Gastrointestinal conditions:

The main function of GIT is to break food down into a suitable energy source to allow normal physiological function of cells.

Diarrhea:

Diarrhea is an ***increased frequency*** of bowel evacuation with the passage of abnormally ***soft or watery stools*** The basis of treatment is electrolyte and fluid replacement; in addition, anti-diarrhoeals are useful in adults and older children. It's not a disease but a sign of underlying problem or infection or GIT disorder. It could be classified as acute(less than 7 days), chronic(more than 14 days) or persistent (longer than a month).

Causes of Diarrhea

1-Acute diarrhoea (infective diarrhoea, gastroenteritis):

Viral: ***Rotavirus*** is the most common cause of diarrhea in children **under the age of 2 years** [4].

Bacterial: These are ***the food-borne infections*** (previously known as food poisoning). There are several different types of bacteria that can cause such infections: ***Salmonella***, ***Shigella***, pathogenic ***Escherichia coli***,…….. . The typical symptoms include severe diarrhoea and/or vomiting, with or without abdominal pain [1].

Antibiotics are generally unnecessary as most food-borne infections resolve spontaneously. The most important treatment is adequate fluid replacement. Antibiotics are used (by prescription only) for ***Shigella*** infections and the more severe ***Salmonella***. *Ciprofloxacin* (**by prescription**) may be used in such circumstances [1].

Protozoan: Examples include ***Entamoeba histolytica*** (amoebic dysentery) and ***Giardia lamblia*** (giardiasis). Diagnosis is made by sending stool samples to the laboratory

Significance of questions to reach diagnosis:

1. Age: significant care for very young (less than 1 yr) and elderly because risk of dehydration.
2. Frequency: which is more than normal, also the severity of diarrhea must known.
3. Duration: chronic diarrhea should be referred. The causes of chronic diarrhea are -----
4. Recent change in diet: must ask the pt. about this
5. Dose any sign of dehydration present?
6. Associated symptoms (vomiting, abd. Cramps, present of blood or mucus)
7. Previous history; either medical or disease history
8. Recent travel

Conditions to eliminate:

protozoal infection, IBS,Medicine induced diarrhea , for ex----------, Ulcerative colitis, Malabsorption syndromes

Management:

1- **ORS:** it has proven to be a simple highly effective treatment, which decrease mortality and morbidity ass. With acute diarrhea in developing countries

2- **Loperamide and entero-stop (anti-motility agents)**: synthetic opioid analogue, act by slowing intestinal tract time and increasing the capacity of the gut.
Dose :Loperamide: Initially 2 tablets (4 mg) followed by 1 tablet (2 mg) after each loose stool (max. 8 tablets / day). Enterostop: 4

Amount of rehydration solution to be offered to patients.

Age	Quantity of solution (per watery stool)
Under 1 year	50 mL (quarter of a glass)
1–5 years	100 mL (half a glass)
6–12 years	200 mL (one glass)
Adult	400 mL (two glasses)

tablets initially followed by 2 tablets every 6 hours.

3- **Bismuth subsalicylate**: no longer use because new products are present and more effective
4- **Kaolin and pectin(adsorbant)**:like pectokal syr.

Further reading about diarrhea

1-Probiotics:
Probiotics are live microbial mixtures of bacteria (including several Lactobacillus species, lacteol forte) and yeasts used to restore the normal intestinal flora. Probiotics have been shown to decrease the duration of infectious and antibiotic-induced diarrhea in adults and children .
2-Use of zinc in children with diarrhea zinc supplementation in young children with acute diarrhea reduces total stool output, frequency of watery stools, and duration and severity of diarrhea . WHO/UNICEF recommend that children with acute diarrhea also receive zinc (10 mg of elemental zinc/day for infants younger than 6 months; 20 mg of elemental zinc/day for older infants and children) for 10 to 14 days.
3- Antisecretary: Hidrasec?? [H.w from BNF]

Constipation:

Constipation: is a condition characterized by the passage of hard, dry stools more than person's normal The most common cause of constipation is an increase intestinal tract transient time of food, which allows greater water resorption from the large intestinal, either caused by change life style&\or environment, disease and medication??.

Specific question to ask the pt:

1- Pain on defecation; this is usually due to anorectal problem (hemorrhoid))
2- Presence of blood: must ask the pt. about blood nature (anal fissure)
3- Duration: more than 6 wks consider as chronic (chronic disease) . If the constipation lasts 14 days with no identifiable cause must be referral.
4- Life style change
5- Medical history.

Conditions to eliminate:

IBS, Pregnancy why?, Functional cause in children, Depression, hypothyroidism

Management:

Firstly, especial non-complicated cases; non-drug treatment is advocated by lifestyle and dietary change by increase fluid intake and fiber ingestion.

