Module 9- NSPE 7260 (Pain Management module- critical thinking activity #1)

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| **Drug** | **Indications** | **Action** | **Key Points of Administration & Mode of Administration** | **Considerations** | **Adverse effects/ Side effects** |
| Acetaminophen | *Mild/mod pain, antipyretic properties* | *Inhibit cyclooxygenase (COX-2), usually peak at about 45min-1hr, after 4hrs <half drug still available* | *PO, PR. IV is not available in Canada* | *Metabolized by the liver, little anti-inflam action,* | *no platelet or adverse gastric effects, overdosing can produce fulminant liver failure* |
| Ketorolac | *Mod pain, used as an adjunct in severe pain with opiates* | *COX inhibit, peak effect 2-3 hours* | *IV/ IM, PO. Loading dose can be given IV.* | *Caution in asthmatics if Hx of NSAID sensitivity, renal disease* | *It can induce gastric pain and bleeding, inhibit bone growth and healing, inhibit platelet function,* |
| Ibuprofen | *Mild/ Mod pain adjunct with an opiate, inflammation, fever* | *NSAID, 30min onset of action* | *PO, PR* | *Contraindicated aspirin sensitivity and NSAID asthma sensitivity May also worsen asthma.* | *Gastritis, transient antiplatelet effects* |
| Aspirin (Acetylsalicylic acid/ ASA) | *Kawasaki disease, post-specific cardiac surgeries* | *PGE inhib, peak levels 30-40 min post admin* | *PO* | *Can precipitate bronchospasm and stomach bleeding (don’t give on an empty stomach); avoid hemophilia.* | *May cause Reye syndrome in kids, gastritis, intracerebral haemorrhage,* |
| Gabapentin | *Neuropathic nerve pain, adjunct to opiates* | *1-3 hrs post admin, peak 2-3 hrs, mechanism unknown,* | *PO* | *Hx of suicidal ideation* | *Headache, ataxia, dizziness, behavioural changes (Emotional lability, hostility, concentration problems), sedation* |
| Pregabalin | *Neuropathic nerve pain, adjunct to opiates* | *Acts of Ca currents, despite being analogue of GABA, the onset of action 30 min post admin* | *PO* | *ACE inhibitors may enhance the toxic/ adverse effect of Pregabalin, and hypoglycaemia, thus monitoring BGL* | *Dizzy, drowsy, diplopia, ↑appetite, heart block, rhabdomyolysis,* |
| Morphine | *Mod/ severe pain* | *Acts on mu2 receptors, delayed onset of action 8-10 mins post IM admin, 5 min IV, 20 min PO* | *PO, IV, SC, IM* | *Suppress CNS and resp drive, develop tolerance, may need higher levels for the same effect, renal failure- accumulative effect (90% eliminated by renal)* | *Potentially significant  histamine, Withdrawal after prolonged exposure, constipation, itching, vomiting, nausea,* |
| Fentanyl | *Mod/ Severe pain* | *Mu receptors, rapid onset <1min, 3-5 min peak post admin, duration 1-2 hrs (IV)* | *PO, IV, Intranasal, IM, Transdermal, give IV as slow push* | *100 x more potent than morphine, short duration of action, CNS depressant, resp depression, hepatic metabolism* | *Biphasic elimination (delayed side effects), headache, nausea, constipation, dry mouth, fatigue, dizziness, nervousness, laryngospasm* |
| Hydrophone | *Severe pain* | *Mu receptors, within 3-5 mins (IV) of admin, peak 7-10 mins* | *PO, IV, IM, SC* | *8-10 x more potent than morphine, metabolized by the liver, Resp depression,* | *Light-headedness, dizziness, sedation, itching, constipation, nausea, vomiting, headache, sweating & hallucinations, tremor, agitation* |
| Methadone | *Severe pain, chronic therapy, IWS treatment* | *Mu receptors and NMDA inotropic glutamate receptors. A full analgesic effect is not usually attained for 3-5 days. Onset 30min to 1hr post admin, peaking 1-7.5 hrs.* | *PO, IV* | *Strongly binds with opiate receptors; thus, breakthrough pain can be treated with short-acting analgesia and resp depression.* | *Fewer side effects, sedation, heat tolerance, dizziness, weakness, nausea, vomiting, hypotension, hallucinations, headache, anorexia, and arrhythmias from QT prolongation* |
| Oxycodone | *Chronic pain* | *Mu, Kappa, delta opioid receptors 10-30min (IR), 1hr (Controlled Release)* | *PO, PR* | *Beware of acetaminophen combination meds and possible overdose, hepatic metabolism.* | *Nausea, constipation, vomiting, apnea, hypotension, respiratory arrest, urinary retention* |
| Tramadol | *Chronic pain,* | *Mu1 receptors, onset of action 10-15 min (PO), duration 4-6 hrs* | *PO, IV* | *Metabolized by the liver, IV doses must be given slowly, with caution in pts with raised ICP and patients with Sz disorders,* | *Nausea, dizziness, palpitation, postural hypotension, headache* |
| Ketamine | *Provides sedation and analgesia, severe pain, short-acting anesthesia* | *In dissociative analgesia, not all parts of the brain depressed* | *PO, IV, IM, Intranasal* | *Slow push, normal laryngeal & pharyngeal reflexes* | *Resp depression, bradycardia, muscle rigidity, nausea, vomiting, constipation, hallucinations, nystagmus, hypertension, bronchodilation,* |
| Baclofen | *Spasticity, inhib. effects on the brain and spinal cord. ↓ spinal reflexes* | *GABA receptors, onset .5-1 hr in adults, peak 4 hrs* | *PO, Intrathecal* |  | *Urinary retention, sedation, bradycardia, hypotension, resp depression and apnoea* |
| Nitrous Oxide | *Short-acting procedural analgesia, a.k.a laughing gas* | *inhibition of NMDA receptors, 30 seconds post admin* | *Inhalation* | *It must be mixed with O2, or death can occur; pt must control the delivery piece to prevent overdose.* | *Shown to inhibit DNA synthesis, so caution in the first two trimesters of pregnancy.* |