Clinical Pharmacy II

Drugs acting on CNS

-Antimigraine drugs

-Treatment of acute migraine

1-**Analgesics**, such as aspirin, nonsteroidal anti-inflammatory drugs (**NSAIDs**), **acetaminophen**, and combination products containing caffeine, with or without an opioid, **are the initial pharmacologic option for the acute management** of **migraine headache** especially when severity is mild to moderate .

2-If these analgesics prove to be **ineffective**, and when headaches are severe, then migraine-specific medications, such as **triptans** .(like almotriptan, eletriptan, frovatriptan, naratriptan, rizatriptan, sumatriptan, and zolmitriptan) , are administered .

3-**Larger doses of oral medications** may be necessary for pain relief, due to the **enteric stasis and poor drug absorption accompanying migraine attacks** .

4-**Intranasal**, **parenteral**, and **rectal administration** can circumvent this complication .


actavis
2.5 mg
Zolmitriptan
Film-coated
Tablets
6 tablets
For oral use


POM
Sumatriptan
50 mg tablets
6 tablets
AUROBINDO
50 mg
Sumatriptan 50 mg tablets
6 tablets

5-**The timing of doses is important in migraine** where the analgesic should be **taken at the first sign of an attack**, **preferably in soluble form**, since gastrointestinal (GI) **motility is slowed during an attack** and **absorption of analgesics delayed** .

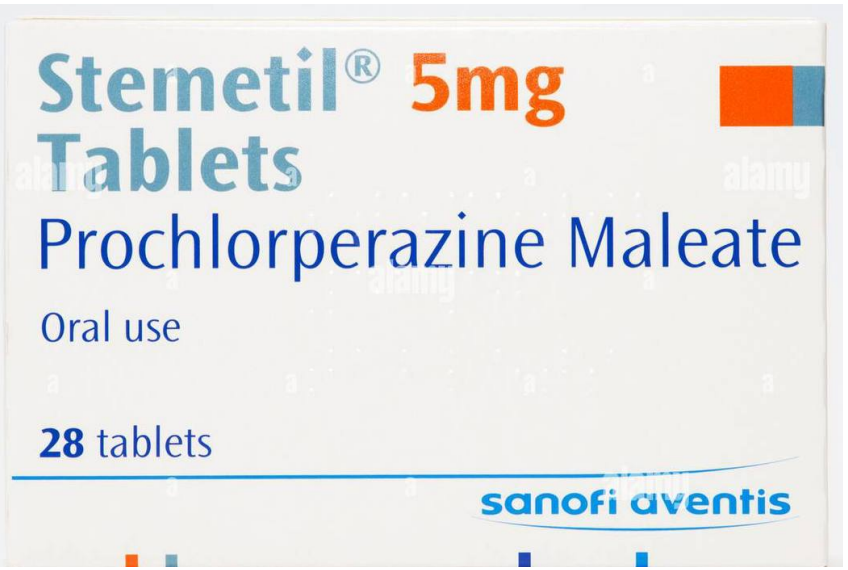
6-**Metoclopramide** or **prochlorperazine** can be given orally or by injection to **relieve nausea or vomiting**. **Domperidone** may be used as an alternative antiemetic .An antiemetic given 15 to 30 minutes prior to an oral migraine medication limits nausea and vomiting and improves absorption of migraine medication .

7-**Ergot derivatives**, including **ergotamine tartrate** and dihydroergotamine, are migraine-specific medications used for moderate to severe migraine headaches

8-**Triptans** and **ergotamine** are **contra-indicated in ischemic heart disease** .Do not use ergotamine derivatives and triptans within 24 hours of each other


Metoclopramide Tablets
10 mg
actavis
Metoclopramide Tablets
28 tablets
For oral use


PRESCRIPTION ONLY MEDICINE
KEEP OUT OF REACH OF CHILDREN
Motilium®
domperidone 10 mg
100 TABLETS
AUST R 39510


Stemetil® 5mg
Tablets
Prochlorperazine Maleate
Oral use
28 tablets
sanofi aventis


10x1x10 Tablets
Ergotamine Tartrate 1mg Tablets
MERGODEN
Tablets


℞
Ergotamine Tartrate, Caffeine, Paracetamol
& Prochlorperazine Maleate Tablets
Mirin®
माइरिन
10 x 10 Tablets
SALVIA

-Prophylaxis of migraine

1-Migraine headaches that are **severe**, **frequent**, or **lead to significant disability require long-term medication therapy** .