Laxative is the drug choice for constipated pts. How to use each product?

Type of laxative	How they work	Side effects	Onset
Oral osmotics (lactulose, Mg hydroxide)	Draw water into the colon from surrounding body tissues to allow easier passage of stool	Bloating, cramping, diarrhea, nausea, gas, increased thirst	1-2days
Oral bulk formers (ispaghula husk, methylcellulose, sterculia)	Absorb water to form soft, bulky stool, prompting normal contraction of intestinal muscles	Bloating, gas, cramping or increased constipation if not taken with enough water	12-24h sometimes72h
Oral stool softeners (docusate)	Add moisture to stool to allow strain-free bowel movements	Electrolyte imbalance with prolonged use	6-8h
Oral stimulants (senna, bisacodyl, sod. Picosulphate, glycerol)	Trigger rhythmic contractions of intestinal muscles to eliminate stool	Belching, cramping, diarrhea, nausea, urine discoloration	6-12h
Rectal stimulants (Bisacodyl,	Trigger rhythmic contractions of intestinal	Rectal irritation, stomach	1 h

Pedia-Lax, Dulcolax, glycerin)	muscles to eliminate stool	discomfort, cramping	

laxtive abuse: Chronic overuse of stimulant laxatives can result in loss of muscular activity in the bowel wall (an atonic colon) and thus further constipation.

IBS:

Is chronic, functional bowel disorder in which abdominal pain is associated with intermittent diarrhoea, sometimes alternating with constipation, and a feeling of abdominal distension. The cause is unknown. IBS can sometimes develop after bout gastroenteritis. It often seems to be triggered by stress, and many IBS sufferers have symptoms of anxiety and depression, the incidence is higher in women.

Questions to patients:

1- Age: IBS usually develops in young adult life.
2- Symptoms present; in order to reach diagnosis and ask him if ass. Symptoms are present.
3- Duration.
4- Previous history
5- Medication
6- Aggravating factors
7- Pain location

Managements

Antispasmodics

Antispasmodics are the mainstay of OTC treatment of IBS and research trials show some improvement in abdominal pain with smooth muscle-relaxants. Ex: mebeverine, peppermint oil and alverin

Mebeverine is safe drug even for pregnant woman and breast-feeding, rarely S.E and well tolerated. One tab three times daily before meal in 20 min.

Alverin citrate is given in a dose of 60–120 mg (one or two capsules)
up to three times a day

peppermint oil has been used for many years as an aid to digestion and has an antispasmodic effect.

Hyoscine butylbromide given one tab three times daily, and can increase to two tab four time daily.

Simethicone : anti-flatulence effect which act as placebo. Mostly chewable tab is present. Should be taken 20 min before meal

Compinatios

Colona, collaprid, Liprax, Salabid, composition?

Further Reading

Probiotics

local antibiotics(rifaximine), ROLE?

Heartburn

It's a reflux of gastric contents (acid, pepsin, occasionally bile) into the esophagus, which irritate the sensitive mucosal surface (esophagitis).
Patients will often describe the symptoms of heartburn – typically a burning discomfort/pain felt in the stomach, passing upwards behind the breastbone (retrosternal).

Significance of questions and answers

Age

The symptoms of reflux and esophagitis occur more commonly in patients aged over 55 years. Heartburn is not a condition normally experienced in childhood, although symptoms can occur in young adults and particularly in pregnant women (Why???).

Symptoms/associated factors

A burning discomfort is experienced in the upper part of the stomach in the midline (epigastrium) and the burning feeling tends to move upwards behind the breastbone (retrosternally). The pain may be felt only in the lower retrosternal area or on occasion right up to the throat, causing cough or an acid taste in the mouth.

Precipitating or aggravating factors:

Heartburn is often brought on by bending or lying down. It is also more likely to occur after a large meal. It can be aggravated and even caused by belching.
It is more likely to occur in overweight patient and can be aggravated by a recent increase in weight.

Medication

Identity any medication has been tried to treat the symptoms. Any other medication being taken by the patient should also be identified; some drugs can cause the symptoms of heartburn, e.g. those with anticholinergic actions, such as tricyclic antidepressants and calcium channel blockers and caffeine in compound analgesics or when taken as a stimulant.

Condition to eliminate

Severe pain

Sometimes the pain can come on suddenly and severely and even radiate to the back and arms. This can mimic a heart attack (ischemic heart disease) and urgent medical referral is essential.

Dysphagia or Regurgitation

Difficulty in swallowing (Dysphagia **)** must always be regarded as a serious symptom.
Regurgitation can be associated with difficulty in swallowing. It occurs when recently eaten food sticks in the oesophagus and is regurgitated without passing into the stomach. It may be due to mechanical obstruction of the oesophagus, e.g. by a tumour or peptic stricture.

