Subtitle

Non-malignant pain

- Pain assessment
  - Pain history
    - Source of pain
    - What does it feel like?
    - What have you tried?
  - Effects on ADL's/impact on life
  - Adverse effects of interventions
  - Addiction risk

Acetaminophen

- Analgesic/antipyretic
  - **Not** anti inflammatory
- Caution
  - Liver failure, heavy alcohol use, malnutrition, fasting, low body weight, advanced age, febrile illness
  - Doses up to 4 gms/day generally well tolerated, hepatotoxicity has been rarely reported at this dose limit
  - Not more than 3 gms/day in adults with normal liver function, particularly when used for longer duration (> 7 days)

Acetaminophen dosing

- Immediate release: 325mg/tablet, 2 tabs every 4-6 hours prn, max of 10 tablets/day
- Extra strength: 500mg/tablet, 2 tabs every 6 hours prn, max of tabs/day
- Extended release (arthritis formula): 650mg/tablet, 2 tabs every 8 hours prn, max of 6 tabs/day
- For short term, acute pain management try ATC dosing for 48-72 hours

NSAIDs

- Analgesic, antipyretic, anti-inflammatory
- Caution
  - Active peptic ulceration or GI bleeding
    - Can be given with food or with PPI or H2 blockers
    - COX 2 inhibitors reserved for patients at highest risk of ulcer, perforation or bleeding after assessment of CV risk
  - Severe heart failure
    - Diclofenac and selective COX-2 inhibitors should not be used in patients with moderate to severe heart failure, ischemic heart disease, peripheral arterial disease or cerebrovascular disease
  - Impaired renal or hepatic function
  - Inhibited platelet function, anticoagulation, glucocorticoid use

NSAID

- Again consider ATC dosing or longer acting varieties like naproxen
- Great for bone pain (arthritis, fractures, acute pain)
- Don’t forget topical diclofenac over joints

Duloxetine

- Antidepressant/SNRI
- Indicated for fibromyalgia, chronic musculoskeletal pain
- Start with 30 mg daily for 1 week then increase to 60 mg daily
  - Alternatively can start with 20 mg daily and gradually increase weekly by 20 mg daily up to 60 mg daily

Neuropathic pain

- Assessment
  - Burning, shooting, electric shock
  - Allodynia (pain from non-painful stimuli)
  - Hyperalgesia (increased perception of painful stimuli)
- Opioids are often ineffective for neuropathic pain
  - Exceptions: methadone, tramadol
    - NMDA antagonist, inhibits norepinephrine and serotonin reuptake

Treating neuropathic pain

- Antidepressants
  - Amitriptyline 10-150 mg po at HS
  - Nortriptyline 10-50 mg po at HS
  - Doxepin 10-50 mg po at HS
  - Imipramine 10-150mg po at HS
- Anticonvulsants
  - Gabapentin
    - Start with 100-300mg /day and titrate up to max of 3600mg/day
    - Dose every 8 to 12 hours, titrating every 1-3 days
    - Pay attention to renal dosing, especially with patients who have increasing renal failure

Neuropathic pain management

- Pregabalin
  - 20-50mg po every 8 to 12 hours up to 150-300mg every 8-12 hours
  - Titrate over a week
  - Insurance will probably require documentation of failure of gabapentin or other cheaper antidepressants like amitriptyline in order to authorize coverage
- Anesthetics
  - Lidocaine (patch, gel, ointment)
    - Less than 5% of lidocaine is absorbed systemically, can utilized up to 3 patches
    - Avoid in liver failure
- Cannabinoids
  - Consider in cancer patients refractory to opioids and other adjuvants
  - Dronabinol (2.5mg po once or twice daily) or nabilone (0.5-1mg po at HS up to 3mg bid)

Topical agents

- Capsaicin cream 0.025-0.075% 3-4 times daily
- Diclofenac patch/cream/gel
- Doxepin cream
- EMLA
- Compounded cream/gel/suppositories

Nausea and vomiting

- Vomiting center
  - Final common pathway of emesis with signals arriving from 4 general sources:
    - Cerebral cortex
      - Elevated ICP, pain, migraines, emotional output/anticipation, anxiety, prior memories
    - Vestibular system (middle ear)
      - Labyrinthitis, motion sickness, vertigo
      - Receptors include histamine and acetylcholine
    - GI tract
      - Gastric distention, gag reflex, GERD, mechanical obstruction, GI tract irritation from any etiology such as infections, radiation, chemotherapy, toxins and medications
    - Chemoreceptor trigger zone (located on the floor of the 4th ventricle, area without true blood-brain barrier, essentially exposed to the systemic circulation)
      - Triggered by uremia, hypercalcemia, pregnancy, medications (opioids, digoxin, antibiotics, chemotherapy, theophylline), hyperglycemia, hypocortisonism, hyponatremia
      - Receptors include dopamine, serotonin, acetylcholine and opioid (Mu)

Evaluation of nausea and vomiting

- Acronym: A-VOMIT
- A: anxiety/anticipatory
- V: vestibular
- O: obstructive, constipation
- M: medications/metabolic
- I: inflammation, infection, increased ICP
- T: toxins
- Generally large volume emesis is from gastric outflow obstruction, small volume from gastric stasis

