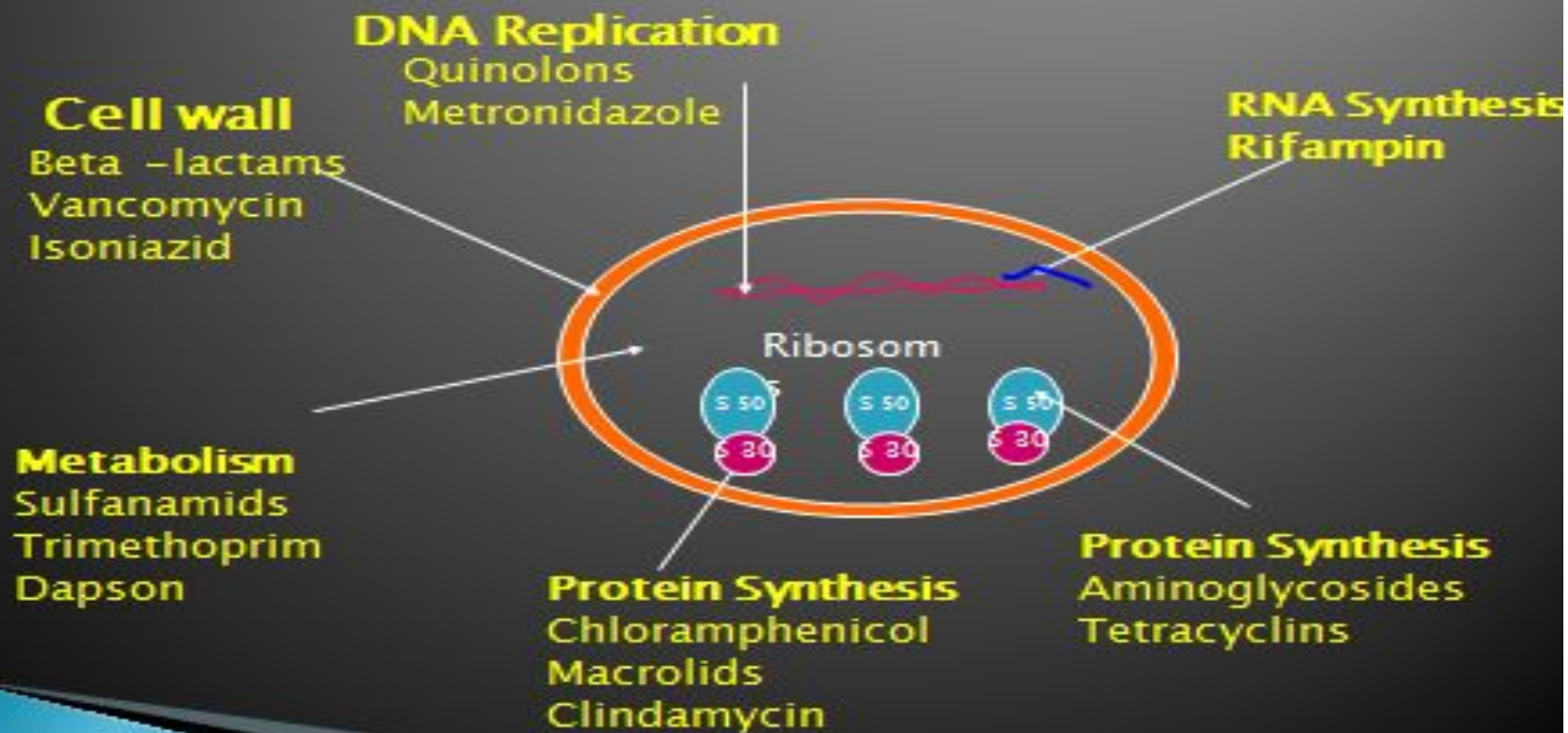


Proper selection of antibiotic



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Antibiotics



Penicillins

Penicillin
amoxicillin
Ampicillin

Wide range of infections,
(streptococcal infections,
syphilis, Lyme disease)

Nausea, diarrhea
Allergy

Oxacillin
Cloxacillin
Dicloxacillin
Nafcillin

PENICILLINASE-RESISTANT
PENICILLINS
(MSSA)

