

ANTIMICROBIAL AGENTS

Amoxicillin AMOXIL, TRIMOX

Bismuth compounds PEPTO-BISMOL,
KAOPECTATE

Clarithromycin BIAXIN

Metronidazole FLAGYL

Tetracycline SUMYCIN

H₂ – HISTAMINE RECEPTOR BLOCKERS

Cimetidine TAGAMET

Famotidine PEPCID

Nizatidine AXID

Ranitidine ZANTAC

PROTON PUMP INHIBITORS (PPIs)

Dexlansoprazole DEXILANT

Esomeprazole NEXIUM

Lansoprazole PREVACID

Omeprazole PRILOSEC

Pantoprazole PROTONIX

Rabeprazole ACIPHEX

PROSTAGLANDINS

Misoprostol CYTOTEC

ANTIMUSCARINIC AGENTS

Dicyclomine BENTYL

ANTACIDS

Aluminum hydroxide ALTERNAGEL

Calcium carbonate TUMS

Magnesium hydroxide MILK OF MAGNESIA

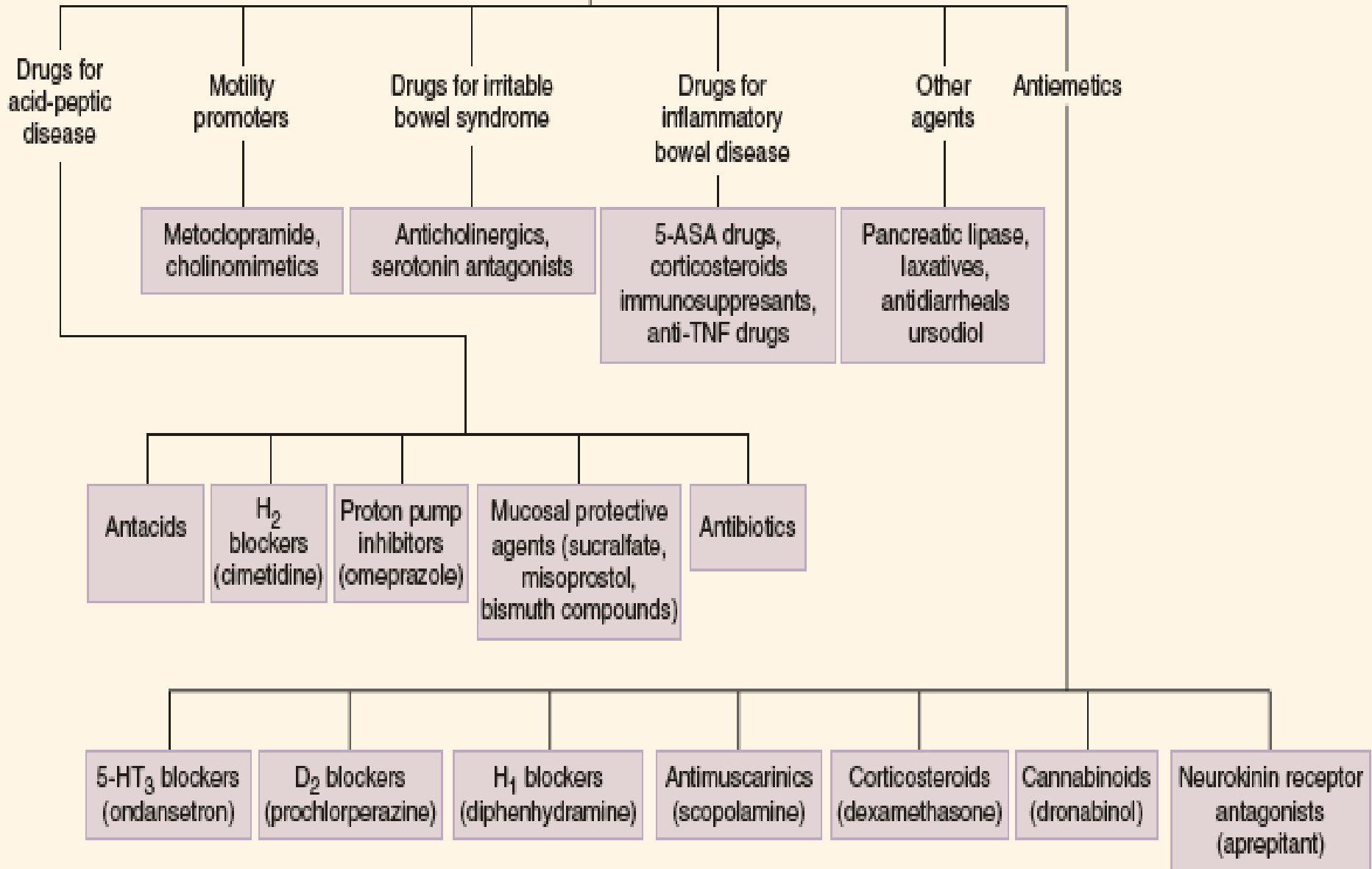
Sodium bicarbonate NUMEROUS

MUCOSAL PROTECTIVE AGENTS

Bismuth subsalicylate PEPTO-BISMOL

Sucralfate CARAFATE

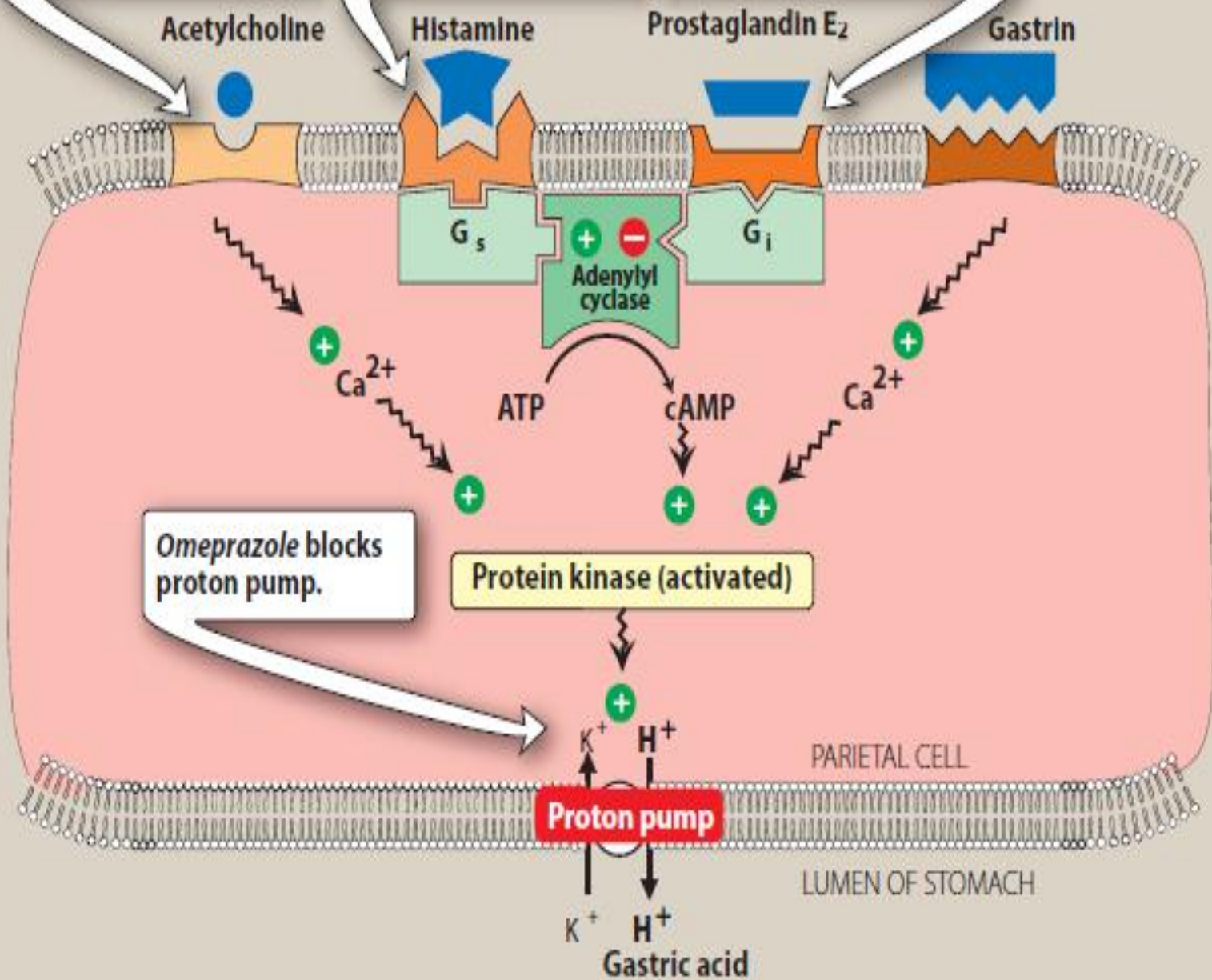
Drugs used for gastrointestinal disorders



