1.1 Antacids

Antacids are chemical substances that increase the pH of gastric contents thereby neutralizing the acidic contents of stomach, thus providing symptomatic relief in ulcer dyspepsia and non-erosive gastro-oesophageal reflux. Liquid preparations are more effective than solid preparations.

ALUMINIUM HYDROXIDE

Dosage form and strength: *Oral suspension*: Aluminium hydroxide 250 mg/5 ml and Magnesium hydroxide 250 mg/5 ml; *Tablets/Gel:* may contain simethicone, and some contain algenic acid
Indication: Ulcer and non ulcer dyspepsia; gastro-oesophageal reflux.
Contraindication/Precautions: Hypophosphatemia, undiagnosed GI or rectal bleeding, appendicitis, porphyria, renal impairment (aluminium may accumulate), constipation, hepatic impairment, dehydration.
Dosage schedule:
- *Tablets*: 1-2 tablets chewed 4 times a day and at bed time or as required;
- *Suspension*: 5-10 ml 4 times daily between meals and at bedtime; Children (6-12 years): up to 5 ml 3 times daily

Adverse effects: Constipation, haemorrhoids, fissures, faecal impaction
Drug and food interaction: Decreases absorption of digoxin, azithromycin, ciprofloxacin, norfloxacin, rifampicin, tetracycline, isoniazid
Patient information: Take with water to decrease constipation

MAGNESIUM HYDROXIDE

Dosage form and strength: *See under aluminium hydroxide*
Indication: Ulcer and non ulcer dyspepsia, gastro-oesophageal reflux
Contraindication/Precautions: Severe renal impairment, renal impairment, hepatic impairment.
Dosage schedule: 250-500 mg, per oral 3-4 times a day
Adverse effects: Diarrhoea in renal impairment, respiratory depression, hypotension, loss of tendon reflexes, cardiac arrest
Drug and food interaction: Decrease absorption of other drugs
Patient information: Do not take this medicine within 2 hours of taking other medicines (especially flouroquinolones); causes diarrhoea

1.2 Antispasmodics

ATROPINE SULPHATE

Dosage form and strength: *Injection*: 0.6 mg/ml
Indication: Gastrointestinal spasm, renal colic, anesthetic premedication, OP poisoning
Contraindication/Precautions: Avoid in case of angle closure glaucoma, hypersensitivity, tachycardia secondary to cardiac insufficiency or thyrotoxicosis. Use in pregnancy only when potential benefits justify possible risk to fetus.

Dosage schedule:

- *Premedication*: intravenous injection, 200-600 micrograms immediately before induction of anesthesia and in incremental doses of 100 micrograms for the treatment of bradycardia; intramuscular injection, 300-600 micrograms 30-60 minutes before induction; child 20 micrograms/kg;
- *For control of muscarinic side effects of neostigmine:* in reversal of competitive neuromuscular block, by intravenous injection, 0.6-1.2 mg;
- *Bradycardia:* particularly complicated by hypotension after myocardial infarction, intravenous injection of 300 micrograms, increasing to 1 mg if necessary;
- *Antidote to organophosphorous poisoning:* by intramuscular or intravenous injection, 1 to 2 mg, repeated in 20-30 minutes as soon as cyanosis has cleared

Adverse effects: Dry mouth, constipation, urinary retention, blurred vision
Drug and food interaction: Anticholinergic effect is more pronounced with tricyclic antidepressants, amantidine, antiparkinsonism agents; decreases the absorption of ketoconazole, levodopa; antacids decrease the effect of atropine
Patient information: Do not perform strenuous activity in high temperatures, heat stroke may occur; do not perform tasks requiring motor co-ordination and alertness (e.g. driving)

DROTAVERINE

Dosage form and strength: *Tablet*: 10 mg, 40 mg and 80 mg; *Injection*: 20 mg/ml
Indication: Gastrointestinal colicky pain, renal colic, 1st stage of labour (dilation of cervical opening)
Contraindication/Precautions: Paralytic ileus (or about to undergo surgery), gall bladder disease, diabetes, depression, ulcerative colitis, heart disease, liver disease, kidney disease
Dosage schedule: 40-80 mg 3 times per day
Adverse effects: Nausea, vomiting, fainting, dry mouth

FLAVOXATE HYDROCHLORIDE

Dosage form and strength: *Tablet*: 100 mg and 200 mg
Indication: Increased urinary frequency and incontinence, bladder spasms due to catheterization, urgency, dysuria
Contraindication/Precautions: Obstructive uropathy, ileus, GI obstruction, GI bleeding, glaucoma
Dosage schedule: 200 mg 3 times daily
Adverse effects: *Same as in hyoscine,* fatigue, vertigo
Drug and food interaction: Can be taken without regard to food
Patient information: Do not perform tasks requiring motor co-ordination/ alertness (e.g. driving)

HYOSCINE BUTYL BROMIDE

Dosage form and strength: *Tablet*: 10 mg and 20 mg; *Injection*: 20 mg/ml

Indication: Symptomatic GI and pain to urinary spasm, irritable bowel syndrome, excessive respiratory secretion, bowel colic
Contraindication/Precautions: Pregnancy, geriatric patient, hyperthyroidism, dysarrhythmias, ulcerative colitis, hypertension, renal disease, hepatic disease, urinary retention
Dosage schedule: 10 mg 3 times a day; 4 to 20 mg 4 times a day
Adverse effects: Headache, confusion, dizziness, hallucination, palpitation, tachycardia, blurred vision, tachycardia, blurred vision, photophobia, cycloplegia, dry mouth, constipation, paralytic ileus

