

Colorado ALTO Project



Pharmacy Training Materials



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Colorado Hospital Association

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Our Partners



Colorado ALTO Project



In 2017, Colorado Hospital Association (CHA) partnered with 10 hospital emergency departments (EDs) on a six-month pilot program with the goal of reducing the administration of opioids in the ED by 15 percent. This would be achieved by changing prescribing guidelines and using new protocols for alternatives to opioids (ALTOs) as first-line treatments for pain management, administering opioids sparingly or only as rescue medications.

The Colorado Opioid Safety Pilot demonstrated the feasibility and effectiveness of using an ALTO approach as a first-line treatment for acute pain in the ED before turning to opioids. Based on this success, CHA will roll out this program statewide in 2018 through the Colorado ALTO Project.

All 10 EDs successfully completed the opioid pilot, achieving a reduction in opioid administration rates of more than double the 15 percent goal on average.

ED-Specific Percent Change in Opioid MEU (2016 vs 2017)

Percent Change from Baseline in MEUs per 1,000 ED Visits



CHA partnered with key stakeholders to develop and roll out the pilot program:

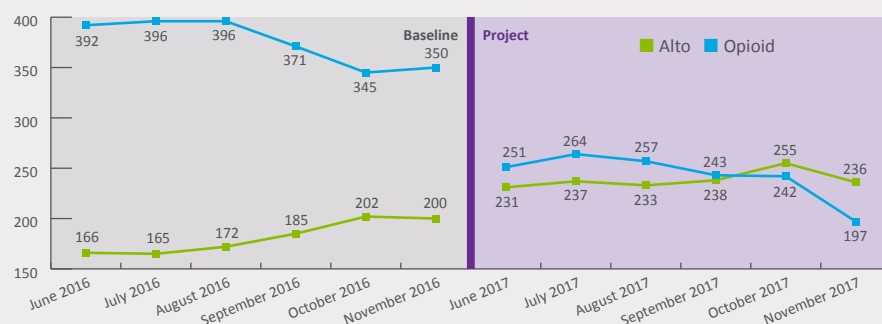


COLORADO CHAPTER
American College of Emergency Physicians
ADVANCING EMERGENCY CARE



In addition, the 10 EDs increased their use of ALTOs by more than 31 percent, with ALTO administration surpassing opioid administration near the end of the six-month pilot.

Number of Treated Pain Visits per 1,000 ED Visits



To learn more about the Colorado ALTO Project visit www.cha.com/opioid.

Introduction:

Colorado ALTO Project | Pharmacy Toolkit

Course Overview

Thank you for participating in the Colorado ALTO Project. The Colorado ALTO Project Pharmacy Toolkit provides information and resources to assist in the education of pharmacists in the following areas:

- ☐ Colorado's opioid crisis
- ☐ Opioid crisis and pharmaceutical companies
- ☐ The Colorado Chapter of the American College of Emergency Physicians *2017 Opioid Prescribing & Treatment Guidelines*
- ☐ The Colorado Opioid Safety Pilot
- ☐ Use of alternative to opioids (ALTOs), procedures and pain pathways
- ☐ Evidenced-based ALTO research
- ☐ Policy changes
- ☐ Data

Pharmacy ALTO Training Curriculum

The pharmacy ALTO training curriculum has three main components: training sessions, handouts and podcast links.

Pharmacy ALTO Training Sessions

The pharmacy ALTO training session is generally presented in one, in-person 90-minute session, a PowerPoint presentation by your organization's identified trainer or a recorded webinar.

Handouts

The pharmacy ALTO training kit includes multiple sample handouts:

- ☐ Sample high-risk medication and procedural policies
- ☐ ED ALTO order sets
- ☐ ALTO pathway discharge prescribing document
- ☐ Pain pathway indication algorithm

Podcast Links

The pharmacy ALTO training kit offers a variety of podcasts from Emergency Medical Minute that can be accessed at the convenience of the clinician. For additional opioid-related podcasts, visit Emergency Medical Minute.

<https://emergencymedicalminute.com/opioid-miniseries/>

Listen to Part I: Medicine's Greatest Folly from Emergency Medical Minute in Podcasts.

Dr. Don Stader describes how opioids became medicine's drug of choice for pain, documenting the dubious science and market forces that helped create the opioid epidemic.

<https://itunes.apple.com/us/podcast/emergency-medical-minute/id1210879676?mt=2&i=1000386294042>

Listen to Part II: Limiting Opioids in the Emergency Department from Emergency Medical Minute in Podcasts.

Dr. Don Stader and Dr. Erik Verzemniks discuss COACEP *2017 Opioid Prescribing & Treatment Guidelines* recommendations to limiting opioids in the ED, including in-depth discussion of keys to limiting opioids and speaking with patients about opioids.

<https://itunes.apple.com/us/podcast/emergency-medical-minute/id1210879676?mt=2&i=1000386312411>

Listen to Part III: Alternative to Opioids from Emergency Medical Minute in Podcasts.