Dicyclomine blocks the cholinergic receptor.

Cimetidine blocks the H₂-histamine receptor.

Misoprostol stimulates the prostaglandin receptor.



PHENOTHIAZINES

Prochlorperazine COMPAZINE

5-HT₃ SEROTONIN RECEPTOR BLOCKERS

Dolasetron ANZEMET

Granisetron KYTRIL

Ondansetron ZOFRAN

Palonosetron ALOXI

SUBSTITUTED BENZAMIDES

Metoclopramide REGLAN

BUTYROPHENONES

Droperidol

Haloperidol HALDOL

BENZODIAZEPINES

Alprazolam XANAX

Lorazepam ATIVAN

CORTICOSTEROIDS

Dexamethasone DECADRON

Methylprednisolone MEDROL

SUBSTANCE P/NEUROKININ-1 RECEPTOR BLOCKER

Aprepitant EMEND

Serotonin
antagonist

Substituted
benzamide

Phenothiazine

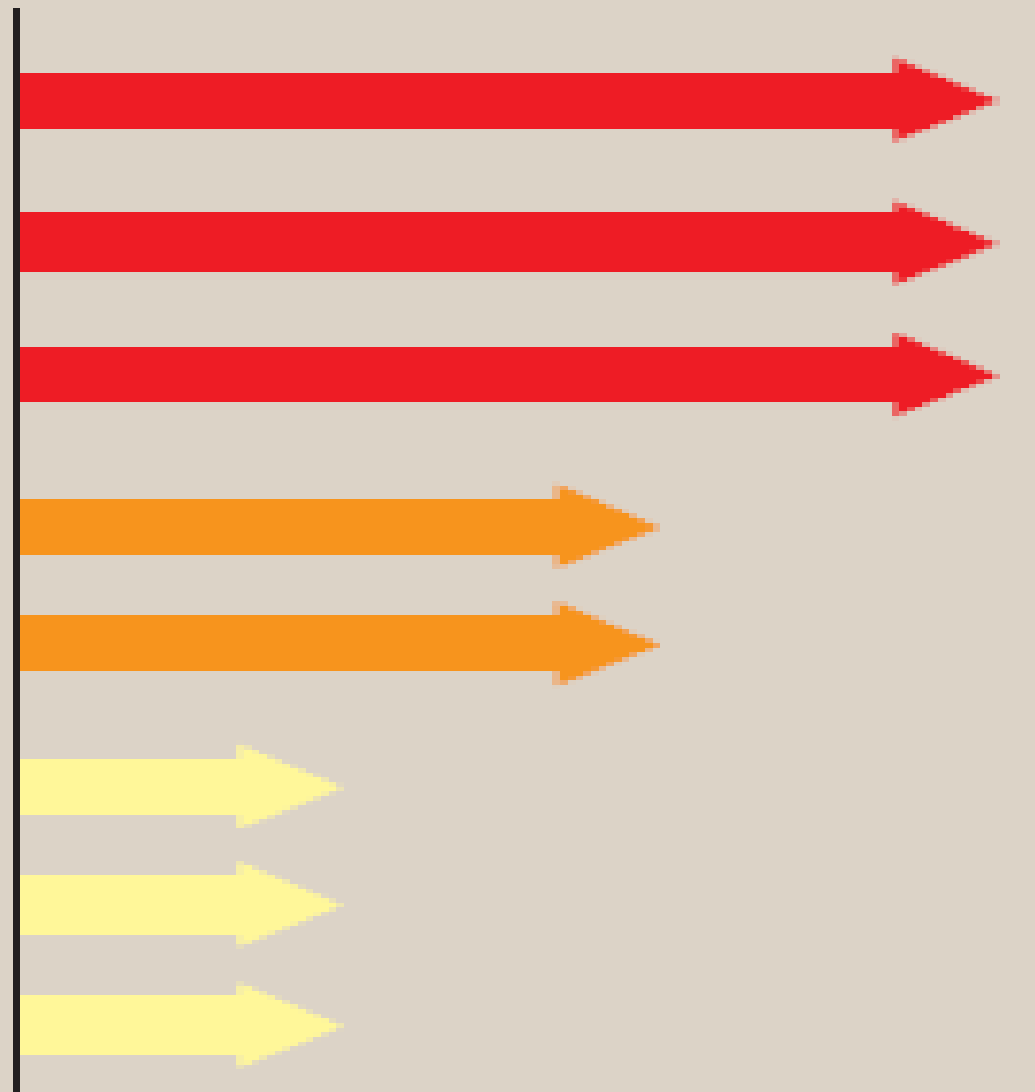
Butyrophenone

Corticosteroid

Antihistamine

Anticholinergic

Benzodiazepine



Low

High

ANTIEMETIC ACTIVITY

**DRUG
COMBINATIONS**

*Dexamethasone
Ondansetron*

91

*Dexamethasone
Diphenhydramine
Metoclopramide
Droperidol*

76

*Lorazepam
Dexamethasone
Metoclopramide*

63

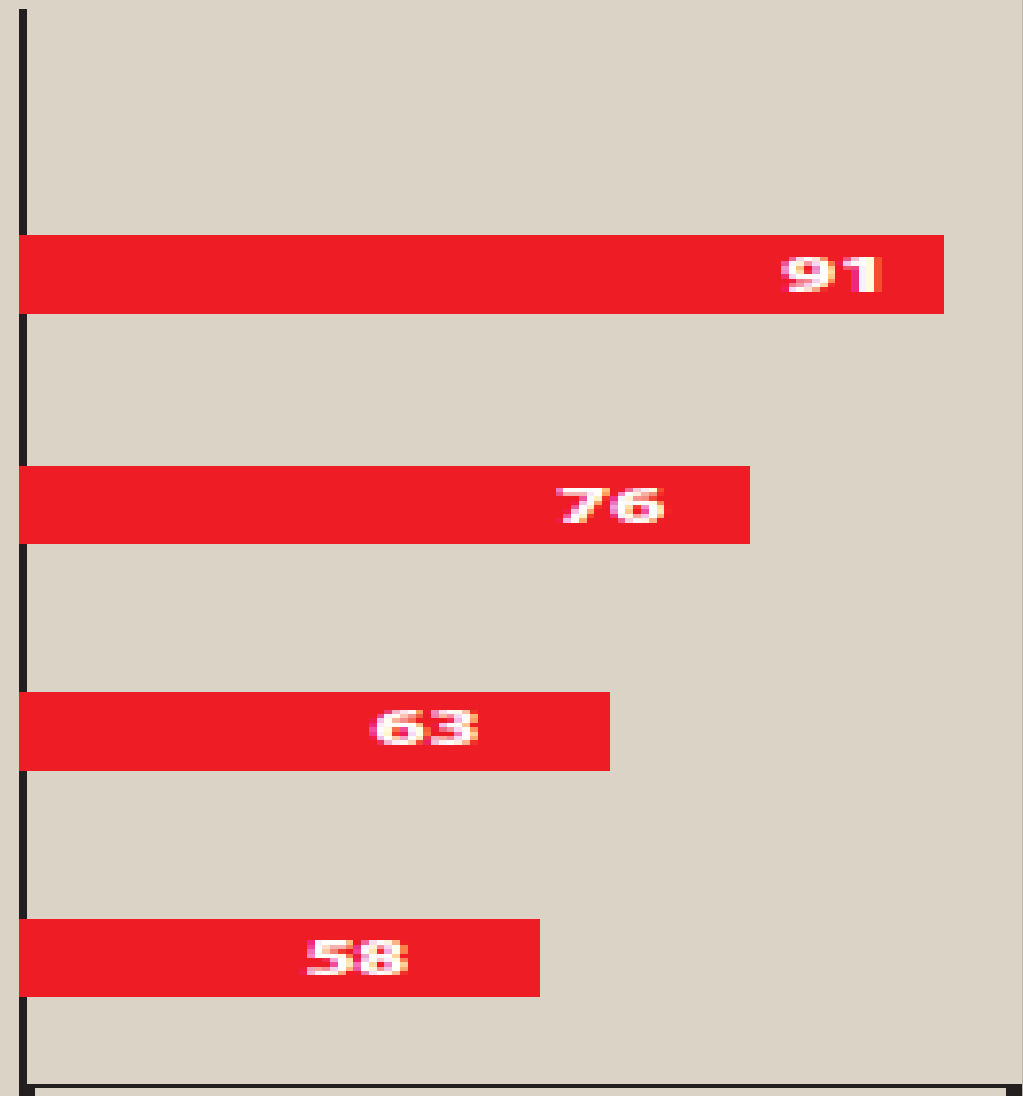
*Diphenhydramine
Dexamethasone
Metoclopramide*

