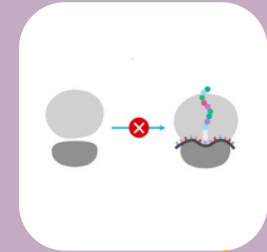


TETRACYCLINES

Binds to 30S subunit of bacterial ribosome,
interfering with protein production



EXAMPLES

- Tetracycline (1st gen)
- Doxycycline (2nd gen)

COVERAGE

Gram +ve	<i>S. aureus</i> , <i>S. pneumoniae</i> , <i>B. anthracis</i>
Gram -ve	<i>H. pylori</i> , <i>V. cholerae</i>
Anaerobic	<i>C. perfringes</i> , <i>C. tetani</i>
Spirochetes	<i>T. pallidum</i> , <i>B. burgdorferi</i>
Mycoplasma	<i>M. pneumoniae</i>
Chlamydia	<i>Chlamydia</i> sp.
Others	<i>R. rickettsii</i>

SIDE EFFECTS

- GI disturbances
- Permanent tooth discoloration & tooth hypoplasia in children
- Photosensitivity
- Hepatotoxicity in pregnant women
- Vestibular dysfunction e.g. dizziness, vertigo, tinnitus

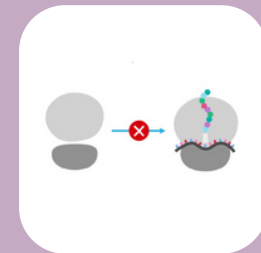


CONTRAINDICATIONS

- Pregnant/breastfeeding women
- Children < 8 years old

AMINOGLYCOSIDES

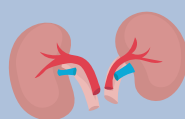
Binds to 30S subunit of bacterial ribosome,
interfering with protein production



EXAMPLES

- Gentamicin
- Amikacin
- Streptomycin
- Neomycin
- Tobramycin

SIDE EFFECTS

- Ototoxicity 
- Nephrotoxicity 
- Neuromuscular paralysis

COVERAGE

Aerobic gram negative bacilli

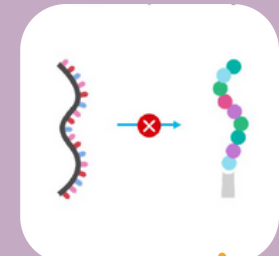
- Pseudomonas aeruginosa
- Klebsiella pneumoniae
- Enterobacter sp.

No activity
against
anaerobes

Enhanced synergy with
 β -lactam antibiotics for
treatment of
infective endocarditis

MACROLIDES

Binds to 50S subunit of bacterial ribosome,
inhibiting translation steps of protein synthesis



EXAMPLES

- Azithromycin
- Erythromycin
- Clarithromycin

SIDE EFFECTS

- GI disturbances
- QT prolongation
- Ototoxicity
- Cholestatic jaundice

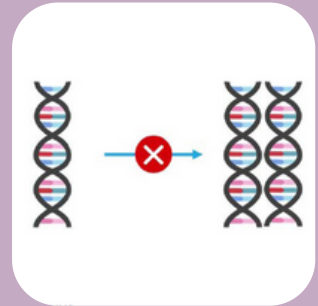


COVERAGE

Gram +ve	<i>S. pyogenes</i> , <i>S. pneumoniae</i> , <i>C. diphtheriae</i>
Gram -ve	<i>N. gonorrhoeae</i> , <i>B. pertussis</i> , <i>C. jejuni</i> , <i>H. influenzae</i> , <i>L. pneumophila</i>
Spirochetes	<i>T. pallidum</i>
Mycoplasma	<i>M. pneumoniae</i>
Chlamydia	<i>C. pneumoniae</i> , <i>C. psittaci</i> , <i>C. trachomatis</i>
Others	<i>L. monocytogenes</i> , <i>B. henselae</i> , <i>B. quintana</i> , <i>H. pylori</i>

FLUOROQUINOLONES

Inhibits the synthesis and replication of DNA
in bacterial cells by binding to and inhibiting
enzymes DNA gyrase and topoisomerase IV



EXAMPLES

- Ciprofloxacin
- Levofloxacin
- Moxifloxacin

COVERAGE

Gram +ve	<i>S. pyogenes</i> , <i>S. pneumoniae</i> , <i>B. anthracis</i>
Gram -ve	<i>Enterobacter</i> sp., <i>E. coli</i> , <i>H. influenzae</i> , <i>K. pneumoniae</i> , <i>L. pneumophila</i> , <i>P. mirabilis</i> , <i>P. aeruginosa</i> , <i>Shigella</i> sp.
Mycobacterium	<i>M. tuberculosis</i>
Atypical	



SIDE EFFECTS

- High incidence of *C. difficile* colitis
- Nausea, vomiting, diarrhea
- Phototoxicity
- CNS toxicity
- Peripheral neuropathy
- QT prolongation
- Abnormal glucose metabolism
- Tendinopathy

NO



CONTRAINDICATIONS

- Pregnancy
- Limit use in children < 18 y.o.