Pharmacist Rachael Duncan reviews ALTO medications, how they are used and tips to using ALTOs safely and effectively.

<https://itunes.apple.com/us/podcast/emergency-medical-minute/id1210879676?mt=2&i=1000386312410>

Listen to Part IV: Harm Reduction from Emergency Medical Minute in Podcasts.

Dr. Don Stader and Harm Reduction Action Center Executive Director Lisa Raville discuss harm reduction and keys to speaking with patients with opioid use disorder and IV drug use – emphasizing points on how to keep these patients safe.

<https://itunes.apple.com/us/podcast/emergency-medical-minute/id1210879676?mt=2&i=1000386331460>

For more information on the Colorado ALTO Pharmacy Training toolkit, contact Diane Rossi MacKay at Diane.RossiMacKay@cha.com.

ED Opioid-Free Pain Options by Indication in the ED

Musculoskeletal Pain:

- No IV access – Intranasal ketamine 50 mg – 100mg/mL product
 - Acetaminophen 1000 mg PO
 - Ibuprofen 600 mg PO or Ketorolac 15 mg IV/IM
 - Trigger Point injection
 - Lidocaine 1% 2-3 mL IM at each trigger point
 - Cyclobenzaprine 5 mg PO or diazepam 5 mg PO/IV
 - Dexamethasone 8 mg PO/IV
 - Ketamine 0.2 mg/kg (50mg/5mL syringe) IVP over 10 min
 - ± 0.1 mg/kg/hr gtt (100 mg/50 mL) until pain is tolerable
 - Lidoderm patch to most painful area, MAX 3 patches
 - Gabapentin 300 mg PO (neuropathic component of paint)
-

Recurrent Primary Headache/Migraine:

- Acetaminophen 1000 mg PO
- Ibuprofen 600 mg PO or Ketorolac 15 mg IV/IM
- 1 L 0.9% NS bolus
- Sumatriptan 6 mg SC
- Cervical or Trapezius Trigger Point Injection with lidocaine 1% 1-2 mL IM
- Metoclopramide 10mg IV
- Promethazine 12.5 mg IV OR prochlorperazine 10 mg IV
- Magnesium 1 gm IV over 60 minutes
- Valproic Acid 500 mg/50 mL NS IV over 20 min
- Levetiracetam 1000 mg/100 mL NS IV over 15 min
- Dexamethasone 8 mg IV (Migraine only)
- Haloperidol 2.5-5 mg IV over 10 min
- Lidocaine 1.5 mg/kg in 100 mL NS over 10 min (max 200 mg)

If tension component:

- Cyclobenzaprine 5 mg OR Diazepam 5 mg PO/IV

Extremity Fracture or Joint Dislocation:

Consider regional anesthesia: e.g. nerve blocks: wrist, ankle, ulnar, radial, hip, femur, etc.

Immediate therapy (steps 1-3 while setting up for block)

- Ketamine intranasal 50 mg– concentration 100 mg/mL
- Nitrous Oxide titrate as needed (MAX 70%)
- Tylenol 1000 mg PO

Followed by setting up for:

- Ultrasound Guided Regional Anesthesia
 - Joint Dislocation and Extremity Fracture
 - Lidocaine 0.5-1% peri-neural infiltration (MAX 4 mg/kg)

If unable to do ultrasound guided regional anesthesia:

- Ketamine 0.2 mg/kg in (50mg/5mL syringe) IVP over 10 min
 - ± 0.1 mg/kg/hr gtt (100 mg/50mL) until pain is tolerable
-

Abdominal Pain:

Gastroparesis-associated or chronic functional abdominal pain:

- Metoclopramide 10 mg IV
 - Diphenhydramine 25 mg IV
 - Prochlorperazine 10 mg IV
 - Dicyclomine 20 mg PO/IM
 - Lidocaine 1.5 mg/kg in 100 mL NS over 10 min (max 200 mg)
 - Haloperidol 2.5-5 mg IV
 - Ketamine 0.2 mg/kg (50mg/5mL syringe) IVP over 10 min ± 0.1 mg/kg/hr gtt (100 mg/50 mL) until pain is tolerable
 - Capsaicin 0.025% topical (cannabinoid hyperemesis syndrome)
-

Renal Colic:

- Acetaminophen 1000 mg PO
- 1 L 0.9% NS
- Ketorolac 15 mg IV
- Lidocaine 1.5 mg/kg IV in 100 mL NS over 10 min (max 200 mg)
- Desmopressin 40 mcg IN
- Ketamine 50 mg IN (100 mg/mL product)

ED Opioid-Free Pain Options by Indication at Discharge from the ED

Headache:^{1,2}

For acute attacks:

- Sumatriptan 100 mg
- Acetaminophen/Aspirin/Caffeine (Excedrin Migraine)
- Acetaminophen 1000 mg every 6 hours
- DHE 2 mg nasal spray
- Naproxen 500-550 mg twice daily
- Metoclopramide 10 mg every 6 hours
- Ibuprofen 600 mg PO every 6 hours

