Medicines Formulary

Gastrointestinal system

Contents:

For full information on treatment, side effects, cautions and contraindications, see electronic British National Formulary (www.bnf.org) or the relevant summary of product characteristics (www.medicines.org.uk).

For information on preparing intravenous medicines for administration, see Medusa Injectable Medicines Guide for the NHS (see Clinical Guidance home page)

1. Dyspepsia and gastro-oesophageal disease

i) Mild dyspepsia

Maalox Plus® suspension (aluminium hydroxide mixture)

5 to 10mL, orally, after food and at bedtime, up to four times daily, when necessary

ii) Gastro – oesophageal reflux disease

Mild symptoms

Gaviscon Advance® 5 to 10mL, orally, after meals and at bedtime

Or

Ranitidine 150mg, orally, twice daily

Moderate to severe symptoms

Omeprazole 20mg, orally, once a day. Can be increased to 40mg daily if indicated (see **Dyspepsia Guidelines**)

Or

Lansoprazole 30mg, orally, once a day. Can be increased to 30mg twice daily if symptoms are severe.

See **Dyspepsia Guidelines** for guidance on which treatment to prescribe (according to indication), the duration of PPI treatment and when to refer patients for an endoscopy or to the gastroenterology team,

iii) Helicobacter pylori-associated duodenal and gastric ulcers

If patient is NOT allergic to penicillin:

Omeprazole 20mg, orally, twice daily,

and

Amoxicillin 1g, orally, twice daily,

and

Clarithromycin 500mg, orally, twice daily — all for seven days.

If patient is allergic to penicillin, switch amoxicillin with

Metronidazole 400mg, orally, twice daily

iv) Barrett's oesophagus

First choice

Omeprazole 40mg, orally, daily. This dose should NOT be reduced even if the patient is asymptomatic

Add if necessary

Ranitidine 150mg, orally, once or twice daily

Or

Gaviscon Advance® 5 to 10mL, orally, after meals and at bedtime

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2. Acute gastrointestinal bleeding

If non-variceal upper gastrointestinal bleed is confirmed by endoscopy

Pantoprazole 80mg, by IV infusion, in 100mL sodium chloride 0.9% over 15 minutes

followed by

Pantoprazole 80mg, by IV infusion, in 250mL sodium chloride 0.9%, infused at 8mg/hour over 10 hours. Continue for up to 72 hours (unlicensed use)

If bleeding oesophageal varices are suspected
Terlipressin 2mg IV bolus, four times daily initially followed by 1-2mg four times daily until bleeding controlled or after 5 days (NB. Terlipressin is licensed for use for up to 3 days. Beyond 3 days use is off-label)

Then, as prophylaxis (unless contraindicated)
Propranolol 20 to 40mg, orally, once a day (caution when used for patients with encephalopathy), increased as necessary to max 160mg twice a day

If unsuccessful, add
Isosorbide mononitrate 10 to 40mg twice a day (morning and teatime)

For bacterial prophylaxis (consider for all patients) — see **Antibiotic formulary**

For all other circumstances where an IV proton pump inhibitor is required
Pantoprazole 40mg, by IV infusion, in 100mL sodium chloride 0.9% over 15 to 30 minutes once daily.

3. Irritable bowel syndrome

Antispasmodics may be useful as adjunctive treatment in irritable bowel syndrome and in diverticular disease.

First choice
Mebeverine 135mg, orally, three times daily (20 minutes before food).
Or
Alverine citrate 60 to 120mg, orally, up to three times daily

Second choice
Dicycloverine hydrochloride 10 to 20mg, orally, three times daily

4. Diarrhoea

Many cases of acute diarrhoea are short lived and require fluid replacement only.

First choice
Ensure the patient is rehydrated adequately with fluids.

If fluids are inappropriate or not possible
Dioralyte® sachets Dissolve one or two sachets in 200mL water and take after each loose motion.

Anti-diarrhoeal agents should not be used chronically without investigation of the underlying cause.