58

0

100

% RESPONSE



IRRITANTS and STIMULANTS

Bisacodyl CORRECTOL, DULCOLAX

Castor oil

Senna EX-LAX, SENOKOT

BULK LAXATIVES

Methylcellulose CITRUCEL

Psyllium METAMUCIL, FIBERALL

SALINE and OSMOTIC LAXATIVES

Magnesium citrate CITROMA

Magnesium hydroxide MILK OF MAGNESIA

Polyethylene glycol MIRALAX, GOLYTELY, MOVIPREP, NULYTELY, TRILYTE

Lactulose CONSTULOSE, ENULOSE, GENER-LAC, KRISTULOSE

STOOL SOFTENERS

Docusate COLACE, DOCU-SOFT

LUBRICANT LAXATIVES

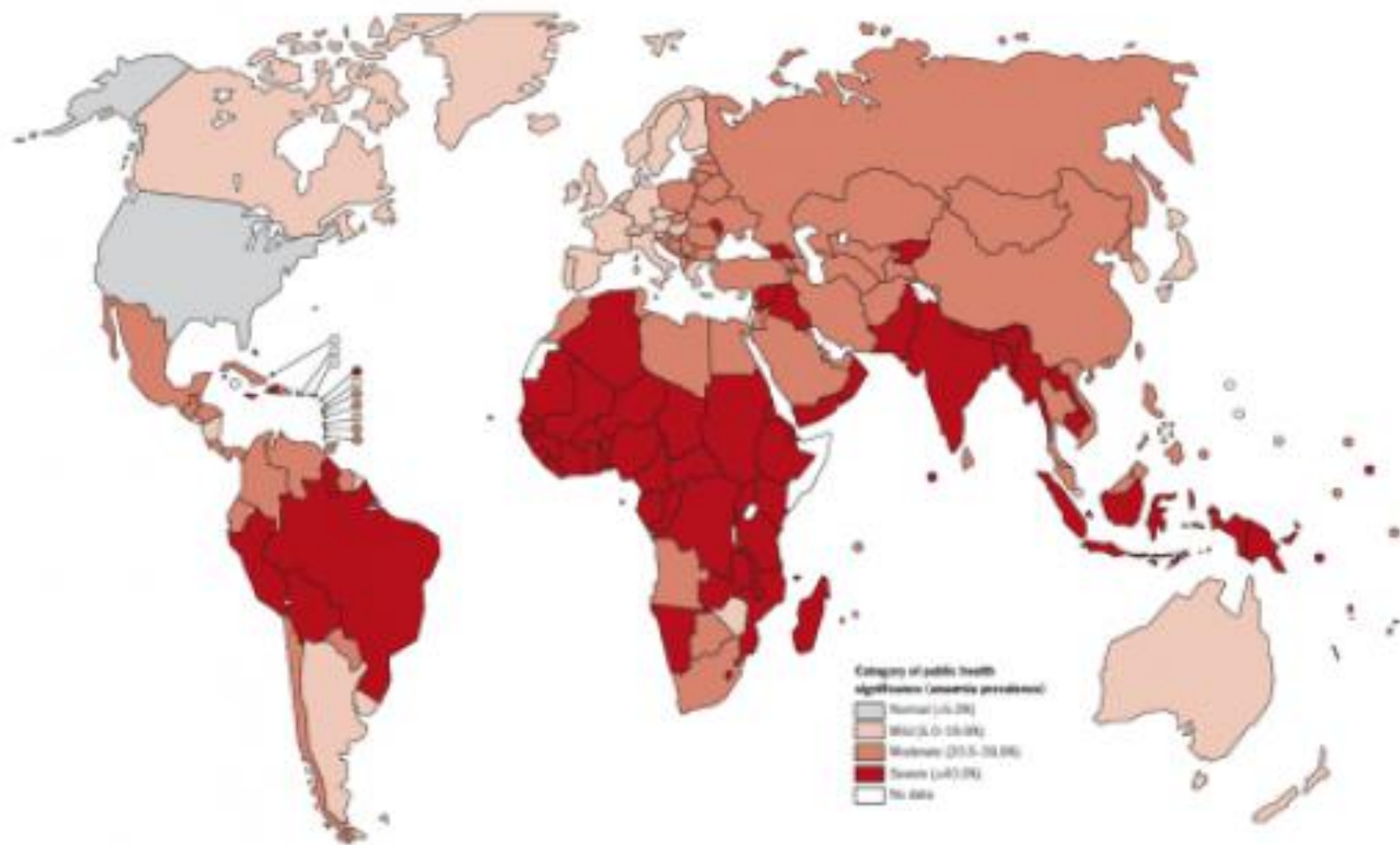
Glycerin suppositories

Mineral oil

CHLORIDE CHANNEL ACTIVATORS

Lubiprostone AMITIZA

**Anemia as a public health problem by country:
Preschool-age children**



(Source: Worldwide Prevalence of Anemia 1993-2005, WHO 2008)

THE RISK

OF

Iron Deficiency

IRON DEFICIENCY IS THE MOST COMMON NUTRIENT DEFICIENCY
IN THE WORLD¹

4^{TO} 5
BILLION



111
MILLION

Up to 4 to 5 billion people may suffer from iron deficiency.²

Although prevalences can vary across communities, iron deficiency anaemia affects approximately 15% of the world population.³

In the high developed countries, 9.1% of the population is affected resulting in 111 million affected people.⁴

Causes of Iron Deficiency

- Deficient diet
 - Gastrointestinal
- Decreased absorption
 - Menstrual
 - Blood donation
 - Celiac sprue
 - Zinc deficiency
- Increased requirements
 - Pregnancy
 - Lactation
- Blood loss (chronic)
 - Hemoglobinuria
 - Iron sequestration
 - Pulmonary hemosiderosis
 - Idiopathic