For prevention:

- Propranolol 40 mg BID
- Divalproex DR 250 mg twice daily OR ER 500 mg daily
- Topiramate 25 mg at bedtime
- Magnesium supplementation 600 mg daily

Sore Throat:

- Ibuprofen 600 mg every 6 hours
- Acetaminophen 1000 mg every 6 hours
- Dexamethasone 10 mg once
- Viscous lidocaine

Fibromyalgia:^{3,4}

- Cardiovascular exercise
- Strength training
- Massage therapy
- Amitriptyline 10 mg at bedtime
- Cyclobenzaprine 10 mg every 8 hours
- Pregabalin 75 mg twice daily

Uncomplicated Neck Pain:⁵

- Acetaminophen 1000 mg every 6 hours
- Ibuprofen 600 mg every 6 hours
- Cyclobenzaprine 5 mg every 8 hours
- Physical therapy
- Lidocaine 5% patch Q12 hours

Uncomplicated Back Pain:^{6,7}

- Acetaminophen 1000 mg every 6 hours
- Ibuprofen 600 mg every 6 hours
- Lidocaine 5% patch Q12 hours
- Diclofenac 1.3% patch TD twice daily
- Diclofenac 1% gel 4 g four times daily PRN
- Cyclobenzaprine 5 mg PO three times daily
- Heat
- Physical therapy
- Exercise program

Simple Sprains:

- Immobilization
- Ice
- Ibuprofen 600 mg every 6 hours
- Acetaminophen 1000 mg every 6 hours
- Diclofenac 1.3% patch TD twice daily
- Diclofenac 1% gel 4 g four times daily PRN

Contusions:⁸

- Compression
- Ice
- Ibuprofen 600 mg every 6 hours
- Acetaminophen 1000 mg every 6 hours
- Lidoderm 5% patch

Non-Traumatic Tooth Pain:⁹

- Ibuprofen 600 mg every 6 hours AND
- Acetaminophen 1000 mg every 6 hours (clove oil, other topical anesthetics)
- Viscous Lidocaine topically

Osteoarthritis:¹⁰

- Diclofenac 50 mg every 8 hours
- Naproxen 500 mg twice daily
- Celecoxib 200 mg daily
- Diclofenac 1.3% patch TD twice daily
- Diclofenac 1% gel 4 g four times daily PRN (topical NSAIDs, capsaicin)

Undifferentiated Abdominal Pain:

- Dicyclomine 20 mg every 6 hours
- Acetaminophen 1000 mg every 6 hours
- Metoclopramide 10 mg every 6 hours
- Prochlorperazine 10 mg every 6 hours

Neuropathic Pain:

- Gabapentin 300mg every 8 hours
- Amitriptyline 25 mg at bedtime
- Pregabalin 75 mg twice daily

¹ Marmura MJ, Silberstein SD, Schwedt TJ. The acute treatment of migraine in adults: the american headache society evidence assessment of migraine pharmacotherapies. *Headache*. 2015 Jan;55(1):3-20.

² Matchar DB et al. Evidence-Based Guidelines for Migraine Headaches in the Primary Care Setting: Pharmacological Management of Acute Attacks. *American Academy of Neurology*.

³ Chinn S, Caldwell W, Gritsenko K. Fibromyalgia pathogenesis and treatment options update. *Curr Pain Headache Rep*. 2016; 20-25.

⁴ Goldenberg DL, Burckhardt C, Crofford L. Management of fibromyalgia syndrome. *JAMA*. 2004 Nov 17;292(19):2388-95.

⁵ Schnitzer, TJ. Update on guidelines for the treatment of chronic musculoskeletal pain. 25 (Suppl 1), *Clin Rheumatol*. 2006;25 Suppl 1:S22-9

⁶ McIntosh G, Hall H. Low back pain (acute). *Clin Evid (Online)*. 2011;05:1102.

⁷ Hayden JA, van Tulder MW, Malmivaara A, Koes BW. Exercise therapy for treatment of non-specific low back pain. *Cochrane Database Syst Rev*. 2005;(3).

⁸ Jones P, Dalziel SR, Lamdin R, Miles-Chan JL, Frampton C. Oral non-steroidal anti-inflammatory drugs versus other oral analgesic agents for acute soft tissue injury. *Cochrane Database Syst Rev*. 2015 Jul 1.

⁹ Moore PA, Hersh EV. Combining ibuprofen and acetaminophen for acute pain management after third-molar extractions. *JADA*. 2013; 898-908.

¹⁰ da Costa, Bruno R et al. Effectiveness of non-steroidal anti-inflammatory drugs for the treatment of pain in knee and hip osteoarthritis: a network meta analysis *The Lancet*. 2016. 2093-2105.

TITLE: High-Alert Med Administration**CATEGORY: Patient Care***Check one:*☒ HOSPITAL-WIDE☐ DEPARTMENT-SPECIFIC FOR →*List department if department specific:*

POLICY NUMBER:

RESOURCE PERSON:

Purpose:

To establish standards for the safe administration and additional monitoring of high alert/narrow therapeutic index medications in order to prevent and minimize potential injury to the patient.

