

Bon Secours Richmond Opioid Equivalence Chart					
	Opioid Equianalgesic Doses (mg)		Half-Life (hours)	Duration of Analgesia (hours) of injection and immediate release tablets	
	IV	Oral		Opioid naïve	Persistent Cancer Pain
Codeine <sup>1</sup>	130	200	3	4-6	
Fentanyl <sup>2</sup>	0.1-0.2		3-4	1-2	
Hydromorphone <sup>2</sup>	1.5	7.5	2-3	3-5	2-4
Levorphanol	2 (Acute) 1 (Chronic)	4 (Acute) 1 (Chronic)	12-16	5-8	4-6
Meperidine <sup>3</sup>	75	300	3-4	2-5	
Methadone <sup>4</sup>	10 (Acute) 2-4 (Chronic)	10-20 (Acute) 2-4 (Chronic)	15-30	4-5 (Acute) > 8 (Chronic)	4-12
Morphine	10	30	2	3-5	2-4
Hydrocodone		30	4	4-6	
Oxycodone		20	2-3	4-6	3-4

Patient Controlled Analgesia for Adult Post Surgical Patients Usually Dose in Opioid naïve					
	Loading Dose	PCA Dose	Delay (minutes)	Continuous Dose	4 hour limit
Fentanyl <sup>2</sup>	20-80 mcg	10-50 mcg	6-10	10-80 mcg/hr	200-600 mcg
Hydromorphone <sup>2</sup>	0.3-0.8 mg	0.1-0.3 mg	6-10	0.2-0.8 mg/hr	3-6 mg
Morphine	2-4 mg	0.6-1.5 mg	6-10	1-4 mg/hr	20-30 mg

Patient Controlled Analgesia for Adult Patients Meeting Criteria for Use Usually Dose in Opioid naïve					
Meperidine <sup>3</sup>	10-30 mg	5-15 mg	6-15	10-20 mg/hr	200 mg

<sup>1</sup>**Codeine** is a prodrug of morphine; some patients do not convert codeine to the active metabolite and will not have a therapeutic effect.

<sup>2</sup>**Hydromorphone and fentanyl** are preferred for hemodynamic instability or renal insufficiency per the 2002 Clinical Practice Guidelines in the Critically Ill Adults by the American College of Critical Care medicine and the American Society of Health-System Pharmacists. There are no active or toxic metabolites. Hydromorphone is the opioid of choice in renal impairment as a small percentage is excreted renally as hydromorphone.

<sup>3</sup>**Meperidine:** Oral therapy is not recommended due to low oral bioavailability, high oral dose required for an equianalgesic dose and high rate of conversion to the toxic metabolite, normeperidine. Injectable therapy is restricted to patients with a true documented allergy or intolerant to first line opioids (morphine, hydromorphone, and fentanyl), treatment or prevention of drug or blood induced rigors, treatment of post operative shivering, and peri-procedural use in short duration procedures such as endoscopic, surgical or other interventional procedures. Meperidine is not recommended at doses greater than 600 mg/day or for durations longer than 48 hours. Meperidine is not recommended in patients with a creatinine clearance less than or equal to 20 ml/min. Renal clearance of normeperidine is equivalent to creatinine clearance. Normeperidine accumulates in patients receiving hemodialysis, CAVH, and CAPD.

<sup>4</sup>**Methadone:** Extended half-life useful in cancer patients. In chronic pain, wait 3 days between dosage adjustments. High doses may prolong QT interval and cause torsade de pointes.

**Signs of normeperidine neurotoxicity include:** Anxiety, hallucinations, illusions, restlessness, seizure, shakiness, nervousness, confusion, fluctuations in awareness levels, agitation, disorientation, bizarre feelings, diaphoresis, myoclonic jerks, tremors, and seizures. Naloxone should not be used as it does not reverse the effects of normeperidine, and may precipitate seizure activity.

**Transdermal fentanyl:** 25 mcg/hour is equivalent to 60 mg/day of oral morphine or 30-40 mg/day of OxyContin. Do not use for management of: acute or post-operative pain, including use in out patient surgeries, mild or intermittent pain responsive to PRN or non-opioid therapy, or children under 12 years of age or patients under 18 years of age who weigh less than 50 kg. Do not give doses exceeding 25 mcg/h at the initiation of therapy in opioid-naïve patients. Duration of effect is usually 3 days, 2 days in some patients.

**Converting to another opioid:** Calculate the average total daily dose of the current opioid medication; divide this number by its equianalgesic dose, multiply the result by the equianalgesic dose of the new opioid to get the total daily dose of the new opioid. The starting dose should be reduced by 25%-33% due to incomplete cross-tolerance among opioids. If converting to methadone reduce the starting dose by 75%-95%.

Total 24 hour dose &  
Route for present opioid

Total 24 hour dose &  
Route for new opioid

=

Equianalgesic dose &  
Route for present opioid

Equianalgesic dose &  
Route for new opioid

**Narcotic classes:** Opioid analgesics are divided into three classes: phenanthrenes (buprenorphine, butorphanol, codeine, hydromorphone, levorphanol, morphine, nalbuphine, oxycodone, pentazocine), phenylpiperidines (anileridine, fentanyl, meperidine, sufentanil), and phenylheptanes (methadone, propoxyphene).

**Bowel Regimen:** A prophylactic bowel regimen is recommended: Stool softener (Colace 100 mg once or twice a day) and gentle laxative (Senna 8.6 mg 2-4 tablets once or twice a day, Lactulose 15-45 mL once daily, Dulcolax 10-15 mg once daily).

**Non-Opioids:** The American Pain Society recommends that all opioid analgesic regimens should include a non-opioid drug unless contraindicated.

Pharmacokinetics of Opioids						
Drug	Half life: Normal/ESRD		Adjustment for Renal Dysfunction			
			>50	10-50	<10	Supplement for Dialysis
Fentanyl	2-7/	<i>No active or toxic metabolites</i>	100%	75%	50%	
Hydromorphone	2-3/	<i>No active or toxic metabolites</i>				
Meperidine	2-7 / 7-32 Normeperidine 14-21/35	Normeperidine accumulates in ESRD causing seizures, tremors, delirium	100%	Avoid	Avoid	Avoid use in: dialysis, CAVH, & CAPD
Propoxyphene	9-15/12-20  Nor-propoxyphene 30-36/	Nor-propoxyphene Cardiac toxicity-not reversed by naloxone	100%	100%	Avoid	Avoid in dialysis, CAVH, & CAPD Not removed by dialysis Nor-propoxyphene accumulates
Morphine	1-4/ Unchanged	Morphine 6 glucuronide (active metabolite): 5 fold accumulation in ESRD, 3.7 times more potent than morphine	100%	75%	50%	Hemo: none CAPD: no data CAVH: dose for GFR 10-50 Increased sensitivity in ESRD