Guideline: A Healthy Start – Folic Acid and Vitamin D Supplementation in Pregnancy and Breastfeeding (January 2022)

NHS Sheffield Clinical Commissioning Group

All pregnant and breastfeeding women should be advised to take;

- 10 micrograms (400 units) **Vitamin D** daily ideally before conception, **throughout** pregnancy and whilst breastfeeding. Women who may require testing for deficiency should be identified as a higher dose may be needed.
- 400 micrograms **Folic Acid** daily before conception and until week 12 of pregnancy. Women at *higher risk of conceiving a child with a neural tube defect should be identified and advised to take Folic Acid 5mg daily and continue until week 12 of pregnancy. (See pink box below)

All advice given should be recorded and compliance checked at each antenatal appointment

Healthy Start Vitamins for Women

- Contain 400 micrograms of Folic Acid, 10 micrograms of Vitamin D and 70 milligrams of Vitamin C. It is a cost effective option of obtaining Folic acid and Vitamin D and can be purchased from all Family Centres. Women requiring a higher dose of Vitamin D or Folic Acid should be signposted to their GP.
- All preconception and pregnant women are eligible for free Healthy Start Vitamins for Women. All breastfeeding women are eligible to obtain their free first two month supply. See here.
- Certain women are eligible for free vitamins via the national scheme (which entitles them to other items e.g. milk, fresh fruit and veg).
- Advice given should be recorded in the woman's records.

Folic Acid - Women at *higher risk of conceiving a child with a neural tube defect;

- Either partner has a neural tube defect (or a family history) or previous pregnancy affected by a neural tube defect
- BMI≥30kg/m^2 - pre-pregnancy
- Coeliac disease (or other malabsorption state), diabetes mellitus, or is taking antiepileptic medicines (refer to BNF).

  Note: Women with sickle-cell disease or thalassemia should take 5mg Folic acid throughout pregnancy

Women with a history of confirmed Vitamin D deficiency

Is the woman currently taking a Vitamin D supplement?

Yes - Check that dose and preparation is suitable

No - Measure Vitamin D and bone profile (request via ICE)

Women at increased risk of Vitamin D deficiency

Does the woman have symptoms or have multiple risk factors (see Vitamin D) for Vitamin D deficiency?

Yes - Measure Vitamin D and bone profile (request via ICE)

No - Recommend **Healthy Start Vitamins for Women.** Stress importance of compliance as this group at greater risk of deficiency

25(OH)D <25 nmol/L – refer to flowchart

25(OH)D >25 and <50 nmol/L – See **text box below**

25(OH)D >50 nmol/L - Recommend **Healthy Start Vitamins for Women** or if previous history of deficiency use enhanced supplement options below.

Enhanced supplement options for women at risk of D deficiency (pre-pregnancy) and for maintenance after high dose treatment;

If calcium intake is sufficient (>700mg /day – see Calcium)**:**

- **Healthy Start Vitamins for Women** - one daily **plus** a daily dose of 10-15 micrograms (400-600units) Vitamin D. **Encourage OTC** or prescribe as *InVita® D_3 2,400 units/ml drops (POM)
- A daily preparation containing 20-25 micrograms (800-1000 units) colecalciferol alone. **Encourage OTC** or prescribe *Fultium-D_3® 800 units capsules (POM) **plus** 400 micrograms of Folic Acid until week 12.

If calcium intake is insufficient:

- Calcium and Vitamin D - daily dose of 1200 mg calcium and 20-25 micrograms (800-1000units) Vitamin D *Adcal-D_3® caplets (recommended dose is 2 BD) **plus** 400 micrograms of Folic Acid until week 12 (**Encourage OTC**)

See Appendix 2 for examples of preparations

**licensed preparations for use in pregnancy*

A Healthy Start - Sheffield Guidance: Folic Acid and Vitamin D Supplementation in Pregnancy and Breastfeeding.

