

Key to

CHEMOTHERAPEUTIC DRUGS

A Project of
AsteriX

Features:

- **Concise**
- **Easy Language**
- **Tabular form**
- **Covers all major topics**
- **Formulas**
- **Easy understanding**

References:

- Lippincott
- Katzung
- PMC Notes

Authors:

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AsteriX Publications

CHEMOTHERAPEUTIC DRUGS

INHIBITORS OF CELL WALL SYNTHESIS

PENICILLINS

CLASSIFICATION

NARROW SPECTRUM SUSCEPTIBLE

Penicillin G

Penicillin V

RESISTANT

Methicillin

Nafcillin

Oxacillin

BROAD SPECTRUM

Amoxicillin

Ampicillin

Piperacillin

Ticarcillin

OTHERS

Cloxacillin

Dicloxacillin

Indanyl Carbenicillin

Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none"> Inhibits Transpeptidation. Inhibits Proteins called Penicillin Binding Proteins (PBPs). Some PBPs cause Peptidation and Penicillin inhibits it. As the cell wall gets destroyed, Autolysins can act now to destroy the Bacteria. 	<p>NATURAL: Penicillin G&V</p> <ul style="list-style-type: none"> (1,2,3,5,6): Pneumonia, Gonorrhoea, Syphilis. <p>AMPICILLIN</p> <ul style="list-style-type: none"> (2,4): Listeria monocytogenes. <p>ANTIPSEUDOMONAL</p> <ul style="list-style-type: none"> (Ticarcillin, Piperacillin, Indanyl Carbenicillin) (4): Pseudomonas aeruginosa 	<ul style="list-style-type: none"> Hypersensitivity Diarrhea Cation Toxicity Hematologic Toxicity Nephritis Neurotoxicity <p style="text-align: center;">FORMULA H_oD Ch NaNa (head of department, choudary nana)</p>

COMBINATIONS:

- Amoxicillin combines with Clavulanic acid for protection.
- Ampicillin combines with Sulbactam for protection.
- TC:** Ticarcillin combines with Clavulanic acid.
- PT:** Piperacillin combines with Tazobactam.

RESISTANCE:

- B-Lactamase activity
- Decreased Permeability to the Drug
- Altered PBPs

CHEMOTHERAPEUTIC DRUGS

INHIBITORS OF CELL WALL SYNTHESIS

CEPHALOSPORINS

CLASSIFICATION

1ST GENERATION 2ND GENERATION 3RD GENERATION 4TH GENERATION

Cefa-zolin Cefa-droxil Cephalexin Cephalothin	Cefa-mandole Cefa-clor Cef-prozil Cef-uroxime Cef-otetan Cef-oxitin	Cef-operazone Cef-otaxime Cef-dinir Cef-ixime Cef-ti-buten Ceft-i-zox-ime Ceft-a-zidi-me Cef-tri-axone	Cefepime
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Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<p style="text-align: center;">Same as Penicillins i.e.;</p> <ul style="list-style-type: none"> • Inhibits Transpeptidation. • Inhibits Proteins called Penicillin Binding Proteins (PBPs). • Some PBPs cause Peptidation and Penicillin inhibits it. • As the cell wall gets destroyed, Autolysins can act now to destroy the Bacteria. 	<p>1st GENERATION</p> <ul style="list-style-type: none"> • (1,4): Klebsiella Pneumonia, E. coli. <p>2nd GENERATION</p> <ul style="list-style-type: none"> • (1,3,4): H. Influenza, Neisseria Species. <p>3rd GENERATION</p> <ul style="list-style-type: none"> • (3,4): Serratia marcescens. <p>4th GENERATION</p> <ul style="list-style-type: none"> • Effective against Staphylococci & Sterptococci. 	<ul style="list-style-type: none"> • Allergy • Bleeding • Disulfiram-like effect <p style="text-align: center;">FORMULA <u>ABD</u></p>

- **Cephalexin, Cefuroxime, Cefdinir & Cefixime** are given **ORALLY** while all the other Cephalosporins are given IV or IM.
- **Cefuroxime, Cefotaxime & Ceftriaxone** can penetrate into the CSF.

