.8 and 1.2 MoM.

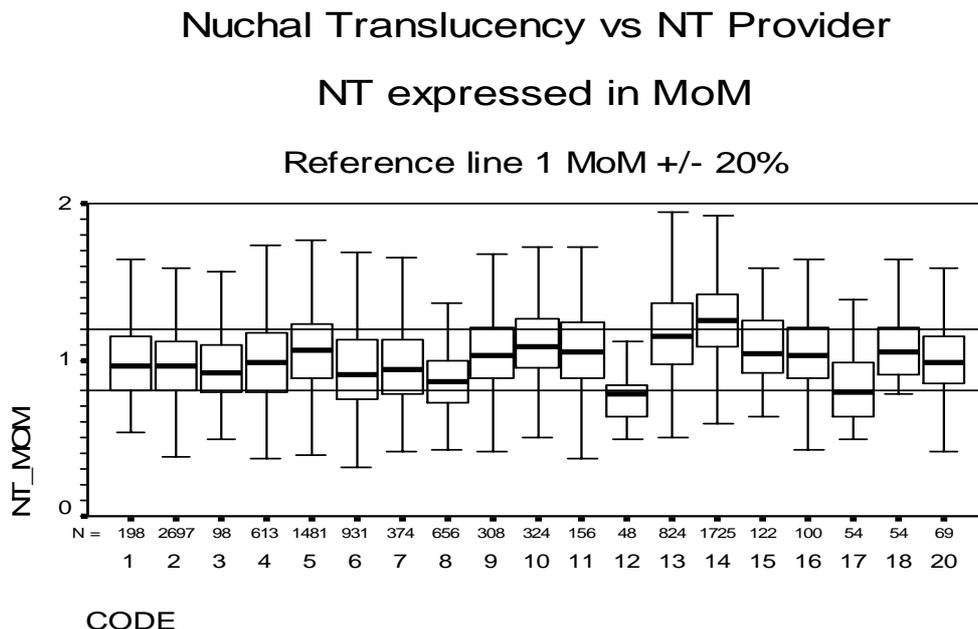


Figure 1

**NT providers 12 and 17** should review their measuring practices as 54% and 50% respectively of their measurements lie below the reference line of 0.8 MoM. Only 25% is expected. **Lower than average measurements will result in an underestimate of risk.**

**NT providers 13 and 14** should also review their practices as 42% and 56% respectively of their measurements lie above the reference line. **Overestimation of risk will result from higher than average measurements.**

It is pleasing to see that a provider (Code 7 in this report) whose results were lower than average in our progress report 4 is now measuring within the expected range.

It is imperative that all NT providers follow the same measurement technique. The recommended method is taught by the NT Ultrasound, Education & Monitoring Program and is discussed under “Newsletters” in their website, [www.nuchaltrans.edu.au](http://www.nuchaltrans.edu.au) . This site contains information on training and accreditation programs, all provider groups are encouraged to have registered sonographers. **In addition to accredited sonographers and the SAMSAS progress reports, quality assurance procedures within each practice are strongly recommended.**

Caution needs to be applied when making inferences about the quality of NT measurements, as ascertainment bias may result from either too few measurements or from screening practices which may preselect screened pregnancies based on either high or low NT measurements. It is however correct to say that strict adherence to the recommended method of measurement will minimise variability, lead to tighter population distributions and assist in maintaining program performance. This point can not be stressed strongly enough.

Figure 2 shows the NT MoM distribution for all NT providers combined. It represents the overall population distribution of NT measurements and is a graphical representation of data in Table 1. We aim to keep the box between 1 MoM +/- 20%.