MEBEVERINE HYDROCHLORIDE

Dosage form and strength: *Tablet:* 135 mg; *Suspension:* 50 mg/5ml
Indication: Irritable bowel syndrome, other spasmodic conditions
Contraindication/Precautions: Paralytic ileus. To be taken 20 minutes before meal
Dosage schedule: 135-150 mg 3 times a day to be taken 20 minutes before meal
Adverse effects: Allergic reaction, angioedema, urticaria, rash

1.3 Ulcer healing drugs

CIMETIDINE

Dosage form and strength: *Tablets:* 200 mg and 400 mg; *Injection:* 100 mg/ml
Indication: *see Ranitidine*
Contraindication/Precautions: *see Ranitidine*
Dosage schedule:
- *Benign ulcer (oral):* 400 mg twice daily followed by 800 mg once at night for 4 weeks, maintainence 400 mg at night; *Child:* 25-30 mg/kg; *Infant:* 20 mg/kg in divided doses;
- *Injection(IM):* 200 mg every 4-6 hrs, *Injection(IM):* 200 mg slowly over 2 minutes; *IV infusion:* 400 mg in 100 ml of normal saline over ½-1 hours, 50-100 mg/hour over 24 hrs for continuous infection

Adverse effects: *See ranitidine,* gynaecomastia, microsomal enzyme inhibition and hepatotoxicity are higher
Drug and food interaction: *See ranitidine*

ESOMEPRAZOLE

Dosage form and strength: *Tablets:* 20 mg and 40 mg; *Injection:* 40 ml/vial
Indication: *See omeprazole*
Contraindication/Precautions: *See omeprazole*
Precautions: *See omeprazole*
Dosage schedule:
- *Duodenal ulcer associated with H. pylori:* 20 mg twice daily
- *NSAID associated GU:* 20mg once daily for 4-8 weeks; for prophylaxis with increase rate of gastroduodenal complication who require continued NSAID treatment 20 mg daily

- *GERD:* 40 mg once daily for 4 weeks, continued for further 4 weeks if not fully healed or symptom persist, maintenance 20 mg daily

Adverse effects: *See omeprazole*

Drug and food interaction: *See omeprazole*

FAMOTIDINE

Dosage form and strength: *Tablets:* 20 mg and 40mg; *Injection:* 10 mg/ml

Indication: *See ranitidine*

Contraindication/Precautions: *See ranitidine*

Dosage schedule:

- *Benign ulcer:* Oral 40 mg at night for 4-8 weeks, maintenance dose 20 mg at night
- *Reflux oesophagitis:* 20-40 mg twice daily for 5-12 weeks
- *Zollinger–Ellison syndrome:* 20 mg every 6 hours

Adverse effects: *See ranitidine*

Drug and food interaction: *See ranitidine*

Patient information: Avoid alcohol, NSAIDs, extreme hot and spicy foods

LANSOPRAZOLE

Dosage form and strength: *Capsule:* 15 mg and 30 mg

Indication: *See omeprazole*

Contraindication/Precautions: *See omeprazole*

Dosage schedule:

- *Duodenal ulcer:* 30 mg daily in morning for 4 week, maintenance 15 mg daily; *Benign gastric ulcer:* 30 mg daily in morning for 8 week;
- *NSAID associated duodenal or gastric ulcer:* 15-30 mg once daily for 4 weeks continued for further 4 weeks if not fully healed;
- *Reflux oesophagitis:* 30 mg daily in morning for 4 weeks, continued for further 4 weeks if not fully healed;
- *Zollinger-Ellison syndrome:* initially 60 mg once daily adjusted according to response, daily dose of 120 mg or more given in two divided doses;
- *Reflux oesophagitis refractory to other treatment:* 40 mg for 8 weeks

Adverse effects: *See omeprazole*

Drug and food interaction: *See omeprazole*

OMEPRAZOLE

Dosage form and strength: *Capsule:* 10 and 20mg

Indication: Benign gastric and duodenal ulcer, NSAID associated duodenal or gastric ulcer, duodenal or benign gastric ulcer associated with *Helicobacter pylori*, reflux oesophagitis, Zollinger–Ellison syndrome, stress ulcer

Contraindication/Precautions: Hypersensitivity reaction, breast-feeding, patients with liver disease

Dosage schedule: Adult: 20 mg/day for 4-8 week

Adverse effects: Nausea, vomiting, diarrhoea, abdominal colic, skin rash, headache and dizziness

Drug and food interaction: Inhibits hepatic metabolism of diazepam, phenytoin, flurazepam, digoxin etc; increases the bleeding tendency with

warfarin

Patient information: Avoid alcohol, salicylates, NSAIDs; avoid excessive amounts of caffeine; report onset of black tarry stools, diarrhoea, abdominal pain

PANTOPRAZOLE

Dosage form and strength: *Tablets:* 20 and 40mg; *Injection:* 40 mg/vial
Indication: *See omeprazole*
Contraindication/Precautions: Report severe diarrhoea, black tarry stools, abdominal pain, product may have to be discontinued**.** *See omeprazole*
Precautions: *See omeprazole*
Dosage schedule:
- *Duodenal ulcer:* 40 mg daily in the morning for 2 weeks
- *Benign gastric ulcer*: 40mg daily in the morning for 2 weeks

