BNF Chapter 9 Blood and Nutrition

Formulary Key

1st line formulary choice	Encouraged
Alternative formulary choice	On Formulary
2nd line formulary choice	2nd Line
Shared Care (TAG Amber)	Shared Care Agreement

Drug	Formulations		Dose	Notes
1.4 Anaemias, Iron-Deficiency				
FERROUS FUMARATE	**T**	210mg	**Prophylaxis** Adult and child over 12 yrs: 1 tablet 1-2 times a day. **Treatment** Adult and child over 12yrs: 1 tablet 2-3 times a day	The oral dose of elemental iron for deficiency anaemia should be 100-200mg daily. Ferrous Fumarate 210mg = 68mg elemental iron.
FERROUS FUMARATE	**S**	140mg/5ml	**Prophylaxis:** 5mls twice a day. **Treatment**: 10mls twice a day Child: See BNF C	Ferrous Fumarate 140mg /5ml = 45mg elemental iron.
Modified release preparations have no therapeutic advantage and are not recommended for use; the low incidence of side effects may reflect the limited absorption of iron as the modified release preparation formulation is carried past the duodenum in to an area of the gut where absorption may be poor.				
1.5 Anaemias, Megaloblastic				
HYDROXOCOBALAMIN (Vitamin B12)	**IM Inj.**	1mg /ml ampoule	Initially 1mg by IM injection 3 times a week for 2 - 3 weeks then 1mg every 3 months.	
FOLIC ACID	**T** **S**	5mg 2.5mg /5ml	Adult and child over 1 yr: 5mg daily for 4 months	Most causes of folate deficiency are self limiting and should respond to a short course of treatment. Folic acid should not be used in undiagnosed megaloblastic anaemia unless Vitamin B12 is co-administered otherwise neuropathy may be precipitated.
2. Fluids and Electrolyte Imbalances				
Oral Potassium				
Potassium salts are preferably given as an effervescent preparation rather than a modified release tablet. They may cause nausea and vomiting and poor compliance is a major limitation to their effectiveness. Regular monitoring of plasma potassium levels is essential in those taking potassium supplements.				
POTASSIUM CHLORIDE	**T: Efferve-scent**	470mg (12mmol) potassium / 285mg chloride (8mmol)	Prevention: 2- 4g (25 to 50mmol) potassium daily in divided doses.	Dose should be reduced in renal impairment to reduce risk of hyperkalaemia.
Oral Sodium				
Sodium chloride is usually given intravenously for deficiency states in a secondary care setting. Ongoing treatment with oral supplements in primary care may be necessary. In chronic conditions associated with mild or moderate degrees of sodium depletions such as in bowel or renal disease, oral supplements may be sufficient.				
SODIUM CHLORIDE	**T: M/R**	600mg (10mmol each of Na^+ and Cl^-	**Prophylaxis:** 4 - 8 tablets daily	
2.2 Calcium Imbalance				
Oral calcium supplements are usually only required where dietary calcium intake is deficient and are usually given combined with vitamin D - see section 9.6.4				
2.3 Hypercalcaemia and Hypercalciuria				
Cinacalet is TAG RED (Hospital/Specialist Only) for **-Primary Hyperparathyroidism in patients with symptomatic severe PHPT where normalisation of calcium is desirable, but in whom surgery is not indicated or is contraindicated for medical reasons** **-Refractory secondary hyperparathyroidism in patients with end-stage renal disease under specific criteria**				
Cinacalet is TAG DOUBLE RED (Not recommended for routine use) for secondary hyperparathyroidism & parathyroid cancer				

2.5 Hypomagnesaemia

Hypomagnesaemia may be caused by excessive loses through diarrhoea, stoma or fistula. Replacement is initially given by intravenous infusion. To prevent recurrence of the deficit magnesium may be given by mouth but there is little evidence of benefit. Oral magnesium salts are not well absorbed from the gastrointestinal tract and may cause colic and diarrhoea.

Guidance on duration of treatment and process for review should be discussed with initiating specialist.

