

Omega-3 status test for prematurity risk

SA Maternal Serum Antenatal Screening (SAMSAS) Program



Information for **health professionals**



SAHMRI
South Australian Health &
Medical Research Institute

SA Pathology, through the SA Maternal Serum Antenatal Screening (SAMSAS) program, and the South Australian Health and Medical Research Institute (SAHMRI) are evaluating serum omega-3 testing for women with singleton pregnancies in South Australia from 2021.

Why do omega-3 status testing?

Women with a singleton pregnancy and low omega-3 status (concentration) in their blood are at higher risk of early preterm birth than women with adequate omega-3 status. Supplementing women who are low in omega-3 reduces their risk of early birth. Screening before 20 weeks' gestation will identify women who require omega-3 supplementation.

The latest National Health and Medical Research Council and Department of Health National Pregnancy Care guidelines recommend assessing omega-3 fatty acid status and supplementing pregnant women with low omega-3 intakes. The SA Pathology-SAHMRI project is evaluating the implementation of this omega-3 guideline recommendation.

There is high quality evidence for omega-3 status testing

- A Cochrane systematic review of 70 randomised controlled trials of almost 20,000 women with mainly singleton pregnancies indicated that omega-3 supplementation from early-mid pregnancy until birth reduces the risk of early preterm birth by 42% (from 46 per 1000 to 27 per 1000 births) and preterm birth by 11% (from 134 per 1000 to 119 per 1000 births)¹.
- The Cochrane review included many studies that were conducted before prenatal supplements with low dose omega-3, around 200 mg per day, were commonly taken by women¹. Two later large randomised trials assessing omega-3 supplementation in contemporary practice in Australia and the USA suggest that universal supplementation of all women would not be effective, but reductions in early preterm birth are achieved by targeting women with low omega-3 status²⁻⁴. These women are at higher risk of early birth and more likely to benefit from supplementation²⁻⁴.

¹ Middleton P, Gomersall JC, Gould JF, Shepherd E, Olsen SF, Makrides M. Omega-3 fatty acid addition during pregnancy. *Cochrane Database Syst Rev.* 2018;11:CD003402.

² Makrides M, Best K, Yelland L, McPhee A, Zhou SJ, Quinlivan J, et al. A randomized trial of prenatal omega-3 fatty acid supplementation and preterm delivery (ORIP trial). *New England Journal of Medicine.* 2019;381:1035-45. <https://doi.org/10.1056/nejmoa1816832>

³ Carlson SE, Gajewski BJ, Valentine CJ, Kerling EH, et al. Higher dose docosahexaenoic acid supplementation during pregnancy and early preterm birth: A randomised, double-blind, adaptive-design superiority trial. *EClinicalMedicine.* 2021;36:100905.

⁴ Simmonds LA, Sullivan TR, Skubisz M, Middleton PF, Best KP, Yelland LN, et al. Omega-3 fatty acid supplementation in pregnancy – baseline omega-3 status and early preterm birth: exploratory analysis of a randomised controlled trial (ORIP). *BJOG.* 2020;27(8):975-981. <https://doi.org/10.1111/1471-0528.16168>.

⁵ Percentage of total omega-3 fatty acid status in serum.

Omega-3 status test results: how to advise women

Omega-3 status ^{4,5}	Guidance to incorporate into pregnancy care plan
Less than 3.7% (low status)	<p>Take omega-3 fatty acid supplements until 37 weeks, to reduce the risk of early preterm birth.</p> <p>Suggested dose: 800 mg DHA and 100 mg EPA per day.</p> <p>Typical suitable supplements include Infantem (Pharmamark)* and Omega Brain (Blackmores).</p>
Between 3.7 and 4.3% (moderate status)	<p>No action required.</p> <p>If already taking omega-3 fatty acids as part of a multivitamin and mineral supplement or a standalone supplement, this may continue.</p>
Above 4.3% (sufficient status)	<p>Omega-3 supplements are not required and provide no benefit to risk of early preterm birth.</p> <p>If women are already taking omega-3 fatty acids as part of a multivitamin and mineral supplement and wish to continue, the dose of DHA+EPA should not exceed 250 mg per day.</p>

*Vegan algal oil supplement of DHA and EPA.

Potential risks with omega-3 fatty acid supplementation

- For women with sufficient omega-3 status (above 4.3%), higher dose omega-3 supplements (more than 900 mg per day) may increase their risk of early preterm birth.⁴
- Omega-3 fatty acid supplements should be avoided for women requiring Clexane because of possible additive anti-coagulant effects.
- Low dose aspirin can be taken with omega-3 fatty acid supplements. Recent randomised trials of omega-3 fatty acid interventions have included women on low dose aspirin without increase in adverse events.

Omega-3 blood sample and cost

No additional blood sample is required as omega-3 analysis will be performed on serum collected as a part of the established SAMSAS program. The omega-3 fatty acid analyses will be performed at no cost to women or the health service.

Evaluation of Omega-3 status testing program

This SA Pathology-SAHMRI collaboration will assess the feasibility and reach of identifying women with low omega-3 status, providing appropriate advice and ultimately assessing success in reducing the rates of early preterm birth. This will be done by deidentified linkage of the omega-3 status test results with relevant pregnancy outcome data. Women who do not want their data linked will need to contact (08) 8128 4444 or email omega3@sahmri.com. The evaluation has been approved by the Women's and Children's Health Network Human Research Ethics (HREC) Committee (HREC/20/WCHN/138). Should you wish to discuss the study

with someone not directly involved, you may contact the executive secretary of the Human Research Ethics Committee, Mr Luke Fraser, WCHN (08) 8161 6521.

How to order the Omega-3 status test

- 1 Discuss the omega-3 status test and refer woman to the Information for Families brochure.
- 2 Order using the updated SAMSAS blood analysis request form.
- 3 Tick the omega-3 status test on the SAMSAS request form. Alternatively, superseded SAMSAS request forms can be used to order the omega-3 test. Write "omega-3 to SAMSAS" on the superseded SAMSAS request forms.
- 4 Refer the woman to the Privacy Disclosure on the SAMSAS request form.
- 5 The omega-3 status test results will be reported to the requesting provider as a standalone report and will be available on OACIS.

Further Information

For further information regarding omega-3 status testing, results interpretation and a list of supplements with different doses of omega-3:

 Visit sahmri.org/omega3

 Call the omega-3 status test hotline
0438 273 155

For request forms:

 Call the SAMSAS Program
(08) 8161 7285