2-Drugs that are used for **prophylaxis of migraine include:**

A-The beta-blockers (e.g. propranolol is recommended as first line preventative treatment) .

B-**Tricyclic antidepressants** (amitriptyline), and **antiepileptics** (topiramate, sodium valproate) are also effective for preventing migraine .

C-**Botulinum toxin type A** .

D-**Erenumab, fremanezumab, and galcanezumab** are monoclonal antibodies **preventing migraine attacks**


BIENOX
Clostridium
Botulinum Toxin
Type A
100
UNITS
BNC
KOREA
BIENOX
Clostridium
Botulinum Toxin
Type A


℞ only
NDC 51759-202-10
AJOVY
(fremanezumab-vfrm)
injection
225 mg/1.5 mL
FOR SUBCUTANEOUS USE ONLY
One single-dose prefilled autoinjector
OPEN HERE
teva
AJOVY®
(fremanezumab-vfrm)
injection


Emgality®
(galcanezumab-gnlm)
120 mg/mL
injection


TOPAMAX
topiramate 25 mg
60 TABLETS
janssen
TOPAMAX
topiramate 25 mg
60 TABLETS


BANGKOK DRUG
Flunarizine
Flunarizine HCl
50x10 Capsules


DÉPAKINE®
500 mg
valproate de sodium
Voie orale
40 comprimés
gastro-résistants
SANOFI
DÉPAKINE
500 mg
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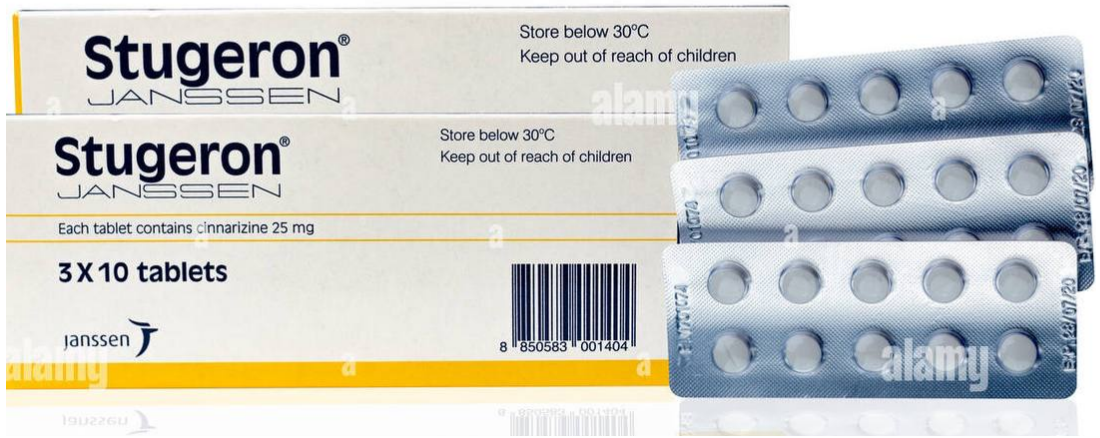
-Drugs for vertigo and tinnitus

Betahistine is an analogue of histamine licensed for vertigo, tinnitus, and hearing loss associated with Ménière's disease. Antihistamines (such as cinnarizine), and phenothiazines (such as **prochlorperazine**) are also used



-Non-steroidal anti-inflammatory drugs (NSAIDs)

1-NSAIDs have **analgesic**, **anti-inflammatory**, and **antipyretic** properties. NSAIDs are used for the relief of mild to moderate **pain**, minor **febrile conditions**, and for **acute and chronic inflammatory disorders** such as osteoarthritis, and rheumatoid arthritis .

2-Some NSAIDs **are applied topically** for the relief of muscular and rheumatic pain, and some (like diclofenac) are used in **ophthalmic preparations** for ocular disorders .

3-In **single doses** NSAIDs have **analgesic** activity. In **regular full dosage** NSAIDs have both a lasting analgesic and an **anti-inflammatory effect** .

4-Differences in anti-inflammatory activity between NSAIDs are small, but there is considerable variation in individual response and tolerance to these drugs. **About 60%of patients will respond to any NSAID**; of the others, those who do not respond to one may well respond to another

5-**Pain relief** starts **soon after taking the first dose** and a full analgesic effect should normally be obtained within a week, whereas **an anti-inflammatory effect** may not be achieved (or may not be clinically assessable) **for up to 3 weeks**. If appropriate responses are not obtained within these times, another NSAID should be tried .