Scope:

Registered Nurses (RNs), Pharmacists, Physicians (MDs), Licensed Independent Practitioners (LIPs)

Policy:

The Patient Safety and Pharmacy and Therapeutics committees will establish and maintain a list of high risk medications. This list may include a class or category of medications as well as specific medications. The list will be based on external (Institute for Safe Medication Practices, (ISMP), published reports and sentinel events) and internal (Swedish Medical Center (SMC) medication errors, sentinel events, and other) data. New drugs added to the formulary will be evaluated for potential risk.

For each drug/drug category identified, specific strategies should be identified and implemented. Strategies will include selection and procurement, storage, ordering and transcribing, preparing and dispensing, administration and monitoring.

Definitions:

High Alert medication: Medications that have a relatively small difference between therapeutic and toxic dosages and/or when administered intravenously have the potential to cause life-threatening effects such as dysrhythmia or circulatory collapse.

Guidelines:

1. The Medication Safety Committee and Pharmacy and Therapeutics committee will identify high risk medications based on the criteria above.

2. Strategies used include but are not limited to: limited access to these medications, standardizing ordering and concentrations, computer alerts, and double checks performed by pharmacists and nurses. In addition, care areas are assigned where medications can be given with proper monitoring.

These areas are:

- Critical Care: Intensive care when patient has an unstable condition and requires advanced and/or invasive monitoring along with aggressive therapies, medication management and specialized equipment (includes but not limited to: Cardiac Cath Lab, Critical Care Unit, Pediatric Intensive Care Unit, Emergency Department, Neonatal Intensive Care Unit, Interventional Radiology, Post Anesthesia Care Unit and Labor and Delivery)
 - Intermediate Care: Patients that are hemodynamically stable but may need monitoring of a previously unstable condition (includes but not limited to: Ambulatory Care Unit, Progressive Care Unit)
 - Medical/Surgical Care: Patients with general treatment and medication needs. These patients may or may not be on telemetry (includes but not limited to: all units not specifically listed above).
3. Staff members and physicians involved in the use of these medications will adhere to the strategies and policies identified.
4. Depending on the individual clinical situation a patient on a drug listed in this policy may require more or less intense monitoring than specified in this policy. If there is a question about the requirement for safe administration and monitoring of intravenous drug therapy or a question about exception to this policy, the unit director or nursing supervisor should be contacted to determine appropriate precautions.
5. Other policies that pertain to parenteral drug administration not addressed in this policy include but are not limited to: general intravenous (IV) policy#, Chemo Policy #, total parenteral nutrition (TPN) policy#FAC.PC.1001, Emergency Measures Protocol and Sedation/Analgesia Policy#FAC.PC.1016.

6. As a group pediatric orders are given special consideration for safety. All pediatric drug dosages are calculated using mg/kg units where applicable as outlined in the Rocky Mountain Hospital for Children (RMHC) Pediatric Medication Orders Policy RMHC. PC.5301.

- Patients aged 0-17 are considered “Pediatric” for the purposes of double checks.
- Pediatric medication orders entered by a prescriber via Electronic Physician Order Management (ePOM) may be verified by a single pharmacist acting as the **independent verification** step. In the event clarification must be obtained and the order is altered by the pharmacist or the original order is generated in any way other than ePOM (Verbal, Written, Protocol, etc.) a second pharmacist must perform an **independent verification** of the following medications:
 - IV Antibiotics
 - IV Opiates
 - IV Benzodiazepines
 - Epidurals
 - Anticoagulants
 - Narrow Therapeutic Index Medications
 - Aminophylline
 - Carbamazepine
 - Lithium
 - Phenytoin
 - Theophylline
 - Valproic Acid and its derivatives
 - Warfarin
 - **Independent verification** requires review of: Indication, Dose, Dose Volume, Frequency, Order Type, Concentration, Rate of Administration and Dose Delivery System (syringe vs. mini-bag).
 - Prior to dispensing medications from the pharmacy, two licensed individuals (at least one must be a pharmacist) should perform a check of the medication against the drug label. A single pharmacist may not pull an item from the shelf or prepare a product and send to the floor prior to having another individual verify the product with them.
 - Prior to administration two nurses, or respiratory therapist with nurse, will verify: Right Medication, Right Dosage, Right Time, Right Route, Right Patient, Right Documentation (“The 6 Rights”). Liquid preparations should have the dose checked by confirming the concentration and volume provide the correct dose ordered. When utilizing smart pump technology two practitioners must check that the correct drug/concentration are selected from the pump library.

