

Dental Colloquium 2012

Analgesics & Antibiotics



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Analgesics



Medications used to relieve pain without reducing the consciousness of the patient.



Analgesics

Narcotics

Non-narcotic

Opioids

PCM

NSAIDS

Opiates

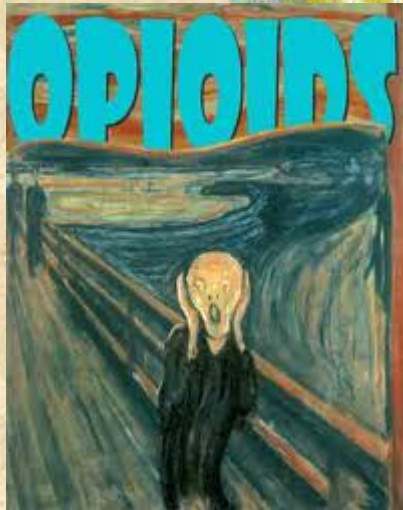
Selective COX-2 inhibitor





Narcotics vs Non-narcotics

Narcotics	Non-narcotics
✓ Act centrally	✓ Act peripherally
✓ Cause addiction	✓ Do not cause addiction
✓ Produce CNS depression	✓ Do not produce CNS depression
✓ Do not produce gastric irritation	✓ Produce gastric irritation



Opiates vs Opioids

Opiates	Opioids
<ul style="list-style-type: none">➤ alkaloids found in opium (a white liquid extract of unripe seeds of the poppy plant).	<ul style="list-style-type: none">➤ derivatives of opiates
<ul style="list-style-type: none">➤ Example:<ul style="list-style-type: none">➤ Morphine➤ codeine	<ul style="list-style-type: none">➤ Example:<ul style="list-style-type: none">➤ Tramadol➤ oxycodone



Common side effects of opioids

- sedation, dizziness, nausea, vomiting, constipation, physical dependence, tolerance, and respiratory depression.
- Most common: constipation (40-95%) and nausea.
 - may be severe enough to require opioid discontinuation, and contribute to under-dosing and inadequate analgesia.
 - Switching opioids and/or routes of administration may provide benefits for patients.
- Can be antagonised by Naloxone



- *Tolerance*

- = loss of analgesic potency
- lead to ever-increasing dose requirements and decreasing effectiveness over time

- *Physical dependence*

- = development of an altered physiological state that is revealed by an opioid withdrawal syndrome involving autonomic and somatic hyperactivity



Tramadol (oral)

- Dosage for moderate to severe pain
 - *Adult:*
 - As conventional tablet: 50-100 mg every 4-6 hr.
Max: 400 mg daily.
 - As extended-release tablet: 50-100 mg once or twice daily. Max: 300 mg daily.
 - *Elderly:*
 - Lower initial dose. Max: 300 mg daily (>75 yr).
- C/I : Suicidal patients, acute alcoholism; head injuries; raised intracranial pressure; severe renal impairment; lactation.
- Onset : 1 hour (conventional tablet)
- Duration : 3-6 hours (conventional tablet)

Codeine (oral)

- Dosage for Mild to moderate pain

Adult: 30-60 mg every 4 hr. **Max: 240 mg daily.**

Child: 1-12 yr: 500 mcg/kg 4-6 times daily.

- C/I : Respiratory depression, obstructive airway disease, asthma, acute alcoholism, convulsive disorders, head injuries, comatose patients, raised intracranial pressure.
- Onset : 0.5-1 hour
- Duration : 4-6 hours
- Metabolized in liver; excreted in urine





Paracetamol 500mg + Codeine phosphate 8mg (oral)

- Dosage for after extraction/ dental pain
Adults: 1-2 tab, 3 or 4 times daily. **Max: 8 tabs in 24 hrs.**
Children 7-12 years: ½-1 tab 3 or 4 times daily. **Max: 4 tabs in 24 hrs;**
- Not recommended for children <7 years old.
- Paracetamol and codeine exert their analgesic effects through different mechanisms and hence, in combination may provide greater pain relief than either ingredient alone.

