Acute Pain

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Managing Acute Pain

- Is not all about the medications
- Listen to your patients
- Pain is subjective
- If they say “it hurts” then it does
- Why does hurt? Where does it hurt? How much does it hurt? What does it feel like?
- Why does treatment not work?

Why do some patients hurt more?

- Anxiety, Catastrophising, Depressed, Fear
- Previous experience of pain
- Tolerance and addiction – remember alcohol
- Genetic variability
- Cultural and Gender variation in expression of pain
- Poor social/family support
- Poor coping strategies in other areas

Painful Pitfalls

- Treat the underlying cause!!
- The correct dose
- Prescribed to be taken regularly
- Reviewed and altered if not effective
- Appropriate level of analgesia for the pain
- The correct route of administration
- Patient Compliance

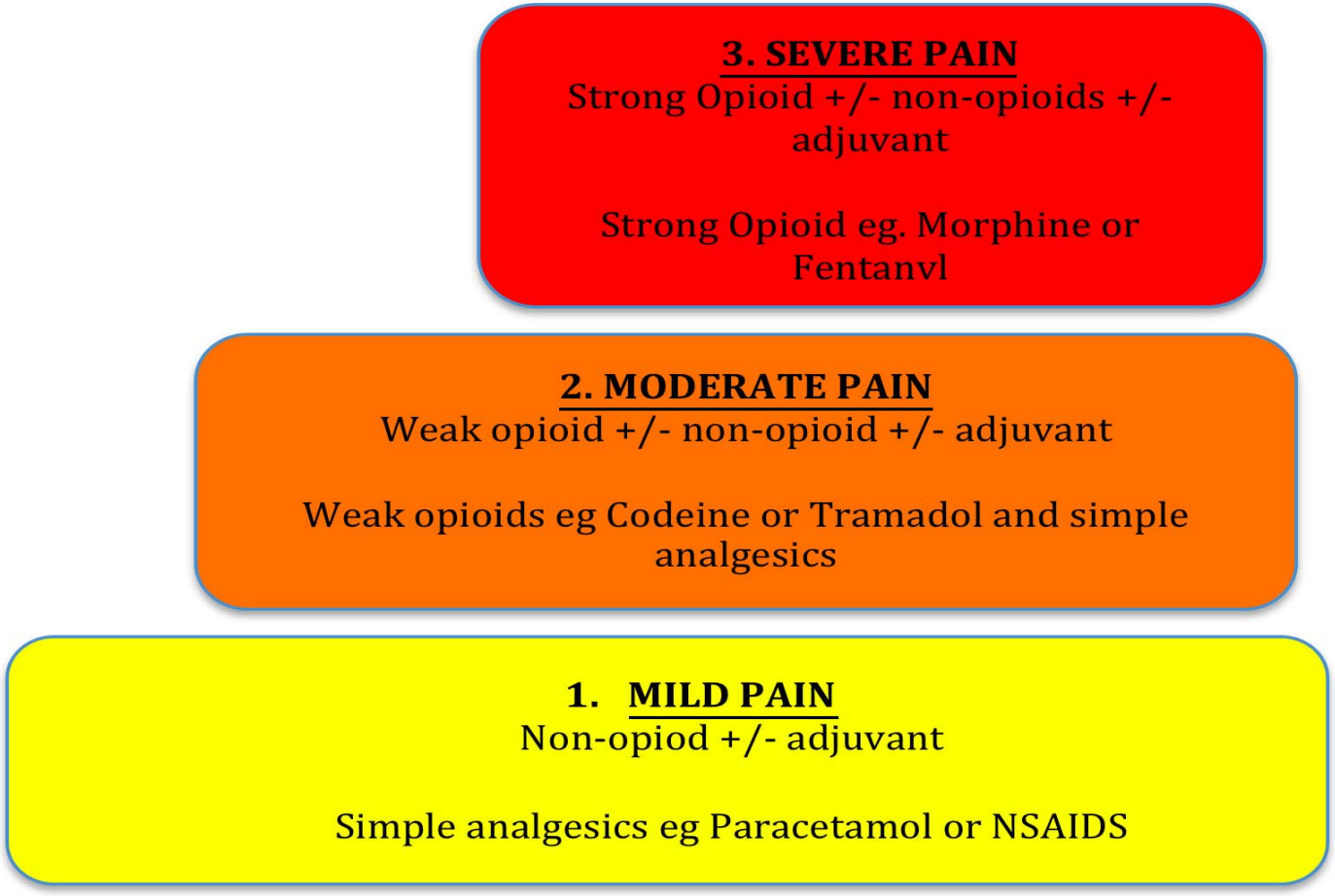
Why Don’t Patient’s Comply?

