SCREENING FOR AND TREATMENT OF VITAMIN D DEFICIENCY IN PREGNANCY

WOMEN OFFERED SCREENING¹

- Women with limited exposure to sunlight (e.g., because they are predominantly indoors or usually protected from the sun when outdoors)
- Dark skin
- A pre pregnancy BMI > 40²

SCREENING TESTS

- At first antepartum visit if at risk and has no current status available. 
  Screening can also be conducted at any stage of pregnancy if previously missed.

  25 (OH) vitamin D serum level once off

RESULTS

Serum levels above 78nmol/L - ideal.
50nmol/L - normal.
25-50 nmol/L - mildly deficient.
<25nmol/L - severe vitamin D deficiency - needs immediate follow up

SUPPLEMENTATION

See Pharmacy Clinical Guideline Cholecalciferol for dosage and forms of supplementation.

- < 50 OHD: 5000units Vitamin D3 per day plus calcium (RDA) orally. (E.g. Bio-Logical Vitamin D3 Solution 1000iu/0.2mL) for 6 weeks
- Maintenance dose of 1000 IU recommended at least until the cessation of lactation.

RECOMMENDED CALCIUM DAILY INTAKE

<table>
<thead>
<tr>
<th>AGE</th>
<th>Calcium (mg)</th>
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<tbody>
<tr>
<td>In pregnancy</td>
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<tr>
<td>14-18 years</td>
<td>1300</td>
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<tr>
<td>19-30 years</td>
<td>1000</td>
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<tr>
<td>31-50 years</td>
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**PURPOSE**

1. To identify women at risk for vitamin D deficiency and initiate screening.
2. To provide information on sunlight exposure and dietary requirements to maintain normal levels.
3. To implement the management of vitamin D supplements for vitamin D deficient women.

**KEY POINTS**

1. All women identified as at risk of vitamin D deficiency should be screened in pregnancy at the first presentation to KEMH, or any time in pregnancy if screening has been missed. Vitamin D deficient women should be offered vitamin D3 supplementation daily for six weeks.
2. A maintenance dose of vitamin D3 should be continued.
3. Inform the paediatrics team of any neonates born to vitamin D deficient mothers, or mothers with risk factors for vitamin D deficiency.

**RISKS ASSOCIATED WITH VITAMIN D DEFICIENCY IN PREGNANCY**

Maternal vitamin D deficiency in pregnancy is associated with:

- low serum calcium in the newborn, with or without convulsions
- rickets and
defective tooth enamel (Effects on fetal growth have also been associated with maternal vitamin D deficiency).
- Population-based studies have found:
  - lower birth weights and a higher risk of being small for gestational age
  - lower newborn bone mineral accrual to be lower in the vitamin D deficient groups, although bone mineral density differences were not statistically significant; and
  - greater femoral metaphyseal cross-sectional area and a higher femoral splaying index at 19 and 34 weeks pregnancy, suggesting that maternal vitamin D deficiency can influence fetal femoral development as early as 19 weeks pregnancy.

Low maternal vitamin D concentrations may also affect the function of other tissues, leading to a greater risk of multiple sclerosis, cancer, insulin-dependent diabetes mellitus, and schizophrenia later in life and may influence early-life respiratory health.

**POPULATION TO BE OFFERED SCREENING**

Antenatal women who

- have limited exposure to sunlight (e.g., because they are predominantly indoors or usually protected from the sun when outdoors)
- have dark skin
- have a pre pregnancy BMI > 40
SCREENING TESTS

1. Arrange screening for the woman at the first antepartum visit if she is at risk of vitamin D deficiency and has no current status available. Screening can also be conducted at any stage of pregnancy if previously missed.

2. Screening tests offered should include:
   - 25 (OH) vitamin D serum level
     - Serum levels above 78nmol/L are ideal.
     - 50nmol/L is considered normal.
     - 25-50 nmol/L is considered mildly deficient. Levels below 25nmol/L represent severe vitamin D deficiency and need immediate follow up.

SUPPLEMENTATION OF VITAMIN D DEFICIENT WOMEN

See Pharmacy Cholecalciferol for dosage and forms of supplementation.

1. < 50 OHD: 5000units Vitamin D3 per day plus calcium (RDA) orally. (e.g. Bio-Logical Vitamin D3 Solution 1000iu/0.2mL)

2. A maintenance dose of 1000 IU is recommended.

AUSTRALIAN 2004 CALCIUM RECOMMENDED DAILY INTAKE (RDI)

<table>
<thead>
<tr>
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Oral supplementation should be the first line treatment. However alongside supplementation to treat the deficiency, education about adequate sun exposure is important. Measures to prevent sunburn, dehydration and skin cancer lead to less exposure to the sun and the use of sunscreens can lower vitamin D concentrations.

Exposure to at least 15-30 minutes of sunshine per day is recommended, avoiding 1100-1500hr (1700hr in the summer months) to increase vitamin D production.

Hands, face and both arms need to be exposed to the sun for adequate vitamin D synthesis. However, deeply held religious, cultural and personal beliefs about modesty and sun avoidance need to be respected.
DIET
Dietary sources of both calcium and vitamin D along with their bioavailability must be considered. Good dietary sources of calcium are milk and milk based foods, but it is also available from alternative non dairy sources such as bony fish, some fruits and nuts and now in fortified soy beverages and breakfast cereals. Dietary vitamin D is found in small amounts in foods and cannot be relied upon when sun exposure is inadequate. Best sources are fish, margarine and eggs.

ADVICE REGARDING FAMILY SCREENING
If a woman is identified with vitamin D deficiency she should be advised to have other family members (particularly children) to be checked for vitamin D deficiency.

BREASTFEEDING AND VITAMIN D DEFICIENCY
Breastfed neonates receive vitamin D stores from the mother for approximately 8 weeks\textsuperscript{2,3}, therefore exclusively breastfed infants are at higher risk of deficiency with adequate concentrations. Breast milk concentration is only about 25IU(1μg) per litre. In Australia most infant formulas contain 400 IU(10μg) of vitamin D3 per litre. Infants exposed to vitamin D deficiency are at risk of hypocalcaemic seizures.\textsuperscript{(1)}

It is recommended that breastfed infants of women who are veiled or dark-skinned and women who have been treated for vitamin D deficiency during pregnancy( See Neontal Postnatal Clinical Guideline 5, Maternal Vitamin D Deficiency) should be supplemented with 400 IU of vitamin D daily (e.g. 0.45mL Pentavite) until at least 12 months of age.\textsuperscript{(1, 2)} Assessment of infants from other at risk groups should be made on an individual basis.

Inform the paediatric team about any neonate who has a mother that has been treated for vitamin D deficiency during pregnancy, or belong to an at risk group and has not been screened.

REFERENCES (STANDARDS)


Responsibility

Policy Sponsor: Medical Director OGCCU
Initial Endorsement: July 2007
Last Reviewed: April 2014
Last Amended: April 2017
Review date: April 2017

Do not keep printed versions of guidelines as currency of information cannot be guaranteed.
Access the current version from the WNHS website