Penicillins & Cephalosporins







# Penicillins & Cephalosporins

**Gram Positive Bacteria** 

Cocci: Staphylococcus, Strep,

**Rods**: Bacillus anthracis, Actinomyces, Erysipelas

**Anaerobic Gram Positive** 

Rods: Clostridium (tetanus, black leg etc.)

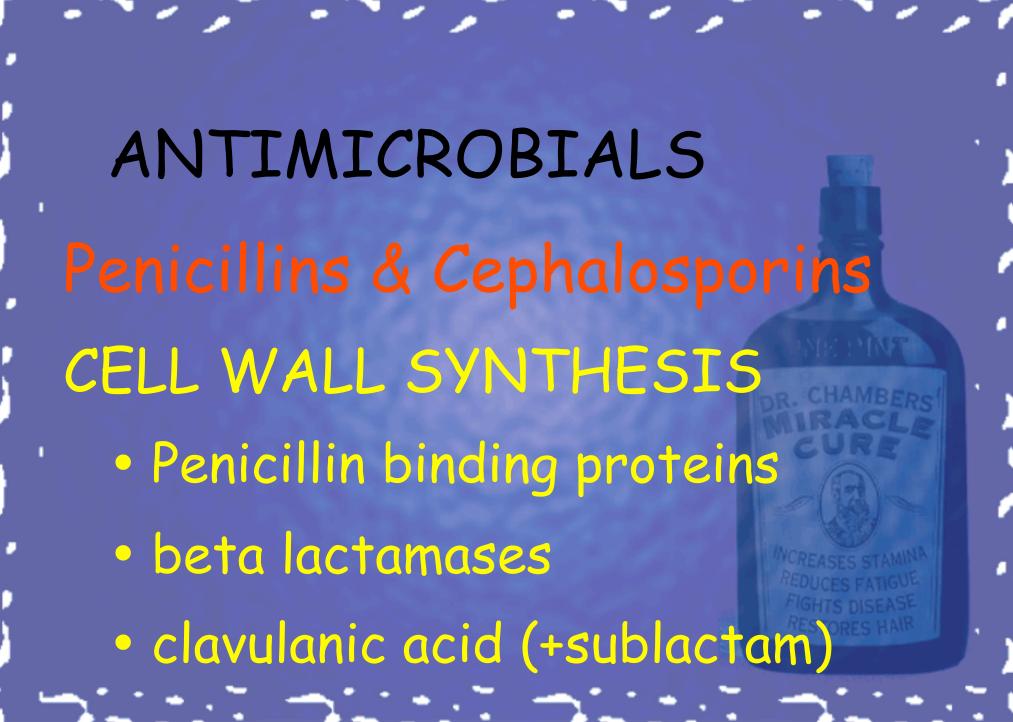
**Gram Negative Bacteria** 

**Rods**: Escherichia coli, Klebsiella, Proteus, Pasteurella, Bordetella

**Anaerobic Gram Negative** 

Bacteroides

Pseudomonas-extended spectrum e.g. ticarcillin





- Primarily Gram Positive Bacteria
   Penicillin (G & V)
- Broad spectrum Positive & Negative Amoxicillin and ampicillin
- Primarily Gram Negative Bacteria
   Ceftiofur

# ANTIMICROBIALS Adverse reactions: Allergic/anaphylactic reactions Suprainfections (guinea pigs!) Electrolyte disturbances (Na, K salts) Ticarcillin-avoid heparin, anticoagulants Procaine reactions in horses

#### Penicillin Pharmacokinetics

- · Penicillin G (Na, K) inactivated in acid
  - Lipid insoluble extracellular
- Poorly distributed across lipid barriers (CNS, eye, prostate)

# ANTIMICROBIALS Penicillin Pharmacokinetics

- · Semi-synthetic penicillins PO use
- Excreted unchanged in the urine (except ampicillin)
  - ·Slow excretion with aspirin or probenecid

# ANTIMICROBIALS Penicillin Pharmacokinetics Duration of Action:

Salts (Na, K) 4-6 hours

· Procaine salt aqueous 24 hours

- · · Procaine salt in oil 48 hours
  - Benzathine salt 48+ hours
    - procaine in race horses!