- SIDE EFFECTS
- Fear of addiction
- Fear of taking too much
- Don’t like tablets
- Can’t take tablets
- Don’t understand the instructions/Can’t remember instructions
- Previous bad experience/”they don’t work”

Routes of Administration

- Oral – can the patient swallow? Tablets vs Liquids, Are they nil by mouth? Are they vomiting?
- Rectal – variability in absorption, prev. lower GI surgery, systemic and GI side effects still occur, cultural variability in acceptance, diarrhoea
- Intravenous – Location (hospital), Does the IV line work? Who is administering?
- Topical – gels and patches – Does the patient have skin conditions?

The WHO Pain Step Ladder



Paracetamol

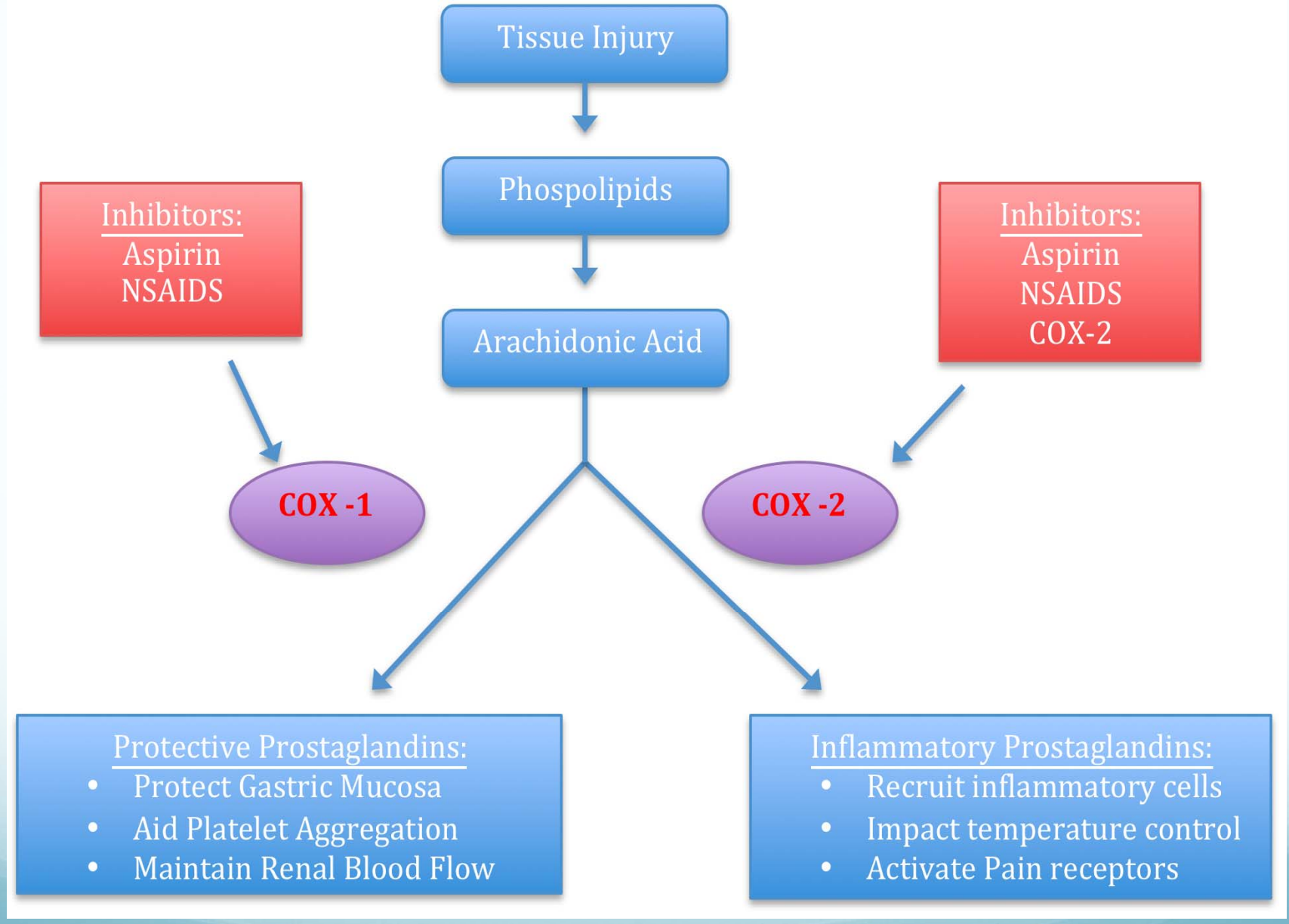
- Analgesic for mild to moderate pain
- Anti-pyretic (reduces fever)
- Over the counter medication
- Poorly understood mode of action
- Known to inhibit prostaglandin synthesis within the CNS
- Thought to act peripherally at bradykinin sensitive receptors involved in generating pain impulses