NOTE: Anti-diarrhoeal drugs should be used under Consultant Gastroenterologist recommendation / supervision only for patients with inflammatory bowel disease and infective diarrhoea as they can cause toxic dilatation.

Anti-diarrhoeal agents may be used in:
i) Acute diarrhoea
ii) Chronic diarrhoea

i) Acute diarrhoea

First choice
Loperamide 4mg orally initially followed by 2mg after each loose stool (maximum 16mg in 24 hours)

Second choice (more likely to cause central side effects.)
Codeine phosphate 30mg, orally, three to four times daily.

ii) Chronic diarrhoea

First choice (in adults without inflammatory bowel disease)
Loperamide 4 to 8mg, orally, daily in divided doses (maximum 16mg in 24 hours)

Second choice (when diarrhoea is associated with bile acid malabsorption, eg, patients with terminal disease or small bowel resection)
Colestyramine 12 to 24g, orally, daily, mixed with water, in single or divided doses (2 to 4 per day), adjust dose as required, maximum 36g/day
NOTE: Other drugs should be taken at least 1 hour before or 4 to 6 hours after colestyramine.

5. Inflammatory bowel disease

This may be classed as either;
i) Ulcerative colitis
ii) Crohn's disease
The following Shared Care Guidelines are available for treatment of both Ulcerative colitis and Crohns disease:

- **Mesalazine and other aminosalicylates (Adults)**
- **Azathioprine and 6-Mercaptopurine for Inflammatory Bowel Disease (Adults)**

i) Ulcerative colitis

A. Mild attack

Newly commenced patients should be prescribed **Mesalazine modified release tablets (Pentasa®)** up to 4g, orally, daily in two to three divided doses.
Patients currently controlled on other brands may continue on these. Dose range: 400 to 800mg, orally, two to three times daily. Maximum: 4.8g per day in divided doses.

And one of
Prednisolone foam or enema 20mg (one applicator full), rectally, twice daily
Or
Hydrocortisone acetate 10% foam enema Use one applicator full, rectally, twice daily

B. Severe acute attack

Prednisolone 40mg, orally, daily
Or
Hydrocortisone sodium succinate 100 to 200mg, IV, three times daily.

If rectal treatment required
Prednisolone foam or enema 20mg, twice daily (short-term use only)
Or
Hydrocortisone acetate 10% foam, rectally, twice daily

If antibiotic treatment is required
Ciprofloxacin 500mg, orally, twice a day for up to 3 months
And
Metronidazole 400mg, orally, three times a day for up to 3 months

C. Maintenance treatment

Mesalazine modified release tablets (Pentasa®) 2g, orally, daily

D. Salvage therapy

If required (to be initiated by Consultant Gastroenterologists **ONLY**)
Azathioprine 50mg, orally, daily for 2 weeks. Then increase to 100mg daily. Maintenance dose: 2 to 2.5mg/kg.

Alternatively, **ciclosporin** and **infliximab** can also be considered for salvage therapy (Secondary care only).

E. Moderately to severely active disease

In patients who have failed to tolerate or had an adequate response to conventional treatment, golimumab, infliximab or adalimumab may be considered (Secondary care only).

NOTE To be initiated by a Consultant Luminal Gastroenterologists ONLY, as per NICE technology appraisal 329 (www.nice.org.uk/ta329)

If failed on the above treatments, or there are contraindications, vedolizumab may be considered.

NOTE To be initiated by a Consultant Gastroenterologists ONLY, as per NICE technology appraisal 342 (http://www.nice.org.uk/ta342)

ii) Crohn's disease

A. Active disease
Prednisolone 40mg, orally, daily
Or
Hydrocortisone sodium succinate 100 to 200mg, IV, three times daily

And
Mesalazine modified release tablets 400 to 800mg, orally, two to three times daily

Consider prescribing an elemental diet — seek advice from dieticians.
B. Maintenance
Continue treatment initiated for active disease if appropriate.