Morphine (oral)

- Dosage for Moderate to severe pain
Adult: 5-20 mg every 4 hr. Start with low dose and adjust according to response.
Elderly, Renal/ Hepatic impairment: Reduced Dosage
- Onset : 1 hour
- Duration : 4 hours
- Conjugated in liver
- Excreted in urine



Paracetamol

- Dosage (tablet)

Adults: 1000mg, maximum= 4g daily

Children 7-12 years: 500mg, maximum 4 doses

Children 3-7 years: 250mg, maximum 4 doses

- Dosage (syrup)

Childn 6-12 yr 10-20 mL

1-6 yr 5-10 mL

3 mth-1 yr 2.5-5 mL.

- Dosage (suspension)

Childn 6-12 yr 5-10 mL

1-6 yr 2.5-5 mL.

- All dosage given 3-4 times daily

Conjugated in liver; excreted in urine



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- Drug interaction: PCM variably increases effect of warfarin & other oral anticoagulants

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Probable Mechanism:

Several case reports and studies have suggested that paracetamol may increase the INR of patients taking concomitant warfarin or other oral anticoagulants. The mechanism of the interaction is still not well described and is largely postulated to be a result of inhibition of enzymes in the vitamin K cycle by paracetamol or its metabolites. A number of conflicting formal studies have not been able to demonstrate an interaction. Despite the lack of consistent clinical evidence, a number of sources *advise careful monitoring of INR if paracetamol is coadministered, especially in sustained high doses, with warfarin or any other oral anticoagulant.*

