RAMA UNIVERSITY

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FACULTY OF NURSING

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Unit 4
Drugs acting on G I System

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NC Syllabus

ntiemetics

metics

urgatives

ntacids

holinergic

nticholinergics

luid and Electrolyte therapy

ntidiarrheals

istamines

Proton pump inhibitors

Composition, Action, Dosage, Rou
Indications, Contraindications, Dr
Interactions, Side effects, Adverse
effects, Toxicity & Role of nurse

Antiemetics

- Antiemetics are the Drugs which prevent or control the Vomiting/Nausea.

Classification	
ndansetron	5HT3 Antagonists
anisetron	
olasetron	
omperidone	Prokinetics / Dopamine Antagonists
anzapine	
etoclopramide	
yclizine	Antihistamines
phenhydramine	
eclozine	
omethazine	
ydroxyzine	
yoscine & Dicyclomine	Anticholinergics

Mechanism of action

HT3 Antagonists: They block serotonin receptors in CNS and astrointestinal tract So they can be used to treat post operative ytotoxic (Chemotherapy) drugs nausea/ vomiting.

rokinetics (Dopamine Antagonists): They block the dopamin eurotransmitter also they promote gastrointestinal motility & uicken gastric emptying.

ntihistamines: They block the histamine neurotransmitter and ey act by an effect on vomiting center and by producing sedati

nticholinergics: An Anticholinergic agents block the eurotransmitter Acetyl choline in central and peripheral nervou ystem.

Durgs And their Dosage

No	Drug	Dose
1	Hyoscine	200-600mg (SC)
2	Diclomine	40mg 6hourly
3	Cyclizine	50mg 4-6 hour
4	Meclizine	25mg/day.
5	Metoclopramide	10mg
6	Domperidone	10-20 mg 4-6hours
7	Ondansetron	8-16mg

Indications / Uses

HT3 antagonists are used in management of
ausea vomiting associated with chemotherapy

ntihistamine such as diphen hydramine is use
or motion sickness and morning sickness.

Metoclopramide is used for gastric emptying in
atient's receiving tube feeding.

nticholinergic such as hyoscine, Dicyclomine
re useful in travel sickness.

Contraindication / Precautions

- Diphenhydramine is contraindicated in hypertensive patients.
- Metoclopramide is contraindicated in suspected gastrointestinal problem.
- Use cautiously and reduced dose in renal impairment conditions.

Adverse effects

- Hypotension.
- Constipation.
- Dryness of mouth.
- Blurred vision.
- Pain in IM injection site.
- Drowsiness.
- Rectal irritation.
- Photo sensitivity reaction.

Drug interactions

Use antihistamine, other CNS depressants including opioids and sedative – hypnotic drugs causes additive CNS depression.

Metoclopramide affects GI motility and alter GI absorption of other drugs such as salicylates, levodopa, diazepam, lithium, tetracycline.

Nursing Responsibilities

- ssess the patient for nausea/vomiting and fluid and
  ectrolyte imbalances.
- ecrease metoclopramide dose 50% of usual
  commended dose if creatinine clearance is less than
  0ml/min.
- nstruct the patient not to consume alcohol when taking a
  ntiemetic drugs.
- dvise the patient to take oral antiemetics 1hour before
  xposures to conditions causing motion sickness or befor
  avelling.

Emetics

- Emetics are drugs which produce vomiting.

Mechanism of action

- They stimulate the chemoreceptor trigger zone and gastric mucosa to induce vomiting.

Drug example and doses

.	Drugs	Doses
	Apomorphine	5mg IM
	Copper sulfate	Given in water every 5 min. until emesis occu
	Sodium chloride (NaCl)	2 table spoon of NaCl in glass of warm water
	Ipecac syrup	15-30ml (followed by 200ml of water.

Indications / Uses

- To induce vomiting.
- To treat poisoning.
- Treatment of overdose of drug.

Contraindication / Precautions

- History of seizures.
- Semi comatose or unconscious patient.
- Ingested caustic substance or petroleum products.

Adverse effects

- Arrhythmias.
- Cardiotoxicity.
- Diarrhea.
- Drowsiness.

Drug interactions

- Emetic reduce their effects when used with activated charcoal.

Nursing Responsibilities

- Assess the consciousness level of patient before administering drug.
- Follow administration of Ipecac syrup with one or two glasses of tepid water or other clear liquid.
- Obtain a history, to find out caustic substances to determine possible antidotes.
- We should know that lavage is necessary if second dose not produce vomiting Ipecac may be cardiotoxic if absorbed.

Laxatives/Purgatives

- These drugs are combinedly knows as purgatives, which includes laxatives and cathartics these drugs are used to overcome the constipation and proper evacuation of bowels.

Mechanism of action

smotic laxatives (Magnesium hydroxide) draw water in
e intestine to increase the mass of stool, stretching
usculature which results in peristalsis.

timulant laxatives result in stimulation of intestinal
eristalsis.

ubricant laxatives increase water retention in the stool,
revent water absorption from the stool, and lubricate as
ell as soften intestinal contents.

tool softener allow more fluid are fat to penetrate the
eces, producing a softer fecal mass.