NOTE: Oral prednisolone is NOT recommended for maintenance therapy due to side effects from prolonged use

C. Resistant or frequently relapsing disease
Azathioprine tablets 2 to 2.5mg/kg, orally, daily (unlicensed use, contact Consultant Gastroenterologist)
Or
Infliximab
PbR drug exclusion – document drug indication clearly on prescription
According to NICE guidance, infliximab should only be used in:

- Patients with severe, active Crohn's disease.
- Patients whose condition has not responded to a full course of corticosteroids or an immunosuppressant or in those patients contraindicated to such therapies.
- Patients for whom surgery is inappropriate.
- Treatment of fistulising, active Crohn's disease in patients who have not responded to conventional therapy.

NOTE: Infliximab must only be used according to these criteria and under the supervision of a Consultant Gastroenterologist (with involvement from the Inflammatory Bowel Disease Nurse and the Gastroenterology Pharmacist).

D. Severe, active disease
Initial treatment
Adalimumab 160mg, by SC injection, to start, then 80mg after two weeks, then 40mg at subsequent fortnightly intervals
Or
Infliximab 5mg/kg, by IV infusion, in 250mL sodium chloride 0.9% over 2 hours

Then, if patient responds to initial treatment with infliximab within 2 weeks
Continue **infliximab** 5mg/kg in 250ml sodium chloride 0.9% by IV infusion, giving subsequent doses 2 and 6 weeks after the initial dose, and then every 8 weeks
Or
Re-administer **infliximab** (5mg/kg by IV infusion as above) if signs and symptoms of disease recur, followed by repeat doses every 8 weeks

If failed on the above treatments, or there are contraindications, vedolizumab may be considered.

NOTE To be initiated by a Consultant Gastroenterologists ONLY, as per NICE technology appraisal 352 (www.nice.org.uk/ta352)

E. Fistulising, active disease
Initial treatment
Infliximab 5mg/kg, by IV infusion, in 250mL sodium chloride 0.9% over 2 hours
Then
Give repeat doses of infliximab 2 and 6 weeks after the initial dose

Then, if patient responds to initial treatment with infliximab
Continue **infliximab** 5mg/kg in 250mL sodium chloride 0.9% by IV infusion, giving repeat doses 2 and 6 weeks after the initial dose, and then every 8 weeks
Or
Re-administer **infliximab** (5mg/kg by IV infusion as above) if signs and symptoms of disease recur, followed by repeat doses every 8 weeks

6a. Constipation — Laxative guidelines for adults

See **Constipation — Treatment with laxatives (Adults)** to ascertain if pharmacological intervention is appropriate. Treatment is dependent on type of constipation diagnosed:

i) Acute constipation
ii) Chronic constipation
iii) Opioid-induced constipation
iv) Palliative patients
v) Constipation during pregnancy or whilst breastfeeding

6b. Constipation — laxative guidelines for children

See **Constipation — Treatment with laxatives (Children)** to ascertain if pharmacological intervention is appropriate. Treatment is dependent on type of constipation diagnosed:

i) Acute constipation
ii) Chronic constipation

i) Acute constipation

Lifestyle advice — the following should be suggested:

- Provide dietary advice
- Increase fluids
- Increase exercise

- Provide reassurance

If laxatives are required, they should only be prescribed by a doctor **ONLY** and be stopped as soon as stools are easily passed again. In addition, a patient information leaflet should be provided.

NOTE: Rectal preparations can be distressing for children so should not be administered

For children aged under 1 year

For mild constipation
Lactulose 2mL, orally, twice daily. Adjust dose according to response.

For faecal impaction
Macrogols (Movicol Paediatric Plain®) ½ to 1 sachet, orally, daily. Continue until impaction resolves.