6-The **commonest adverse effects of NSAIDs** are **generally GI disturbances, such as GI discomfort**. These are usually mild and reversible but in some patients peptic ulceration and severe **GI bleeding** may occur .

7-They vary in their selectivity for inhibiting different types of cyclo-oxygenase (COX); **selective inhibitors of COX-2** (celecoxib, etoricoxib and parecoxib) are associated **with less GI intolerance**. This advantage may be lost in patients who require concomitant low-dose aspirin .
Aceclofenac, diclofenac, etodolac, ibuprofen, indometacin, ketoprofen, mefenamic acid, meloxicam, naproxen, piroxicam, sulindac and tenoxicam are examples of **non-selective COX-2inhibitors.**


Orotix®
Etoricoxib
120 mg
7 Tablets
7 Comprimés
120 mg
Orotix®
90 mg
30 F/C Tablets
30 Comprimés Pelliculé
90 mg
Orotix®
60 mg
14 Film Coated Tablets
14 Comprimés Pelliculés
60 mg


Pfizer
CELEBREX®
200mg
CELECOXIB
30 Kapseln/Capsules

8-The **combination of a NSAID and low-dose aspirin** can **increase the risk of GI side-effects;** this combination should be used only if absolutely necessary .

9-**Systemic as well as local effects of NSAIDs contribute to GI damage**; taking oral formulations with milk or food, or using enteric-coated formulations, or changing the route of administration may only **partially reduce symptoms such as dyspepsia** .
10-Patients at risk of GI ulceration (including the elderly), who need NSAID treatment **should receive gastroprotective treatment** ((e.g. **PPIs**) .

11-**All NSAID** use (including COX-2 selective inhibitors) can, to varying degrees, be associated with a small **increased risk of thrombotic events** (e.g. myocardial infarction and stroke); however, the greatest risk may be in those receiving high doses long term. COX-2 selective inhibitors, diclofenac (150mg daily) are associated with an increased risk of thrombotic events.

12-Naproxen (1 g daily) is associated with a lower thrombotic risk, and low doses of ibuprofen (1.2 g daily or less) have not been associated with an increased risk of myocardial infarction .

13-It is preferable to **avoid NSAIDs** in patients with **active or previous gastrointestinal ulceration or bleeding** and patients with a history of hypersensitivity to aspirin or any other NSAID. **Celecoxib is contra-indicated in patients with sulfonamide sensitivity** .

14-NSAIDs should be used with **caution** in patients with **asthma, and hypertension** (it cause sodium and water retention)

15-**Important**: **Use of more than one NSAID together should be avoided** because of the increased risk of adverse effects .

16-**Indometacin** use associated with a high incidence of side-effects including headache, **dizziness** [may affect performance of skilled tasks (e.g. driving)], and GI disturbances. **Mefenamic acid** has occasionally been associated with **diarrhea** which require discontinuation of treatment. **Piroxicam** has **more GI side effects** than most other NSAIDs, and is associated with more frequent serious skin reactions.

-Paracetamol

1-Paracetamol has **analgesic and antipyretic** effects but no anti-inflammatory effect .

2-**Over-dosage** with paracetamol **is particularly dangerous as it may cause hepatic damage** .

3-Patient should be advised not to take more **than 1g (usually 2 tablet of 500 mg) at any one time.** And **not take more than 8 tablets (4 gm) in 24 hours** .