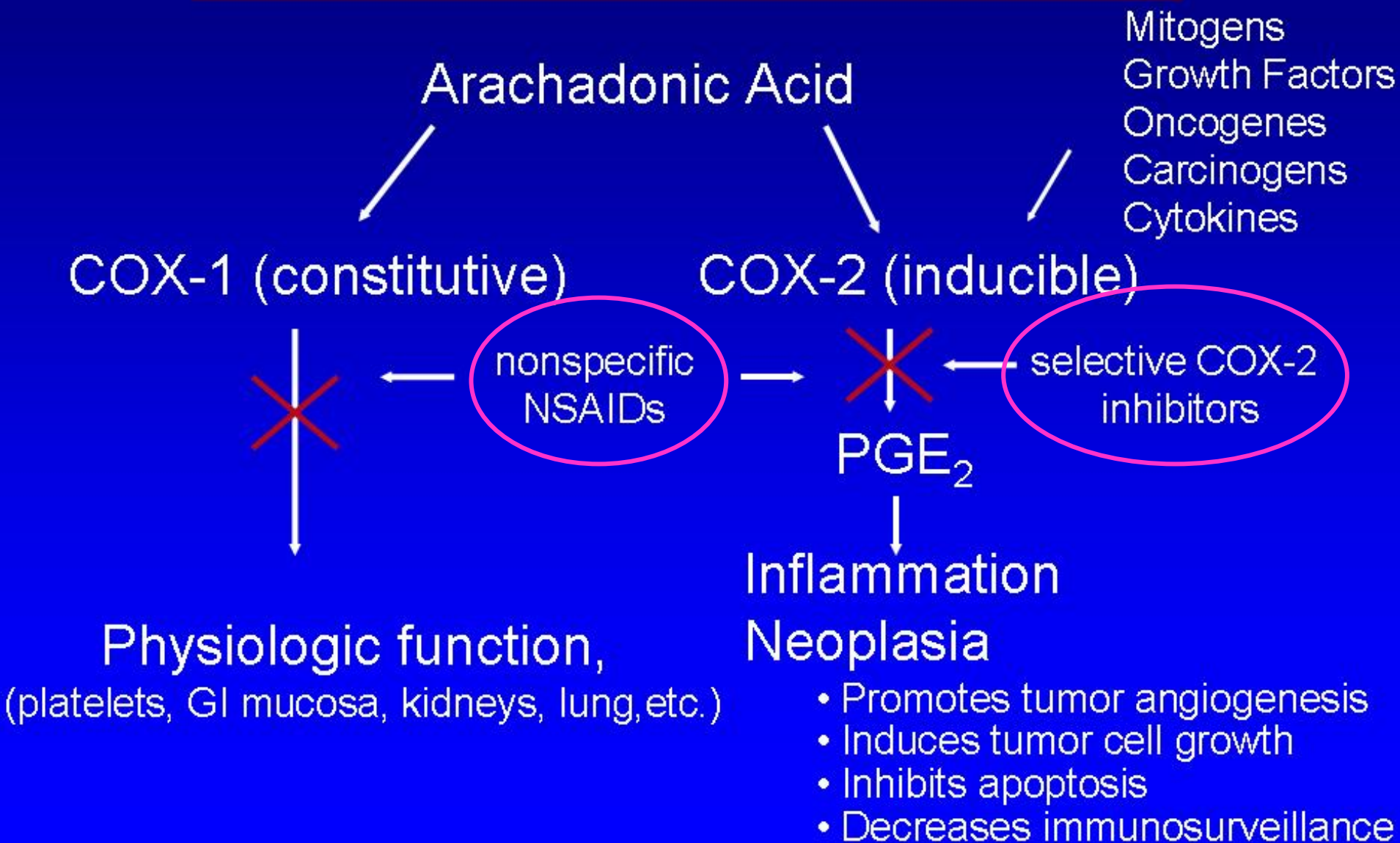
NSAIDs

- Non-Steroidal Anti-Inflammatory Drugs

1	Salicylic acids	Aspirin, diflunisal
2	Propionic acids	Naprozen, <u>ibuprofen</u> , ketoprofen
3	Acetic acids	Indomethacin, sulindac, <u>diclofenac</u>
4	Fenamates	<u>Mefenamic acid</u> , meclofenamic acid
5	Oxicams	Piroxicam, tenoxicam
6	Pyrazolones	Phenylbutazone, azopropazone
7	COX II selective	<u>Celecoxib</u> , etoricoxib (Arcoxia)

- NSAIDs cause deterioration in respiratory function in approximately 10% of adults with asthma and a smaller proportion of children with asthma

Cyclo-oxygenase (COX) Pathways



Ibuprofen (oral)

- Dosage for moderate to severe pain
 - *Adult:*
 - Initially 400mg, then 200-400mg 4-6 hourly.
Max: 2400 mg daily.
- C/I : Active peptic ulcer; hypersensitivity.
- Drug interaction:
 - reduces the effect of antihypertensive
 - Increase risk of GI bleed with Warfarin
- Onset : 0.5-1 hour
- Duration : 4-6 hours



Diclofenac sodium (oral)

- Dosage
 - *Adult:*
 - As conventional tablet: 50 mg every 8-12 hr.
Max: 150 mg daily.
- C/I : Active peptic ulcer; hypersensitivity to diclofenac or other NSAIDs
- Onset : rapid
- Duration : 4-8 hours



Mefenamic acid (oral)

- Dosage for moderate to severe pain

Adult:

- 250-500mg tid.

Max: 3200 mg daily.

Child:

- >6 mth: 25 mg/kg daily in divided doses for up to 7 days.

- C/I : GI ulceration or inflammatory bowel disease.
Renal or hepatic impairment.

- Peak : 2-4 hour
- Duration: 4-8 hours
- Drug interaction: Enhances activity of oral anticoagulants but rarely significant. Increases risk of GI irritation with alcohol





Arcoxia- Etoricoxib(oral)