For children aged over 1 year

For acute constipation

Lactulose	1 to 5 years	5mL, orally, twice daily	Adjust dose according to response
	5 to 18 years	5 to 20mL, orally, twice daily	

For faecal impaction

Macrogols (Movicol Paediatric Plain®)	1 to 5 years	2 sachets on first day, then 4 sachets daily for 2 days, then 6 sachets daily for 2 days, then 8 sachets daily	Continue until impaction resolves
	5 to 12 years	4 sachets on first day, then 6 sachets on the next day, 8 sachets the next day, 10 sachets the next day, then 12 sachets daily	

ii) Chronic constipation

Chronic constipation is most common in children aged 2–4 years. Children should be assessed for faecal impaction.
Laxatives should be prescribed daily until patients go to the toilet normally.
NOTE: Stopping laxatives too soon can lead to recurrence of chronic constipation

First line

Macrogols (Movicol Paediatric Plain®)	1 to 6 years	1 sachets, orally, daily	Adjust dose to produce regular soft stools (max: 4 sachets daily
	6 to 12 years	2 sachets, orally, daily	

Second line

Lactulose	1 to 5 years	5mL, orally, twice daily	Adjust dose according to response
	5 to 18 years	5 to 20mL, orally, twice daily	

Third line

Senna liquid	1 month to 4 years	2.5 to 10mL, orally, daily	Adjust dose according to response
	4 to 18 years	2.5 to 20mL, orally, daily	

NOTE: Senna tablets are licensed for children over 2 years.

Or
Bisacodyl 5 to 20mg, orally, daily. Only licensed for children aged over 4 years. Adjust dose according to response.

If bulk-forming laxatives are indicated
Ispaghula husk See BNF for children for preparations and dosing information. Licensed for children aged over 2 years.

If a softening laxative is indicated

Docusate (Dioctyl Paediatric Solution®)	6 months to 2 years	12.5mg (5mL), orally, three times a day	Adjust dose according to response
	2 to 12 years	12.5 to 25mg (5 to 10mL), orally, three times a day	

NOTE: For patients over 12 years, docusate capsules can be used (up to 500mg per day in divided doses, adjusted according to response).

7. Bowel cleansing

First choice
Moviprep® oral powder sachets (one pair of sachets is reconstituted in 1 litre of water):
Take two litres of reconstituted solution orally on the evening before surgery
Or
Take one litre of reconstituted solution on the evening before surgery/endoscopy **AND** one litre of solution early on the morning of surgery/endoscopy. Treatment should be completed at least one hour before surgery/endoscopy

Second choice
Picolax® oral powder sachets (one sachet reconstituted in 150mL of water)
Take one sachet at 8am and another sachet 6-8 hours later.

Following a National Patient Safety Agency alert, patients should be assessed for the appropriateness of Moviprep® or Picolax® before these medicines are issued.

Clinical guidelines for oral bowel cleansing solutions prior to endoscopy, surgery and radiology are available from secondary care.

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8. Anal and rectal disorders — local treatment

Haemorrhoids

First choice
Anusol® cream or suppositories One application / suppository, rectally, morning and night and after defaecation

Second choice
Xyloproct® (lidocaine with hydrocortisone) ointment, apply several times daily for up to 7 days.

Chronic anal fissure

First choice
Glyceryl trinitrate 0.2% ointment, topically, apply a pea-sized amount to the anal margin twice daily

Second choice
Diltiazem 2% cream, apply a 2.5cm (one inch) sized amount to the anal margin twice daily (unlicensed preparation)

9. Pancreatic hormone deficiency

Supplements of pancreatin are given by mouth to compensate for reduced or absent exocrine secretion in cystic fibrosis and following pancreatectomy, total gastrectomy or chronic pancreatitis.
Dosage requirements show considerable inter-individual variation. Dosage should be adjusted according to size, consistency and frequency of stools. Extra allowance may be needed if snacks are taken between meals.

Creon 10,000® initially 1 to 2 capsules, orally, with each meal, either taken whole or the contents mixed with fluid or soft food, then swallowed immediately without chewing. Increase dose as required.

Creon 25,000® initially 1 capsule, orally, with meals, either taken whole or the contents mixed with fluid or soft food, then swallowed immediately without chewing. Increase dose as required.

