# Breastfeeding and Medication

## Vitamin D and Breastfeeding

Maternal daily doses of 400 to 6,400 IU have not been associated with any short-term biochemical abnormalities in breastfed infants

There has been an unexpected increase over the past 15 years in the number of babies found to be suffering from rickets or symptoms of decreased bone mass which demonstrate poor levels of vitamin D (NICE PH11). Vitamin D deficiency is unusual in babies born at term to mothers with adequate vitamin D status. Some women enter pregnancy with low vitamin D levels. This may be due to:

- lack of exposure to sunlight due to wearing concealing clothing for cultural reasons;
- inadequate consumption of foods containing vitamin D e.g. oily fish;
- Inadequate consumption of dairy (prevalent particularly in adolescent girls)
- BMI greater than 30;
- Women who spend a lot of time indoors or use sun creams limiting the absorption of ultraviolet (UV) light;
- living in the northern hemisphere where levels of UV light are only sufficient to stimulate vitamin D production in the summer months; and
- having dark skin, which prevents absorption of available UV light in the UK climate.


February 2020 *The information on this sheet is based upon my professional experience as a pharmacist with a specialised interest in the safety of drugs in breastmilk, supported by evidence from expert sources. However, I cannot take responsibility for the prescription of medication which remains with the healthcare professionals involved. I am happy to discuss the evidence by email wendy@breastfeeding-and-medication.co.uk*

Babies born to mothers with low vitamin D levels may be born deficient. In turn this will be exacerbated by being breastfed as the vitamin D levels in breastmilk will be sub-optimal.

In 2016 SACN amended recommendations so that breastfed babies from birth to one year of age should be given a daily supplement containing 8.5 to 10mcg of vitamin D as a precaution and breastfeeding mothers should also take a daily Vitamin D supplement of 10 µg (400IU) per day

This in no way suggests that the breastmilk of a mother with low levels of vitamin D, does not have all the other health advantages but is a reflection of current awareness of the risk of sun damage in sunlight balanced with the UK climate and poor levels of sunshine for the majority of the year. Breastfeeding alone cannot redress the deficiency resulting from low levels in pregnancy. Vitamin D is a fat-soluble vitamin that is found in food and can also be made in the body after exposure to UV rays from the sun. Fortified foods are common sources of vitamin D but without sunshine exposure it is difficult to achieve maximal intake. Supplements can be taken as part of multi-vitamin products or with calcium.

Sources of vitamin D

- More than 90% of mankind's vitamin D supply is derived from UVB sunlight exposure
- Oily fish including trout, salmon, mackerel, herring, sardines, anchovies, pilchards and fresh tuna
- Cod liver oil and other fish oils
- Egg yolk – 0.5 µg (20 IU) per yolk
- Mushrooms
- Supplemented breakfast cereals, mainly supermarket 'own brands' in the UK. Typically contain between 2 and 8 µg (80-320 IU) per 100 g
- Margarine

In a fair-skinned individual, exposure of the face and forearms to 20–30 minutes of sunlight at midday is estimated to generate the equivalent of 2000 IU vitamin D. Between April and October all of Scandinavia, much of western Europe, including 90% of the UK (roughly north of

Birmingham) and 50% of USA is above the latitude where exposure to sufficient UVB is possible (Pearce 2010).

**High dose vitamin d supplements**

Many breastfeeding mothers appear to be being diagnosed as vitamin D deficient and prescribed high doses daily or weekly. Hollis et al 2015 reported that "Maternal vitamin D supplementation with 6400 IU/day safely supplies breast milk with adequate vitamin D to satisfy her nursing infant's requirement and offers an alternate strategy to direct infant supplementation. With the use of higher dose supplements the mother should observe the baby for signs of hyper calcaemia (nausea, vomiting, weight loss, thirst, muscle weakness and confusion) and if observed blood test the baby.

Hollis and Wagner (2004) studied 18 women exclusively breastfeeding one month after delivery, and gave half 1600 IU vitamin D2 and 400 IU vitamin D3 and the others 3600 IU vitamin D2 and 400 IU vitamin D for 3 months. Blood, urine, and milk samples were obtained from the mothers at months 1, 2, 3, and 4 of lactation. Infant blood was collected at months 1 and 4 (beginning and end of the study). Maternal blood was monitored for total calcium, vitamin D2, vitamin D3, 25(OH)D2, and 25(OH)D3 concentrations. Infant serum was monitored for vitamin D2, vitamin D3, 25(OH)D2, 25(OH)D3, calcium, and phosphorus concentrations. The conclusion of the study was that the 400iu per day has been recommended arbitrarily and needs further research. In the study maternal vitamin D intakes of ≥4000 IU/d appear to be safe and to provide sufficient vitamin D to ensure adequate nutritional vitamin D status for both mothers and nursing infants.

- Hollis BW, Wagner CL, Vitamin D requirements during lactation: high-dose maternal supplementation as therapy to prevent hypovitaminosis D for both the mother and the nursing infant, *Am J Clin Nutr*, 2004;80(6 Suppl.):1752S–8S. https://academic.oup.com/ajcn/article/80/6/1752S/4690524

Hollis et al (2015) randomised 3 groups of exclusively breastfeeding women to 400 IU vitamin D3 per day 2400 IU or 6400 IU vitamin D3 per day, The infants of the mothers in group one were given a vitamin d supplement but those in the higher dose groups received placebo drops. 148 mothers completed the full study still exclusively breastfeeding. The conclusion of the study was that maternal vitamin D supplementation with 6400 IU/day safely supplies breast milk with adequate vitamin D to satisfy her nursing infant's requirement and offers an alternate strategy to direct infant supplementation. This was not achieved with lower doses.

- Hollis BW, Wagner CL, Howard CR, Ebeling M, Shary JR, Smith PG,Taylor SN, Morella K, Lawrence RA,Hulsey TC, Maternal Versus Infant Vitamin D Supplementation During

Lactation: A Randomized Controlled Trial. Pediatrics 2015;136 (4): 625-634 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4586731/pdf/peds.2015-1669.pdf

Some mothers are prescribed 20,000 or 40,000 units once weekly which approximate to a similar dosage. There is limited research to support this level being compatible with breastfeeding so the baby should be monitored for hypercalcaemia as described above - nausea, vomiting, weight loss, thirst, muscle weakness and confusion

See also https://www.ncbi.nlm.nih.gov/books/NBK500914/

For full references see Breastfeeding and Medication 2018