

Opioid Side Effect Management

Itching

Diphenhydramine 1 mg/kg/dose PO/IV q6 hours.
Max 50mg/dose

GI Discomfort/Nausea

Ondansetron < 10 kg=0.1 mg/kg/dose,
>10kg = 1mg/dose IV q8h. Max 1 mg/dose
Prochlorperazine if >2y of age, 0.1 mg/kg/dose
PO/PR q6 hours. Max 10 mg/dose
Promethazine if >2y of age, 0.5 mg/kg/dose q4h.
Max 25mg/dose

Bowel Regimen

Bisacodyl 5-10 mg/dose PO/PR QD
Lactulose 5-20 gm/day divided TID-QID. Patient
must be taking PO fluids.
Milk of Magnesia 5-15 ml/dose PO BID
Pericolace 5-15 ml QHS; <12 years 1 tab PO QHS,
>12 years 1-2 tabs PO QHS
Senna Syrup 2.5-10ml/dose or 1-2 tabs PO QHS or
BID Max 2 tabs BID.

Respiratory Depression

- In the event of severe somnolence, or depressed or ineffective respiration, stimulate patient and apply oxygen, discontinue opioid infusion and notify the primary service.
- If patient is apneic, unresponsive or cyanotic, stimulate patient, assist ventilation as needed, disconnect pump and FOLLOW CODE BLUE PROCEDURES.
- Anticipate Naloxone administration.**

Naloxone Dose Guidelines:

DRAW up naloxone as follows. Dilute 1ml of naloxone (0.4mg) with 9 mL of normal saline to make 0.04mg/mL.

Age	Incremental Dose (mg)	Incremental Dose (ml)
<1 year	0.02 mg	0.5 ml
1-12 years	0.04 mg	1 ml
>= 12 years	0.08 mg	2 ml

Opioid Analgesics: Equianalgesic Dose Conversion Table

Opioid	Parenteral Dose	Oral Equivalent	Oral Dosing Interval
Morphine	10mg	30mg Continuous Release	12 hours for MS Contin
Codeine	N/A	200mg	4-6 hours
Hydromorphone	1.5mg	7.5mg	3-4 hours
Oxycodone	N/A	20mg	4-6 hours
Fentanyl	100mcg	N/A	N/A

- Calculate total milligrams of parenteral opioid delivered to patient for the past 24 hours
- Use table to convert 24 hour parenteral dose to chosen oral equivalent dose
- Divide 24 hour daily oral dose into appropriate dose per time interval
- When switching from one opioid to another, dose reductions should be considered if the patient has *stable, controlled pain*. Effective pain management may be achieved at **50% of the calculated equianalgesic** because there is not complete cross-tolerance among these drugs.
- Most patients benefit from availability of weight-based dosing of short-acting opioid for breakthrough pain.

How to convert 24 hour dosing requirement:

$$\frac{\text{IV mg given}}{\text{IV equivalent from table}} = \frac{\text{PO mg needed}}{\text{PO mg equivalent from table}}$$

Example: patient has received 40mg IV morphine for the past 24 h

$$\frac{40 \text{ mg IV morphine given}}{10 \text{ mg IV morphine from table}} = \frac{X \text{ mg PO morphine needed}}{30 \text{ mg PO morphine from table}}$$

CROSS MULTIPLY

$$1200 \text{ mg IV/PO morphine} = 10x \text{ mg of IV/PO morphine}$$

$$120 \text{ mg PO morphine equivalent} = X \text{ mg of PO morphine needed}$$

$$50\% \text{ of } 120 \text{ mg morphine PO is } 60 \text{ mg PO morphine per } 24 \text{ hours}$$

$$\text{Give } 30 \text{ mg MS Contin PO Q12 hours}$$

Pediatric Sedation Team provides conscious sedation and/or analgesia for elective procedures. To schedule call 414-4523 or contact PICU, and fill out a sedation screening form. Off-hours or weekends, sedation for procedures needs to be coordinated through the anesthesia department 414-4118.

Inpatient/ED sedation and/or analgesia ALWAYS require the involvement of a physician with hospital credentials in conscious sedation (ED/PICU/NICU/anesthesia attendings).

Oral sedative drugs: chloral hydrate, midazolam, pentobarbital are considered conscious sedation and must be held to the same standard. Pediatric Sedation and Analgesia Policy (3.11) provides guidelines for administration and monitoring.