Creon 40,000® initially 1 to 2 capsules, orally, with meals, either taken whole or the contents mixed with fluid or soft food, then swallowed immediately without chewing.

NOTE: Dose increases, if required, should be made slowly with careful monitoring of response and symptomology. Creon 40,000® should only be used for patients in whom the minimum effective dose has already been determined using lower strength preparations.

10. Hepatic encephalopathy

Lactulose lowers faecal pH and reduces ammonia-producing organisms.
Rifaximin is a poorly absorbed antibiotic (reducing the risk of systemic side effects) that is thought to reduce ammonia production by eliminating ammonia producing colonic bacteria. Rifaximin can be administered with lactulose but dual therapy should be stopped if the patient deteriorates.
Intravenous pantoprazole can be given prophylactically for patients with fulminating hepatic coma.

First choice
Lactulose solution 30 to 50mL, orally, three times daily, adjusted to produce two to three soft stools daily.

Second choice (in patients presenting with 2 or more overt episodes of hepatic encephalopathy)
Rifaximin 550mg, orally, twice daily (in combination with lactulose unless lactulose not tolerated)
Note To be initiated by Consultant Gastroenterologist ONLY as per NICE technology appraisal 337 (www.nice.org.uk/ta337)

See Rifaximin Prescribing Pathway for further information

If severe encephalopathic coma, no response to oral treatment or no bowel movement
Phosphate enema One enema, rectally, stat; repeat if necessary according to response

11. Motility stimulants

Pro-kinetic drugs such as domperidone and metoclopramide stimulate gastric emptying and small intestinal transit. They reduce vomiting by strengthening oesophageal sphincter contraction. They are **NOT** useful in situations where smooth muscle contraction is either not possible or not advised.

First choice
Metoclopramide (off-label indication) 10mg orally three times daily. **See also MHRA advice for dose restrictions and contraindications (link)**. Do not use in patients <20 years old.

Second choice
Domperidone (off-label indication**)** 10 to 20mg orally three times daily, or rectally 30mg three times daily. **See also MHRA advice for dose restrictions and contraindications (link)**.

12. Hepatitis B

Section awaiting development. Contact Medicines Information (ext 5126) for further information.

Adefovir dipivoxil and **peginterferon alfa-2a** See product information for details on dose and duration of treatment.
NOTE: To be initiated by a gastroenterology consultant ONLY, as per NICE technology appraisal 96 (www.nice.org.uk/ta96)

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13. Hepatitis C

i) Genotype 1

Ribavirin
Patients less than 75kg: 1g, orally, each day
Patients 75kg or more: 1.2g, orally, each day
and
Peginterferon alfa
180micrograms, by SC injection, weekly (reduce to 135micrograms if side effects)

If pre treatment viral load is < 800,000/mL, a 24 week treatment course may be adequate. If the virus is detectable at 4 weeks, 48 weeks treatment is required.

If failed on the above treatments — add
Boceprevir 800mg, orally, three times a day with food. See product information for details on duration of treatment.
NOTE: To be initiated by a gastroenterology consultant ONLY, as per NICE technology appraisal 253 (www.nice.org.uk/ta253)
Or
Telaprevir 750mg, orally, three times a day with food. See product information for details on duration of treatment.
NOTE: To be initiated by a gastroenterology consultant ONLY, as per NICE technology appraisal 252 (www.nice.org.uk/ta252)

ii) Genotypes 2 and 3

Ribavirin (Copegus tablets)
800mg orally each day (regardless of weight).
and
Peginterferon alfa (Pegasys pre-filled syringe)
180 micrograms weekly by subcutaneous injection (reduce to 135 micrograms if side effects).

Treatment should be continued for 24 weeks.
Contact the Gastroenterology Nurse Specialist for further information (ext 8449).

14. Total parenteral nutrition (TPN)

Secondary Care Only

NOTE: Prior to commencing a patient on TPN refer to the nutrition support team. TPN should not be commenced outside normal working hours.