CHEMOTHERAPEUTIC DRUGS

PROTEIN SYNTHESIS INHIBITORS

TETRACYCLINES

CLASSIFICATION

SHORT ACTING

Tetracycline
Oxy-tetracycline

INTERMEDIATE ACTING

Demeclocycline
Methacycline

LONG ACTING

Doxycycline
Minocycline

Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none">Inhibits amino acyl t-RNA binding to 30S Ribosomal Sub-unit.	<ul style="list-style-type: none">(-1,3): Cholera, Lyme disease, Mycoplasma Pneumonia, Chlamidial & Rickettsial Infections.	<ul style="list-style-type: none">Gastric DiscomfortCalcificationSuperinfectionsHepatotoxicityVestibular problemsPhototoxicityPseudomotor Cerebri <p>FORMULA <u>GC</u> <u>Sey</u> <u>H</u>epatitis <u>V</u> <u>Ph</u>ailta hai.</p>

CHEMOTHERAPEUTIC DRUGS

PROTEIN SYNTHESIS INHIBITORS

AMINOGLYCOSIDES

CLASSIFICATION

**CAUSING COCHLEAR
NERVE DAMAGE**

**CAUSING VESTIBULAR
NERVE DAMAGE**

**NOT FOR
PAR-
ENTRAL
USE**

OTHERS

Amikacin
Netilmicin

Streptomycin
Gentamicin

Neomycin Spectinomycin
Paromomycin Tobramycin

Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Binds to 30S sub-unit and cause MISREADING of the genetic code. • Inhibits the INITIATION process. • Interrupts the process of Polysome DISAGGREGATION & ASSEMBLY and thus the Polysome gets DEPLETED. 	<ul style="list-style-type: none"> • (1,4) [1st Generation Cephalosporins also have the same Antibacterial Spectrum in numbers] • Enterococcal Infections = Gentamicin + Penicillin G • Tularemia = Gentamicin • Pseudomonas Aeruginosa Infections = Tobramycin + Piperacillin 	<ul style="list-style-type: none"> • Nephrotoxicity • Ototoxicity • Neuromuscular Paralysis • Allergy <p style="text-align: center;">FORMULA <u>NONA</u></p>

CHEMOTHERAPEUTIC DRUGS

PROTEIN SYNTHESIS INHIBITORS

MACROLIDES

CLASSIFICATION

(ECAT)

Erythromycin

Clarithromycin

Azithromycin

Telithromycin

Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Binds at 50S Ribosomal Sub-unit and Prevents TRANSLOCATION. 	<ul style="list-style-type: none"> • (-5,9) • Corynebacterium Diphtheria = Erythromycin • Legionnaires' Disease = Azithromycin • Syphilis & Mycoplasma Pneumonia = Erythromycin • Urogenital Infections of Chlamydia = Erythromycin • Urethral & Rectal Infections of Chlamydia = Azithromycin 	<ul style="list-style-type: none"> • Epigastric Distress • Cholestatic Jaundice • Ototoxicity <p style="text-align: center;">FORMULA <u>ECO</u></p>

CHEMOTHERAPEUTIC DRUGS

PROTEIN SYNTHESIS INHIBITORS

CHLOREMPHENICOL

Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none">• Binds at 50s Ribosomal Sub-unit and Inhibits PEPTIDYL TRANSFERASE reaction.	<ul style="list-style-type: none">• Rickettsial Infections• Anerobes	<ul style="list-style-type: none">• Anemias• Grey Baby Syndrome (Poor feeding, Depressed Breathing, Cardio-vascular Collpse, Cyanosis) <p>FORMULA <u>AG</u></p>

CHEMOTHERAPEUTIC DRUGS

FLUROQUINOLONES

CLASSIFICATION

1ST GENERATION 2ND GENERATION 3RD GENERATION 4TH GENERATION

Nalidixic acid
Norfloxacin

Ciprofloxacin
Ofloxacin

Gatifloxacin
Levofloxacin
Sparfloxacin

Trovafloracin
Moxifloxacin

Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Inhibit NICKING, PASS THROUGH & RESEALING step via the DNA Gyrase (Topoisomerase II). • Inhibits REPLICATION of DNA by Topoisomerase IV. 	<p>1ST GENERATION: (4) 2ND GENERATION: (1,4,7,8)</p> <ul style="list-style-type: none"> • Ciprofloxacin = Traveler's Diarrhea, Anthrax, Tuberculosis, Pseudomonal Infections. <p>3rd GENERATION: (1,4,7,8)</p> <ul style="list-style-type: none"> • Levofloxacin = Prostatitis, Gonorrhoea, Pneumonia. <p>4th GENERATION: (1,2,4,5)</p> <ul style="list-style-type: none"> • Trovafloracin & Moxifloxacin = Anerobes, Pneumonia. 	<ul style="list-style-type: none"> • Gastric Discomfort • CNS Disturbance • Connective Tissue Problems • Phototoxicity • Nephrotoxicity • Liver Toxicity <p style="text-align: center;">FORMULA <u>GC</u> <u>Ca</u> <u>PeN</u> <u>Lo</u></p>