Medications

- Select medication that targets the appropriate receptor
- If more than one agent is required, use an agent that targets another receptor after the first agent has been titrated
- Antiemetics can be scheduled if nausea/vomiting is persistent or as needed if intermitttent

Medications

- Prokinetics
  - Metaclopramide 5-10 mg PO/SQ/IV every 6-8 hours
    - Has dopamine antagonist activity
- Anticholinergics
  - Scopolamine 1.5 mg transdermal patch every 3 days or 0.3-0.6mg IM/IV/SQ q6 hrs
- Antihistamines
  - Hydroxyzine 25-200 mg po/IM q4-6 hrs
  - Dimenhydrinate 50-100mg po/IM/IV q4-6hrs
  - Diphenhydramine 25-50mg po/IM/IV q4-6hrs
  - Meclizine 25-50mg po q6hrs
  - Promethazine 12.5-25mg po/IM/IV q4-6hrs, 25mg PR q6hrs

More antiemetic medications

- Dopamine antagonists
  - Haloperidol 0.5-5mg po q6-8 hrs, 2mg IV/SQ q8hrs
  - Chlorpromazine 10-25mg po q4-6 hrs, 25-50mg IM q4hrs
  - Droperidol 0.625-1.25mg IM/IV q4hr
  - Olanzapine 2.5-7.5mg po/ODT HS
  - Prochlorperazine maleate 5-10mg po q6hrs, 25mg PR q12hrs
- Serotonin 5HT3 antagonists
  - Dolasetron 12.5mg IV daily, 100mg po q1hr pre chemo or 2 hrs pre-op
  - Ondansetron 4-8 mg po/IM/IV every 4-8hrs
  - Granisetron 1mg po q12hrs, 10 mcg/kg IV q12hrs, 7 day transdermal patch for chemo induced N/V for patients receiving daily chemo for up to 5 days
  - Palonosetron 0.25mg IV over 30 min prior to chemo

More antiemetics

- Steroids
  - Dexamethasone 6-10 mg po/SQ/IM/IV single dose then maintain 4-20mg PO/IM/IV every am
  - Prednisone 5mg = dexamethasone 0.75mg
- Cannabinoids
  - Dronabinol 5-10mg po q6-8 hrs
  - Medical marijuana
- Benzodiazepines
  - Lorazepam 0.5-2mg po/IM/IV q4-6 hrs
  - Diazepam 2-10 mg po/IM/IV q4-6 hrs
- Neurokinin 1 antagonist
  - Aprepitant 40 mg po single dose prior to anesthesia for post op N/V prevention or 125mg po single dose 1 hour prior to mod-high emetogenic chemo, then 80mg every am on days 2 and 3 (along with corticosteroid and 5-HT3 antagonist)

Lack of appetite

- Appetite stimulants
  - Megastrol acetate 400-800mg daily
  - Corticosteroids
    - Dexamethasone 4-8 mg po every am
  - Cannabinoids
    - Dronabinol 2.5mg po twice day up to 20 mg per day
- Anticatabolic/anticytokine agents
  - Omega-3 fatty acids EPA and DHA found in fish oil, 1.5 to 7.5g/day
  - Thalidomide 200mg/day (advanced pancreatic cancer)
  - Melatonin 20 mg po every pm
- Antidepressants (side effect of weight gain, sedation)
  - Mirtazapine 7.5-30 mg at bedtime
- Prokinetic agent (1st choice if anorexia due to early satiety or gastroparesis
  - Metaclopramide 10 mg before meals and at bedtime

Constipation

- Stool softener
  - Docusate sodium 100mg po 1-2 times daily
- Hyperosmolar
  - Lactulose 10 g/15 ml, 15-60 ml po twice daily
  - Polyethylene glycol 17 g in 4-8 oz of liquid 1-2 times daily
  - Lubiprostone 24 mcg po twice daily (activated fluid secretion into the intestines)
- Saline/magnesium salts
  - Magnesium hydroxide (MOM) 15-30ml daily to 3 times a day
  - Magnesium citrate 240ml per day

Constipation

- Stimulants
  - Prune juice 120-240ml daily to twice a day
  - Senna 1-4 tabs up to twice daily
  - Bisacodyl 5mg 1-3 tabs po up to twice a day or 10 mg PR daily
- Lubricants
  - Glycerin 1 PR daily
  - Mineral oil 10-30 ml po daily or 133ml PR daily
- Enemas
  - Sodium phosphate 1 PR daily
  - Warm tap water 1-2 times daily
  - Soap suds
  - Mineral oil

Constipation

- Prokinetics
  - Metaclopramide 10-20mg po every 6 hrs
- Opioid antagonists
  - Naloxone up to 4mg po three times daily
  - Methylnaltrexone SQ every 24-48hrs
    - 38-61kg – 8 mg
    - 62-114kg – 12 mg
    - < 38 kg or > 114 kg – 0.15mg/kg
- Diarrhea
  - Generally treat the cause and don't resort to medications until cause is known

Insomnia

- Sleep hygiene
- Consider sleep apnea
- Anxiety and depression
- Benzodiazepines
  - Lorazepam 0.5-2mg at bedtime
- Antidepressants
  - Mirtazapine 7.5-30 mg at bedtime (more sedating at lower doses)
  - Trazodone 25-100mg at bedtime
- Other
  - Melatonin 3-10 mg at bedtime