Peptic Ulcer

When to refer

Failure to respond to antacids, Pain radiating to arms, Difficulty in swallowing, Regurgitation, Long duration, Increasing severity, Children.

Management

1. Patient Education

1. Weight reduction
2. Small meals, eaten frequently, are better than large meals, as reducing the amount of food in the stomach reduces gastric distension.
3. Avoid high-fat meals as it delay gastric emptying. The evening meal is best taken several hours before going to bed.
4. Bending and stooping can provoke symptoms and should be avoided where possible. There is evidence that raising the head of the bed can reduce both acid clearance and the number of reflux episodes.
5. Tight, constricting clothing, especially waistbands and belts, can be an aggravating factor and should be avoided.
6. Smoking, alcohol, caffeine and chocolate have a direct effect by making the oesophageal sphincter less competent by reducing its pressure.

2. Pharmacological treatment

Antacids

Antacids can be effective especially if combined with an alginate. These are weak bases that dissociate to form alkaline salts, thereby neutralising gastric acid.

Soluble salts (Na, K salts): act quickly but are absorbed rapidly, so reducing their duration of action.

Less soluble(Mg, Al salts) are less rapid but more prolonged action.

Ca salt: both rapid action and long duration.

**Antacid usually present in combination (Why???), liquid dosageform rabid acting than sold dosageform. Antacid should give1 h after a meal (why??)

S/E:

1.Preparations that are high in sodium should be avoided by anyone on a sodium-restricted diet (e.g. those with heart failure or kidney or liver problems).

2.Constipation(Al salt) or diarrhea (Mg salt).

3.Chronic over use of antacid may result in systemic absorption. Chronic abuse of Ca-containing antacid → milk alkai syndrome (*especially if patient use thiazide diuretic??). Al-containing product →osteomalasia.

Interactions with antacids

1. Raise gastric pH→ interfere with enteric coated tab→ unpredictable release of the drug, adverse effects or drug inactivation may occur.

2. Antacids may reduce the absorption of tetracyclines, *azithromycin*, *itraconazole*, *ketoconazole*, *ciprofloxacin*, *dipyridamole*, *norfloxacin*, *rifampicin.*

Taking the doses of antacids and other drugs at least 1 h apart should minimise the interaction

Alginates

Alginates form a raft that sits on the surface of the stomach contents and prevents reflux. Some alginate-based products contain *sodium bicarbonate*, which, in addition to its antacid action, causes the release of carbon dioxide in the stomach, enabling the raft to float on top of the stomach contents.

H2 antagonists (famotidine and ranitidine)

Famotidine and *ranitidine* can be used for the short-term treatment of dyspepsia, hyperacidity and heartburn in adults and children over 16 y.

The H2 antagonists have both a longer duration of action (up to 8–9 h) and a longer onset of action than do antacids so they can be given in compination.

H2 antagonist should be taken an hour before food. H2 antagonists are also effective

for prophylaxis of nocturnal heartburn.

SE: Headache, dizziness, diarrhea and skin rashes have been reported as adverse effects but they are not common.

Use during pregnancy???

**Famotidine*

The drug is licensed for OTC use at a maximum dose of 10 mg and a maximum daily dose of 20 mg. The maximum continuous treatment period is six days.

**Ranitidine*

Ranitidine is licensed for OTC use in a dose of 75 mg with a maximum daily dose of 300 mg. It can be used for up to two weeks.

*Cemitidine not OTC, not suitable for young man(why?), high drug intractions (Why ??)

Proton pump inhibitors

Omeprazole act by blocking the hydrogen–potassium ATPase enzyme in the parietal cells of the stomach wall. It can be used for the relief of heartburn symptoms associated with reflux in adults. It may take a day or so for them to start being fully effective..

Two 10-mg tablets once daily is the initial starting dose. increasing to 20 mg if symptoms return.

Patients taking *omeprazole* should be advised not to take H2 antagonists at the same time. The tablets should be swallowed whole with plenty of liquid prior to a meal. It is important that the tablets are not crushed or chewed.

Omeprazole should not be taken during pregnancy or whilst breastfeeding.

SE: Drowsiness(rare), diarrhea. Treatment with OTC *omeprazole* may cause a false-negative result in the 'breath test' for *helicobacter*.

Drug interactions: H.W????

Prokinetic Agents

Sometimes administered to patients with GERD, act by increase gastric emptying rate and increase lower esophageal sphincter tone. These agents not OTC medication, and they include

1-Metocloperamide

Dopamine antagonist, antiemetic drug,

Dose: 10mg tab 2-3times daily

SE:???

2-Domperidone

Antiemetic, less likely to cause central effect

Dose: 20-30mg 3-4 times daily

Used with caution in patient with cardiac disease (Why??)