Paracetamol

- Available in Oral (tablets and syrup/liquid), Rectal Suppositories and intravenous preparations
- Adult dose: 500mg – 1g, 4-6 hourly (Maximum 4g per 24hr)
- Biggest risk is accidental overdose when taken with other medications containing paracetamol
- Use with caution in patients with liver impairment
- Reduce dose in adult patients less than 50kg (max 15mg/kg, 4-6hrly, max per 24hr 60mg/kg)
- Reduce dose in patients taking enzyme inducing anti-epileptic meds (eg Phenytoin, Carbamazepine)

NSAIDs

- **N**on-**S**teroidal **A**nti-**I**nflammatory **D**rugs
- Act by inhibiting Cyclo-oxygenase (COX) enzymes
- COX enzymes act on arachidonic acid to produce endoperoxidases from which prostaglandins, prostacyclin and thromboxanes are formed
- Two types: **COX-1** – present in many tissues, responsible for protective prostaglandins – eg renal blood flow, gastric mucosa; **COX-2** – induced during inflammation


Tissue Injury
Phospolipids
Arachidonic Acid
Inhibitors:
Aspirin
NSAIDS
Inhibitors:
Aspirin
NSAIDS
COX-2
COX -1
COX -2
Protective Prostaglandins:
• Protect Gastric Mucosa
• Aid Platelet Aggregation
• Maintain Renal Blood Flow
Inflammatory Prostaglandins:
• Recruit inflammatory cells
• Impact temperature control
• Activate Pain receptors

NSAIDs

- Non-Selective: Ibuprofen, Diclofenac, Naproxen
- Selective COX-2 Inhibitors: Parecoxib (iv only), Celecoxib, Etoricoxib
- Aim of COX-2 Inhibitors is analgesic/anti-inflammatory benefits with fewer GI/Renal side-effects
- Reality – only 2 oral preparations licensed in UK for RA/OA/Ank Spond only. 1 preparation withdrawn due to increased risk of MI

NSAIDs Side Effects

- GI: pain, heartburn, reflux, nausea, vomiting, ulcers (Consider PPI cover with use)
- Renal Impairment – Diabetics, dehydration, sepsis
- Bronchoconstriction, Wheeze – Approx 5-7% of Asthmatics – ASK THE PATIENT
- Bleeding – consider risk factors, other drugs eg. Warfarin, Aspirin, Clopidogrel

Ibuprofen

- Over the counter medication
- Mild to moderate pain/inflammation
- Tablet and syrup oral preparations available, 5% gel available
- Adult dose 200-400mg 3 x day (max dose 600mg, 4 x day)
- Slow release preparation 1.6g daily (max dose 2.4g daily)

Diclofenac

- Mild to moderate pain and inflammation
- Available preparations: Oral (IR and SR), Rectal Suppositories, Deep IM injection, Intravenous infusion, Topical Gel
- Adult dose: 75mg – 150mg per day in 2 or 3 divided doses
- There is little evidence to support it being a “stronger” painkiller than ibuprofen
- More expensive than ibuprofen and higher incidence of GI bleeds