NITROIMIDAZOLES

Antiprotozoal drug that also has potent antibacterial activity against anaerobes by producing metabolic products that damages anaerobe DNA



EXAMPLES

Metronidazole

COVERAGE

Most anaerobic organisms

E.g. bacteroides, clostridium sp.

Intraabdominal
infections

Vaginitis

Clostridium
difficile colitis

SIDE EFFECTS

- Nausea, diarrhoea
- Stomatitis
- Peripheral neuropathy
- Disulfiram-like reaction with alcohol

Avoid alcohol!



Inhibits de novo synthesis of folate, interferes with bacterial DNA & RNA synthesis

EXAMPLES

- Sulfamethoxazole
- Sulfadiazine
- Sulfasalazine

SIDE EFFECTS

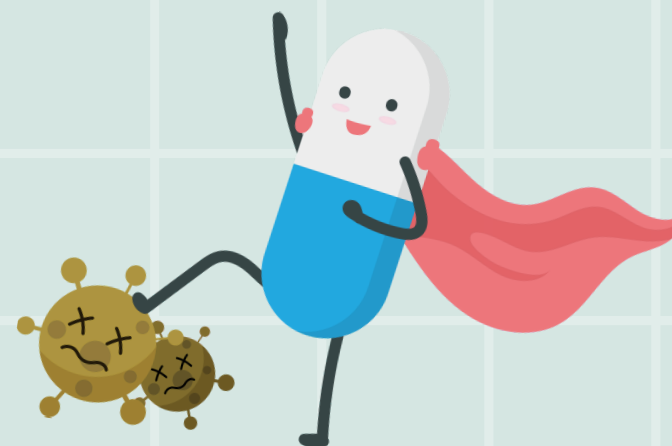
- Cystalluria
- Hypersensitivity (rashes, angioedema, Stevens–Johnson)
- Hemolytic anaemia in G6PD deficiency
- Kernicterus in newborns
- Drug–drug interactions



SULFONAMIDES



TRIMETHOPRIM



Inhibits reduction of dihydrofolic acid to the metabolically active form, tetrahydrofolic acid by inhibiting bacterial dihydrofolate reductase