Women Are at Greater Risk of Iron Deficiency



Menstruating women are at greater risk²⁷















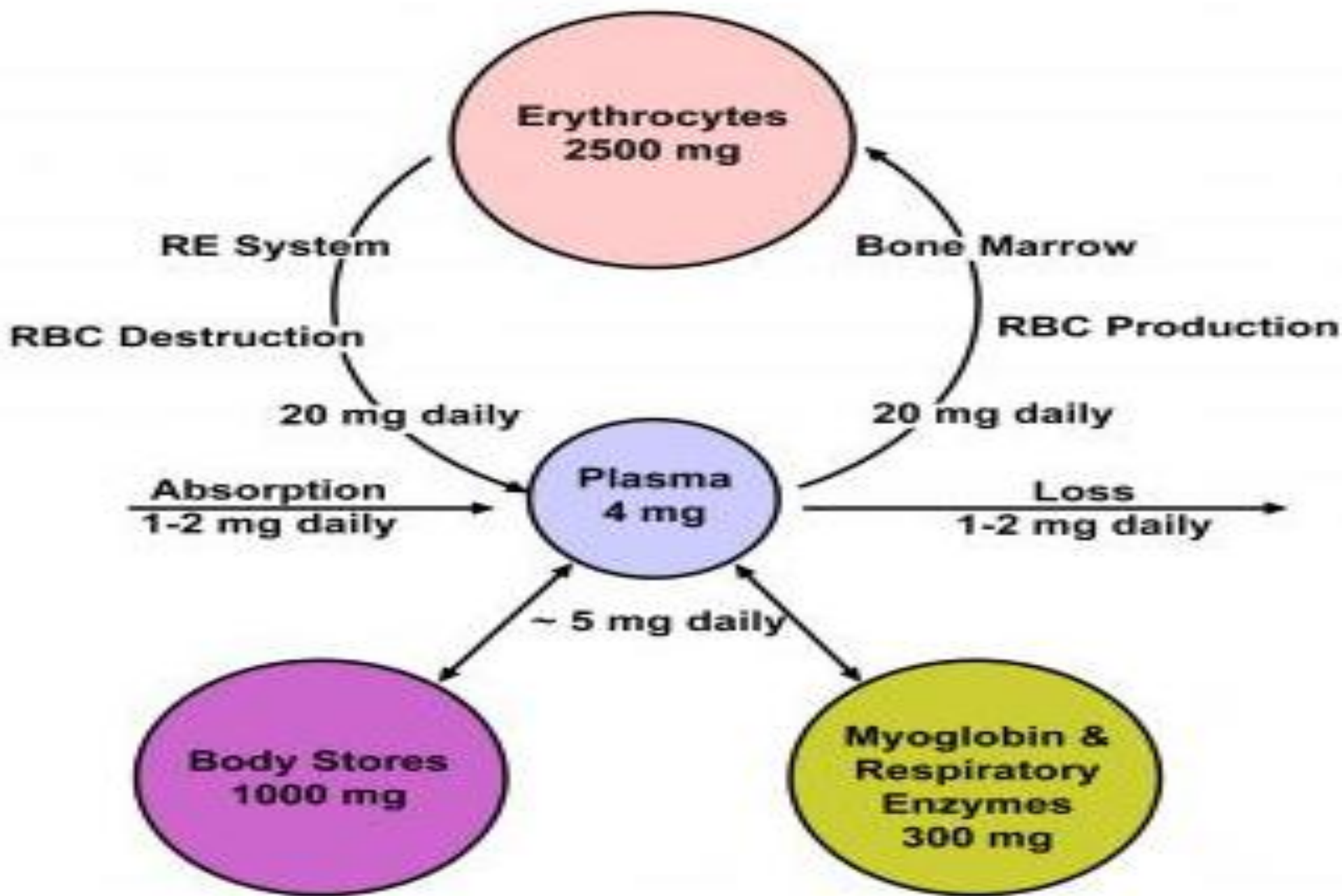
Pregnant women are at greater risk¹⁰

Iron deficiency without anaemia affects up to 33% of menstruating women in Europe²⁸



90% of women do not get enough iron during pregnancy²⁹

	Normal	Iron depletion	Iron deficient erythropoiesis	Iron deficiency anemia
storage iron				
transport iron				
erythron iron				
Marrow iron	2-3+	0-1+	0	0
Serum Fe ($\mu\text{g}/\text{dl}$)	150	120	<100	<20
% saturation	40	35	<30	<20
HCT (%)	45	45	41	<40
RBC morphology	normal	normal	normal	microcytic hypochromic



IRON DEFICIENCY ANEMIA

- MCV - Reduced (N : 80-100 fl)
- MCH - Reduced (N : 27-32 pg)
- MCHC- Normal to reduced (N: 30-34 mg/dl)
- Iron- Reduced (N: 4 gm)
- TIBC- Increased (N: 47-70 $\mu\text{mol/l}$)
- Transferin Saturation- Reduced (N :16-50%)
- Ferritin- Reduced (N:15–300 $\mu\text{g/l}$)
- RDW: High (N : 11.5- 14 %)
- Reticulocytes: Normal/Low (N: 0.5- 2.5%)
- Platelets: Normal/Low/High
- WBC: Normal/Low
- Smear: Hypochromia, anisocytosis,
microcytosis, poikilocytosis