High Risk/High Alert Drugs:

- Adrenergic Agonists (dopamine, epinephrine, norepinephrine, phenylephrine, vasopressin)
- Adrenergic Antagonists, injectable (labetalol, metoprolol, propranolol)
- Aldesdesleukin, IL-2
- Amphotericin B (liposomal, traditional)
- Anesthetic Agents (general, inhaled, injectable)
- Antiarrhythmics, injectable (amiodarone, diltiazem, lidocaine)
- Anticoagulants (argatroban, bivalirudin, dalteparin, enoxaparin, fondaparinux, heparin, dabigatran, rivaroxaban, apixaban, warfarin)
- Benzodiazepines
- Blood factor products (Factor VII, Factor IX)
- Chemotherapy, injectable and oral
- Concentrated electrolytes (Calcium chloride/gluconate, magnesium sulfate, sodium chloride/phosphate, potassium chloride/phosphate)
- Epidural medications
- Fibrinolytics (alteplase, tenecteplase)
- Glycoprotein IIb/IIIa inhibitors (abciximab, eptifibatide)
- Intotropes (digoxin, dobutamine, milrinone)
- Insulin
- Intrathecal medications
- Neuromuscular blocking agents (atracurium, cisatracurium, pancuronium, rocuronium, succinylcholine, vecuronium)
- Opiates
- PCA
- Phenytoin and fosphenytoin, injection
- Phytonadione injection
- Promethazine
- Sterile water for injection (in amounts of 100 mL or more)

Use of High-Alert/High-Risk Medications by Area

*CC= Critical Care Monitoring (includes but not limited to: Cardiac Cath Lab, Critical Care Unit (CCU), Pediatric Intensive Care Unit (PICU), Emergency Department (ED), Neonatal Intensive Care Units (NICU), Interventional Radiology (IR), Post Anesthesia Care Unit (PACU), and Labor and Delivery (LD))
IntC= Intermediate Care Monitoring (includes but not limited to: Ambulatory Care Unit (ACU), Progressive Care Unit (PCU)) **MS= Med/Surg Care Monitoring** (includes but not limited to: other patient care areas in the hospital not listed above)

**Intravenous cardiac medications may be administered for acute conditions outside intensive care or intermediate care settings to stable patients without major organ pathology if automated noninvasive blood pressure monitoring is maintained and appropriate rate of administration is observed. If condition persists, consider transfer to an intermediate care unit. For treatment of *chronic conditions* maintenance doses may be administered to patients on med/surg units who cannot take oral medications with appropriate precautions for rate of administration and frequent non-invasive blood pressure checks during and for one hour after drug administration.

*** Central venous access is required if two or more vasopressors are infusing at the same time.

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
Abciximab	CC, IntC	CCU, PCU only		
Adenosine	CC, IntC	If used on floor must have code cart in room, be on continuous cardiac monitoring and MD present		
Aldesleukin, IL-2	CC, Oncology			Two qualified RNs will review the physician's order; the medication received from the pharmacy, and double-checks the dosage calculations prior to administration. Please refer to the Swedish Medical Center CCU Standard of Care for Interleukin-2, IL-2 protocol available on the CCU intranet page for detailed information on toxicity management.
Alteplase	CC (full dose) IntC, MS (cath clearance)	Alteplase for catheter clearance may be used in all areas		
Amiodarone inj	CC, IntC	CCU, PCU only		Central line required if the expected duration of therapy is greater than 24 hours.
Amphotericin, Amphotericin IV lipid-complex	CC, IntC, MS	Concern if wrong form of amphotericin is dispensed and administered. Renal function needs to be monitored.	Double check on all order entry. Alerts in order entry system to verify product selected. Usual dosing for each product provided for reference. Pharmacist monitors renal functions.	Review medication and dose prior to administration.