Drug example and doses

	Drugs	Doses
	Bilk forming laxatives (Methyl Cellulose)	2 tablets 1000mg orally with 8oz liquid up to 6times a day.
	Lubricant laxatives include mineral oil (Kondremal, Fleet mineral oil enema.	-
	Hyperosmotic laxatives include lactulose.	10mg BD
	Stimulant laxatives (Bisacodyl, Castor oil)	5-10 mg sodium Pico sulfate 15-20 ml
	Stool softener (Docusate Calcium, Docusate potassium)	240mg 50-400mg orallyb1to 4 equally divided dose each day.

Indications / Uses

- o treat or prevent constipation.
- o prepare the bowel for radiologic or endoscopic rocedures.
- hort term treatment of constipation caused high dose of pioid use.
- smotic laxatives are used to rapid evacuation of the bow fter ingestion of poison or following anti-helminthic erapy to rid of the body from dead parasites.
- Methyl cellulose and psyllium are used to many chronic iarrhea.

Contraindication / Precautions

- Contraindicated if patient with parasites. Or severe abdominal pain of unknown cause.

Adverse effects

- GI irritation.
- Rectal burning sensation.
- Osmotic laxatives may causes dehydration.
- Long term use and abuse of laxatives may cause permanent loss of colonic motility. Laxative dependence and electrolyte imbalances.
- Nutritional deficiencies (with lubricant laxatives).
- Belching (with osmotic laxatives)
- Electrolyte imbalance. (with saline laxatives)

Drug interactions

- Laxative decrease intestinal transit time and reduce absorption of orally administer drugs.

Nursing Responsibilities

Assess for abdominal pain, distention, nausea/vomiting, bowel sounds.

Monitor the patient for fluid electrolyte imbalances.

Evaluate stools for frequency and consistency.

Mix bulk forming laxatives in full glass of water or juice.

Antacids

- They act by neutralizing Gastric acid in the stomach.

Mechanism of action

- They achieve their effects by neutralizing gastric acid, inhibiting gastric acid secretion or protect gastric mucosa.

Drug example and doses

S. No.	Drugs	Doses
1	Sodium bi carbonate	1-5 gram orally
2	Magnesium hydroxide	0.5-1gm
3	Aluminum Hydroxide	Up to 1gm daily
4	Magnesium carbonate	250-500 mg orally
5	Calcium carbonate	Up to 1.5gm daily

Indications / Uses

- Indigestion.
- Reflux esophagitis,
- Pain and burning with peptic ulcer.
- Peptic ulcer.

Contraindication / Precautions

- Abdominal pain of unknown origin.
- Caution in renal failure because they contain magnesium.
- Heart patient.

Adverse effects

- Constipation (Aluminum Hydroxide).
- Hypophosphatemia (with Aluminum Hydroxide).
- Hypomagnesemia (with Magnesium Hydroxide).
- Increase sodium can cause edema and CHF. (Sodium bi carbonate).
- Diarrhea (Magnesium Hydroxide)

Drug interactions

- Antacids decrease absorption of anticholinergics, sucralfate, H2 receptor antagonists, Iron, Isoniazid and tetracyclines.

Nursing Responsibilities

- ive antacids at least one hour after meal and at least one hour a art from enteric coated tablets.
- lways give combination of aluminum and magnesium hydroxi ecause they make a balance (constipation effects of aluminum ith laxative effects of magnesium).
- ive pre-cautiously to kidney and heart patient.
- heck antacids labels for sodium content and to use only low odium preparation.
- each the patient to avoid gastric irritants such as smoking, cohols, caffeine, NSAID's because they counteract the effect o rug.

Cholinergic - Information for GI system

arasympathomimetic or cholinomimetics

timulate parasympathetic nervous system in same mann
does acetylcholine

lay stimulate cholinergic receptors directly or slow
cetylcholine metabolism at synapses (affect the enzyme
cetylcholinesterase)

seful in treating Alzheimer's Disease, Myasthenia gravi
nd to treatment atony of the smooth muscle of the GI
ystem or urinary system

GI effects

Acetylcholine stimulates cholinergic receptors in the gut to promote normal secretory and motor activity

Cholinergic activity in the gut will increase peristalsis and facilitates movement of flatus and feces

The secretory functions of the salivary and gastric glands also stimulated.

Increased tone and contractility in GI smooth muscle, relaxation of sphincters, increased salivary gland and GI secretions.

Anticholinergics – Information for GI system

lso called cholinergic blocking agents or parasympatholytics

gain, focus is on the parasympathetic nervous system

arasympathetic system acts as a resting and reparative functi

unctions include digestion, excretion, cardiac decelertion, nabolism and near vision.

Iost anticholinergic drugs interact with the muscarinic ceptors in the brain, secretory glands, heart, and smooth uscle

few can also affect the nicotinic receptors. Glycopyrrolate Robinul) is an example

Mechanism of action: Act by occupying receptor
tes at parasympathetic nerve endings, thereby
eaving fewer receptor sites free to respond to
cetylcholine.