EXAMPLES

**Often combined with sulfonamides:
trimethoprim–sulfamethoxazole
(Bactrim)**

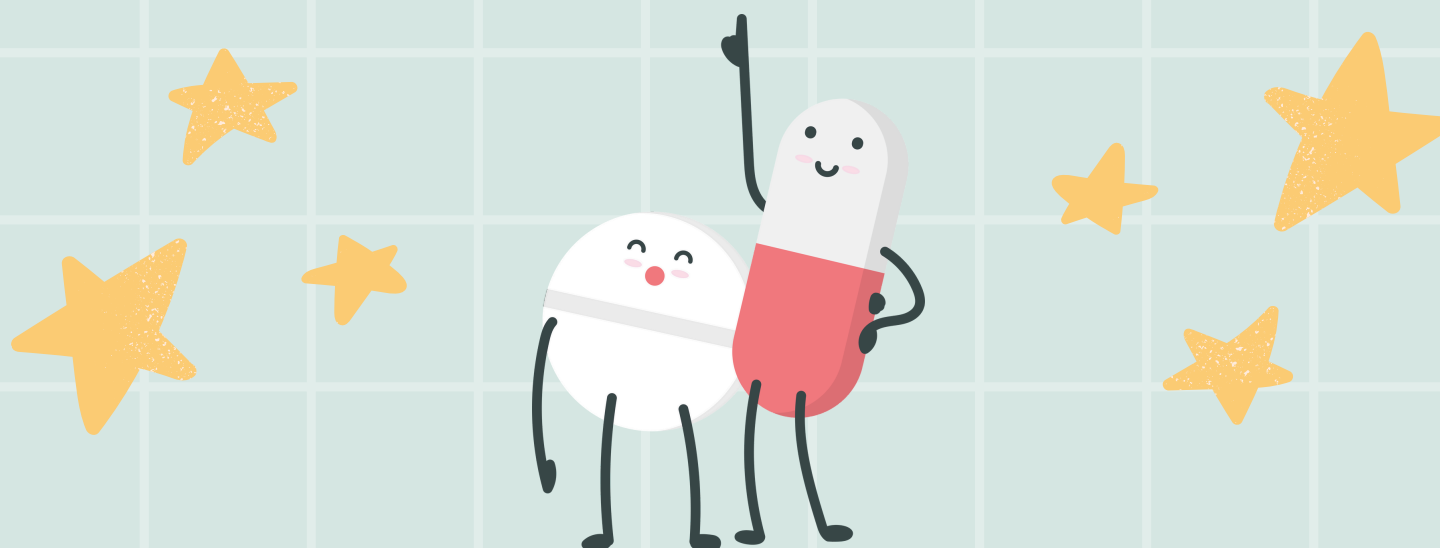
SIDE EFFECTS

- Megaloblastic anaemia, leukopenia, granulocytopenia
- Hyperkalemia

TRIMETHOPRIM-SULFAMETHOXAZOLE (BACTRIM)

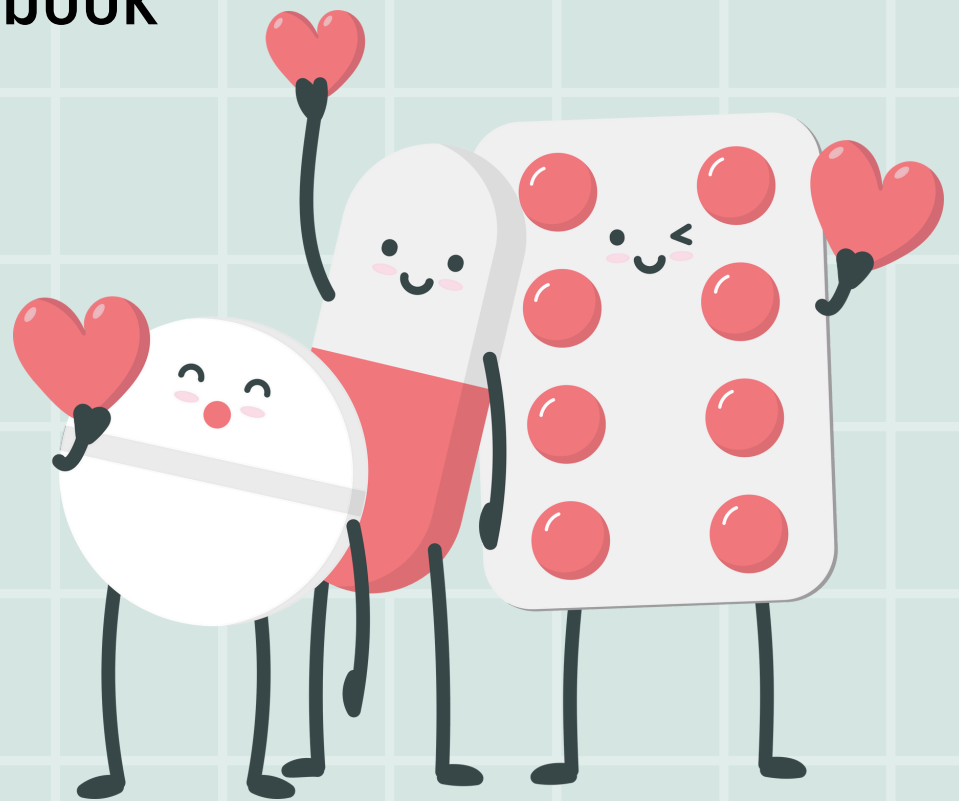
COVERAGE

Gram +ve	<i>S. aureus</i> (including MRSA), <i>L. monocytogenes</i>
Gram -ve	<i>E. coli</i> , <i>H. influenzae</i> , <i>L. pneumophila</i> , <i>P. mirabilis</i> , <i>S. typhi</i> , <i>Shigella</i> sp.
Fungi	<i>Pneumocystis jirovecii</i>
Parasite	<i>Toxoplasma gondii</i>



References

1. Basic Clinical Pharmacology 14th Ed., Bertram G. Katzung
2. Lippincott Illustrated Reviews: Pharmacology
3. Antibiotic stewardship handbook



Disclaimer

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