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PainFree Pediatrics Reference Card



Pain Assessment as The Fifth Vital Sign

- Assessment on **initial evaluation**
- Assessment with every **change in caregiver**.
- Assessment on **transfer**
- Assessment with **change in condition**
- Assessment **before and after intervention** for pain
- As required for patients on **PCA and epidurals**
- Assessment at **discharge**

Choosing a Pain Scale*

Scale	Patient Population
FLACC	Infants, toddlers, and other pre/nonverbal patients
Wong-Baker FACES	Children > 3 years
Numerical Rating Scale (0-10)	Children > 10 to 12 years
NAS	Infants weaning from opioids
N-PASS	Infants residing in NICU, Vented/sedated neonates in
MMAS	Vented/sedated patients age >1 month in PICU

*Copies of pain scales are available in the patient care areas

PainFree Pediatrics Philosophy for Painful Procedures

- Always utilize non-pharmacological techniques (swaddling, distraction, bubbles)
- Utilize appropriate pharmacological modalities and monitor appropriately
- Be honest with patient and parent about what to expect during the procedure and any anticipated discomfort
- Allow patient to have choices when possible (site for venipuncture, positioning)
- Use treatment room for inpatients <13 years unless medically contraindicated

This document is intended as a reference material only, and should not be a substitute for clinical judgment. All decisions re: patient management should be made considering the patient's allergies, history, underlying condition, response to previous treatment, and concurrent therapies.



Nurse-Driven Protocol for Procedural Pain Management

When an MD or NP writes for "PainFree Measures per Protocol" the following orders may be carried out. Documentation of the method should be written in the medical record.

- 1) Sucrose: 0.2-2cc (see chart) PO given 2 minutes prior to procedure for patients up to 3 months of age

Gestational Age	Dose
<28 weeks	0.2 cc swabbed into mouth
28-32 weeks	0.2-2 cc depending upon suck/swallow
>32 weeks	2 cc

- 2) EMLA Cream: apply to skin at least 1 hour before needlestick or circumcision*

Age and Weight	Max Dose/24 h	Max Application Time
0 to 3 months OR up to 5 kg**	1 g	1 hour
3 to 12 months AND greater than 5 kg	2g	4 hours
1 to 6 years AND greater than 10 kg	10g	4 hours
7 to 12 years AND greater than 20 kg	20g	4 hours

*for infants > 3 months or 5 kg EMLA works best when left on for at least 2 hours before IM injections.

**must be at least 32 weeks gestation to use EMLA

- 3) ELA-Max Cream: apply to skin at least 20-30 minutes prior to needlestick. Recommend an occlusive dressing.

Age and Weight	Max Dose/ Area	Max Application Time
Greater than 1 yr AND less than 10 kg	4x4 in	1 hour
>1 years AND >10 kg	5.5 x 5.5 in	2 hours

- 4) Vapocoolant spray: Spray on skin (up to 10 seconds for Ethyl Chloride™, Fluori-Methane™, or 2-3 seconds for Fluro-Ethyl™) immediately prior to needlestick for infants at least 36 weeks gestation.

- 5) Numbly Stuff: 1 cc of Iontocaine™ or lidocaine 2% with epinephrine 1:100,000 by iontophoresis prior to

Acute Pain Management

Framework for Pain Management

- I. Mild Pain: non-opioid medication
- II. Moderate Pain: continue non-opioid and add oral opioid medication
- III. Severe Pain: continue non-opioid and add parenteral opioid

Non Opioids:

Ketorolac 0.5 mg/kg/dose IV q6h. Max 30 mg for 72 hours

Ibuprofen 10 mg/kg/dose PO q6h. Max 800 mg/dose

Acetaminophen 15 mg/kg/dose PO/PR q4h. May also load with 35mg/kg PR and follow with 20mg/kg PR q6h. Max 75mg/kg/day or 4 g/day

Choline magnesium trisilate 25mg/kg/dose PO q12h. Max 1500mg/dose. Do not use for patients with aspirin allergy or those with G6PD deficiency.

Oral Opioids:

Codeine 0.5-1 mg/kg/dose PO q4h. Max 60mg/dose

Hydromorphone 0.03-0.08 mg/kg/dose PO q4h. Usual adult dose is 2-4 mg/dose

Oxycodone 0.1-0.2 mg/kg/dose PO q4h. Usual adult dose is 10mg/dose. There is no ceiling on oxycodone, but use caution dosing combination products (eg. Percocet) because there is a maximum safe dose for acetaminophen.