Opioids

- Opioid receptors are found throughout the CNS, the peripheral nervous system and other organs
- Opioid drugs act upon these receptors by activating an inhibitory G-protein which reduces transmission of painful impulses
- Opioids are used to treat moderate to severe pain
- With the exception of low dose codeine preparations they are controlled drugs

Opioid Side Effects

- Respiratory depression and reduced response to hypoxia or hypercapnia
- CNS: Drowsiness, confusion, euphoria, analgesia, hallucinations
- GI: Nausea, Vomiting, Constipation
- Hypotension and bradycardia
- Urinary Retention
- Itching and Skin flushing secondary to histamine release
- Physical and psychological dependence

Codeine

- Oral or IM preparation
- Adult dose 30-60mg, 3-4 x day, Maximum dose: 240mg/day
- Often comes in a preparation with Paracetamol
  - Co-codamol 8/500
  - Co-codamol 15/500
  - Co-codamol 30/500

Codeine

- Codeine is a **PRO-DRUG**
- It is converted in the liver into it's active forms which then bind to opioid receptors
- About 10% of the Caucasian population are considered poor metabolisers of codeine because they lack, or have a less effective version of one of the enzymes required to convert codeine to it's active form
- A smaller proportion of the population are considered to be rapid metabolisers and may suffer greater side efects

Dihydrocodeine

- Oral (IR and SR prep) and IM injection
- Adult dose: 40-80mg 3 x day (IR), 60 – 120mg every 12hrs (SR), Maximum dose 240mg/day
- Codydramol (with paracetamol) 3 strengths: 10/500, 20/500, 30/500
- Dihydrocodeine is a Pro-drug converted to dihydromorphine (active form)
- Can result in a significant “high” in doses above what is required

Tramadol

- Multiple modes of action at multiple receptor sites including opioid receptors and as a serotonin and noradrenaline re-uptake inhibitor
- Available in Oral, IM and IV preparations
- Adult dose 50-100mg every 4-6hours (maximum dose 400mg/24hr)
- Interacts with a huge number of drugs including many anti-depressant drugs
- Reduces seizure threshold, confusion/hallucinations esp elderly

Strong Opioids

- For treatment of Severe Pain
- A variety of preparations in oral – tablet and liquid, IR and SR, Rectal, subcutaneous, IM, IV, PCA
- Dosing will depend on patient tolerance to opiates, weight, age (reduced dosing in elderly) and severity of pain
- Start low and titrate up
- Monitor for side effects – particularly respiratory depression

Morphine

- Starting adult dose 5-10mg every 4-6 hourly for oral and IM routes increasing to 20mg every 4-6 hourly if required
- IV dose is 0.05 – 0.1mg/kg every 3-4 hours after loading
- Standard PCA dose is 1mg every 5minutes, Max 30mg/4hours
- Preparation will depend on local suppliers and policy

Fentanyl

- Strong opiate with rapid onset of analgesic effect
- Available IV, lozenge, transdermal patch and intra-nasal spray
- More often used for Chronic Pain and cancer pain management
- Used in acute Pain setting for Post-op, dressing changes, PCA if patient intolerant of morphine side effects

Naloxone

- Reverses the effects of opiates
- Competitive opioid receptor antagonist
- Used to treat respiratory depression and sedation secondary to opiates
- Dose 200-400mcg iv/im/sc repeated every 2-4minutes until reversal of effects achieved
- Duration of effect only 15-20 mins

Neuropathic Pain

- Can be seen in an acute pain setting
- Patients describe burning, abnormal sensation, severe pain from light touch
- Conventional analgesics often ineffective
- Sciatica, Trigeminal neuralgia, neuroma, shingles
- Drugs like Gabapentin, Pregabalin, Amitriptylline often used

Other Adjuncts

- Nitrous Oxide – fractures, dressing changes, labour
- Lignocaine Patches – rib fractures, dermatomal nerve pain
- Local Anaesthesia Blocks – hip fractures
- Ketamine – peri-operatively, “field medicine” – the pre-hospital patient
- TENS (Transcutaneous Electrical Nerve Stimulation)
- Alternative therapies

Tips For New Prescribers

- Treat the Patient not the Pain
- Prescribe Analgesia appropriate for the level of the Pain
- Prescribe regular analgesia
- Review regularly
- Seek advice on complex patients and those for whom the prescribed analgesia is not effective