

# Pain Control

## **1. General Principles**

- ~ Effective pain control is a moral imperative
- ~ Response to reports of pain must be quick and effective
- ~ Social and emotional issues often lower pain tolerance threshold
- ~ Playing or sleeping may be diversions not indicative of lack of pain
- ~ Use scheduled around-the-clock medications with frequent reassessment
- ~ Use WHO pain escalation (mild, moderate, severe) ladder
- ~ Reassess frequently after any analgesic intervention
- ~ Learn about non-pharmacological as well as pharmacological treatments
- ~ Uncontrolled protracted pain may have long term consequences

## **2. Assessment Tools**

- ~ Assessment must be tailored to the child's age
- ~ Gold standard is self-report
- ~ Physiological measures useful especially in young children
- ~ Behavioral responses are unreliable because they will attenuate with chronic pain
- ~ Infants: CRIES scale useful
  - Crying, Requires more O<sub>2</sub>, Increased VS, Expression, Sleeplessness
- ~ Self-report scales useful over 3 years
  - eg, Bieri Faces Scale, Oucher Scale in 3-7-year-olds
- ~ Numeric and visual analogue scales effective over about 5 years

## **3. Correcting Misconceptions**

- ~ Serious side effects from opiates are not more frequent in children than adults
- ~ Adequate pharmacological pain relief does not predispose to addiction
- ~ Worsening disease is a much more frequent cause of increased analgesic requirements than tolerance
- ~ Opiates and co-analgesics can control at least 95% of severe pain; invasive procedures are rarely needed

## **4. Managing Procedure-Related Pain**

- ~ Build trust; take time
- ~ Address physical + emotional aspects with pharmacological + non-pharmacological treatments
- ~ Find out about what helped child and what didn't in the past
- ~ Enlist help of parents
- ~ Opioids + sedative hypnotics + local anesthetics + non-pharmacological therapies are often excellent alternatives to general anesthesia
- ~ Conscious sedation requires adequate trained personnel and monitoring equipment
- ~ Local anesthetics often work faster on lighter-skinned than dark-skinned people; use buffered lidocaine, a 27-gauge needle, and slow incremental injection

## **5. Routes of Delivery of Analgesics**

- ~ PO route preferred (cheaper, safer, wide variety, easy to titrate, easily given at home)
- ~ Parenteral route (IV or SC *not* IM) is best for acute severe pain, rapid titration, non-tolerance of PO

- ~ Transdermal route achieves steady state in 12-16 hours, is excellent for long term severe pain control, but may be less effective in febrile sweating restless children (unpredictable absorption)
- ~ Transmucosal lozenges, lollipops, concentrated liquids are helpful for rapid pain relief particularly in children who cannot swallow or have poor IV access

### 6. Pharmacological Agents

- ~ Acetaminophen (15mg/kg/dose/4-6hrs to max of 75mg/kg/24 hrs) is useful when used regularly for *mild* pain;
- ~ NSAIDs are excellent as primary or adjuvant analgesics in patients with normal platelets and renal function and intact GI mucosae (eg, ibuprofen 10mg/kg/dose/6hrs); COX-2 inhibitors are useful alternatives
- ~ Codeine (1mg/kg/dose/4hrs) is useful for moderately severe pain but only 20% converted to active opioid so side effects (nausea, constipation, CNS) are frequent; consider moving quickly to more effective opiates
- ~ Opioids are used for moderate to severe pain; goal is maximum comfort with maximum function, avoiding frequent breakthroughs and “chasing after” pain, which fuels anxiety and mistrust
- ~ Schedule should be regular round-the-clock, q4hrs for immediate-release opioids, using the same drug for breakthroughs, which should be q1hr for PO and q15mins for parenteral, titrating baseline scheduled doses according to amount of breakthrough doses required
- ~ Recommended opioids are morphine, oxycodone (Percocet), hydromorphone (Dilaudid) and fentanyl
- ~ Long-acting opioids (MS Contin, Oramorph SR, oxycodone, hydrocodone) recommended for long term pain, given q8-12hrs
- ~ Methadone should only be used by clinicians with considerable experience because of its slow onset of action, wide variability in effect, and often very long half-life (up to 80hrs)

Table 1 shows equivalent and starting doses of different opioids:

**Table 1**

Drug	Equipotent Doses		Starting Dose		PO/IV Ratio	Half-Life
	PO	IV/SC	PO	IV/SC		
<b>Morphine</b>	<b>30mg</b>	<b>10mg</b>	<b>0.3mg/kg</b>	<b>0.1mg/kg</b>	<b>3:1</b>	<b>3 hours</b>
<b>Codeine</b>	<b>180mg</b>	<b>120mg</b>	<b>1mg/kg</b>	<b>0.5mg SC</b>	<b>2:1</b>	<b>3 hours</b>
<b>Oxycodone</b>	<b>20mg</b>	<b>N/A</b>	<b>0.2mg/kg</b>	<b>N/A</b>	<b>N/A</b>	<b>3 hours</b>
<b>Hydromorphone</b>	<b>7.5mg</b>	<b>1.5mg</b>	<b>0.05mg/kg</b>	<b>0.025mg/kg</b>	<b>5:1</b>	<b>3 hours</b>
<b>Fentanyl</b>	<b>N/A</b>	<b>N/A</b>	<b>25mcg</b>		<b>N/A</b>	<b>24 hours</b>

### 7. Breakthrough Pain

- ~ Due to inadequate analgesia, worsening disease, movement, stress
- ~ Treat with immediate-release opioid, same as baseline drug, and titrate
- ~ Use 10% of total 24-hr requirement or 100% of hourly dose if patient on a continuous infusion
- ~ Extra doses often needed at night; use 2x normal dose at bedtime
- ~ Naloxone (Narcan) is sometimes used to reverse the side effects of opiates (pruritus, constipation, urinary retention), without lessening its analgesic effect.

Table 2 shows guidelines for the use of patient-controlled analgesia.

Table 2

Drug	Basal mcg/kg/hr	Bolus mcg/hr	Lockout mins	#/hr
Morphine	10-30	10-30	6-10	4-6
Dilaudid	3-5	3-5	6-10	4-6
Fentanyl	0.5-1.0	0.5-1.0	2-3	2-3

### **8. Abuse of Analgesics**

~ Physiological and psychological dependency may occur in patients who are requiring opioids over a long period.

~ The incidence is low; for example, less than 5% of patients with sickle cell disease requiring frequent treatment of pain crises become possibly or probably addicted. It should never be seen as a problem in patients with incurable diseases undergoing end-of-life care.

~ Management requires the help of psychologists, psychiatrists and social workers trained in addiction medicine, although the primary requisite is self-recognition by the patient and willingness to comply with treatment.

~ Immediate recommendations for other staff are (a) to be precisely aware of what drugs the patient has available in the hospital and by prescription at home, (b) to know who the prescribing physician is (particular care must be taken to avoid duplication), and (c) to make use of a "contract" that sets limit on patient use of the relevant analgesics.

### **9. Non-pharmacological Management of Pain**

~ Physical, cognitive and behavioral measures can lessen physical and psychological distress

~ Guided imagery and hypnosis can relieve breakthrough pain

~ Distraction and relaxation may reduce pharmacological requirements

~ Massage, acupuncture, acupressure, reiki and therapeutic touch are all effective sometimes

~ Music and humor are also valuable adjuvant that may lessen pharmacologic requirements

~ These interventions are all free of serious side effects

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