CHEMOTHERAPEUTIC DRUGS

SULFONAMIDES

CLASSIFICATION

SHORT ACTING INTERMEDIATE ACTING LONG ACTING OTHERS

Sulfisoxazole	Sulfamethoxazole	Sulfadoxine	Mafenide Sulfadiazine Sulfasalazine Sulfacetamide
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Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none"> • PABA Analogues. • Inhibits DIHYDROPTEROATE SYNTHETASE enzyme and thus inhibit the synthesis of Bacterial Folic acid. 	<ul style="list-style-type: none"> • Enterobacteria in the Urinary Tract & Nocardia. • Sulfadiazine + Pyrimethamine = Toxoplasmosis & Chloroquine Resistant Malaria. 	<ul style="list-style-type: none"> • Crystalluria • Kernicterus • Hemopoietic Disturbance • Hypersensitivity <p style="text-align: center;">FORMULA <u>CK HH</u> (celvin klein double H)</p>

- **UTIs** = Sulfisoxazole
- **Ocular Infections** = Sulfacetamide
- **Burn Infections** = Sulfadiazine or Mafenide
- **Ulcerative Colitis, Rheumatoid Arthritis** = Sulfasalazine

CHEMOTHERAPEUTIC DRUGS

CO-TRIMOXAZOLE

Mechanism of Action	Anti-microbial Spectrum	Adverse Effects
<ul style="list-style-type: none">Inhibits DIHYDROPTEROATE SYNTHETASE & DIHYDROFOLATE REDUCTASE enzymes.	<ul style="list-style-type: none">(2,4,9): Listeriosis, GIT Infections, Prostate & Urinary Tract Infections, Respiratory Infections, Pneumocystis Jiroveci Pneumonia.	<ul style="list-style-type: none">Gastric DiscomfortRashHematologicHIV Patient <p>FORMULA <u>GR</u> <u>HH</u></p>

- Co-trimoxazole is formed by the combination of **Trimethoprim & Sulfamethoxazole**.
- The combination occurred because both the drugs had similarity in their HALF-LIVES.

CHEMOTHERAPEUTIC DRUGS

ANTI-MYCOBACTERIAL DRUGS

CLASSIFICATION

1ST LINE DRUGS

Isoniazid
Rifampin
Pyrazinamide
Ethambutol
Streptomycin

2ND LINE DRUGS

Aminosalicyclic acid
Cycloserine
Ethionamide
Rifapentin
Floroquinolones
Macrolides

ISONIAZID

Mechanism of Action	Anti- mycobacterial Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Inhibits Mycolic acid synthesis. • Inhibits: <ol style="list-style-type: none"> 1. β-ketoacyl-ACP synthase. 2. enoyl acyl carrier protein reductase. 	<ul style="list-style-type: none"> • M. tuberculosis • M. kansasii 	<ul style="list-style-type: none"> • Hepatic Toxicity • Peryphral Neuritis <p style="text-align: center;">FORMULA <u>HP</u></p>

- Isoniazid is a pro-drug which is activated by **Mycobacterial catalase-peroxidase (KatG)**
- For Bacilli in stationary phase, Isoniazid is **BACTERIOSTATIC**, but for rapidly dividing organisms, it is **BACTERICIDAL**.

RIFAMPIN (Bactericidal)

Mechanism of Action	Anti- mycobacterial Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Inhibits Bacterial DNA Dependent RNA Polymerase and thus the Transcription 	<ul style="list-style-type: none"> • M. tuberculosis • M. kansasii • Gram +ve Organism 	<ul style="list-style-type: none"> • Fever • Vomiting • Rash <p style="text-align: center;">FORMULA</p>

Process.	•	Gram –ve Organism	<u>FeVeR</u>
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PYRAZINAMIDE (Bactericidal for dividing Organisms)

Mechanism of Action	Anti- mycobacterial Spectrum	Adverse Effects
• Un-Known	• M. tuberculosis	• Liver Toxicity • Urate Retention FORMULA <u>LU</u>

ETHAMBUTOL (Bacteriostatic)

Mechanism of Action	Anti-mycobacterial Spectrum	Adverse Effects
• Inhibits arabinosyl transferase , an enzyme necessary for the synthesis of Mycobacterial arabinogalactan cell wall.	• M. tuberculosis • M. kansasii	• Color Blindness • Optic Neuritis FORMULA <u>CO</u>

REGIMENS FOR TUBERCULOSIS:

6 months is the time for which the medication has to be taken.