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
Anticoagulants- apixaban, argatroban, dabigatran, dalteparin, enoxaparin, fondaparinux, heparin (weight based protocols), tinzaparin, rivaroxaban, warfarin	CC, IntC, MS	Recommended monitoring: <i>Unfractionated Heparin (UFH) and argatroban</i> : baseline PT, INR, aPTT, CBC, platelet count. All weight based dosing should use approved protocols. <i>LMWH and factor Xa inhibitors</i> : baseline CBC, serum creatinine, platelet count. CBC, platelet count every 3 days, serum creatinine every other day. Warfarin: baseline INR. Current INR used to adjust therapy.	<ul style="list-style-type: none"> Double check on all order entry (not required for prophylactic dose of sub-q LMWH or Heparin) of therapeutic anticoagulants. Double check required for all Factor Xa inhibitor orders. Direct Thrombin Inhibitors- Only one premixed concentration of argatroban available- 1mg/ml. UFH: Only one premixed concentration of heparin for infusion is permitted: 50units/ml. The only strengths of heparin available in patient care areas are 1000 units/ml, 5000 units/ml OR 5000 units/0.5ml. All other concentrations will be dispensed from the pharmacy pursuant to specific patient order. Warfarin: Only unit dose warfarin products used when available. Standard administration time 1700. Use P&T approved policy for Pharmacy to dose warfarin. 	<ul style="list-style-type: none"> IV pump required for all Unfractionated Heparin/UFH, direct thrombin inhibitor infusions All infusion rate changes and bolus doses for UFH and direct thrombin inhibitors shall be double-checked by a second nurse and documented in EMAR. In addition a double checked will be performed when a new bag is hung or when the pump is changed. Second nurse is responsible for checking the preparation labeling and anticipated administration only and is not performing a review of the initial physician order or subsequent patient assessment.
Atropine	CC, IntC			
Benzodiazepines	CC, IntC, MS	See P&P: Procedural Sedation/Analgesia #8711.601		
Chemotherapy (Injectable)		<p>See P&P: Administration and Handling of Chemotherapy and Biotherapy #8614.142)</p> <ul style="list-style-type: none"> The Chemotherapy Order Form will be utilized by prescribers for all injectable chemotherapeutic orders. Clarifications of chemotherapy orders do not require the rewriting of the entire order. Clarifications may be written on regular physician order forms and may also be taken as verbal orders per the verbal order policy. Exception for methotrexate for ectopic pregnancy. Vincristine/Vinblastine-will be prepared with a volume of no less than 50 ml to avoid possible intrathecal infusion. 	<ul style="list-style-type: none"> All dose calculations, indications for use, dilution, and route, and preparation shall be double-checked by two pharmacists prior to dispensing. Chemotherapy orders are placed in a pending status in Meditech by the entering pharmacist until the double check is performed. After completing the double check the second pharmacist will place the order in a verified status. Double-check shall include verification of calculation and appropriateness of dose. Dose differences greater than 5% will be discussed with the prescriber. Patient profiles should be reviewed prior to dispensing. Pharmacy will prime all IV tubing. All chemotherapeutics agents are stored in separate and identifiable area away from other injectable medications. 	<ul style="list-style-type: none"> These drugs must be administered only by a nurse who is chemotherapy qualified. The PICC team should be contacted if a chemotherapy qualified nurse is not available. In the operative/invasive setting, injectable chemotherapy may only be administered by the prescribing physician. Two chemotherapy qualified RNs will review the physician's order, the medication received from the pharmacy, and double-check dosage calculations prior to administration. Both RNs will document this double check on the physician progress notes. In procedural areas the double check may be performed by the physician and RN.

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
Chemotherapy (oral)			<ul style="list-style-type: none"> All oral chemotherapy are stored in distinctly colored bins and are separated from other oral unit dose medications. 	<p>Oral cytotoxic medications may be administered by a non-chemotherapy qualified nurse. Proper chemotherapy precautions and use of personal protective equipment will be employed. A double check with another nurse will be performed and documented on the MAR or electronically in eMAR.</p>
Concentrated electrolytes: Calcium chloride/ gluconate, Magnesium sulfate, Potassium chloride/ phosphate, Sodium chloride /phosphate	CC, IntC, MS	The Institute for Safe Medication Practices (ISMP), the Pharmacy and Therapeutics Committee and the Department of Pharmacy all discourage the practice of adding lidocaine to IV infusions.	<p><i>Calcium chloride and calcium gluconate</i></p> <ul style="list-style-type: none"> Physician orders must clearly identify the calcium salt desired and the specific dose in mEq, mg or grams (calcium gluconate = 4.65 mEq calcium/gram, calcium chloride = 13.6 mEq calcium/gram). Shall not be in the floor stock of any nursing unit, except in emergency carts. Diluted premixed bags may be stored in automated dispensing cabinet. <p><i>Magnesium Sulfate:</i></p> <ul style="list-style-type: none"> Should be ordered based on the number of grams to be administered, not by volume or percentage. Shall not be in the floor stock of any nursing unit, except in emergency Code carts. Diluted premixed bags may be stored in automated dispensing cabinet. <p><i>Sodium Chloride:</i></p> <ul style="list-style-type: none"> Solutions more concentrated than 0.9% NaCl require a pump for administration If anticipated use is 48 hours or less, 3% NaCl may be run via peripheral line. If anticipated or actual use is greater than 48 hours, a central line should be placed. If administering peripherally, any maintenance fluids should be run via Y-site with the 3% NaCl infusion. 3% NaCl infusion may be used in non-critical care areas only at a rate of 30 mL/hour or less (maximum rate does not apply to critical care areas). The 48-hour rule applies for peripheral versus central access. Brain injury patients with elevated ICPs requiring high rate 3% NaCl infusion or ANY 23.4% NaCl bolus require central venous access. 	<p><i>Calcium chloride and calcium gluconate</i></p> <ul style="list-style-type: none"> Infuse 1 gm/hr <p><i>Magnesium Sulfate:</i></p> <ul style="list-style-type: none"> Infuse 1 gm/hr all areas except: Up to 6 gram loading dose over 30 minutes in L&D, followed by infusion of up to 4 grams/hour, Up to 5 gram loading dose over 45 minutes in CC areas for Hypothermia Post Cardiac Arrest Protocol, followed by infusion of 1 gram/hour, Up to 4 grams infused over 1 hour for electrolyte replacement in CC areas, Rapid IV push in CC areas ONLY under direct physician supervision for acute bronchospasm or other respiratory/cardiac emergency. <p><i>Sodium Chloride:</i></p> <ul style="list-style-type: none"> Solutions more concentrated than 0.9% NaCl require a pump for administration If anticipated use is 48 hours or less, 3% NaCl may be run via peripheral line. If anticipated or actual use is greater than 48 hours, a central line should be placed. If administering peripherally, any maintenance fluids should be run via Y-site with the 3% NaCl infusion. 3% NaCl infusion may be used in non-critical care areas only at a rate of 30 mL/hour or less (maximum rate does not apply to critical care areas). The 48-hour rule applies for peripheral versus central access. Brain injury patients with elevated ICPs requiring high rate 3% NaCl infusion or ANY 23.4% NaCl bolus require central venous access.