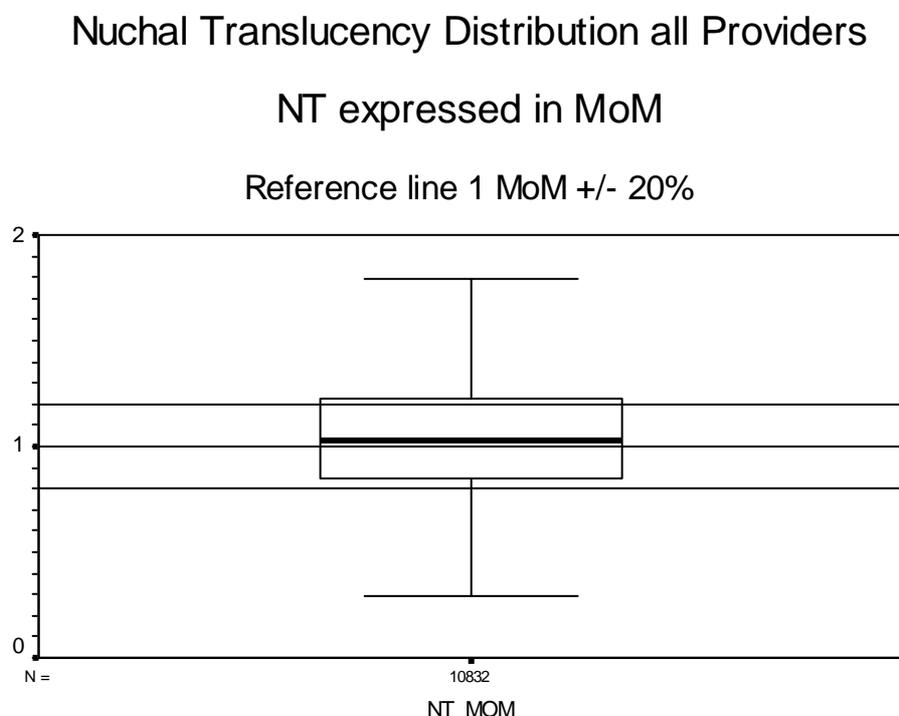


Figure 2

Table 1 shows summary data of NT MoM's for five NT progress reports. The data suggests stability however there is a shift of +3% to thicker measurements in 2005; this will be corrected by SAMSAS by adjusting median values. This shift coincides with the new measuring technique now being taught of zooming up the head and upper thorax. Refer to Newsletter 3, on the website [www.nuchaltrans.edu.au](http://www.nuchaltrans.edu.au). The IQR has remained tight at <0.4, this is pleasing as the number of NT provider groups has increased. **The stability displayed supports current practices and the continued use of NT in the screening program.**

**Table 1**

	Report 1 Dec'01	Report 2 May'03	Report 3 April'04	Report 4 April'05	Report 5 Jan'06
Number of NT Provider Groups	8	12	17	17	19
Number of NT measurements	1,845	2,465	8,198	8,727	10,832
<b>Percentile</b>	<b>MoM</b>	<b>MoM</b>	<b>MoM</b>	<b>MoM</b>	<b>MoM</b>
5 <sup>th</sup>	0.6	0.59	0.61	0.62	0.64
25 <sup>th</sup>	0.82	0.82	0.83	0.83	0.85
<b>50<sup>th</sup> or Median</b>	<b>0.99</b>	<b>1.0</b>	<b>1.01</b>	<b>1.00</b>	<b>1.03</b>
75 <sup>th</sup>	1.19	1.22	1.21	1.20	1.23
95 <sup>th</sup>	1.62	1.63	1.63	1.60	1.62
<b>Interquartile Range (IQR)</b>	<b>0.37</b>	<b>0.4</b>	<b>0.38</b>	<b>0.37</b>	<b>0.38</b>

For the 10,832 screens performed the median maternal age at delivery was 31.3yrs, the median gestation for blood samples was 12wks 2 days and 12wks 4 days for the nuchal translucency scans.

### **First Trimester Combined Screening Strategy Performance**

In 2005 the uptake of first trimester screening continued to increase. In SA this now represents 67% (up from 60% in 2004 and 45% in 2003) of requests for Down syndrome screening.

Recently validated 2003 audit figures for the SA population continue to show improved performance of 1<sup>st</sup> trimester combined screening over the 2<sup>nd</sup> trimester screen. The comparative figures are as follows:

- **First trimester screening.** The median age of mothers screened in 1<sup>st</sup> trimester was 31.4 years. 5.7% were given an "at increased risk report" for Down syndrome. There were 11 cases of Down syndrome in this 1<sup>st</sup> trimester audited population and all 11 of the 11 affected pregnancies were detected, resulting in a 100% detection.
- **Second trimester screening.** The median age of mothers screened was 29.0 years. 6.5% were given an "at increased risk report" for Down syndrome. There were 9 cases of Down syndrome within the audited 2<sup>nd</sup> trimester population and 7 of the 9 affected pregnancies were detected, resulting in a 77.8% detection rate.

The most striking difference in performance is the better positive predictive value of 1<sup>st</sup> trimester screening compared to 2<sup>nd</sup> trimester screening. The positive predictive value expresses the number of diagnostic tests required to detect one case of Down syndrome – the smaller this number, the better the detection of pregnancies affected with Down syndrome. The positive predictive value (expressed as an odds ratio) in 2003 for the 1<sup>st</sup> trimester screen was 1 in 17.5 compared to 1 in 56 for the 2<sup>nd</sup> trimester screen. In 2003 1<sup>st</sup> trimester was 3.2 times better at detecting Down syndrome during pregnancy than 2<sup>nd</sup> trimester.

## Summary

- NT provider groups 12, 17, 13 and 14 should review their measuring practice.
- Blood samples and nuchal translucency scans can be done on different days. It is preferable to have the blood sample collected before the NT scan.
- Sonography practices should have accredited sonographers and internal quality assurance procedures, to maintain the standard of their service.
- From a population screening perspective, the spread and stability of NT measurements continues to be acceptable.
- The combined screening strategy performance continues to be high and is the strategy of choice when screening for Down syndrome.