REGIMEN I:

- Daily Isoniazid, Rifampin, Pyrazinamide & Ethambutol for **2 months** followed by Isoniazid and Rifampin twice or thrice weekly for next **4 months**.

REGIMEN II:

- Thrice weekly administration of Isoniazid, Rifampin, Pyrazinamide & Ethambutol for **6 months**.

CHEMOTHERAPEUTIC DRUGS

ANTIFUNGAL DRUGS

CLASSIFICATION

DRUGS FOR SUBCUTANEOUS & SYSTEMIC MYCOSES

Amphotericin B
Ketoconazole
Fluconazole
Itraconazole

DRUGS FOR CUTANEOUS MYCOSES

Griseofulvin
Nystatin
Terbinafine

DRUGS FOR SUBCUTANEOUS & SYSTEMIC MYCOSES

AMPHOTERICIN B (Fungicidal & Fungistatic)

Mechanism of Action	Anti-fungal Spectrum	Adverse Effects
<ul style="list-style-type: none"> Binds to ergosterol in the plasma membrane and create pores through which electrolyte (Potassium) leaks and cause cell death. 	<ul style="list-style-type: none"> Candida albicans Coccidioides immitis Cryptococcus neoformans Blastomyces dermatidis Aspergillus strains Histoplasma capsulatum 	<ul style="list-style-type: none"> Fever Chills Neurologic Effects Renal Impairment Hypotension Anemia <p style="text-align: center;">FORMULA <u>FC</u> <u>Nai</u> <u>RHA</u></p>

KETOCONAZOLE (Fungistatic)

Mechanism of Action	Anti-fungal Spectrum	Adverse Effects
<ul style="list-style-type: none"> Inhibits C-14 α-demethylase, thus blocking the demethylation of lanosterol to ergosterol. 	<ul style="list-style-type: none"> Candida albicans Coccidioides immitis Blastomyces dermatidis 	<ul style="list-style-type: none"> GI Disturbance Endocrine Effects Franks Hepatitis <p style="text-align: center;">FORMULA <u>GEF</u></p>

	<ul style="list-style-type: none"> • Histoplasma capsulatum 	
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- **FLUCONAZOLE** is the drug of choice for Cryptococcus neoformans, Candidemia and Coccidioidomycosis. It lacks the endocrine effects of Ketoconazole.

DRUGS FOR CUTANEOUS MYCOSES

GRISEOFULVIN

Mechanism of Action	Anti-fungal Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Cause disruption of mitotic spindle and inhibits the fungal mitosis. 	<ul style="list-style-type: none"> • Candida albicans 	<ul style="list-style-type: none"> • GI Disturbance <p style="text-align: center;">FORMULA <u>G</u></p>

- Swish & swallow is the mechanism employed for usage.

NYSTATIN

Mechanism of Action	Anti-fungal Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Same as Amphotericin B i.e. Binds to ergosterol in the plasma membrane and create pores through which electrolyte (Potassium) leaks and cause cell death. 	<ul style="list-style-type: none"> • Candida albicans 	<ul style="list-style-type: none"> • GI Disturbance <p style="text-align: center;">FORMULA <u>G</u></p>

TERBINAFINE

Mechanism of Action	Anti-fungal Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Inhibits Fungal Squalene epoxidase, thereby decreasing the synthesis of ergosterol. 	<ul style="list-style-type: none"> • Candida albicans • Dermatophytes 	<ul style="list-style-type: none"> • GI Disturbance • Taste Disturbance • Visual Disturbance <p style="text-align: center;">FORMULA <u>GTV</u></p>

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- Drug of choice for Dermatophytoses.