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
			<ul style="list-style-type: none"> Concentration Limits: <ul style="list-style-type: none"> - Peripheral line- 10 meq/100 ml - Central line -20 mEq per 100 mL. Dose Limits: <ul style="list-style-type: none"> - 40 mEq doses are the maximum single dose size that will be dispensed for a patient in a Critical Care monitored patient. - Doses will only be dispensed in 10 mEq increments for non-Critical Care monitored patients. Rate Limits: <ul style="list-style-type: none"> - For non-Critical Care monitored patients: 10 mEq/hour maximum rate. - For Critical Care monitored patients: 20 mEq/hour maximum rate and patient should have continuous cardiac monitoring. - Rate limits include all potassium being administered through maintenance IV fluids + piggyback administration. 	Potassium Chloride/Phosphate: <ul style="list-style-type: none"> Potassium will not be given by IV push or undiluted form Potassium infusions will be administered via an IV pump
Dexmedetomidine	CC			
Digoxin	CC, IntC, MS**	See above, limits on use outside of CC, IntC		
Digoxin Immune Fab	CC, IntC			
Diltiazem	CC, IntC, MS**	See above, limits on use outside of CC, IntC		
Dobutamine	CC, IntC	CCU or PCU (fixed doses) only		
Dopamine***	CC, IntC	CCU or PCU(fixed dose less than 10 mcg/kg/min) only		Consider central venous access for infusions >5 mcg/kg/min for 12-24 hours
Enalaprilat	CC, IntC, MS**	See above, limits on use outside CC, IntC		
Epidural medications		See P&P: Patient Controlled Analgesia #8614.143 and Epidural Pain Management #8614.140.	<ul style="list-style-type: none"> Double check on all order entry required. Make sure anticoagulant dose are appropriate for concurrent epidural administration 	
Ephedrine	CC	Ephedrine may be administered by an anesthesiologist, or nurse anesthetist; see P&P Medical Screening of the Obstetric patient Classified as controlled substance and stored in the CII safe.	May only be dispensed thru Pyxis or directly to a physician.	<ul style="list-style-type: none"> Ephedrine must be diluted and administered in 5-10 mg increments. Ephedrine may also be administered by a CCU nurse under the direction of a physician for post-intubation hypotension.

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
Eptifibatide	CC, IntC	CCU, PCU only		
Esmolol	CC			
Epinephrine***	CC			Infusions require central venous access
Factor VII	CC	Associated with risk for thrombosis Proper dosing shall be verified by the physician and pharmacist.		
Factor IX Complex	CC	Associated with risk for thrombosis. Proper dosing shall be verified by the physician and pharmacist.		
Fentanyl PCA	CC, IntC, MS			
Fentanyl injection	CC, IntC, MS (see note)	IntC, MS-Single dose of 100 mcg or less for a procedure (exception for oncology and 5 East). Oncology and 5 East: Intermittent dosing is allowed for pain and palliative care patients. Oncology – doses of 100 mcg or less for patients with history of opiate use and severe pain associated with cancer. CC-Intermittent dosing or infusion for pain		Oncology and 5 East – Administration requires oxygen saturation and respiratory rate monitoring.
Hydralazine	CC, IntC, MS**	See above, limits on use outside CC, IntC		
Ibuprofen	CC, IntC	CCU, PCU only		
Insulin	CC, IntC, MS (iv, sub-q) CC, LD (iv drip)	<ul style="list-style-type: none"> Multiple dose insulin vials available as floor stock. 	<ul style="list-style-type: none"> The standard insulin drip concentration is 100 units/100ml (1 unit per 1 ml). Drips may only be infused in CCU and LD. Blood glucose levels will be checked prior to initiation of a single dose or infusion and at regular intervals thereafter. 	<ul style="list-style-type: none"> All insulin doses shall be double-checked by a second nurse and this double check is documented in the electronic MAR or on the MAR. All insulin drips are prepared by pharmacy, require a pump for administration, and must have the rate double-checked by a second nurse (charted on the MAR). The second nurse performing the double check is responsible for checking the preparation labeling and anticipated administration only. The second nurse is not performing a review of the initial physician's order or subsequent patient assessment.