Penicillins - Gram positive, inactivated by beta lactamase

- · Procaine Penicillin G
- · Benzathine Penicillin
- · Penicillin V



injection may be an a repeat in 48 hour immediately, in all Administer one in Horses and Cattle Horses and Cattle Dairy Cows 400kg Sheep, Calves, Fo Cats and Dogs: SUGGESTED DO Surgeon. unless otherwise DOSAGE INDICAT half of the nec producing animals intramuscular or DOSAGE AND A

LICENSED TO AND MANUFACTURED IN NEW ZEALAND BY 38 PUKETE ROAD, P.O. BOX 10305 HAMILTON



EXP FE 8 2004

the dose in half an For larger doses, administer the se absence of clin Administer the se Horses and Cattle Horses and Cettle Dairy Cows (400kg Cats and Dogs: Sheep, Calves, Fo SUGGESTED DOS Veterinary Surgeon I.U./kg unless other DOSAGE IND CAT anterior half of the producing animals, intramuscular or su DOSAGE AND AU

Licensed under of the neck

INTRACILLIN"



must be added for each further treatment to additional 12 hours must be added for each further treatment to a maximum of 72 hours following the last treatment HORSES may not race within 504 hours (21 days of the last treatment or until testing shows clearance of procaine.

5308101

Each mL contains Procaine Penicillin G 300,000 I.U.

LICENSED UNDER THE AT each side of the na to divide the dose If necessary. For lar

INTRACILLIN

Each mL contains Procaine Penicillin G 150,000 I.U.

and Benzathine Penicillin 150,000 LU.

LONG ACTING

Penicillins-"broad spectrum" but susceptible to beta lactamase

- · Amoxicillin q 8-12 h
- ' Ampicillin
- · Amoxicillin + clavulanic acid
  - \*resistant to beta lactamase







Penicillins-beta lactamase resistant

Narrow gram + spectrum

- · Cloxacillin 98h
- · Flucloxacillin q8h



Penicillins-extended spectrum

Gram + and gram - aerobes

Gram + anaerobes;

Pseudomonas

- · Carbenicillin
- Ticarcillin



# Cephalosporins-Pharmacology

- · Similar to penicillins
- · Doses 98-12h
- · ceftiofur q24h, nil withholding



Cephalosporins-Pharmacokinetics

· Similar to penicillins:

e.g excreted in urine, inhibition by aspirin and probenecid



# Cephalosporins

· Cephalexin- Gram +, (-)



· ceftiofur-Gram -, (+)

· ceftazidime-Gram +, - III







0 100 mL

E CENEL"

& Sterile suspension

ceftiofur hydrochloride sterile suspension equ

 $50 \, \text{mg/mL}$ 

ceftiofur

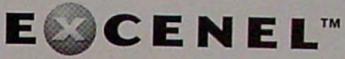
For the treatment of respiratory infections in cal pigs and bovine foot rot.

FOR ANIMAL TREATMENT ONLY

Prescription Animal Remedy (P.A.R) class for use only following a veterinary consultations and under the Animal Remedies Act 1961

Pharmacia & Upjohn

PRESCRIPTION ANIMAL REMEDY KEEP OUT OF REACH OF CHILDREN FOR ANIMAL TREATMENT ONLY



Sterile Suspension

ceftiofur hydrochloride sterile suspension

Equivalent to:

50 mg/mL ceftiofur

For the treatment of respiratory infections in cattle and pigs and bovine foot rot.

100 mL

Pharmacia & Upjohn

ANTIMICROBIALS

Penicillins and

Cephalosporins