SAMSAS continues to experience delays in receipt of NT reports. These are critical for combined risk determination. Could all groups review their practice of providing timely reports to SAMSAS (e-mail or fax); this does not apply to OACIS users as SAMSAS has direct access. If your practice uses Promedius software please send reports under Dr A SAMSAS or Dr SAMSAS using the e-mail address [samsas@promedius.net](mailto:samsas@promedius.net) . Please contact Promedius on 03 9426 9988 if assistance is required.

South Australia is in a unique position of offering centralised services for both maternal serum screening and cytogenetics. This results in effective program management and evaluation. I would like to thank all participants within this service network. Your continued cooperation and input have lead to the success of the program.

**The data presented and the performances quoted in this report are those of the SAMSAS program and do not apply to other software or testing centres.**

Progress reports are available on line, [www.wch.sa.gov.au/samsas.html](http://www.wch.sa.gov.au/samsas.html)

Yours sincerely,



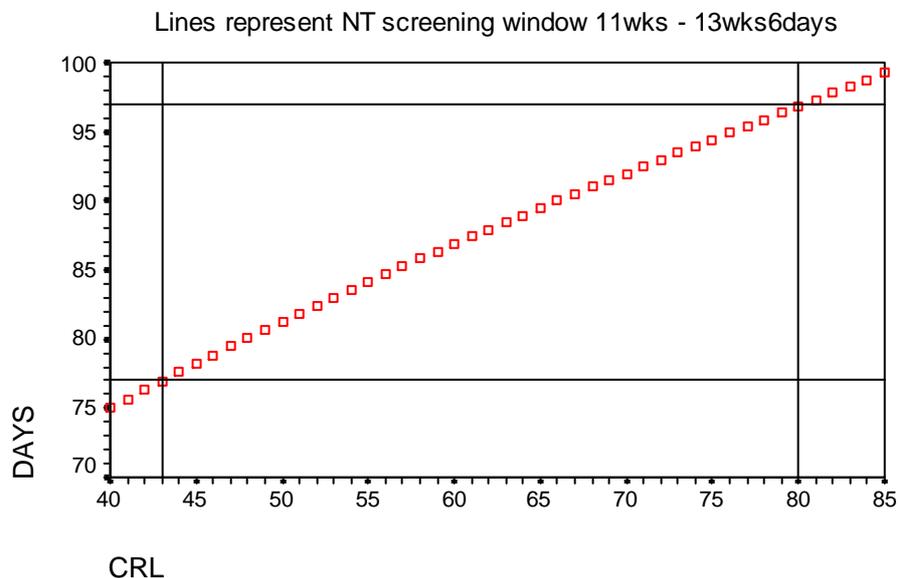
Robert Cocciolone, BAppSc, Med Lab Sc, Head, Antenatal Screening (SAMSAS) Program

## Appendix A

1. SAMSAS uses crown rump length (CRL) at the time of the nuchal translucency (NT) scan to estimate gestation. From our curve shown below, (based on ASUM standards), a CRL of 43 mm corresponds to 11 wks 0 days with 81 mm being 13wks 6 days. If, when measuring the NT, the fetal position and image is optimal but the CRL is a few mm outside the above range, still measure and report the NT; chances are the blood sample is within the acceptable gestational age window. If in doubt please call us on 08 8161 7285. Our staff and SAMSAS software are primed to pick up discrepancies in submitted gestational age information; corrections are initiated before risk calculations.

### Gestational Age Curve

#### CRL (mm) vs Days



2. 1<sup>st</sup> trimester blood samples are accepted from 10wks to 13wks 6 days; they DO NOT have to be collected on the same day as the nuchal scan. Any gestational age variations for blood samples will be automatically corrected back to the collection date once the NT report is received. The optimal time for the blood sample is 10-12 wks.
3. Most data presented in this report are in the form of Box Plots. A number N= is displayed on the X axis, this represents the number of measurements displayed in the box plot for the respective group. The Box includes the 25<sup>th</sup> to the 75<sup>th</sup> percentiles (or the interquartile range, IQR), with the median (or 50<sup>th</sup> percentile) being the line in the box. 50% of cases fall within the Box. The tails or whiskers at either end of the box display the smallest and largest observed values that are not outliers. From the length of the box you can determine the spread or variability of your measurements. If the Median value is not in the centre of the box, then your measurements are skewed.
4. Representing the NT measurements in multiples of the population median (MoM), eliminates variability from differences in gestational age. For example, 1 MoM at 11 weeks is directly comparable to 1 MoM at 12 weeks etc, whereas the respective measurements in mm would be different.