Adverse effects: *See omeprazole*
Drug and food interaction: *See omeprazole*

RABEPRAZOLE

Dosage form and strength: *Tablet:* 10 mg and 20 mg
Indication: *See omeprazole*
Contraindication/Precautions: *See omeprazole,* children - not recommended
Dosage schedule:
- *Benign gastric ulcer:* 20 mg daily in the morning for 6 weeks, continued for further 6 weeks if not fully healed;
- *Duodenal ulcer:* 20 mg daily in the morning for 4 week continued for further 4 week if not fully healed;
- *GERD:* 20 mg once daily for 4-8 weeks, maintenance 10-20mg daily

Adverse effects: *See omeprazole*
Drug and food interaction: *See omeprazole*

RANITIDINE

Dosage form and strength: *Tablets:* 150 mg and 300 mg; *Injection:* 25 mg/ml
Indication: Benign duodenal and gastric ulcer, reflux oesophagitis, Zollinger–Ellison syndrome, GERD, stress ulcer
Contraindication/Precautions: Hypersensitivity, pregnancy, impaired renal function, children<12 years. Sexual dysfunction in male (loss of libido, impotence, gynaecomastia)
Dosage schedule:
- *Benign ulcer:* oral 150 mg twice daily, 300 mg at night for 4-8 weeks
- *Chronic episodic dyspepsia:* 6 weeks
- *NSAID induced ulcer:* for 8 weeks
- *Reflex oesophagitis:* 150 mg twice daily, 300 mg at night for 8 weeks, or if necessary 12 weeks
- *Gastric acid reduction (Prophylaxis of acid aspiration in obstetric):* oral – 150 mg at onset of labour, then every 6 hours

- *Surgical procedure:* IM or slow IV injection, 50 mg 45-60 minutes before induction of anaesthesia, oral 150 mg 2 hours before induction of anaesthesia, IM 50 mg every 6-8 hours IV infusion, 25 mg/hour for 2 hours, repeated every 6-8 hours

Adverse effects: Headache, dizziness, myalgia, nausea, skin rash and diarrhoea or constipation

Drug and food interaction: Decreases absorption of sucralfate, decreased absorption by ketoconazole, itraconazole

SUCRALFATE

Dosage form and strength: *Tablet:* 1 g

Indication: Benign gastric and duodenal ulceration, chronic gastritis

Contraindication/Precautions: Pregnancy, safety and efficacy of sucralfate in children have not been established

Dosage schedule: 2 g twice daily (on rising and at bed time) for 4-6 week or in resistant case 12 weeks, morning 8 g daily; Prophylaxis of NSAIDs induced ulcer (suspension) 1 g 6 times daily (maximum 8 g daily)

Drug and food interaction: Concomitant use with cimetidine, phenytoin, tetracyclines and fluoroquinolones result in reduction in bioavailability of these drugs. It should be taken at least 2 hours after administration of other drugs

Patient information: Complete full course of treatment to ensure ulcer healing, increase fluid intake, dietary bulk and exercise to prevent constipation

1.4 Antiemetics

CYCLIZINE

Dosage form and strength: *Tablets:* 25 mg and 50 mg

Indication: Prevention and treatment of nausea, vomiting and vertigo associated with motion sickness

Contraindication/Precautions: Asthma, glaucoma, emphysema, chronic pulmonary disease. Should not be concurrently used with sedatives, tranquilizers and anticholinergic medication

Dosage schedule: *Motion sickness:* 50 mg 30 minutes before traveling, can be repeated in 6 hours (up to 200 mg/day), 6-12 hours, 25 mg up to 3 times/day not to exceed 75 mg/day

Adverse effects: Drowsiness, xerostomia, headache, dermatitis, urinary retention, diplopia

Patient information: Avoid hazardous activities, activities requiring alertness because dizziness may occur; avoid alcohol, other CNS depressants; take 30 minutes before travelling

DIMENHYDRINATE

Dosage form and strength: *Tablet:* 50 mg; *Injectable:* 50 mg/ml

Indication: Prevention of motion sickness, Meniere's disease

Contraindication/Precautions: Hypersensitivity, pregnancy and neonates, breast-feeding, seizures, angle closure glaucoma, benign enlargement of

prostate. Masks early signs of ototoxicity if given consistently with ototoxic drugs

Dosage schedule:

- *Prevention of motion sickness:* 50-100 mg 4-6 hours or 30 minutes before traveling (not to exceed 400mg/day);
- *Meniere's disease:* 50 mg intra-muscular for acute attack, 25-50 mg 8 hourly for maintenance

Adverse effects: Paradoxical CNS stimulation (children & occasionally in adults), CNS depression, dizziness

Drug and food interaction: Eluxadoline, sodium oxalate increases effects by pharmacodynamics synergism

Patient information: Avoid hazardous activities, activities requiring alertness because dizziness may occur; avoid alcohol, other CNS depressants

DOMPERIDONE

Dosage form and strength: *Tablet:* 10 mg; *Suspension:* 1 mg/ml

Indication: Antiemetic, gastrokinetic to accelerate gastric emptying, dyspepsia, GERD (Gastro esophageal reflux disease)