Distribution of receptors is broad so effects of
nticholinergics will be diffuse.

Helpful in treating irritable colon or colitis.

Useful in gastritis, pylorospasm and ulcerative
olitis as they slow motility.

Fluid and Electrolyte therapy

- **Assignment**: Refer to paper notes and Brief/summarize it and submit..

Proton pump inhibitors

- These agents are used in patient with peptic ulcers (who have failed to respond H_2 blockers)

Mechanism of Action

It acts by inhibiting proton pump which is final common step in gastric acid secretion. It also have antisecretory action.

Drug example and doses

S. No.	Drugs	Doses
1	Omeprazole	20mg daily
2	Lansoprazole	30 mg OD.
3	Pantoprazole	40mg
4	Rabeprazole	20mg

Indications / Uses

- Peptic ulcer.
- Reflux esophagitis.
- Zollinger – elision syndrome.
- Prevent and treat NSAID's related to gastric ulcer.

Contraindication / Precautions

- Hypersensitivity.
- Special precaution in pregnant and breast feeding mothers.

Adverse effects

- Headache.
- Abdominal pain.
- Chest pain.
- Diarrhea.
- Dizziness.
- Nausea / Vomiting.

Drug interactions

- Proton pump inhibitor interfere with the absorption of drugs (Ketoconazole, iron and ampicillin) that depends on gastric PH absorption.

Nursing Responsibilities

Monitor the patient for diarrhea and abdominal pain.

Teach the patient to swallow capsule whole and not to chew or crush them.

Teach the patient to avoid gastric irritants, such as smoking alcohol, aspirin containing products, caffeine, NSAIDs and food that causes irritation.

Antidiarrheals

- Drug used to control diarrhea is called antidiarrheal drugs.

Mechanism of action

- Antidiarrheals active opioids receptor in G.I. tract to decrease intestinal motility and to increase the absorption of fluid and sodium in the intestine.

Drug example and doses

S. No.	Drugs	Doses
1	Loperamide	2-4mg
2	Diphenoxylate	5-10mg
3	Octreotide	100-250 mcg TID
4	Polycarbophil	----
5	Bismuth subsalicylate	60 ml 6hourly suspension

Indications / Uses

- To treat underlying cause of diarrhea.
- To control the relive symptoms of acute and chronic diarrhea.

Contraindication / Precautions

- Contraindicated in abdominal pain of unknown pathology.
- There is an increase risk of megacolon in clients with inflammatory bowel disorders. This could lead to a serious complication such as perforation of bowel.

Adverse effects

- Constipation.
- Abdominal pain.
- Pain at the injection site.
- Nausea.
- Gall stones. (with octreotide)
- Drowsiness. (with diphenoxylate, and loperamide

Drug interactions

- Use diphenoxylate or loperamide with similar acting drugs causes additive anticholinergic effects.

Nursing Responsibilities

- ssess for the abdominal pain and distension, nausea, vomiting,
  nd bowel sounds.
- ssess the patients skin turgor and monitor fluid and electrolyte
  alance for evidence of dehydration resulting from diarrhea.
- dvise patient to avoid drinking plain water because it does not
  ontent necessary electrolytes that have been loss in the stool.
- dvise clients to avoid caffeine. Caffeine exacerbate diarrhea by
  creasing GI motility.
- lient with severe case of diarrhea may be hospitalized for
  anagement of diarrhea.
- now that high dose, long term use of defenoxin or
  phenoxylate may cause dependence.

Histamines (Histamine Receptors Antagonist/H_2 blockers)

- They are also called as H_2 antagonists. These agents block the action of histamine, thus it reduce the amount of acid released into the stomach. They also promote ulcer healing.

Mechanism of action

- They inhibit gastric acid secretion by inhibiting the action of histamine and histamine 2 receptors in gastric parietal cells.

Drug example and doses

S. No.	Drugs	Doses
1	Cimetidine	400mg B.D.
2	Ranitidine	150mg twice daily.
3	Famotidine	20-40 mg.
4	Nizatidine	150 mg twice daily.

Indications / Uses

- Gastritis.
- Reflux esophagitis.
- Indigestion.
- Peptic ulcer.
- Heart burn.

Contraindication / Precautions

- Hypersensitivity with this drug.
- Breast feeding women.
- Cautiously use in pregnant women.

Adverse effects

- Dizziness.
- Headache.
- Gynecomastia.
- Confusion.
- Impotence.
- Loss of libido due to antiandrogenic action.

Drug interactions

- Antacids may inhibit absorption of H_2 receptors antagonists.
- Cigarette smoking increases gastric acid secretions and may decreases the effectiveness of H_2 receptors antagonists.

Nursing Responsibilities

- Don't give an antacid within 1 hour of administration of H_2 receptors antagonists it may decrease the absorption.
- Teach the patients to avoid gastric irritants, such as smoking alcohol aspirin containing products, caffeine, NSAID's and food that cause G.I. irritation
- Teach the patient that smoking worsens ulcer disorders and counteracts the effect of H_2 blockers.

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