Dosage for moderate to severe pain

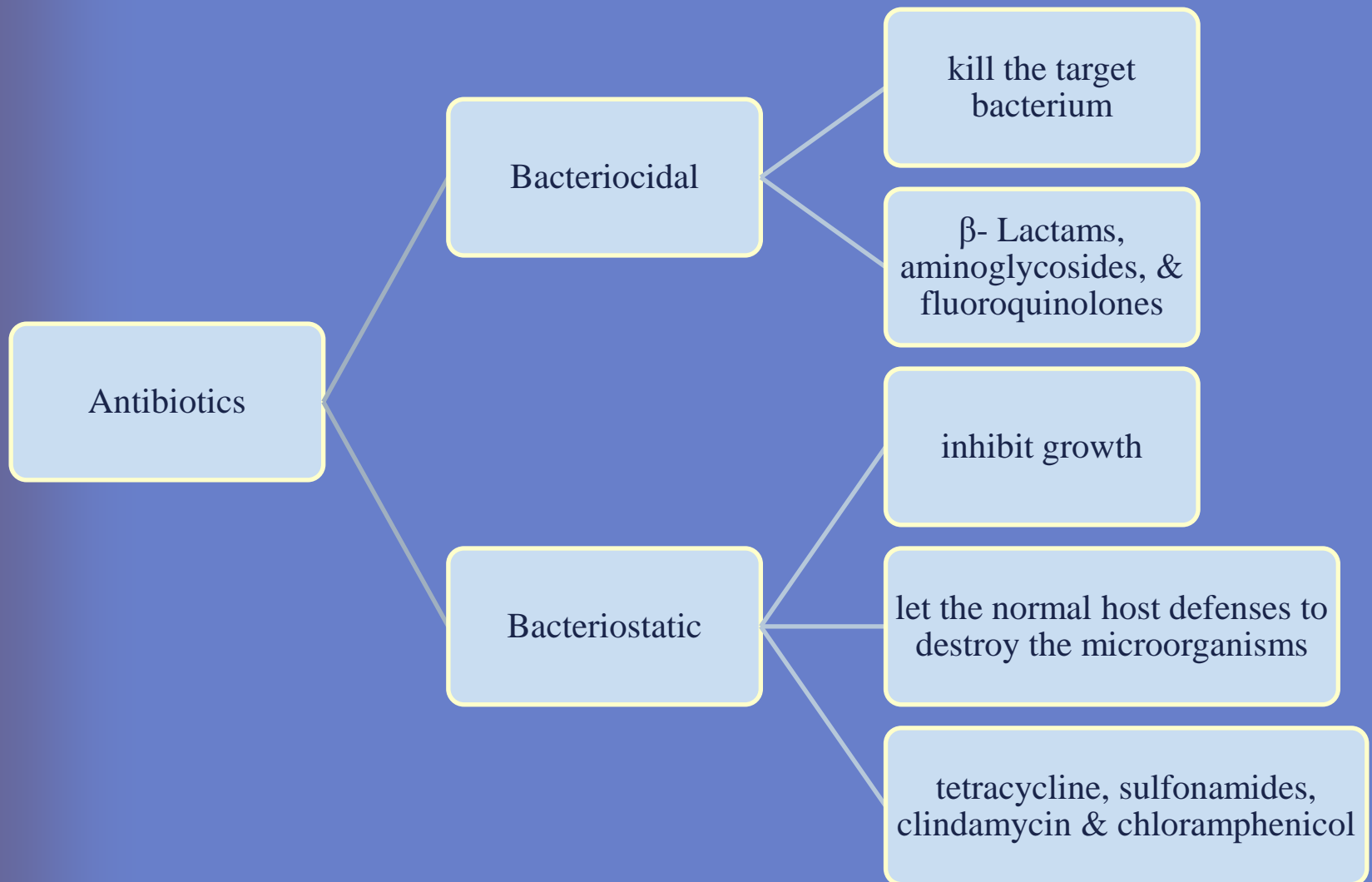
- *Adult:*
 - 120mg once daily, maximum 8 days.
Max: 120 mg daily.
- C/I : Hypersensitivity. Patients who have experienced asthma, urticaria or allergic-type reactions after taking aspirin or NSAIDs. CHF. Established ischemic heart disease, peripheral arterial disease &/or cerebrovascular disease (including those who have recently undergone coronary artery bypass graft surgery or angioplasty). Inadequately controlled HTN. Pregnancy
- Peak plasma concentration : 1 hour