Contraindication/Precautions: Obstruction to GIT, urinary outflow, paralytic ileus, comatose condition, hepatic and cardiovascular disease, glaucoma

Dosage schedule:

- *Acute nausea and vomiting:* 10-20 mg 6-8 hours (child 0.25-0.5 mg/kg);
- *Functional dyspepsia:* 10-20 mg 3 times daily before food for maximum of 12 hours

Adverse effects: Galactorrhoea, gynaecomastia, decreased libido, skin rashes

Drug and food interaction: Anticholinergic drugs may reduce the therapeutic effects of domperidone

Patient information: Avoid grapefruit juice during therapy

METOCLOPRAMIDE

Dosage form and strength: *Tablet:* 10 mg; *Injection:* 5 mg/ml

Indication: Nausea and vomiting in GI disorders and treatment with cytotoxic or radiotherapy, GERD, gastroparesis, premedication and post operatively

Contraindication/Precautions: Gastro intestinal obstruction, haemorrhage or perforation, 3-4 days after GI surgery, pheochromocytoma, convulsive disorders, renal and hepatic impairment, elderly, children, pregnancy and breast feeding, Parkinson's disease, epilepsy, depression, porphyria. Assess for extra-pyradimal side effects (difficulty in speaking, loss of balance, rigidity, tremor), signs of depression

Dosage schedule:

- *Nausea and vomiting, GERD, Gastroparesis:* Adult: 10 mg 3 times daily (children 2-5 mg/kg);
- *Premedication:* 10 mg single dose
- *Aid to gastrointestinal procedure:* 10-20 mg as single dose 5-10 minutes

before examination

Adverse effects: Extrapyramidal symptoms (children and young adult), tardive dyskinesia on prolonged use, hyperprolactinemia, drowsiness, dizziness, restlessness, headache, neuroleptic malignant syndrome, rashes, pruritus, cardiac conduction abnormalities following IV administration

Drug and food interaction: Alcohol, other CNS depressants increase sedation effects. haloperidol, phenothiazines increase risk for EPS

Patient information: Avoid concurrent use of alcohol and other CNS depressants

ONDANSETRON

Dosage form and strength: *Injectable:* 2 mg/ml; *Tablet:* 4 mg, 8 mg and 24 mg; *Oral solution:* 4 mg/5ml

Indication: Chemotherapy induced nausea and vomiting, post operative nausea and vomiting, radiation induced nausea and vomiting, uremic pruritus, rosacea, hyperemesis gravidarum

Contraindication/Precautions: Hypersensitivity reactions, co-administration with apomorphine, pregnancy, breastfeeding, moderate to severe liver impairment; child below 4 years of age - safety and efficacy not established

Dosage schedule:

- *Chemotherapy induced nausea and vomiting:* moderate - 8 mg started 30 minutes prior, highly emetogenic 24 mg; IV - 0.15 mg/kg over 15 minutes, 30 minutes prior to chemotherapy then 4 and 8 hours
- *Postoperative nausea and vomiting :* 4 mg IV/IM before anaesthesia as after procedures
- *Radiation induced nausea and vomiting:* 8 mg PO 1-2 hours before radiation, subsequent doses every 8 hours
- *Cholestatic pruritus:* 8 mg 12 hours or 8 hours for 7 days
- *Uremic pruritus:* 8 mg 12 hours or 8 hours for 14 days,
- C*hild below 4 years of age:* Safety and efficacy not established, can be given 0.1 mg/kg IV in postoperative nausea &vomiting

Adverse effects: Headache, constipation, hiccups, flushing, transient visual disturbances, involuntary movements, dizziness, arrhythmia, hypotension

Patient information: Report to health care professional immediately if symptoms of irregular heart beat or involuntary movement of eyes, face or limbs occur

PROCHLORPERAZINE

Dosage form and strength: *Injection:* 12.5 mg/ml; *Tablets:* 5 mg and 25 mg

Indication: Postoperative nausea and vomiting, chemotherapy induced nausea and vomiting, vertigo, psychosis

Contraindication/Precautions: Coma, hypersensitivity. Should be protected from light

Dosage schedule:

- *Acute attack of vomiting:* 20 mg initially then 10 mg after 2 hours
- *Prevention of nausea and vomiting:* 5-10 mg 2-3 times daily (0.25 mg/kg)

- *Labyrinthine disorders:* 5 mg 3 times daily (up to 30 mg daily in divided doses)

Adverse effects: Muscle dystonia and other extrapyramidal side effect, dry mouth, drowsiness

Drug and food interaction: Increase serotonin syndrome, neuroleptic malignant syndrome with SSRIs, SNRIs

Patient information: Avoid hazardous activities, activities requiring alertness, alcohol; not to double or skip doses; avoid sun, wear sunscreen, protective clothing

PROMETHAZINE

Dosage form and strength: *Tablets:* 25 mg, 50 mg and 125 mg; Syrup: 6.25 mg/ml; *Suppository:* 25 mg, 50 mg and 125 mg; *Injection:* 25 and 50 mg/ml

Indication: Nausea, vomiting, motion sickness, pre-operative and post-operative sedation, obstetric sedation

Contraindication/Precautions: Porphyria, child under 2 years (risk of respiratory depression), pregnancy. May cause photosensitivity

Dosage schedule:

- *Nausea and vomiting:* PO/PR 12.5-25 mg 4-6 hours, IV/IM 12.5-25 mg 4-6 hours
- *Motion sickness:* 25 mg PO/PR 30-60 minutes before travel
- *Pre-operative sedation:* 50 mg PO/PR on night before procedure
- *Post-operative:* 25-50 mg IV/IM combined with reduced doses of analgesics
- *Allergic conditions:* 25 mg at bedtime or 12.5 mg (PO/PR), 25 mg may be repeated in 2 hours (IV/IM)

Adverse effects: Sedation, blurred vision, confusion, hallucination, disorientation, extrapyramidal symptoms

Drug and food interaction: May potentiate the sedative action of opiates, other CNS depressants, antihistamines and alcohol

Patient information: Avoid prolonged exposure to sunlight, avoid concurrent use of alcohol or other CNS depressants

1.5 Anti-diarrhoeal drugs

DIPHENOXYLATE

Dosage form and strength: *Tablet:* 2.5 mg diphenoxylate and 0.025 mg atropine

Indication: Acute diarrhoea, chronic mild ulcerative colitis

Contraindication/Precautions: Children <4 years, hypersensitivity, hepatorenal disease, pregnancy, obstructive jaundice, abnormal liver function, diarrhoea, pseudomembranous colitis, pregnancy, breast feeding, hepatic disease, ulcerative colitis, hypertensive crisis

Dosage schedule: Initial dose for adults is 4 tablets, followed by 2 tablets every 6 hours until diarrhoea is controlled. Maintenance dose as low as ¼th of initial dose

Adverse effects: Blurred vision, sedation, nausea, vomiting, abdominal discomfort, dryness of mouth, urinary retention

Drug and food interaction: Antimuscarinics, opioids and analgesics, avoid in those with NAD inhibitors

LOPERAMIDE

Dosage form and strength: *Tablet:* 2 mg

Indication: Acute nonspecific diarrhoea, chronic diarrhoea, faecal incontinence, pain of intestinal colic

Contraindication/Precautions: Active ulcerative colitis, antibiotic associated colitis, condition where abdominal distention develops, condition where inhibition of peristalsis should be avoided. Hypersensitivity, bloody diarrhoea, high fever, infectious diarrhoea; pseudomembranous colitis, age<2 years. Patients in whom constipation must be avoided. Avoid use as primary therapy with acute dysentery. Discontinue if no improvement seen within 48 hours in patient with acute diarrhoea, symptoms worsen or abdominal swelling or bulging develops

Dosage schedule:

- *Acute diarrhoea:* Initially 4 mg, followed by 2 mg for up to 5 days; usual dose 6 to 8 mg daily; maximum 16 mg per day
- *Chronic diarrhoea:* Initially 4 to 8 mg daily in divided doses; subsequently adjusted accordance to response, maintenance up to 16 mg daily in 2 divided doses

Adverse effects: Dizziness, drowsiness, fatigue, flatulence, headache, nausea

Drug and food interaction: Eluxadoline and fentanyl increase chance and severity of constipation

Patient information: Do not take missed doses, do not double dose

ORAL REHYDRATION SALTS

Dosage form and strength: *Sachet:* 2.6 g/l sodium chloride, 2.9 g/l sodium citrate (dihydrate), 1.5 g/l potassium chloride,13.5 g/l glucose (anhydrous)

Indication: Dehydration from acute diarrhoea

Contraindication/Precautions: Renal impairment. Should be protected from moisture

Dosage schedule: Fluid and electrolyte loss in acute diarrhoea: oral - adult 200-400 ml solution after every loose motion; infant 1-1.5 times usual feed volume; child 200 ml after every loose motion

Adverse effects: Vomiting (too rapid administration), hypernatremia and hyperkalaemia (overdose in renal impairment or administration of too concentrated solution)

Patient information: One sachet should be used to prepare one litre of solution, discard any unused solution after 24 hours; do not boil/dilute the solution

RIFAXIMIN

Dosage form and strength: *Tablet:* 200 mg and 550 mg

Indication: Traveller's diarrhoea, hepatic encephalopathy, irritable bowel

syndrome

Contraindication/Precautions: Hypersensitivity, pregnancy category C, breast feeding. Not effective in traveller's diarrhoea due to organism other than *E. coli*; discontinue if symptoms worsen or persist > 24-48 hours; hepatic impairment. Possibility of pseudomembranous colitis

Dosage schedule:

- *Traveller's diarrhoea:* oral, 200mg TDS for 3 days
- *Hepatic encephalopathy (maintenance of remission):* oral, 550mg BD
- *Irritable bowel syndrome:* oral, 550 mg TDS for 14 days

Adverse effects: Flatulence, rectal tenesmus, abdominal pain, defecation urgency, constipation, nausea, vomitting

ZINC SULFATE

Dosage form and strength: *Oral solution:* 10 mg/5 ml; *Tablet:* 10 mg, 20 mg
Indication: Adjunct to ORS in acute diarrhoea
Contraindication/Precautions: Acute renal failure (may accumulate)
Dosage schedule:

- *Infants<6 months:* 10 mg daily for 10-14 days
- *Child 6 months-5 years ronic diarrhoea:* 20 mg daily for 10-14 days

