

Addressing Opioid Range Order Use in Post Anesthesia Care Units (PACUs) Across a System

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Background

Range orders and therapeutic duplication are an ongoing issue in PACUs as we balance the unique needs of our patients with the restrictions of laws and regulatory bodies. The intent of opioid range orders is to allow the nurse the flexibility to administer pain medications to provide pain management to meet the patient's acute individual needs immediately post-operative. While range orders allow for flexibility, they do not support standardization between nurses for initial and consecutive dose selection and administrations, dose titration, or transition to 2nd line or 3rd line opioids.

Purpose

With the goal to support standardized nursing practice for opioid administration with range orders to patients in the PACU, the multidisciplinary team efforts were focused on identifying a tool to meet these needs.

Assessment

PACU Nurses manage patient's pain with opioid range orders written by the anesthesia provider.

PACU Nurses choose a dose based on patient's pain rating, knowledge, experience, and comfort level.

Hospital Policy States:

- Range orders are acceptable
- The maximum dose of an opioid range order must not exceed four times the lowest dose.
- Any dose range may be ordered if dose selection will be directed by an ordering provider

Opioid range orders written by anesthesia include:

- Range
- Frequency
- Cumulative maximum dose
- Therapy Line (1st line, 2nd line, etc)
- When to move to the next line of therapy
- When to contact the provider
- Specific orders when bridging to oral therapy

Available tools and resources:

- The inpatient units have a tool which was created and implemented for use; while the principles of the tool meet the need to support PACU nursing practice, the actual language does not meet the PACU practice needs.

Process

Stakeholders

Anesthesia
Nursing – Clinical Nurse Specialists, Nursing Education Specialist, Quality and Safety Program Specialist
Pharmacy

Discuss & Review

Current practice across all PACUs/Phase I recovery areas across the system
Hospital policy directing practice related to patient care orders
Law and regulatory requirements

Brainstorm & Draft

Identify ideal practice within the limits of policy, regulatory requirements, and physician orders:
Ideal state for assessing, dose selection, and administration, reassessing, dose increase/decrease /same amount

Nurse Draft Review

Reviewed many algorithm iterations with a group of PACU nurses
Applied to real patient scenarios
Updated algorithm as needed with these reviews

Final Product & Roll out

All nurses providing care to patients in phase I recovery received training using real patient scenarios outlines in a Computer Based Training (CBT) module and were successful when completing training.

Results

Guiding principles

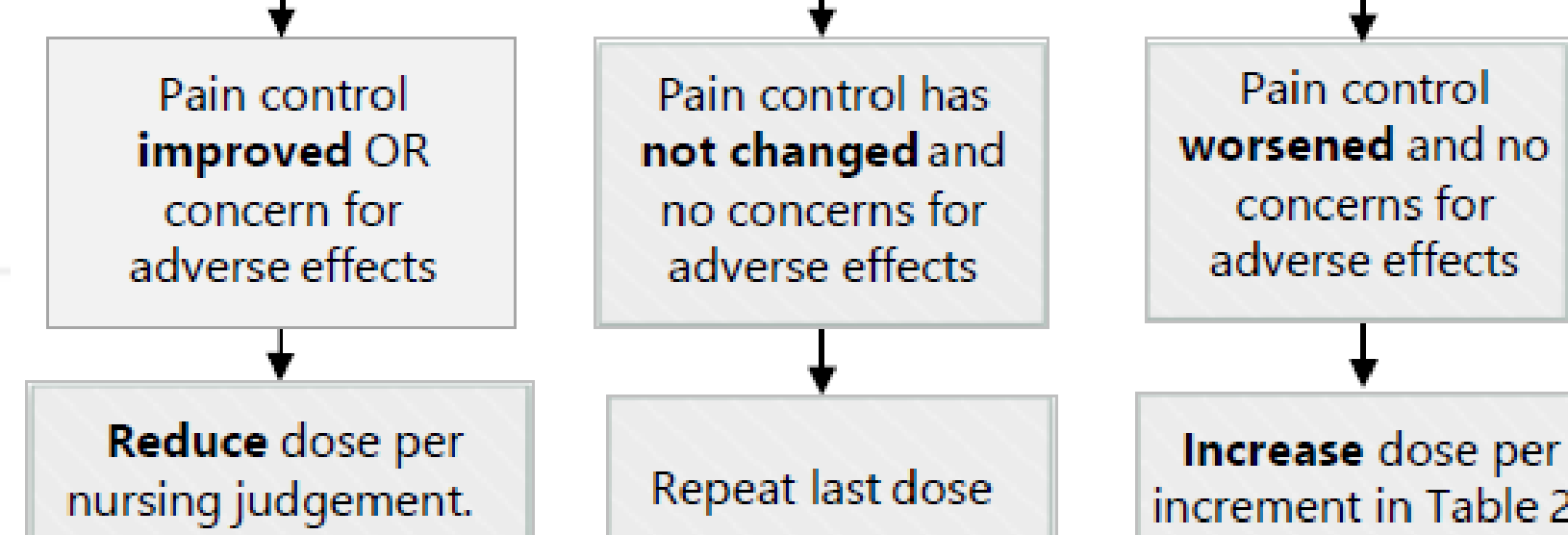
1. Contact provider if unsure or unclear what dose to give
2. Pain control is based upon nursing assessment of multiple factors including patient reported pain score and observations (e.g. tears, facial expression, agitation, whimpering, crying out, relaxed, tense, fetal position)
3. Contact provider if maximum dose in the order does not adequately control pain
4. Nurses may always provide a lower dose if concerned for adverse effects
5. If intraoperative opioid is not given; start with the lowest dose or up to second dosing increment based upon patient's pain control and/or patient's prior opioid experience (e.g. hydromorphone 0.2-0.6mg, could give up to 0.4mg)