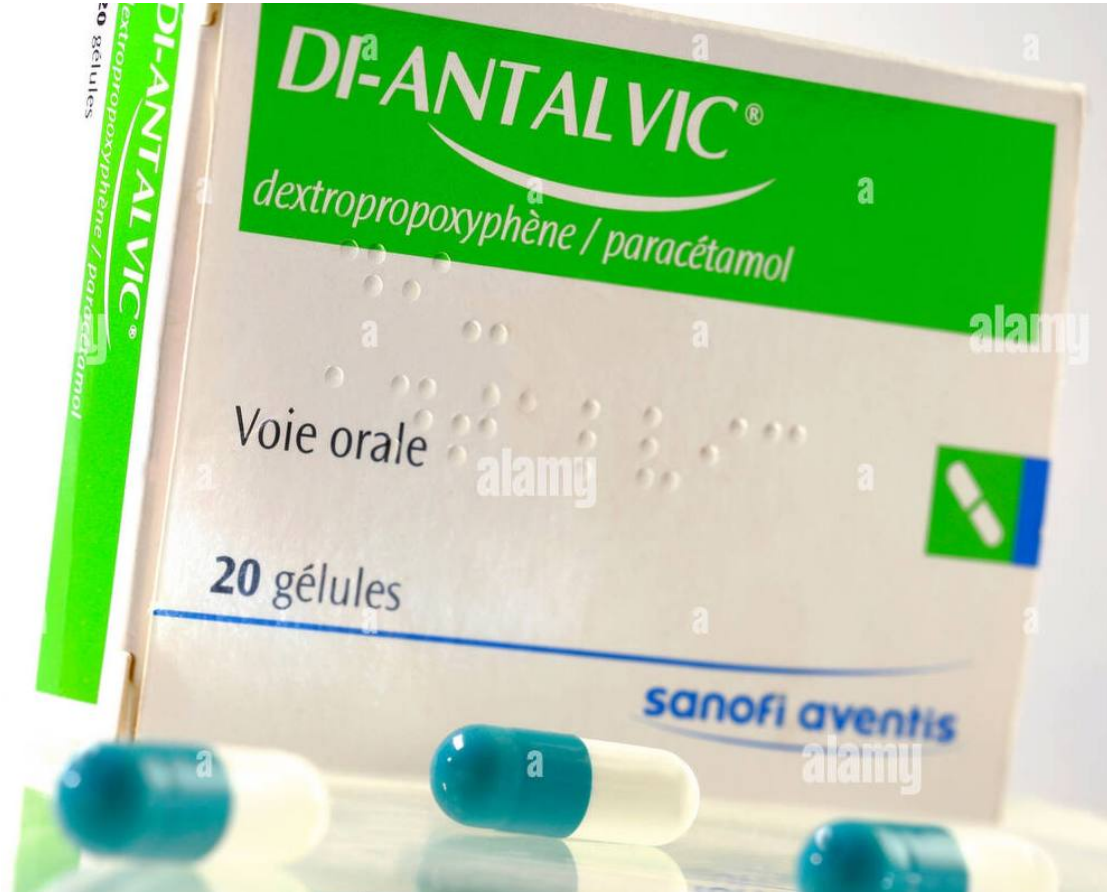
4-**Compound analgesic preparations** containing paracetamol with a low dose of an opioid analgesic (e.g. 8 mg of codeine phosphate per compound tablet) are commonly used, but the advantages have not been substantiated. The low dose of the opioid may be enough to cause opioid side-effects (in particular, constipation)

5-**Rectal administration** results in **erratic absorption.**

-Opioid analgesics

1-Opioid analgesics are usually used to relieve moderate to severe pain. **Repeated administration may cause dependence and tolerance** .
2-Opioids such as codeine or dextropropoxyphene are used in the treatment of less severe pain, and are often combined with non-opioid analgesics such as aspirin, other NSAIDs, or paracetamol .
3-**More potent opioids** such as morphine are used in severe acute and chronic pain, including cancer pain .
4-**Tramadol has fewer of the typical opioid side-effects** (notably, less respiratory depression, less constipation and less addiction potential **.(Note: However, tramadol is abused by some Iraqi addicts).**
5-The most **common side-effects include nausea and vomiting** (particularly in initial stages), and **constipation** .
6-Opioids should be used with **caution in patients with impaired respiratory function** (avoid in chronic obstructive pulmonary disease) and asthma (avoid during an acute attack)


Tramadol
100 mg Tabletas
10 x 10 Tabletas
100 mg
Dimedics


DI-ANTALVIC®
dextropropoxyphène / paracétamol
Voie orale
20 gélules
sanofi aventis

-Non-opioid, centrally acting nalgesics

Nefopam may have a place in the relief of persistent pain unresponsive to other non-opioid analgesics. It causes **little or no respiratory depression, but sympathomimetic and antimuscarinic side-effects may be troublesome** .

-Neuropathic pain

1-Neuropathic pain, occurs as a result **of damage to neural tissue** .