CHEMOTHERAPEUTIC DRUGS

ANTI-PROTOZOAL DRUGS

CLASSIFICATION

CHEMOTHERAPY FOR AMEBIASIS

SYSTEMIC

Chloroquine
Emetine
Dehydroemetine

LUMINAL

Diloxanide
Iodoquinol
Paramomycin

MIXED

Metronidazole

METRONIDAZOLE

Mechanism of Action	Anti-Amebic Spectrum	Adverse Effects
<ul style="list-style-type: none"> • The Nitro group of Metronidazole is able to serve as an electron acceptor, forming reduced cytotoxic compounds that bind to protein and DNA, resulting in cell death. 	<ul style="list-style-type: none"> • E. histolytica • Clostridium difficile • Gardia lamblia • Tricomonas vaginalis • Anaerobic cocci • Anaerobic gram -ve bacilli. 	<ul style="list-style-type: none"> • GI Disturbance • Oral Moniliasis • Metallic Taste • Paresthesias <p style="text-align: center;">FORMULA <u>GOMP</u></p>

Clinical Syndrome	Drug
Asymptomatic Cyst carriers	Iodoquinol or Paromycin or Diloxanide
Diarrhea/Dysentery (Extraintestinal)	Metronidazole + Iodoquinol or promycin or diloxanide
Amebic Liver abscess	Chloroquine + Metronidazole or Emetine

CLASSIFICATION

CHEMOTHERAPY FOR MALARIA

EXOERYTHROCYTIC

Primaquine
Sulfones
Sulfonamides

ERYTHROCYTIC

Chloroquine
Quinine
Mefloquine

BOTH

Pyrimethamine

PRIMAQUINE

Mechanism of Action	Anti-malarial Spectrum	Adverse Effects
<ul style="list-style-type: none"> Act as Oxidants and thus destroy schizonts. Cause Hemolysis 	<ul style="list-style-type: none"> P. falciparum P. vivax P. ovale 	<ul style="list-style-type: none"> Hemolytic Anemia Agranulocytosis Methimoglobinemia <p>FORMULA <u>HAM</u></p>

CLOROQUINE

Mechanism of Action	Anti-malarial Spectrum	Adverse Effects
<ul style="list-style-type: none"> Stored in food vacuole of the parasite. Inhibits polymerization of Heme to Hemozoin. Increased pH and 	<ul style="list-style-type: none"> P. falciparum 	<ul style="list-style-type: none"> GI Disturbance Pruritus Blurring of vision Headache <p>FORMULA <u>GP</u> <u>Bara</u> <u>Hai</u></p>

accumulation of Heme results in lysis of Both parasite and red blood cells.		
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QUININE

Mechanism of Action	Anti-malarial Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Same as Chloroquine i.e. • Stored in food vacuole of the parasite. • Inhibits polymerization of Heme to Hemozoin. • Increased pH and accumulation of Heme results in lysis of Both parasite and red blood cells. 	<ul style="list-style-type: none"> • P. falciparum 	<ul style="list-style-type: none"> • Cinchonism (Nausea, Vomiting, Tinnitus & Vertigo)

DRUGS FOR TREATMENT OF MALARIA

All Plasmodium species except Chloroquine resistant P. falciparum	Chloroquine resistant P. falciparum	Prevention of relapse: P. vivax & P. ovale only	Chloroquine sensitive geographic area	Chloroquine resistant geographic area	In Pregnancy
Chloroquine	Quinine + Pyrimethamine-sulfadoxine or	Primaquine	Chloroquine	Mefloquine	Chloroquine or Mefloquine

	Doxycycline or Clindamycin				
	Alternate is Mefloquine				

CHEMOTHERAPEUTIC DRUGS

ANTHELMINTIC DRUGS

CLASSIFICATION

FOR NEMATODES

Mebendazole
Thiabendazole
Ivermectin
Pyrantel pamoate

FOR TREMATODES

Praziquantel

FOR CESTODES

Albendazole
Niclosamide

DRUGS FOR NEMATODES

MEBENDAZOLE

Mechanism of Action	Anthelmintic Spectrum	Adverse Effects
<ul style="list-style-type: none"> Interferes with the assembly of parasites' Microtubules. Decrease glucose uptake. 	<ul style="list-style-type: none"> Trichuris trichiura (Whipworm) Enterobius vermicularis (Pinworm) Ancylostoma duodenale (Hookworm) Ascariasis lumbricoides (Roundworm) 	<ul style="list-style-type: none"> Diarrhea <p style="text-align: center;">FORMULA <u>D</u></p>

PYRANTEL PAMOATE

Mechanism of Action	Anthelmintic Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Acts as depolarizing neuromuscular blocking agent and causes persistent activation of parasites' nicotinic receptors. 	<ul style="list-style-type: none"> • Entrobium vermicularis (Pinworm) • Ancylostoma duodenale (Hookworm) • Ascariasis lumbricoides (Roundworm) 	<ul style="list-style-type: none"> • Nausea • Vomiting • Diarrhea <p align="center">FORMULA <u>NVD</u></p>

- **THIABENDAZOLE** is given against Strongyloidiasis.
- **IVERMECTIN** is given against Onchocerciasis (River Blindness).