Optimising Folic Acid and Vitamin D intake in pregnancy aims to reduce the risk of conceiving a child with neural tube defect and optimise musculoskeletal development, giving babies the **best start in life**

Vitamin D - All women should be advised to take Vitamin D supplementation throughout pregnancy and whilst breastfeeding. This should be done pre-conceptually (where possible) and/or at the first antenatal appointment. Compliance should be discussed and recorded at each subsequent appointment with all healthcare professionals

Folic Acid - All women should be advised to take Folic Acid supplementation, before conception and until week 12 of pregnancy. However, please note supplementation can be taken through the duration of the pregnancy. Women who are at higher risk of conceiving a child with a neural tube defect should be identified and advised to take a higher daily dose

It is agreed by Sheffield CCG and SCC Children's Services that **Healthy Start Vitamins for Women** will be promoted universally as a public health message to all childbearing women, progressing onto Healthy Start Vitamins for their baby in due course. Some groups may gain extra benefit from enhanced supplementation and these are specified in this protocol

- To provide a systematic approach to implementing national and local guidelines around Folic Acid and Vitamin D
- To rationalise testing for Vitamin D deficiency based on risk factors and symptoms (see Vitamin D)
- Patients should be assessed and advised to take the suggested recommended daily Vitamin D and Folic Acid supplementation as per flow chart on page 1 and advised about calcium intake (see Calcium)
- **Over the counter supplementation is first choice**. See patient information leaflet to support self-care.
- **Healthy Start Vitamins for Women** are a cost effective option for most *women and are available to buy from all Family Centres and some community pharmacies. *Those identified at needing a higher dose of Folic Acid or Vitamin D will need an additional or alternative supplement.
- In Sheffield, there is an extended healthy start scheme to complement the national scheme. See further guidance for more information:
    - Healthy Start Vitamins for Women are free to all pre-conception women, they are available from all Family Centres. They are also free to all pregnant women throughout

the duration of pregnancy and are available from midwives at antenatal appointments or family centres.

- All breastfeeding women will be offered a two month supply from the midwife at the discharge unit and then all those who qualify for Healthy Start Vitamins thereafter. Women should be signposted to buy low-cost ongoing supplies available from all family centres and community pharmacies

Vitamin D

Risk factors

- Increased skin pigmentation
- Low or no exposure to sunlight (e.g. skin covered for cultural reasons; housebound or confined indoors for long periods, perhaps due to mental health issues or social isolation)
- Obese (BMI≥30kg/m^2 - pre-pregnancy)
- Teenagers
- Malabsorption problems, e.g. Crohn's, coeliac disease

Symptoms / clinical presentation of Vitamin D deficiency

There is a gradient of risk with an increasing likelihood of signs and symptoms with very low levels of Vitamin D, particularly if these are longstanding. Symptoms are generally gradual in onset. They may be seasonal and more marked over the winter months.
Characteristic features include:

- Bone pain without preceding mechanical injury
  - Commonly affects back or lower limbs
  - Gradual onset, persistent
- Proximal muscle weakness
  - Difficulty with stairs, standing after sitting in a low chair
  - Waddling gait
- Signs/symptoms of underlying condition
  - e.g. malabsorption
- Low trauma fracture
  - May have history of prodromal pain
  - Typical sites include ribs, sacrum, pelvis, hip
  - Vertebral fractures classically present with biconcave appearance of several vertebrae

For further information and for your use please refer to the Vitamin D Leaflet or the Easy Read Leaflet. Other languages are also available in the easy read leaflet – See here under 'Vitamin D'

Diet

There are very few foods providing a natural source of Vitamin D. Consequently, dietary sources provide only approximately 10-15% of daily requirements. They include:

- Egg yolk
- Mushrooms
- Cheese, milk and butter (small amounts)

- Fortified foods (some margarines and breakfast cereals in UK)

NB: Oily fish and liver are also other good sources of Vitamin D however, due to restrictions of food that should be avoided in pregnancy, these food items should not be recommended as a source of Vitamin D during pregnancy.

Sun exposure

When to go out in the sun?