2-Neuropathic pain is generally managed with a **tricyclic antidepressant** (e.g. amitriptyline) or with certain **antiepileptic drugs** (carbamazepine, gabapentin, and pregabalin) .

3-Neuropathic pain may respond to **opioid analgesics** .

4-**Capsaicin** (topical) is licensed for neuropathic pain (but the intense burning sensation during initial treatment may limit use)

-Nausea and vomiting

1-**Prochlorperazine**, **metoclopramide** and **domperidone** are used to treat or prevent nausea and vomiting .

2-**Cinnarizine** is used to prevent **motion sickness** where the dose **is taken 2 hours before travel then every 8 hours if required** .

3-**Domperidone has the advantage over metoclopramide and the prochlorperazine** of being less likely to cause central effects such as **dystonic reactions** (a **tetanus-like reaction**) because it does not readily cross the bloodbrain barrier .

4-Granisetron, **ondansetron** and palonosetron (5HT3-receptor antagonists) are of value in the management of nausea and vomiting in patients receiving **cytotoxics** and in postoperative nausea and vomiting

5-**Dexamethasone** has antiemetic effects and it is used in **vomiting** associated with **cancer chemotherapy**. It can be used alone or with metoclopramide, prochlorperazine, lorazepam, or a 5HT3-receptor antagonist .

6-Aprepitant, fosaprepitant, and rolapitant are neurokinin 1-receptor antagonists. They are licensed for the prevention of **nausea and vomiting associated with chemotherapy** .

7-**Doxylamine** (antihistamine) with **pyridoxine** (B6) combination is used for nausea and vomiting in **pregnancy** .

8-**Hyperemesis gravidarum** (a severe nausea and vomiting during pregnancy) is a more serious condition, which requires regular **antiemetic** therapy, **intravenous fluid** and **electrolyte** .


NDC 0781-2321-51
Aprepitant Capsules, USP
40 mg
℞ only
5 Capsules
WARNING: Do not use if blisters are torn, broken or missing.
This unit-dose package is not child-resistant.
(For institutional use only)
SANDOZ
a Novartis company
0781-2321-06
Aprepitant
Capsule, USP
40mg
℞ only
Mfd. for
Sandoz Inc., Princeton, NJ 08540
Rev.: 07/2016 46170547
Lot: HJ9602
Exp.: 08 2019
PUSH THROUGH


Navidoxine®
Meclozine hydrochloride
Pyridoxine hydrochloride
ucb
10 tablets
Navidoxine

9-Domperidone, metoclopramide, 5HT3-receptor antagonists, and the phenothiazines are **ineffective in motion sickness**

10-**I.V Metoclopramide** doses should be administered as a slow bolus **over at least 3 minutes**. Oral liquid formulations should be given via an appropriately designed, graduated oral syringe to ensure dose accuracy .

12-Side effects:

A-Cinnarizine may cause drowsiness which may affect performance of skilled tasks (e.g. cycling, driving) .

B-**Domperidone** is associated with a small increased risk of serious cardiac side-effects (**arrhythmia**). Patients and their carers should be told how to recognize signs of arrhythmia and advised to seek medical attention if symptoms such as palpitation or syncope develop .

C-**Metoclopramide** can induce acute **dystonic** reactions involving facial and skeletal muscle spasms and **oculogyric crises**. These dystonic effects are more common in the young (especially girls and young women) and the very old; they usually occur shortly after starting treatment with metoclopramide and subside within 24 hours of stopping it .

Drugs for Inflammatory Bowel Disease

-Drugs for inflammatory bowel disease.

Notes:

1-Chronic **inflammatory bowel diseases** (IBD) include **crohn's disease** (CD) and **ulcerative colitis** (UC). UC is confined to the rectum and colon, while CD can involve any part of the gastrointestinal (GI) tract .