Adverse effects: Abdominal pain, dyspepsia, Nausea, Vomiting, Diarrhoea, Headache, Gastric irritation
Drug and food interaction: Absorption of ciprofloxacin, levofloxacin, ofloxacin, ferrous salt and calcium salt can be reduced
Patient information: Tablets may be dispersed in breast milk, in oral rehydration solution or in water on a small spoon, older children may chew tablets or swallow them with water; inform doctor if severe nausea/vomiting, abdominal pain or tarry stools seen

1.6 Laxatives

1.6.1 Bulk forming agents

ISPAGHULA HUSK

Dosage form: *Powder (in plastic bottles):* 50 g, 100 g, 200 g, 500 g
Indication: Constipation
Contraindication/Precautions: Useful to patient who cannot tolerate bran
Dosage schedule: 0.5-2 gm/day (3 tea spoonful) at bed time, children ½ of adult dose
Adverse effects: Abdominal distension, flatulence
Patient information: increase fluid intake, bulk forming foods in diet and mobility

1.6.2 Stool softeners

DOCUSATE SODIUM

Dosage form and strength: *Tablet:* 100 mg; *Syrup:* 50 mg/ml; *Drops:* 25mg/drop

Indication: Constipation, adjunct to radiological procedure (with Barium meal 400 mg)
Contraindication/Precautions: Hypersensitivity reaction, intestinal obstruction, prolong use and children
Dosage schedule: 50-300 mg per oral single or divided dose (up to 500 mg), initially large dose, gradually decrease dose, with barium meal 400 mg
Adverse effects: Rashes, transient abdominal cramping pain

LIQUID PARAFFIN

Dosage form and strength: *Emulsion:* 25% v/v
Indication: Constipation
Contraindication/Precautions: Hypersensitivity reactions
Dosage schedule: 10-30 ml at night
Adverse effects: Lipoid pneumonia due to aspiration, interfere fat soluble vitamin absorption, Foreign body granulomatous lesion on mesenteric, liver and spleen

1.6.3 Stimulant laxative

BISACODYL

Dosage form and strength: *Tablet:* 5 mg, 10 mg; *Suppository:* 5 mg, 10 mg
Indication: Constipations, bowel preparation for radiology and surgery
Contraindication/Precautions: Intestinal obstruction**,** pregnancy, children <4 years.
Dosage schedule:
- *Constipation:* 5-10 mg (oral) at night, 10 mg at morning suppository
- *Radiological procedure:* 10 mg per oral at night then 10 mg suppository at morning, 1 hour before procedure
- *Paediatric:* >6 yr, 5 mg per oral at night, <10 yrs, 5 mg suppository
- *Radiological procedure:* 5 mg by mouth at night, 5 mg per rectal at morning

Adverse effects: Abdominal cramp, local irritation
Drug and food interaction: Increase risk of mucusoal ulceration while coadminstering with sodium sulfate, potassium sulfate or magnesium sulfate. May produce hypokalemia with deflazacort or dichlorphenamide.
Patient information: Better to be taken in empty stomach, to be taken with full glass of water. Swallow tabs whole with full glass of water; do not break, crush, chew tabs. alone only with water for better absorption. Do not take with antacid with in 1 hour

SENNA

Dosage form and strength: *Tablet:* 7.5 mg
Indication: Constipation, bowel preparation for radiological and surgical procedure
Contraindication/Precautions: Avoid in children and pregnancy, intestinal obstruction. Should be avoided except when straining, increased risk of rectal bleeding in haemorrhoids
Dosage schedule:

- *Constipation:* Adult:2-4 tablets at night, Children (>6 years): ½ of adult dose
- *Bowel preparation:* 1 mg/kg in two divided doses

Adverse effects: Abdominal cramps

1.6.4 Osmotic laxatives

LACTULOSE

Dosage form and strength: *Syrup:* 10 mg/15 ml

Indication: Constipation, hepatic encephalopathy

Contraindication/Precautions: Hypersensitivity, intestinal obstruction, diabetic patient, pregnancy- use if benefit > risk. Take adequate water

Dosage schedule:

- *Constipation:* adult, 15 ml per oral twice daily (not more than 60ml/day) gradually titrate the dose to produce 2-3 soft stool/day
- *Children:* <1 year, 2.5 ml twice a day titrate according to stool frequency, 1-5 years, 5 ml twice a day titrate according to stool frequency, >6-12 years – 10 ml twice a day, titrate according to stool frequency;
- *Hepatic encephalopathy:* 30-45 ml (20-30 g) per oral to induce rapid detection, 30-45 ml per oral after 6-8 hours

Adverse effects: Dehydration, hypernatremia, abdominal distension

Drug and food interaction: Do not use with other laxative (hepatic encephalopathy), increase chance of GI obstruction with nifedipine

Patient information: Dilute with fruit juice or water to counteract sweet taste, take in empty stomach for rapid action; may cause belching, flatulence, abdominal cramping

MACROGOL 3350

Dosage form and strength: *Powder (in satchet):* 13.125 g (macrogol 3350) with 0.3507 g sodium chloride, 0.1785 g sodium bicarbonate, 46.6 mg potassium chloride

Indication: Constipation, fecal impaction

Contraindication/Precautions: Gut obstruction, gut perforation, severe inflammatory bowel disease, known hypersensitivity, cardiovascular diseases.