Unless someone has a very dark skin type, they should protect their skin when out in strong sunlight for more than a short period of time, both in the UK and abroad. The UV index provides an indicator of the sun's strength for a given location, date and time. This information, combined with skin type and behaviour, can be used to assess someone's risk of sunburn. The Met Office provides daily information on UV levels in the UK.

In the UK, sunlight is strongest between 11am and 3pm from the beginning of April to mid-October. Between these times:

- Vitamin D production is most efficient (it can occur, but more slowly, before 11am and after 3pm);
- sunburn is most likely;
- most people can make sufficient Vitamin D by going out for short periods (well below the time it takes to get sunburn) and leaving uncovered only small areas of skin that are often exposed (such as forearms, hands or lower legs), longer periods may be needed for those with darker skin
- it might be better for people with very fair skin to go out in the sun before 11am and after 3pm (it will take them longer to synthesise sufficient Vitamin D but reduces the risk of sunburn).

People with genetically darker skin are at relatively lower risk of burning and therefore, skin cancer, but at higher risk of Vitamin D deficiency in the UK. This means:

- they may need more time in sunlight in the UK to produce the same amount of Vitamin D as people with lighter skin;
- generally they can be exposed for longer before risking sunburn and skin cancer, but should not get to the point where their skin is likely to burn;
- they need advice on Vitamin D supplements.

People with naturally very light skin or fair or red hair and freckles:

- do not need much time in the sun (less than the time it takes them to burn) to produce Vitamin D;
- are at greater risk of sunburn and skin cancer – including after shorter periods of exposure – than people with darker skins.

For further information see NICE NG34 - Sunlight exposure: risks and benefits

Update on Vitamin D supplementation

In July 2016, Public Health England updated their advice after Scientific Advisory Committee of Nutrition (SACN) recommended that it was not possible to say how long the UK public needed to spend in the sun in order to achieve adequate Vitamin D levels. SACN concluded that everyone should take a daily dietary intake of 10micrograms. Public Health England have data to suggest that

levels of UVB rays (to make Vitamin D) between late March and late September provide sufficient supplementation. However, during October and late March, levels were lower and so an additional supplement containing 10micrograms of Vitamin D should be considered.

Calcium

The recommended daily intake of calcium for pregnant women is 700 mg a day. Many women will be getting this from their diet. For example, half a pint of milk (330 mg), a 150 g pot of yogurt (210 mg) and a medium (40 g) chunk of cheddar cheese (300 mg) will provide the recommended daily requirement. Breastfeeding women need an additional 550 mg/ day (total daily intake of 1250 mg a day). Further information on dietary intake can be found here.

Women should be encouraged to increase their calcium intake from their diet. If this is not possible, a combined preparation of calcium and Vitamin D is recommended. Adcal-D_3® caplets preparation is licensed in pregnancy and is in the Sheffield formulary.

Examples of calcium-rich foods are given in Appendix 1 to support discussions with women. Alternatively, calcium intake can be assessed using an online calcium calculator.

Folic Acid

Women at higher risk of conceiving a child with a neural tube defect should take a higher dose of Folic Acid. The following groups are at higher risk;