2-The major drug therapies used in IBD are **aminosalicylates**; **corticosteroids**; **immunomodulators** (**azathioprine**, **mercaptopurine**, and **methotrexate**);

immunosuppressive agents (**ciclosporine** and tacrolimus); **antimicrobials** (metronidazole and ciprofloxacin) **monoclonal antibodies** (**infliximab**, **adalimumab**, **golimumab**, **certolizumab**, **natalizumab**, **ustekinumab**, and **vedolizumab**)

Ulcerative Colitis VS Crohn's Disease

Location of inflammation

Limited to the **large intestine/colon**

Anywhere in GI tract, (from gum to bum)

Pattern of inflammation

Inflammed areas are continuous with no patchiness

Patches of inflammation found in large sections of the bowel

Appearance of inflammation

Typically in the **lower left abdomen**

Typically in the **lower right abdomen**

Location of Pain

Ulcers penetrate the inner lining of the abdomen only

Ulcers penetrate the entire thickness (several layers) of the abdominal lining

Bleeding

Common during bowel movements

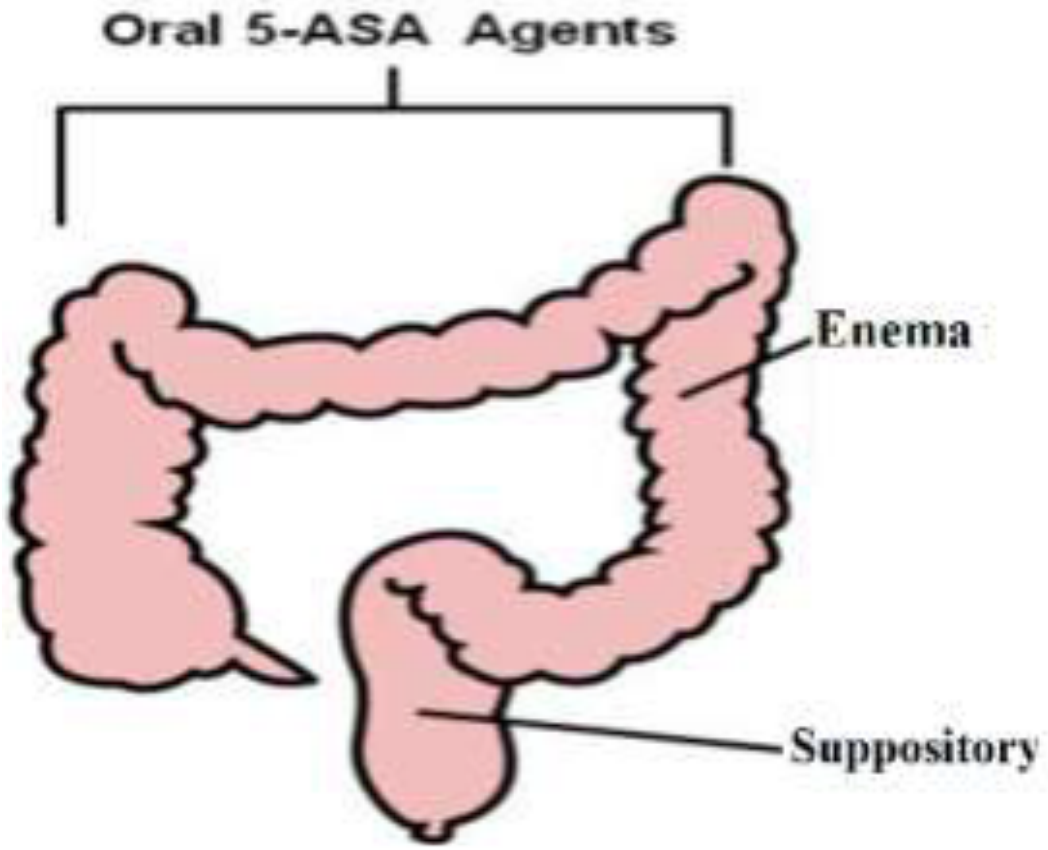
Uncommon

-Aminosalicylates

1-**Aminosalicylates** include **Sulfasalazine** [a combination of 5-aminosalicylic acid, (5-ASA) and sulfapyridine (acts as a carrier and **believed to be responsible for many of the adverse reactions to sulfasalazine**)], and **the safer sulfa-free compounds** [mesalazine (mesalamine)(5-ASA), balsalazide (a pro-drug of 5-ASA) and olsalazine (a dimer of 5-ASA)].

2-The aminosalicylates are among the most commonly used drugs for **inducing and maintaining remission** in patients with mild to moderate IBD .

3-**Enemas** are appropriate for patients with **left-sided disease** because the medication will reach the splenic flexure. **Suppositories** deliver mesalamine up to approximately 20 cm and are **most appropriate for treating proctitis.**



4-**Oral and topical mesalamine preparations may be used together** for maximal effect. Oral mesalamine may also be used for patients who are unwilling or unable to use topical preparations .