Dosage schedule:

- *Constipation:* dissolve 1 sachet in 125 ml of water, to be taken 1-3 times/day as required;
- *Fecal impaction:* dissolve 1 sachet in 125 ml of water, 8 sachets to be taken within 6 hours, up to 3 days if required

Adverse effects: Diarrhoea, dehydration, indigestion, pain abdomen, allergic reactions

Drug and food interaction: Anti-epileptics (decreased effectiveness)

Patient's information: Take plenty of fluids. Reconstituted solution can be kept in fridge (2-8°C) and covered, remaining solution to be discarded after 6 hours if not consumed

MAGNESIUM HYDROXIDE (MILK OF MAGNESIA)

Dosage form and strength: *Tablet:* 400 mg; *Suspension:* 7.75%, 400 mg/5 ml, 800 mg/5 ml, 1200 mg/5 ml
Indication: Constipation, acid peptic disease
Contraindication/Precautions: Renal failure, acute abdomen, undiagnosed abdominal pain, known hypersensitivity reaction, renal insufficiency
Dosage schedule:
- *Constipation:* 30-60 ml/day per oral at bed time (400 mg/5ml)
- *Acid peptic disease:* 5-15 ml (400 mg/5ml) per oral in 4 divided doses, 2-4 tab/day chewable tables

Adverse effects: Abdominal cramp, electrolyte imbalance, hypotension
Patient information: Shake solution before use. Better to be taken in empty stomach

MAGNESIUM SULPHATE

Dosage form and strength: *Injectable:* 40 mg/ml, 80 mg/ml, 50%; *Infusion solution:* 1 g/10 ml, 2 g/100 ml
Indication: Constipation, hypomagnesemia, eclampsia/severe preeclampsia, preterm labor, torsades de pointes
Contraindication/Precautions: Renal impairment, abdominal pain, acute surgical abdomenorectal bleeding, heart block
Dosage schedule:
- *Constipation:* 5-10 g dissolved in 24 ml of water

Adverse effects: Flaccid paralysis, circulatory collapse, nausea, vomiting, electrolyte and fluid disturbance
Drug and food interaction: Increases effects of neuromuscular blocker, increases hypotension-antihypertensives, decreases absorption of tetracyclines, fluoroquinolones
Patient information: Not to use laxative for long time; shake suspension well before use, not to given at bedtime as laxative may interfere with sleep

POLYETHYLENE GLYCOL 3350

Dosage form and strength: *Powder (in sachet):* 255 g, 527 g
Indication: Constipation
Contraindication/Precautions: Bowel obstruction, pregnancy category C, children
Dosage schedule: *Constipation:* 17 g, after reconstitution in a glass of water
Adverse effects: Nausea, abdominal bloating, cramping and flatulence, diarrhoea and excessive stool frequency
Patient's information: Report if unusual cramps, bloating or diarrhoea occurs

1.7 Drugs used in inflammatory bowel diseases (IBD)

ADALIMUMAB

Dosage form and strength: *Injection:* 40 mg/0.8 ml prefilled syringe/pen
Indication: Crohn's disease, ulcerative colitis, rheumatic and psoriatic arthritis, ankylosing spondylitis, plaque psoriasis

Dosage schedule: *Crohn's disease and ulcerative colitis:* subcutaneous, initial: 160 mg (given on day 1 or split and given over 2 consecutive days), then 80 mg 2 weeks later (day 15), maintenance: 40 mg every other week beginning day 29

BUDESONIDE

Dosage form and strength: *Tablet (enteric coated):* 3 mg
Indication: Treatment of mild to moderate active Crohn's disease,
Contraindication/Precautions: Hypersensitivity, pregnancy cat (C), hepatic impairment
Dosage schedule:

- *Treatment of mild to moderate active Crohn's disease:* 9 mg orally once daily for up to 8 weeks;
- *Maintenance of clinical remission of mild to moderate Crohn's disease:* 6 mg orally once daily for maintenance of clinical remission up to 3 months (if symptom control maintained, taper doses to complete cessation)

Adverse effects: Increased risk of infection, abdominal pain, flatulence, vomitting and other corticosteroid related systemic adverse effects
Drug and food interaction: Avoid using CYP3A4 inhibitors concomitantly

HYDROCORTISONE ACETATE

Dosage form and strength: *Suppository:* 25 mg
Indication: Ulcerative colitis, proctitis, proctosigmoiditis
Contraindication/Precautions: Avoid in bowel obstruction preparation, and untreated infection. Proctoscopic examination required before treatment, avoid prolonged use
Dosage schedule: Suppository 25 mg twice daily for 2 weeks – can be increased up to 25 mg 3 times daily or 50 mg twice daily
Adverse effects: Local pain/burning sensation, rectal bleeding, exacerbation of untreated infections

INFLIXIMAB

Dosage form and strength: *Injection:* 100 mg
Indication: Crohn's disease, ulcerative colitis
Contraindications/Precautions: Discontinue if serious infection/sepsis, pregnancy (B). Consider premedication with antihistamines, acetaminophen, and/or corticosteroids. Increases risk of lymphoma and other malignancy in children and adolescents
Dosage schedule:

- *Crohn disease:* adult, IV: 5 mg/kg at 0, 2, and 6 weeks, followed by 5 mg/kg every 8 weeks thereafter; dose may be increased to 10 mg/kg in patients who respond but then lose their response. If no response by week 14, consider discontinuing therapy, Children ≥6 years and adolescents, IV: 5 mg/kg at 0, 2, and 6 weeks, followed by 5 mg/kg every 8 weeks thereafter;
- *Ulcerative colitis:* IV: 5 mg/kg at 0, 2, and 6 weeks, followed by 5 mg/kg every 8 weeks thereafter, children ≥6 years and adolescents, IV, 5 mg/kg at 0, 2, and 6 weeks, followed by 5 mg/kg every 8 weeks thereafter