The nutrition support team will advise on appropriateness, access and most appropriate TPN regimen to use. The nutrition support team will also supply relevant protocols. Parenteral nutrition is only indicated for patients with a dysfunctional gut where nutrition is likely to be compromised for more than 7 days. If the patient has a functioning and accessible gut, enteral alternatives should be considered (see section 2 below).

All patients when commencing TPN will receive a starter bag for the first 24 hours prior to commencing the recommended full regimen.

Regime	Volume (mL)	Nitrogen (g)	Total Energy (Kcalories)	Route
Starter bag (Kabiven 5)	1440	5.4	900	Peripheral & Central
Kabiven 9	2400	9	1700	Peripheral & Central
Kabiven 11	2053	10.8	1900	Central only
Kabiven 14	2566	13.5	2300	Central only

Electrolytes, trace elements and vitamins are added in the Pharmacy Aseptic Unit

Potential complications include line infection (ensure the nutrition support team protocols are followed at all times) and metabolic and biochemical disturbances. **In the event of a suspected central line infection (including PICC line) please contact nutrition support team for advice.**

15. Refeeding syndrome — prevention

Patients are at high risk of refeeding syndrome if:

They exhibit one or more of the following:

- BMI less than 16kg/m^2
- Unintentional weight loss greater than 15% within the past 3-6 months
- Little or no nutritional intake for more than 10 days
- Low levels of potassium, phosphate or magnesium prior to feeding

They exhibit two or more of the following:

- BMI less than 18.5kg/m^2
- Unintentional weight loss greater than 10% within the past 3-6 months
- Little or no nutritional intake for more than 5 days
- A history of alcohol use or drug use — including insulin, chemotherapy, antacids or diuretics

To manage patients at risk of refeeding syndrome
Thiamine 100mg, orally, three times a day for 10 days
And
Vitamin B compound strong 1 or 2 tablets, orally, three times a day for 10 days
And
Forceval One capsule (or soluble tablet) once a day for 10 days

If the enteral route is unavailable/inappropriate
Pabrinex Give 1 pair ampoules, by IV infusion, in 100ml sodium chloride 0.9% or glucose 5% over 30 minutes, once daily for 10 days (switch back to the oral regimen above as soon as the enteral route becomes available again)
NOTE: Select appropriate diluent — glucose may not be appropriate for patients with anorexia; sodium chloride may not be appropriate for patients with severe liver disease

16. Enteral nutrition

If commencing a patient on enteral nutrition please refer to ward dietician via PCIS. They will advise on the most appropriate product for individual patients from the following choices.

i) Sip feeds

- Ensure Plus
- Enrich Plus
- Enlive Plus
- Ensure Plus Yoghurt style
- Scandishake

ii) Feeds for when GI function is impaired

- Perative – for malabsorption
- Elemental E028 – for Crohn's disease

iii) High-energy feeds

- Procal
- Maxijul
- Duocal
- Calogen
- Forticreme

iv) Feeds via nasogastric, nasojejunal, gastrostomy or jejunostomy tubes

- Jevity (1 kcal/mL)*
- Osmolite (1 kcal/mL)
- Jevity (1.5 kcal/mL)*
- Jevity Plus (1.2 kcal/mL)*
- Ensure Plus (1.5 kcal/mL)
- Nepro* (low volume and low electrolyte — for patients with chronic renal failure)

**Contains fibre*

NOTE: Enteral feeding should always be used in preference to TPN if the gut is functioning and accessible.

All patients requiring supplements at home should be discharged with a letter from the dietitian informing their GP of their requirements and follow-up arrangements.
If enteral feeding is initiated outside of normal working hours, an emergency nasogastric feeding regimen is available via the central equipment library.

17. Coeliac disease

For information on quantity of gluten-free foods that should be prescribed per month for patients with Coeliac disease (by primary care clinicians), see **Gluten-free foods — Prescribing guideline**.