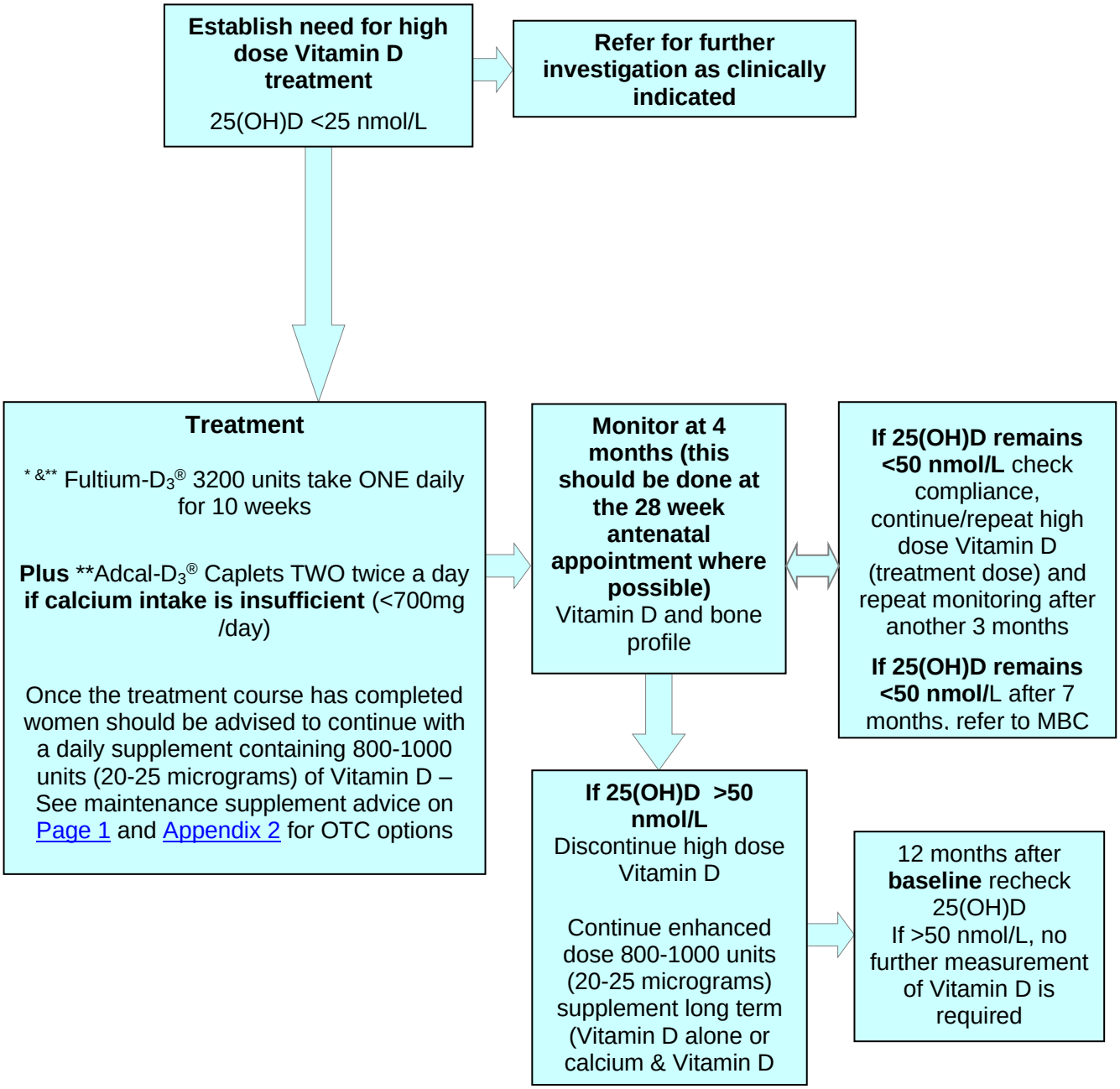
- Either partner has a neural tube defect (or a family history) or previous pregnancy affected by a neural tube defect
- BMI≥30kg/m^2 - pre-pregnancy
- Coeliac disease (or other malabsorption state), Diabetes Mellitus, or is taking antiepileptic medicines (refer to BNF).

Women with sickle-cell disease or thalassemia should continue taking their normal dose of 5mg Folic Acid throughout pregnancy.

There are no studies suggesting that the combined use of high dose 5mg Folic Acid with Healthy Start Vitamins for Women (containing 400micrograms Folic Acid) during pregnancy has been shown to cause any adverse effects. The SPC for Folic Acid also states under ‘Over-dosage’ that ‘no special procedures or antidotes are likely to be needed'.