MAGNESIUM GLYCERO-PHOSPHATE	**Chewable tablets**	4mmol (97mg)	Initially 1—2 tabs three times daily, adjusted according to response. Children: Under 4 years, not recommended; 4—12 years, initially 1 tab twice daily; 12—18 years, initially 1 tab three times daily. Adjust according to response.	**Licensed product: Neomag.**
MAGNESIUM-L-ASPARTATE	**Powder sachets for oral soln.**	243mg (10mmol) per 6.5g	Adult: 1—2 sachets dissolved in 50—200ml water, tea or orange juice once daily. Under 2 years, not recommended; 2—4 years, 109mg (1 level 5ml spoon) daily; 4—10 years, 109mg (1 level 5ml spoon) or 1 sachet daily; 10—18 years, 1 sachet daily. Dissolve in 50—200ml water, tea or orange juice before taking.	**Licensed product: Magnaspartate.**

2.6 Phosphate imbalance

2.7 Hyperphosphataemia

First line choice

CALCIUM ACETATE	**T**	1g (calcium 250mg or Ca^{2+} 6.2mmol)	Initially 1 tablet 3 times daily with meals adjusted according to serum phosphate concentration. Max 12 tablets daily.	**PHOSEX**
	T	475mg (calcium 120.25mg or Ca^{2+} 3mmol)	Adult: 475mg-950mg mg with breakfast and snacks, 0.95g-2.85g with main meals 0.95-1.9g with supper, adjusted according to serum phosphate concentration. Max. 6.65g daily	**RENACET**

For the management of hyperphosphataemia in renal failure on dialysis: Lanthanum and Sevelamer are commissioned by NHS England - currently these may be prescribed in primary care with reimbursement to CCGs until formal repatriation agreed.

Second line choice

LANTHANUM	**T: Chewable**	500mg, 750mg, 1g	Adult: 1.5-3g daily in divided doses with or immediately after meals adjusted according to serum phosphate concentration.	**FOSRENOL** **TAG Green: GP prescribable at request of Consultant/Specialist**
	Powder	750mg, 1 g sachets	Each sachet to be mixed with food and consumed within 15 minutes	
SEVELAMER HYDROCHLORIDE	**T**	800mg	Adult: Initially 2.4-4.8g daily in 3 divided doses with meals adjusted according to serum phosphate concentration. Usual dose 2.4-12g daily.	**RENAGEL** **TAG Green: GP prescribable at request of Consultant/Specialist**

5. Nutrition

5.2 Enteral Nutrition

Nutrition support should be considered in people who are malnourished, as defined by any of the following:
- a BMI of less than 18.5 kg/m2
- unintentional weight loss greater than 10% within the last 3–6 months
- a BMI of less than 20 kg/m2 and unintentional weight loss greater than 5% within the last 3–6 months.

MUST Tool should be used to assess risk of malnutrition:

● People at risk of malnutrition should be given advice regarding food fortification i.e. a 'Food First' approach.
● People at high risk of malnutrition (e.g. 'MUST' score 2 or more), should be recommended to purchase over the counter (OTC) nutritional supplements (e.g. Meritene Energis, Complan), before prescription of oral nutritional supplements (ONS) is considered.

Referral to a dietitian should be considered if 'Food First' and OTC supplements do not result in improved nutritional intake and/or increased, or stabilised, weight within two to four weeks.

A Dietitian's assessment may indicate the need for a prescribable ONS according to the specific Advisory Committee on Borderline Substances (ACBS) conditions laid out in the NHS Drug Tariff. If prescribed, a maximum of 7 days supply should be issued in the first instance to assess product acceptance and compliance and avoid waste.