Piperacillin
Ticarcillin

G - (psudomonas)

Carbenicillin

Cephalosporins, 1st generation

Cefadroxil Mainly skin and soft-tissue infections
Cefazolin
Cephalexin

Cephalosporins, 2nd generation

Cefaclor Some respiratory and,
Cefoxitin , abdominal infections (cefoxitin)
Cefuroxime

Cephalosporins, 3rd generation

Cefixime –skin and soft-tissue infections
Cefotaxime –Serious infections (meningitis or
Cefpodoxime hospital infections)
Ceftazidime
Ceftriaxone

Cephalosporins, 4th generation

Cefepime Serious infections (including
Pseudomonas infections

Cephalosporins, 5th generation

Ceftobiprole Complicated skin infections
(including foot infections ,
Pseudomonas, (MRSA)

Carbapenems

Imipenem-
cilastatin

+-

sepsis, pneumonia, abdominal
infections, Gangrene

Seizures
Confusion
imipenem

Meropenem

meropenem is more active
against Enterobacteriaceae

-
Ertapenem

- (L)

Doripenem

+-

Macrolides



Erythromycin

**Streptococcal infections,
syphilis, respiratory
infections, mycoplasmal
infections**

**Nausea, vomiting,
diarrhea
Jaundice**

Clarithromycin

Azithromycin

Roxithromycin

roxithromycin

Aminoglycosides

Neomycin	gram-negative	Hearing loss
Gentamicin	bacteria	Dizziness
Kanamycin		Kidney damage
Amikacin		
Tobramycin		

Streptomycin

Tetracyclines

Tetracycline

Doxycycline

Minocycline

Syphilis,
chlamydial,
mycoplasmal,
rickettsial
infections

Gastrointestinal
upset
Sensitivity to
sunlight
Staining of teeth

Fluoroquinolones

Ciprofloxacin

Sepsis, urinary tract infections, prostatitis, diarrhea, and gonorrhea

Nervousness

Norfloxacin

Nausea

Levofloxacin

Antibiotic-associated diarrhea

Lomefloxacin

Moxifloxacin

Ofloxacin

Trovafloxacin

Miscellaneous antibiotics

Metronidazole

**Trichomonas or Gardnerella
, pelvic and abdominal
infections**

**Nausea
Headache**

Vancomycin

MRSA, Enterococcus

**Allergic reactions
Decrease in white
blood cell and platelet
counts**

⊕ Antibiotics treatment

⊕ specific



⊕ Empiric



Principles of Empiric therapy

- Is there a Bacterial Infection?
- Use Skills In bacterial etiology.
- Use Skills In Antibiotic effect.
(Get familiar with Daily isolates and the Antibiotic patterns)
- Prescribe antibiotic (s)
- Judgment on Clinical response



principles of antibiotic prescription:

1. Only prescribe antibiotics for bacterial infections if:
 - Symptoms are significant or severe
 - There is a high risk of complications
2. Use first-line antibiotics first
3. Reserve broad spectrum antibiotics for indicated conditions only

Considerations for choosing the antibiotic

- Good in vitro activity and clinical efficacy
 - Good penetration into infected site
 - Long half-life
 - Safety:
 - ✓ low adverse effects and toxicity
 - ✓ not killing the normal flora
 - ✓ not promoting bacterial resistance
- Narrow spectrum of antibiotics should be used

Antimicrobial Resistance



Natural selection of resistant bacteria



Common Antimicrobial Resistance

- Penicillin resistance of *S. pneumoniae*
- Erythromycin resistance of *S. pneumoniae*
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- Fluoroquinolone resistance of *E. coli*
- Fluoroquinolone resistance of *Klebsiella pneumoniae*
- Carbapenem resistance of *Klebsiella pneumoniae*



1934 penicillin

1940 penicillin-R *Staphylococcus*

tetracycline 1950

erythromycin 1953

methicillin 1960

1959 tetracycline-R *Shigella*

1962 methicillin-R *Staphylococcus*

1965 penicillin-R pneumococcus

gentamicin 1967

1968 erythromycin-R *Streptococcus*

vancomycin 1972

1979 gentamicin-R *Enterococcus*

imipenem & ceftazidime 1985

1987 ceftazidime-R Enterobacteriaceae