Adverse effects: Hypersensitivity, abdominal pain, increased serum ALT, infection, infusion related reaction

Drug and food interaction: Adalimumab, etanercept (increases immunosuppressive effect of infliximab)

MESALAZINE

Dosage form and strength: *Tablet:* 1.2 g; *Suppository:* 500 mg; *Enema:* 5 ml

Indication: Ulcerative colitis (acute attack, maintenance of remission). maintenance of remission of Crohn's ileo-colitis

Contraindication/Precautions: Hypersensitivity to salicylates, breast feeding mother, children with chickenpox or flu like symptoms, active peptic ulcer disease, severe renal failure. Empty stomach prior rectal administration of drug; instruct patient on correct method of administration

Dosage schedule:

- *Maintenance of remission of ulcerative colitis (UC) and Crohn's ileo-colitis:* Adult 1.2-2.4 g daily in divided dosage, child 12-17 years 400-800 mg 3 times/day
- *Treatment of mild to moderate UC and acute attack:* Adult 2.4 g daily in divided dosage, child 12-17 years 800 mg 3 times a day

Adverse effects: Dizziness, oligospermia, abdominal pain, flatulence and headache

Drug and food interaction: Preparation that lower stool pH (e.g. lactulose) may prevent release of mesalazine

SULFASALAZINE

Dosage form and strength: *Tablet:* 0.5 g, 1 g; *Suppository:* 500 mg

Indication: Ulcerative colitis, active Crohn's disease, active rheumatoid arthritis

Contraindication/Precautions: Avoid in cases of hypersensitivity to salicylates or sulfonamides, child under 2 years, porphyria, intestinal or urinary obstruction, severe renal impairment. Use with caution in renal, hepatic impairment, G6PD deficiency, blood related disorder, child

Dosage schedule:

- *Ulcerative colitis:* adult (oral) - 1-2 g QID in acute attack until remission maintenance dose 500 mg QID, child > 2 yrs 40 -60 mg/kg in acute attack, reducing to maintenance dose 20-30 mg/kg daily;
- *Active Crohn's disease:* adult (oral) 1-2 g QID in acute attack until omission occurs, child >2 year 40-60 mg/kg daily in acute attack;
- *Ulcerative colitis, Crohn's disease:* by reactive suppositories, 0.5-1 g morning & evening after bowel movement, by rectum (retention enema), 3 gm at night for at least an hour

Adverse effects: Nausea, vomiting, exacerbation of colitis, diarrhoea, loss of appetite, fever, blood disorders, hypersensitivity, lung complications (eosinophilia, fibrosing alveolitis), periorbital edema

Patient information: Take each oral dose with full glass of water to prevent crystalluria, urine, skin may be coloured yellow orange.

1.8 Drug used in esophageal varices

OCTREOTIDE

Dosage form and strength: *Injection:* 0.05 mg/ml, 0.1 mg/ml, 0.2 mg/ml, 0.5 mg/ml and 1 mg/ml
Indication: Esophageal variceal bleeding, acromegaly, carcinoid tumor, VIPoma
Dosage schedule: *Esophageal variceal bleeding:* 50 mcg IV bolus, then 25-50 mcg/hr for 1-5 days
Adverse effects: *See under section 12.6*
Drug and food interaction: *See under section 12.6*

TERLIPRESSIN

Dosage form and strength: *Injection:* 200 mg/2 ml
Indication: Bleeding from esophageal varices
Contraindication/Precautions: Avoid in seizure, migraine, asthma, heart failure and renal disease. Use in pregnant women only if clearly needed
Dosage schedule: Initially 2 mg every 4-6 hours until bleeding is controlled, then 1 mg every 4-6 hour for maximum up to 48 hours
Adverse effects: Abdominal cramps, headache, cardiac arrhythmias

1.9 Drugs affecting biliary composition and flow

URSODEOXYCHOLIC ACID

Dosage form and strength: *Tablets:* 150 mg; *Capsules:* 250 mg
Indication: Used in dissolution of gallstones, primary biliary cirrhosis
Contraindication/Precautions: Pregnant and lactating mothers. Avoid aluminium containing antacids during therapy, may impair absorption
Dosage schedule:

- *Dissolution of gall stones:* 8-12 mg/kg daily as a single dose at bedtime or in two divided doses, for up to 2 years; treatment is continued for 3-4 months after stones dissolve
- *Primary biliary cirrhosis:* 10-15 mg/kg daily in 2-4 divided doses

Adverse effects: Nausea, vomiting, diarrhoea, gallstone calcification, pruritus

1.10 Probiotics

They are combination of microbial cell preparation (live cultures or lypophilised powders) usually containing *Lactobacillus sp., Bifidobacterium, Streptococcus faecalis, Enterococcus sp. and the yeast Saccharomyces boulardii*, etc.
Dosage form and strength: *Capsule/sachet (organisms vary from 15 million cells to 2.5 billion cells of lactobacillus acidophilus)*
Indication: Infective diarrhoea, antibiotic associated diarrhoea, risk of traveller's diarrhoea
Contraindication/Precautions: Immunocompromised patients.