IRON FORMULATION	BRAND NAME(S)	ELEMENTAL IRON (%)	NOTES
<i>Ferrous gluconate</i>	Fergon	12	<ul style="list-style-type: none"> • Less elemental iron, but similar tolerability to <i>ferrous sulfate</i>
<i>Ferric ammonium citrate</i>	Iron citrate	18	<ul style="list-style-type: none"> • Less bioavailable than ferrous salts • Must be reduced to ferrous form in the intestine
<i>Ferrous sulfate</i>	Fer-in-Sol, Feosol	20	<ul style="list-style-type: none"> • Most common oral iron supplement • Low cost with good effectiveness and tolerability
<i>Ferrous sulfate, anhydrous</i>	Slow-Fe	30	<ul style="list-style-type: none"> • Extended-release formulation of <i>ferrous sulfate</i> (once daily dosing) • Higher cost than <i>ferrous sulfate</i>
<i>Ferrous fumarate</i>	Ferretts, Ferrimin, Hemocyte	33	<ul style="list-style-type: none"> • Similar effectiveness and tolerability to <i>ferrous sulfate</i> • Almost no taste compared to other iron salts
<i>Carbonyl iron</i>	Icar, Ircan, Renatabs with Iron	100	<ul style="list-style-type: none"> • Microparticles of purified iron • Dissolves in the stomach to form HCl salt to be absorbed • Less toxic than iron salts due to slower absorption rate (continued iron release for 1 to 2 days)
<i>Polysaccharide-iron complex</i>	Nu-Iron 150, Niferex	100	<ul style="list-style-type: none"> • Tasteless and odorless • Similar bioavailability to <i>ferrous sulfate</i>

DRUG THERAPY

- Treatment with drugs that are dihydrofolate reductase inhibitors

POOR ABSORPTION

- Pathology of small intestine
- Alcoholism

DIETARY DEFICIENCY

- During pregnancy
- During lactation

FOLATE DEFICIENCY

↓
Amino acid biosynthesis

↓
Purine synthesis

↓
Pyrimidine synthesis

↓
DNA and RNA synthesis

Megaloblastic anemia

MEDICATION	ADVERSE EFFECTS	DRUG INTERACTIONS	MONITORING PARAMETERS
TREATMENT OF ANEMIA			
Cyanocobalamin/B₁₂	Injection site pain Arthralgia Dizziness Headache Nasopharyngitis Anaphylaxis	Proton pump inhibitors—may decrease oral absorption of vitamin B ₁₂	Vitamin B ₁₂ Folate Iron
Erythropoietin/epoetin alfa	Edema Pruritus Nausea/Vomiting Hypertension CVA Thrombosis	Darbepoietin alfa —duplication of therapy can lead to increase adverse events	H/H Serum ferritin Blood pressure
Darbepoietin alfa	Edema Dyspnea Hypertension CVA Thrombosis	Epoetin alfa —duplication of therapy can lead to increase adverse events	H/H Serum ferritin Blood pressure
Folic acid	Bad taste in mouth Nausea Confusion Irritability	Cholestyramine —may interfere with absorption	CBC Serum folate
Iron	Pruritus N/V/D Headache Anaphylaxis	Deferoxamine —chelates iron Dimercaprol —chelates iron	H/H Serum iron TIBC Transferrin Reticulocyte count
TREATMENT OF SICKLE CELL ANEMIA			
Hydroxyurea	Myelosuppression Skin ulcer Secondary leukemia	HIV medications— <i>hydroxyurea</i> can decrease CD4 counts Salicylates—increased bleeding risk <i>Probenecid</i> —↑ uric acid	CBC
Pentoxifylline	Nausea/Vomiting Thrombocytopenia Jaundice Anaphylaxis	Ketorolac (contraindicated)—increased bleeding risk <i>Ginkgo biloba</i> —increased antiplatelet effect	CBC