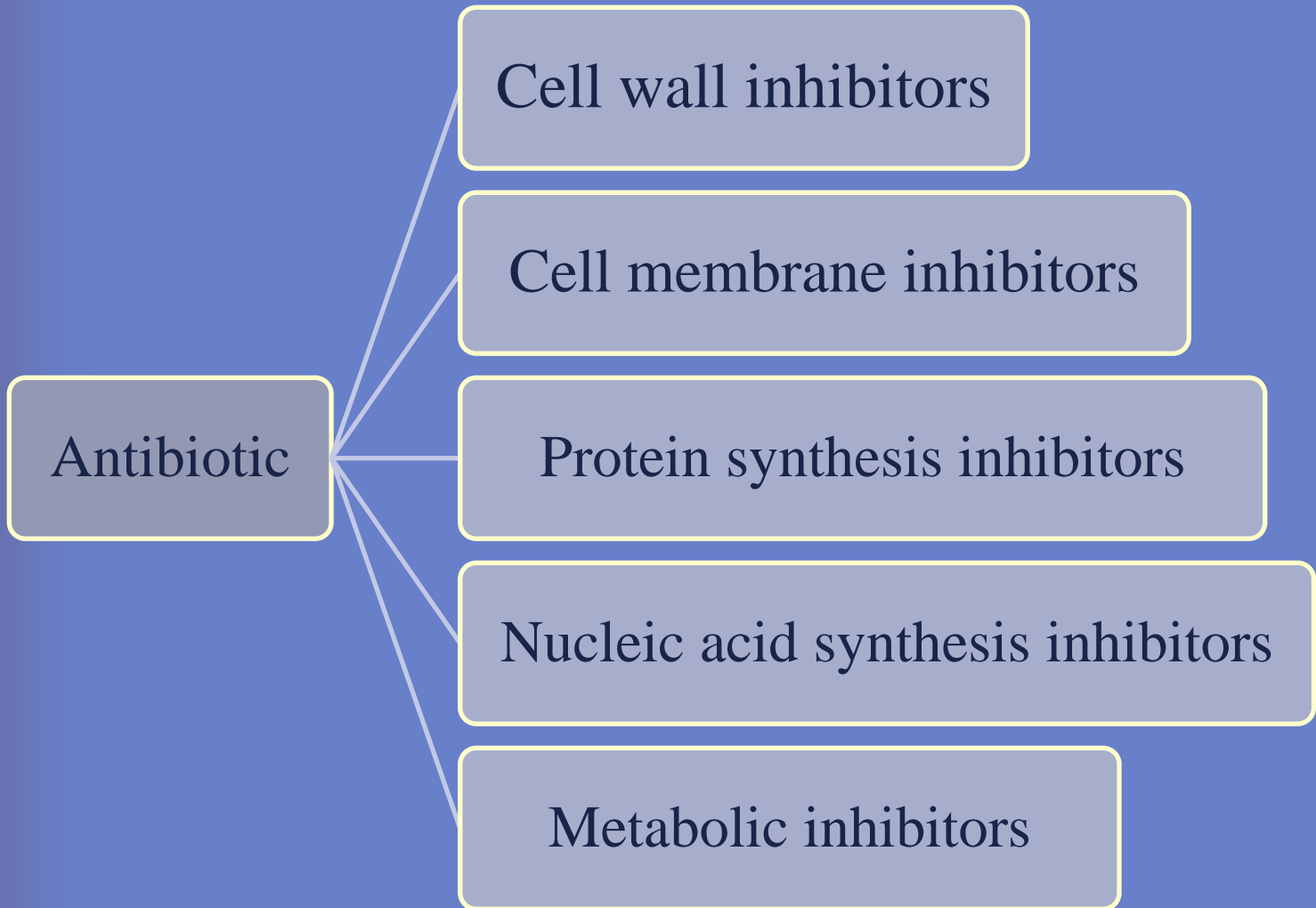
ANTIBIOTICS



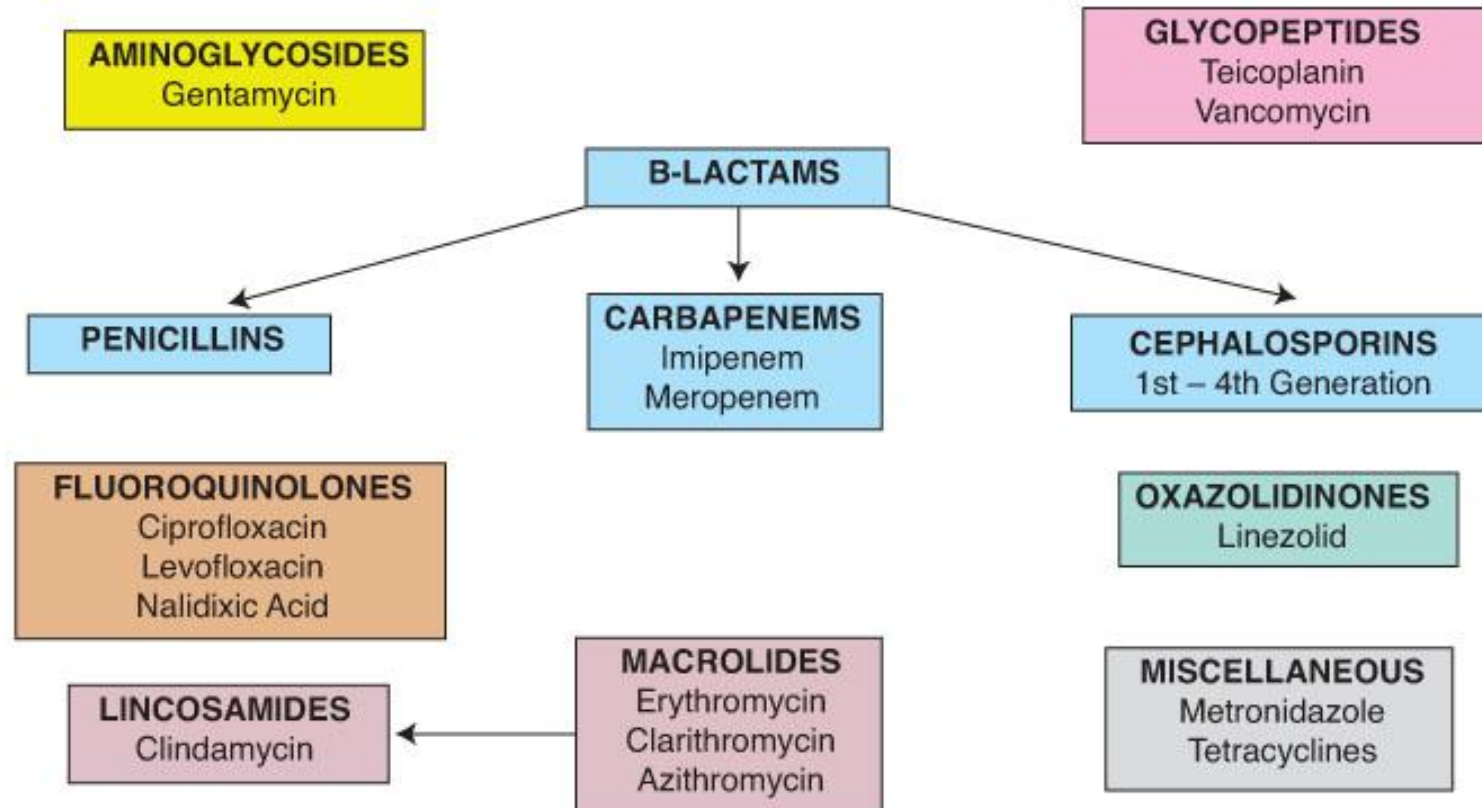
substance produced by or a
semisynthetic substance
derived from a microorganism
& able to dilute solution to
inhibit / kill another
microorganism







CLASSIFICATION OF ANTIBIOTICS



Amoxicillin

- Amino-Penicillins
- Beta lactams
- MOA: inhibit cell wall synthesis
- Bactericidal
- Dosage:
 - **Adult:** 250-500 mg every 8 hr or 500-875 mg every 12 hr.
 - **Child:** ≤ 10 yr: 125-250 mg every 8 hr; < 40 kg: 20-40 mg/kg daily in divided doses every 8 hr
- Contraindication: hypersensitivity
- Side effects: Hyperactivity, agitation, insomnia, dizziness; maculopapular rash, exfoliative dermatitis, urticaria, hypersensitivity vasculitis;