Medications Administered

Medication	Calculated Total
FENTANYL	25 mcg
MORPHINE	5 mg
HYDROMORPHONE	0.3 mg
ketAMINE	25 mg

Convert intraoperative dose(s) of opioids given in last 60 minutes to an approximate equivalent dose of ordered PRN opioid per Table 1

Assess efficacy (e.g. pain control) and adverse effects (e.g. respiratory depression)



Opioids Administered within Last 60 Minutes (last 1 hour)

Date/Time	Action	Medication	Dose
05/29/20 1142	Given	fentanyl Citrate (PF) 100 MCG/2ML soln cartridge	25 mcg
05/29/20 1159	Given	Morphine Sulfate (PF) injection	5 mg
05/29/20 1159	Given	HYDROMORPHONE HCl PF (Dilaudid) injection	0.3 mg

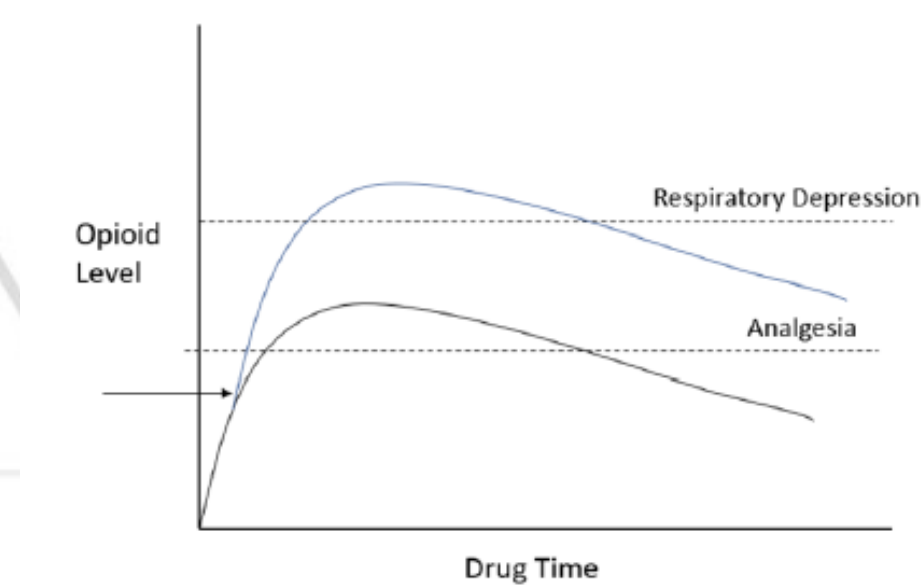
Table 1. Perioperative opioid dosing equivalence

	Fentanyl IV (mcg)	Hydromorphone IV (mg)	Morphine IV (mg)	Oxycodone PO (mg)
	12.5	0.2	1	5
	25	0.3	2	
	37.5	0.4	3	10
	50	0.5	4	
	75	0.6	5	15
Onset	Almost immediate	5 min	5-10 min	10-15 min
Peak	1-3 min	10-20 min	20 min	0.5-1 hour
Duration	0.5-1 hour	3-4 hours	3-5 hours	3 to 6 hours

Table 2. Perioperative opioid dosing increase increments

Fentanyl IV	Hydromorphone IV	Morphine IV	Oxycodone PO
12.5mcg	0.2mg	1mg	5 mg

3. What is "dose stacking"?
Re-dosing too early.
When an opioid is not given sufficient time to reach a peak effect before it is re-dosed, the risk of significant respiratory depression or sedation increases.



2. What factors put patient's at risk for respiratory depression?

Risk factors for opioid-induced respiratory depression	Comorbidities as risk factors	Perioperative risk factors
Surgical and patient risk factors	Diagnosed or suspected OSA	Concomitant use of sedatives
First 24-hours after surgery	Renal disease	PCA
Orthopedic general and transplant surgery	Pulmonary disease (including COPD)	Excessive dose of opioids
Elderly > 60 years	Cardiac disease (including CAD, CHF, arrhythmias)	Multiple routes of administration
Females	Diabetes mellitus	Multiple prescribers
ASA 3 or 4	Obesity	Two or more opioids
Opioid dependent	Hypertension	Excessive sedation
Genetic polymorphism	Neurological disease (stroke, dementia)	Inadequate monitoring
	Liver disease	Hyperoxemia
	PACU respiratory events	Patient on oxygen during respiratory depression
	•Hypoventilation	
	•Apnea	
	•Desaturation	
	•Sedation/analgesia mismatch	

ASA, American Society of Anesthesiologists; CAD, coronary artery disease; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; OSA, obstructive sleep apnea; PACU, postanesthesia care unit; PCA, patient controlled analgesia.

Implications

The PACU/Recovery Room Opioid Management Tool supports standardization of initial and consecutive doses of range ordered opioids, allowing nurses to continue to manage a patient's individual pain management needs with the flexibility range orders offer.



Acknowledgements

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