5-The **extent of disease** should be considered when choosing the route of administration. If the inflammation is **distal**, a **rectal** preparation is adequate but if the inflammation is **extended**, **systemic** medication is required .

6-Enemas or suppositories (when given once daily) are preferably administered at **bedtime**, preferably **after** a **bowel movemen**t .

7-**Oral** aminosalicylates for the treatment of ulcerative colitis are available in different preparations and **release forms**. The preparation and dosing schedule should be chosen taking into account the **delivery characteristics** and suitability for the patient .

8-Unlike sulfasalazine, **sulfa-free compounds** are safe to use for patients with sulfonamide allergies .

9-**Blood count** should be performed and the drug stopped immediately if there is suspicion of a **blood dyscrasia** .

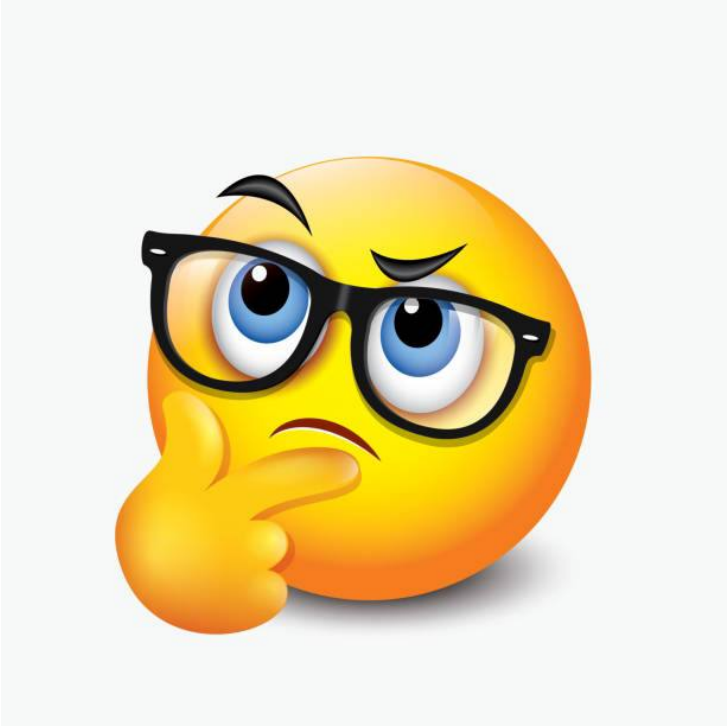
10-Patients receiving aminosalicylates, and their carers, should be advised to report any unexplained bleeding, bruising, purpura, sore throat, fever or malaise that occurs during treatment (**Blood disorders**) .

12-**Olsalazine** is associated with a **higher incidence of secretory diarrhea** than other aminosalicylates .

13-Aminosalicylates are contra-indicated in salicylate hypersensitivity .

14-**Balsalazide and olsalazine are** taken after food .

15-Note: **sulfasalazine** is also used for rheumatoid arthritis [it is one of the Disease-Modifying Antirheumatic Drugs (DMARDs)].




Salazopyrin® EN-tabs
enteric coated tablets
500 mg
sulfasalazine
100 enteric coated tablets
PHARMACIA
Salazopyrin® EN-tabs
500 mg
sulfasalazine
100 enteric coated tablets


MEDICINE
KEEP OUT OF REACH OF CHILDREN
PENTASA®
mesalazine 500 mg
Prolonged release tablets
Do not crush or chew the tablets
The tablets may be dispersed in cold water
FERRING
AUST R 99139
100 Tablets


Lialda


ASACOL®
100 Filmtabletten
400 mg
ASACOL®
Arzneimittel
Für Kinder unerreichbar aufbewahren
unterhalb von 25°C und Licht geschützt
lagern.
Bitte Packungsbeilage beachten.
Médicament
Tenir hors de portée des enfants à une
température inférieure à 25°C et à l'abri
de la lumière.
Veuillez consulter la notice d'emballage.
Medicamento
Tenere fuori dalla portata dei bambini a
una temperatura inferiore a 25°C e al
riparo della luce.
Vedere il foglietto illustrativo.
Vertrieb / Distribution / Distribuzione
sanofi-aventis (suisse) sa
1214 Vernier/GE
100 Comprimés pelliculés
Compresse rivestite con film
400 mg
ASACOL®
Mesalazinum
400
mg


Thank
You!