MS Contin 0.3-0.6mg/kg/dose PO Q12hr. See equianalgesic chart on reverse.

- MS Contin has no immediate release component and should not be used for the beginning of a pain episode or for pain that is expected to be of a short duration
- MS Contin is useful for transitioning from PCA with a basal rate if pain is expected to last for several more days
- Select patients may need MS Contin to be dosed q8 hours
- MS Contin tablets may not be split or crushed

Meperidine is not a first-line medication and should only be used in specific clinical situations. Meperidine should never be used for sickle cell patients

Severe Acute Pain Management: use Opioid and Non-Opioid *

Parenteral Opioid	Morphine	Hydromorphone
Initial Bolus	0.1 mg/kg IV max 5mg over 5 min	0.015 mg/kg IV max 1mg over 5 min
Repeat Bolus	0.05mg/kg IV max 5 mg q 15 minutes until comfortable or sedated	0.008mg/kg IV max 1 mg q 15 minutes until comfortable or sedated
Intermittent Dose for Previously Captured Pain	0.1 mg/kg/dose IV q2-4h PRN. Usual adult starting dose 10 mg.	0.015 mg/kg/dose IV q3-4h PRN. Usual adult starting dose 1.5 mg.

Pediatric Patient Controlled Analgesia (PCA)

- When PCA is initiated a patient's pain should be controlled initially using parenteral bolus dosing. See the section on Severe Acute Pain Management for guidelines on loading doses.
- These PCA guidelines are appropriate for children school age and older on pediatric inpatient units and the Emergency Department. Full policy is available on the BMC Pharmacy Website
- PCA is a technique whereby patients self-administer opioid medications by using a preprogrammed infusion pump; the purpose of utilizing PCA is to provide a method of patient controlled delivery of an opioid which maintains optimal analgesia while minimizing sedation.
- Operation of PCA pumps by nursing staff or family members is prohibited. These practices may cause excessive sedation of the patient by overriding the "patient controlled mechanism".

Suggested Guidelines for Pediatric Dosing Post-op or Trauma Patients

	Morphine	Hydromorphone
Basal rate (mg/kg/hr)*	0.01 mg/kg/hr	0.0016 mg/kg/hr
PCA dose (mg/kg)	0.02 mg/kg	0.0033 mg/kg
Lockout period (min)	6 min	6 min
1hr limit equivalent to: Basal rate** + (PCA dose x 10)	0.21 mg/kg in one hour	0.034 mg/kg in one hour

*A basal rate is not required for many post-operative patients and should be reserved for those with severe pain

Sickle Cell Patients**

	Morphine	Hydromorphone
Basal rate (mg/kg/hr)	0.02 - 0.04 mg/kg/hr	0.003 - 0.007mg/kg/hr
PCA dose (mg/kg)	0.015 mg/kg	0.0025 mg/kg
Lockout period (min)	6 min	6 min
1hr limit equivalent to: Basal rate + (PCA dose x 6-10)	0.17 - 0.19 mg/kg in 1 hr	0.028 - 0.032 mg/kg in 1 hr

**Select patients may have specific dosing guidelines, refer to patient history

Average Adult Dosing Table (≥65 kg) for comparison of doses*

	Morphine	Hydromorphone
Basal rate	0-1 mg/hr	0-0.2 mg/hr
PCA dose	1-3 mg	0.1-0.3 mg
Lockout period (min)	6-10 min	6-10 min
Starting 1hr limit equivalent to: Basal rate + (PCA dose x 6-10)	4-20 mg in 1 hr	0.8-2 mg in 1 hr

*This table is intended to be used as a double-check to avoid excessive doses in larger patients. Opioid-dependent patients may require higher doses.

Patients on PCA need frequent assessment re: pain intensity and sedation level. Dosing adjustment may be necessary:

- If patient on basal rate is over sedated decrease basal rate by 10-20%.
- For somnolence or respiratory depression stop the infusion and treat as outlined under Respiratory Depression
- For increased or persistent, severe pain re-educate patient on use of PCA. If using basal rate, give bolus and consider increasing basal by 10-20% If not using basal, give bolus and consider adding low basal rate

For all patients on PCA:

- 2 nurses check dose/pump and initial flow sheet q shift