Link back to Page 1

High-dose Oral Vitamin D Supplementation and Monitoring



* Halal or kosher certified.
** Licensed preparation for use in pregnancy

Link back to Page 1

Appendix 1 - Calcium-rich foods

Find calcium-rich foods from this list for a bone-healthy diet. Serving sizes are based on average portions

Food	**Serving Size** (average)	**Calcium** (mg)
Milk		
Milk, semi-skimmed	glass, 200 ml	240
Soy drink, calcium enriched	glass, 200 ml	178
Yoghurt and Cream		
Yoghurt, low-fat, fruit	pot, 150 g	210
Cream, double, whipped	portion, 45 g	26
Cream single	tablespoon, 15 g	13
Cheeses		
Cheddar	medium chunk, 40 g	296
Cheese spread	portion, 30 g	149
Cottage	small pot, 112 g	142
Vegetables		
Broccoli, boiled	serving, 85 g	34
Green/French beans	serving, 90 g	50
Baked beans	serving, 135 g	72
Nuts		
Almonds	12 whole, 26 g	62
Brazil Nuts	6 whole, 20 g	34
Desserts		
Ice cream, dairy, vanilla	average serving, 75 g	75

Food	**Serving Size** (average)	**Calcium** (mg)
Fromage frais, fruit	small pot, 60 g	52
Fish		
Sardines in oil, tinned	portion, 100 g	500
Salmon, tinned	average portion, 100 g	91
Breads and grains		
Pasta, plain, cooked	portion, 230 g	85
Rice, white, boiled	portion, 180 g	32
White bread	slice, 30 g	53
Wholemeal bread	slice, 30 g	32
Muesli, Swiss style	portion, 50 g	55
Fruits		
Apricots, raw, no stone	4 fruit, 160 g	117
Figs, ready to eat	4 fruit, 220 g	506
Currants	2 tablespoons, 50 g	47
Orange	peeled, 160 g	75
Other foods		
Tofu, soy bean, steamed	100 g	510
Omelette, cheese	2 eggs, 120 g	344
Quiche, cheese & egg	average slice, 140 g	367
Macaroni cheese	portion, 220 g	374
Pizza, cheese & tomato	9" - 10" pizza, 410 g	873
Lasagne	portion, 420 g	420

Appendix 2 – Examples of preparations that contain Vitamin D

Over the counter (OTC) preparations can be obtained from all pharmacies, major supermarkets and health food shops. The table below lists some examples of preparations available over the counter and on prescription (POM), along with prices to support discussions with patients. Please note these vitamin supplements are often on offer, which reduces price further.

Preparation	Cost / pack size (January 2022)
Vitamin D 400 units (10 microgram) preparations	
Boots (OTC) – Vitamin D 400 units (10 microgram) tablets	£2.30 / 90 (77p / month)
'Healthy Start Vitamins for Women' tablets containing 400 units (10 micrograms) Vitamin D and 400 micrograms of Folic Acid	Around £2.30 / 60 (£1.15 / month) All preconception women are eligible for free 'Healthy Start Vitamins for Women' via their local Family Centre. All pregnant women are eligible for free 'Healthy Start Vitamins for Women' through their pregnancy obtainable via their midwife. All breastfeeding mothers are eligible for their first free two month supply of 'Healthy Start Vitamins for Women' obtainable via their midwife upon discharge from the maternity unit. See here.
Holland and Barrett (OTC) – Vitamin D 400 units (10 microgram) tablets	£2.19 / 90 (73p / month)
InVita D_3 2,400 units/mL oral drops, solution (POM)*	£3.60 / 10mL (£1.80 / month for a daily dose of 400 units a day. (Note 6 drops = 400 units (10 microgram)
Vitamin D 1000 units (25 microgram) preparations	
ASDA (OTC) – High Strength Vitamin D 1000 units (25 microgram) food supplement tablets	£2.00 / 60 (£1.00 / month)
Boots (OTC) - Vitamin D 1000 units (25 microgram) tablets	£9.00 / 180 (£1.50 / month)
Holland and Barrett (OTC) - Vitamin D 1000 units (25 microgram) tablets	£4.99 / 90 (£1.66 / month)
Tesco (OTC) - High Strength Vitamin D 1000 units (25 microgram) tablets	£3.50 / 90 (£1.17 / month)
Valupak (OTC) - Vitamin D 1000 units (25 microgram) tablets – available from most community pharmacies	£1.05p / 60 (53p / month)
Fultium-D_3 800 units Colecalciferol (20 microgram) capsules (POM)*	£3.60 / 30 (£3.60 / month)
Calcium and Vitamin D preparations	
Adcal-D3 preparations are available to purchase over the counter*	Cost will vary
Folic Acid Preparations	
Valupak Folic Acid 400 micrograms – available from most community pharmacies	Variable ranging from £1.00 - £1.99 / 90 (33p – 66p / month)