Cloxacillin

- Beta lactams
- MOA: inhibit cell wall synthesis
- Bactericidal
- Indication: Staphylococcal infections
- Dosage:
 - *Adult:* 250-500 mg 4 times daily.
 - *Child:* 50-100 mg/kg in divided doses every 6 hr
- Contraindication: hypersensitivity to penicillins
- Side effects: Neutropenia, agranulocytosis; GI upsets; rash. Sore mouth or tongue. Black hairy tongue.



Augmentin

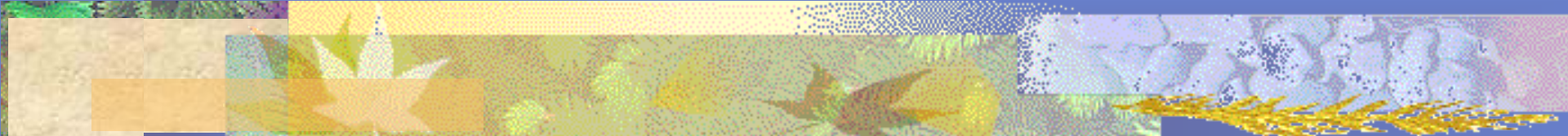
- **Per 625 mg tab** Co-amoxiclav: Clavulanate K 125 mg, amoxicillin trihydrate 500 mg.
- Dosage for dental infection:
 - One 625-mg tab twice daily for 5 days
- Contraindication: hypersensitivity to penicillins
- Side effects: Diarrhoea, indigestion, nausea, vomiting, candidiasis/mucocutaneous candidiasis, rash; colitis..





Metronidazole

- Bactericidal
- Indication: anaerobic bacteria and protozoa..
- has good tissue penetration, and produces relatively mild side effects
- Dosage:
 - **Adult:** 200-400 mg 8 hourly.
- Contraindication: hypersensitivity, pregnancy (1st trimester) & lactation

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- Side effects: GI disturbances, Furred tongue, glossitis, and stomatitis due to overgrowth of Candida. Numbness or tingling in the extremities, epileptiform seizures (high doses or prolonged treatment). Urethral discomfort and darkening of urine. Raised liver enzyme values, cholestatic hepatitis, jaundice.
 - Drug interaction:
 - Concomitant use of alcohol and metronidazole may cause a disulfiram-like reaction (flushing, nausea, hypotension).

Erythromycin



- Macrolides
- MOA: inhibit protein synthesis (50s subunit)
- Bacteriostatic

- Indication: use to treat respiratory tract infections (such as pharyngitis, sinusitis, and bronchitis), genital, GI tract, and skin infections.



Erythromycin

- Dosage:
 - **Adult:** 1-2 g daily, increased up to 4 g daily for severe infections. Doses >1 g should be given in more than 2 divided doses.
- Contraindication: Hypersensitivity; porphyria; hepatic impairment; pregnancy.
- Side effects: Rash, urticaria; ototoxicity; central neurotoxicity; agranulocytosis; arrhythmias; pancreatitis.

Thank you for not snoring while “resting your eyes” ...



BIL	DRUG	DOSE
1	AMOXYCILLIN	500MG & 250MG
2	AMPICILLIN - POWDER	125MG
3	METRONIDAZOLE / FLAGYL	400MG & 200MG
4	CLOXACILLIN	250MG
5	AUGMENTINE	625MG
6	ERYTROMYCIN	250MG
7	PARACETAMOL	500MG
8	SYRUP PCM	250MG
9	MAFENAMIC ACID	250MG
10	VOLTREN	50MG
11	ARCOXIA	90MG
12	CHLORPHENIRAMINE / PIRITON	4MG
13	LORATADINE	10MG
14	PAPAIN	
15	CARBAMAZEPIN / TEGRETOL	200MG
16	PREDNISOLONE	5MG
17	MAGNESIUM TRISILICATE	250MG
18	EPHEDRINE / ADRENALINE	30MG/ML