Oral Nutritional Supplements should NOT be used as a replacement for meals but taken between meals, not at mealtimes.				
FOODLINK COMPLETE	**Powder shake**	7 x57g sachets	1—2 servings a day reconstituted with water or whole milk	Gluten free. Contains lactose. Not nutritionally complete.
ALTRAPLEN COMPACT	**Sip Feed**	300kcal / 125mls	2 x125ml per day or as recommended by dietician, between meals.	Nutritionally complete. Gluten free.
FRESUBIN JUCY	**Sip Feed**	300kcal / 200ml serving	2 x200ml per day or as recommended by dietician, between meals.	Lactose and gluten free. Fat free. Not suitable for diabetics. Contains 30% less protein than milk based supplements. Nutritionally complete but not sufficient for total daily nutrition requirements.
Opened, or reconstituted, ONS should be discarded after 24 hours.				
High calorie supplements containing ≥2kcal/ml or modular supplements containing high protein, high carbohydrate or high fat content should only be prescribed on recommendation of a dietician.				
Specialised Infant Formula				
See Key Message Bulletin 36: Specialised Infant Formula: SUMMARY				
Lactose free formulas for secondary lactose intolerance are not recommended for prescribing as these can be purchased at a similar cost to standard infant formulas.				
See Key Message Bulletin 26: Specialised Infant Formulas 1: Secondary Lactose Intolerance in infants under 2 years				
Mild-moderate non-IgE CMPA may be managed in primary care and involves initial elimination of cow's milk protein followed by a re-challenge, within 6 weeks, to confirm diagnosis. Refer to specialist if IgE suspected or severe non-IgE CMPA, multiple food allergies, one or more acute systemic or severe delayed reactions, faltering growth with one or more GI symptoms or significant atopic eczema.				
See Key Message Bulletin 27: Specialised Infant Formulas 2: Cow's Milk Protein Allergy (CMPA)				
Hydrolysed Formula				
First line choice - for formula fed infants				
SIMILAC ALIMENTUM	Powder	400g		Suitable from birth onwards
Second line choice - for formula fed infants				
SMA ALTHERA	Powder	400g, 800g		Suitable from birth to 2 years
Amino Acid Formula				
Amino Acid Formula should only be used if symptoms have not resolved after a 6 week trial of hydrolysed formula				
First line choice - for formula fed infants				
SMA ALFAMINO	Powder	400g		Suitable for children 0—12 months.
Second line choice - for formula fed infants				
NUTRAMIGEN PURAMINO	Powder	400g		Suitable for children 0—12 months.
Thickening formulas such as SMA staydown® or Enfamil AR® for Gastro-Oesophageal Reflux (GOR) should not be prescribed as these can be purchased for a similar cost to standard infant formulas. Alternatively a thickener such as Instant Carobel® may be prescribed to add to their usual formula.				
See Key Message Bulletin 28: Specialised Infant Formulas 3: Gastro-Oesophageal Reflux (GOR) in Infants				
6. Vitamin deficiencies				
Vitamins prescribed for supplementation to prevent deficiency are not recommended on prescription. These are available widely for patients to purchase.				
Vitamin B group				
Severe deficiency states Wernicke's encephalopathy and Korsakoff's psychosis, as seen in chronic alcoholism are best treated initially by parenteral administration of B vitamins followed by oral administration of thiamine. Other vitamin B supplements are not indicated.				
THIAMINE	**T**	50mg	50mg two to three times a day* **Norfolk and Suffolk NHS Foundation Trust : Alcohol Care Pathway Draft version 2*	Thiamine not recommended for low risk patient groups, hazardous, harmful drinkers or those with mild to moderate alcohol dependence who eat an adequate diet and have no other alcohol related problems.

Vitamin D and analogues

Vitamin D deficiency can occur in people who have limited exposure to sunlight and whose diet is deficient is vitamin D. Deficiency can be prevented by taking an oral supplement of 10micrograms daily which should be purchased. Where supplementation with calcium is required a combined product may be prescribed. For proven deficiency, high dose vitamin D is required on prescription:

Diagnosis and Management of Vitamin D Deficiency in Adults in Primary Care

Treatment of deficiency: Loading regimen up to a total of approx. 300,000 IU colecalciferol				
INVITA D3	**Soft capsules**	50,000 I.U.	Treatment of deficiency in adults: **one** capsule **once a week** for **6 weeks.** Total dose: 300,000IU	Licensed for the treatment and prevention of vitamin D deficiency in all ages from newborn infants to adults. Sugar-free liquid. Contains Olive oil (refined), and Sweet orange peel oil.
	Oral Solution (Adults)	50,000 I.U. / ml (1ml ampoule)	Treatment of deficiency in adults: **one ampoule (50,000 IU) once a week** for **6** weeks. Total dose: 300,000IU	
	Oral Solution (Children)	25,000 I.U. / ml (1ml ampoule)	Treatment of deficiency in children 0-18 years: one **ampoule every 2 weeks** for **6** weeks. Total dose: 75,000IU	
STEXEROL D3	**T**	25,000 IU	Treatment of deficiency in adults: **two** tablets **weekly** for **6 weeks.** Total dose: 300,000IU	Film-coated capsule-shaped tablets (14 mm size) which can be swallowed whole or crushed, and taken with food. Not recommended for children under 12 years.
Vitamin D requires hydroxylation to the active form therefore hydroxylated derivatives i.e. alfacalcidol should be prescribed if patients with severe renal impairment require vitamin therapy.				
ALFACALCIDOL	**C**	250 nanograms 500 nanograms	Adult and child over 20Kg: initially 1microgram daily (elderly 500nanograms) adjusted to avoid hypercalcaemia. Usual dose 0.25 - 1microgram daily.	
Supplementation with calcium - also see NEL CSU Bone Formulary				
THEICAL D3 (CALCIUM CARBONATE / COLECALCIFEROL)	**T: Chewable**	2.5g / 880iu	Chew 1 tablet daily	Each tablet contains Calcium 1g / Colecalciferol 20micrograms (800iu)
ADCAL D3 (CALCIUM CARBONATE / COLECALCIFEROL)	**T: Chewable**	1.5g / 10micrograms	Chew 1 tablet twice daily	Each tablet contains Calcium 600mg / Colecalciferol 10micrograms (400iu)
	Caplet	750mg / 5micrograms	2 caplets twice daily	Each tablet contains Calcium 300mg / Colecalciferol 5 micrograms (200iu)
Options for patients with swallowing difficulties				
CALFOVIT D3 (CALCIUM PHOPHATE / COLECALCIFEROL)	**3.1 g / 20 micrograms**	Powder for oral suspension	1 sachet daily	Daily dose equivalent to 1.2 g of calcium and 800 units colecalciferol
ADCAL D3 DISSOLVE (CALCIUM CARBONATE / COLECALCIFEROL)	**1.5g / 10 micrograms**	Effervescent tablets (dissolves to clear solution)	1 tablet BD	Daily dose equivalent to 1.2 g of calcium and 800 units colecalciferol

Guidelines for Food Fortification & Use of Oral Nutritional Supplements (ONS) in Adults – Summary Pathway

Step 1: Screen for malnutrition

Use MUST http://www.bapen.org.uk/pdfs/must/must_full.pdf

Ensure weight / BMI is documented in patient records

Requests for ONS for care home residents

Carers should complete assessment form to inform GP of malnutrition risk and for repeat requests for ONS (see Best Practice Bulletin 21)

ONS should **not** be prescribed to care home residents as a substitute for food.

MUST score = 0
No risk factors
Low Risk

If taking ONS review need and consider stopping

MUST score = 1
1 risk factor
Medium Risk

Step 2: Food First

Give Food First Advice: Click here for resources on fortifying food

Review after **2-4 weeks.** If weight has not stabilised or increased proceed to **Step 3.**

Ensure weight / BMI is documented in patient records

MUST score = 2
2 or more risk factors
High Risk

Step 3: Food First & Over the Counter Supplements

These can be purchased in most chemists and supermarkets - sachets which need to be mixed before use so are **only suitable** for patients with carer support or who can make it up themselves

Review after **2-4 weeks**

If weight has not stabilised or increased go to **Step 4.**

Ensure weight / BMI is documented in patient

Key points:

- ONS should only be prescribed if ACBS criteria is met: see Drug Tariff Part XV Borderline Substances
- Weight/BMI must be recorded prior to initiation of ONS.
- Starter packs with various flavours are available
- Prescriptions should only be reauthorised and re-issued if current weight is recorded.
- Usual quantity is one supplement twice a day **between** usual meals - ensure directions are specific
- Desserts and yogurt style drinks are not recommended.

Step 4: Refer to Dietitian*

Ensure steps 1-3 have been followed.

A prescription for ONS **may** be initiated by GP for the interim period - ensure 1st prescription for max. **7 days** to ensure palatability and reduce waste – see recommended products.

**May not be appropriate for palliative care patients; GP should use clinical discretion in prescribing appropriate, short term ONS.*

Step 5: Prescription of ONS on advice of Dietitian

Check patient preference for flavours as per Dietitian samples. Continue fortified food

Review after 3 months:

Ensure weight / BMI is documented in patient records

Current weight should be provided by patient / carer every 3 months before a prescription for ONS can be reauthorised and reissued by GP.

Once discharged from Dietitian care, continue to assess malnutrition status and review ongoing need for ONS every 3 months – **stop if patient has resumed adequate dietary intake and weight is maintained.**