*Licensed for use in Pregnancy / Breastfeeding

Link back to Page 1

Appendix 3 - Patient Information Leaflet

Vitamin D and Folic Acid Supplementation in Pregnancy and whilst Breastfeeding

Vitamin D and folic acid supplements can be bought from many pharmacies, supermarkets, and health food shops.

'Healthy Start Vitamins for Women' tablets containing 400 micrograms of Folic Acid and 400 units (10 micrograms) of Vitamin D are designed to be taken at preconception, throughout pregnancy and whilst breastfeeding. They are available at low cost from all Family Centers and most pharmacies in Sheffield. They are free to certain groups under the extended Sheffield Healthy Start Scheme, for further information, ask your GP or midwife.

The recommended daily dose / preparations for you are shown below

Folic Acid

Taking folic acid during the first trimester of pregnancy reduces the risk of the child developing a neural tube defect. All women should take folic acid supplementation before conception and until week 12 of pregnancy.

☐ Folic acid 400micrograms daily until at least week 12 of pregnancy.

Or, if you are at a higher risk of conceiving a child with a neural tube defect you will be advised to take a higher daily dose. Your doctor will need to prescribe this higher dose.

☐ Folic acid 5mg tablets daily (if this strength is needed this will be provided on a prescription from your GP)

Vitamin D

Taking Vitamin D supplements during pregnancy helps with muscle and bone development, giving babies the best start in life. All women should take Vitamin D supplementation throughout pregnancy and whilst breastfeeding.

☐ Vitamin D 400 units (10 micrograms) daily whilst pregnant and breastfeeding

☐ A preparation containing between 800 -1,000 units (20 - 25 micrograms) daily of Vitamin D

A combination of Folic Acid and Vitamin D

☐ Healthy Start Vitamins for Women containing 400 micrograms of folic acid and 400 units (10 micrograms) of Vitamin D. Designed to be taken at preconception, throughout pregnancy and whilst breastfeeding

Link back to Page 1

Further Reading / References

Dosing and monitoring for treatment of Vitamin D deficiency in pregnancy – SPS - Specialist Pharmacy Service – The first stop for professional medicines advice

BUMPS Best Use of Medicines in Pregnancy – Use of vitamin D supplements

NHS - Vitamins, Supplements and Nutrition in Pregnancy

Which oral vitamin D products are suitable for people with vegetarian or vegan diets?

NICE CKS – Pre-conception advice for all women

Coeliac UK – Gluten Free when pregnant

Vitamin D: increasing supplement use among at-risk groups NICE – PH56:

Sunlight exposure: Risks and Benefits NICE NG34

Electronic medicines compendium:

Vitamin D - advice on supplements for at risk groups, CMO:

Vitamin D and Bone Health

Management of Women with Obesity in Pregnancy March 2010:

Scientific Advisory Committee on Nutrition (SACN): Vitamin D and Health:

Public Health England: PHE publishes new advice on Vitamin D:

British Dietetic Association Calcium: Food Fact Sheet

Food Standards Agency (2002) McCance and Widdowson's The Composition of Foods, Sixth Summary Edition. Cambridge: Royal Society of Chemistry.

Food Standards Agency (2002), Food Portion Sizes.

International Osteoporosis Foundation Calcium Calculator

Version History

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