DRUGS FOR TREMATODES

PRAZIQUANTEL

Mechanism of Action	Anthelmintic Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Permeability of the cell membrane to calcium is increased. • Contracture and paralysis of the parasite occurs. 	<ul style="list-style-type: none"> • Schistosomiasis • Cystecercosis 	<ul style="list-style-type: none"> • Dizziness • Anorexia • Malaise <p align="center">FORMULA <u>DAM</u></p>

DRUGS FOR CESTODES

NICLOSAMIDE

Mechanism of Action	Anthelmintic Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Inhibits the parasite's Mitochondrial energy producing mechanism. 	<ul style="list-style-type: none"> • Taenia solium • Taenia saginata 	<ul style="list-style-type: none"> • Constipation <p align="center">FORMULA <u>C</u></p>

ALBENDAZOLE

Mechanism of Action	Anthelmintic Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Same as Mebendazole i.e. • Interferes with the assembly of parasites' Microtubules. • Decrease glucose uptake. 	<ul style="list-style-type: none"> • Taenia solium Larvae • Echinococcus granulosus (Hydatid Disease) 	<ul style="list-style-type: none"> • Headache • Hepatic Toxicity • Agranulocytosis • Nausea <p style="text-align: center;">FORMULA <u>HHAN</u></p>

CHEMOTHERAPEUTIC DRUGS

ANTI-VIRAL DRUGS

CLASSIFICATION

DRUGS FOR HIV

Neucloside Reverse Transcriptase Inhibitor

Zidovudine
Abacavir

Non-Neucloside Reverse Transcriptase Inhibitor

Delavirdine
Nevirapine

Protease Inhibitor

Indinavir
Lopinavir

Fusion Inhibitor

HERPES

Acyclovir
Ganciclovir

INFLUENZA

Amantadine
Rimantadine

HBV & HCV

Interferon
Ribavirin
Adefovir
Lamivudine

Enfuvirtide

INTERFERON

Mechanism of Action	Anti-viral Spectrum	Adverse Effects
<ul style="list-style-type: none"> Inhibits the viral RNA Translation leading to degradation of viral mRNA & tRNA. 	<ul style="list-style-type: none"> Hepatitis B & C virus Papilloma virus 	<ul style="list-style-type: none"> GI Disturbance CVS Problems Weight Loss Flu-like Symptoms Bone Marrow Suppression <p>FORMULA <u>GC W</u>on <u>F</u>oot<u>B</u>all</p>

APPROVED INDICATIONS OF INTERFERONS

Interferon-α	Interferon-β	Interferon-γ
<ul style="list-style-type: none"> Chronic Hepatitis B & C Genital warts caused by Papilloma virus Hairy cell Leukemia & Chronic Myelogenous Leukemia. Kaposi's Sarcoma. 	<ul style="list-style-type: none"> Relapsing-remitting Multiple Sclerosis. 	<ul style="list-style-type: none"> Chronic Granulomatous Disease.

ACYCLOVIR

Mechanism of Action	Anti-viral Spectrum	Adverse Effects
<ul style="list-style-type: none"> Thimidine kinase converts Acyclovir into Acyclovir mono-phosphate. 	<ul style="list-style-type: none"> HSV-1 & HSV-2 Varicella-zoaster virus Epstein-Barr 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhea Headache Renal Dysfunction

<ul style="list-style-type: none"> • Then into di and tri form which gets incorporated into the DNA and cause DNA-chain termination. 	virus	<p>FORMULA <u>NVD HR</u></p>
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CHEMOTHERAPEUTIC DRUGS

ANTI-CANCER DRUGS

CLASSIFICATION

ANTI-METABOLITES

5-Fluorouracil
6-Mercaptopurine
Methotrexate

ANTIBIOTICS

Dactinomycin
Daunorubicin
Doxorubicin

ALKYLATING AGENTS

Cyclophosphamide
Ifosfamide

MICROTUBULE INHIBITORS

Vincristine
Vinblastine
Paclitaxel

STEROIDS & ANTAGONISTS

Estrogen
Prednisone
Letrozole

MONOCLONAL ANTIBODIES

Cetuximab
Rituximab

OTHERS

Interferons
Etoposide
Asparaginase

METHOTREXATE

Mechanism of Action	Anti-cancer Spectrum	Adverse Effects
<ul style="list-style-type: none"> • Inhibits Dihydro- 	<ul style="list-style-type: none"> • Burkitt 	<ul style="list-style-type: none"> • Nausea

<p>folate Reductase and thus conversion of Folate to Tetra-hydro-folate.</p> <ul style="list-style-type: none"> • MTX Polyglutamate conversion occurs which do the same. 	<ul style="list-style-type: none"> • Lymphoma • Lymphocytic Leukemia • Chorio carcinoma • Breast cancer • Head-neck carcinomas 	<ul style="list-style-type: none"> • Vomiting • Diarrhea • Renal Dysfunction • Mucocitis • Myelosuppression • Stomatitis • Pulmonary Toxicity (Cough, Dyspnea, Fever & Cyanosis) • Alopecia • Cirrosis • Neurologic Toxicity (Meningitis, Encephalopathy & Paraplegia) <p style="text-align: center;">FORMULA <u>NVD R MMS PAC N</u></p>
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- **Leucovorin** is an Anti-dote to Methotrexate.
- MTX is also given in **Rhematoid arthritis & Crohn disease.**

6-MERCAPTOPURINE

Mechanism of Action	Anti-cancer Spectrum	Adverse Effects
<ul style="list-style-type: none"> • 6-Mercaptopurine is converted into TIMP. • TIMP inhibits the 1st step of Purine-ring synthesis. • TIMP is converted into TGMP which changes into Di & Tri phosphate forms and gets incorporated into RNA & DNA and renders them non-functional. 	<ul style="list-style-type: none"> • Lymphoblasti c Leukemia 	<ul style="list-style-type: none"> • Nausea • Vomiting • Diarrhea • Myelosuppression • Hepatic Toxicity <p style="text-align: center;">FORMULA <u>NVD MH</u></p>

5-FLUOROURACIL

Mechanism of Action	Anti-cancer Spectrum	Adverse Effects
<ul style="list-style-type: none"> Changes into 5-FdUMP which inhibits conversion of dTMP from dUMP by inhibiting Thymidylate synthase. 	<ul style="list-style-type: none"> Breast cancer Ovarian cancer Gastric cancer Pancreatic cancer Colorectal cancer 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhea Dermopathy called Hand Foot Syndrome. Anorexia Myelosuppression Ulceration of Oral & GI Mucosa <p style="text-align: center;">FORMULA <u>NVD DAMU</u></p>

CYCLOPHOSPHAMIDE

Mechanism of Action	Anti-cancer Spectrum	Adverse Effects
<ul style="list-style-type: none"> Changes into Hydroxylated metabolites by P450. Hydroxylated metabolites are converted into Phosphoramidate Mustard & Acrolein. Phosphoramidate Mustard is cytotoxic and destroys DNA. 	<ul style="list-style-type: none"> Breast cancer Burkit Lymphoma 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhea Hemorrhagic cystitis & Leukocytosis leading to Fibrosis of Bladder.. Anorexia Myelosuppression Veno-occlusive disease of Liver Amenorrhea, Testicular atrophy & Sterility Secondary Malignancies <p style="text-align: center;">FORMULA</p>

		<u>NVD HAM VAS</u>
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VINCRISTINE & VINBLASTINE

Mechanism of Action	Anti-cancer Spectrum	Adverse Effects
<ul style="list-style-type: none"> • They block the ability of Tubulin to Polymerise to form Microtubules. • Block mitosis in Metaphase. 	<ul style="list-style-type: none"> • Vincristine (Lymphoblastic Leukemia, Wilms tumor, Ewing soft-tissue sarcoma, Hodgkin & non-Hodgkin Lymphomas) • Vinblastine (Hodgkin & non-Hodgkin Lymphomas, non-small cell Lung cancer, Metastatic Testicular carcinoma) 	<ul style="list-style-type: none"> • Nausea • Vomiting • Diarrhea • Alopecia • Vincristine (Constipation & Peripheral Neuropathy) • Vinblastine (Myelosuppression) <p style="text-align: center;">FORMULA <u>NVDA CPM</u></p>