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
Intrathecal medication	CC	CCU or OR only	<ul style="list-style-type: none"> Intrathecal (IT) doses will be labeled using appropriate route of administration auxiliary labels. Pharmacy will prepare IT doses according to applicable department P&Ps. Pharmacy personnel will hand carry doses to the patient's nurse or physician. 	<ul style="list-style-type: none"> Administration is restricted to the physician. Each provider (pharmacist, physician, nurse) will verify the route of administration.
Ketamine	CC, IntC, MS	<p>Ketamine use is dose-dependent. Ketamine may be used for analgesia at doses less than or equal to 0.25 mg/kg via slow IVP or 0.1 mg/kg/hr infusion and may be given on the floor. Doses that exceed these limits, or dosing for sedation must be given in CC areas. For procedural sedation, reference 8711.601</p>		<ul style="list-style-type: none"> Administration requires continuous oxygen saturation and respiratory rate monitoring
Labetalol	CC, IntC, MS**	See above, limits on use outside CC, IntC		
Lidocaine	CC, IntC, MS	<p>Doses less than or equal to 1.5 mg/kg given over 10 minutes may be given on the floor (maximum of 200 mg per dose). Doses that exceed this must be given in CCU or IntC areas.</p>		
Methyldopa	CC, IntC, MS**	See above, limits on use outside CC, IntC		
Metoprolol	CC, IntC, MS**	See above, limits on use outside CC, IntC		
Milrinone	CC, IntC	CCU or PCU (fixed dose less than 10 mcg/kg/min) only		
Neuromuscular Blocking agents: Atracurium, cisatracurium, pancuronium, rocuronium, succinylcholine, vecuronium	CC	Patients must be in Critical Care Monitored areas only.		<ul style="list-style-type: none"> Patients on neuromuscular blocking infusions must have regularly scheduled doses or a continuous infusion of a sedative agent. Patients on neuromuscular blocking infusions must have regularly scheduled doses or a continuous infusion of a narcotic analgesic agent. Patients receiving doses of neuromuscular blocking drugs must have a protected airway (intubated, mechanical ventilation). Recommended monitoring for patients on neuromuscular blocking infusions includes use of a peripheral nerve stimulator to monitor response and avoid overdose.

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
Nicardipine	CC			
Nitroglycerin	CC, IntC			
Nitroprusside	CC			
Norepinephrine***	CC			Infusions require central venous access
Opiates	CC, IntC, MS	See P&P Sedation/Analgesia #8711.601 • Use dose fractionation when appropriate.		Narcotic fractionation- administering less than the dose ordered by the physician at a given time. Dose may be repeated within the ordered time frame as long as the cumulative doses do not exceed the initial dose.
Phenylephrine***	CC			Infusions >100 mcg/minute require central venous access
Phenytoin	CC, IntC, MS	Phenytoin and fosphenytoin have particularly narrow therapeutic margins, which may put patients at risk for toxicity. The diluent in phenytoin may also cause toxic side effects therefore, this product is non-formulary.	<ul style="list-style-type: none"> By using phenytoin sodium milligram equivalents (mg PE), physicians will not have to make dosing adjustments when converting from phenytoin sodium to fosphenytoin or vice versa. Fosphenytoin should always be prescribed and dispensed in phenytoin sodium milligram equivalents (mg PE). Monitor for neurotoxicity (nystagmus, diplopia) and cardiovascular effects (hypotension and dysrhythmia) during and immediately following IV fosphenytoin administration. Patients with history of cardiac disease, and patients with an arrhythmia should have continuous EKG monitoring while receiving doses of fosphenytoin. 	<ul style="list-style-type: none"> The maximum rate of administration for fosphenytoin is 100 mg PE/min. Patients in Critical Care monitoring areas may receive fosphenytoin at 150 mg PE/min for management of status epilepticus Fosphenytoin is not a vesicant and may be given IM.
Phytonadione	CC, IntC, MS	Intramuscular and subcutaneous routes of administration for phytonadione doses should not be routinely used.	Phytonadione for intravenous use must be diluted in a 50 mL IV piggyback and administered over 30-60 minutes (maximum 1mg per minute).	Monitor blood pressure, heart rate, and respirations every 5 minutes x 3 then every 15 minutes x 3 for symptoms of anaphylaxis or shock following IV administration of phytonadione.
Procainamide	CC, IntC			

Medication	Areas Allowed	Comments, Storage	Pharmacy Notes	Nursing Notes
Promethazine	CC, IntC, MS	Promethazine has been identified as a vesicant which means it has the potential to cause tissue irritation and, in some cases, necrosis.	Initial doses of promethazine should be in the 6.25 – 12.5 mg range and it is recommended that doses be fractionated in 6.25 mg increments.	<ul style="list-style-type: none"> Promethazine should be given into a running IV line at the port furthest from the patient's vein. If necessary to administer promethazine by IV push dilute promethazine in 10-20 mls of fluid and give by secondary infusion over 10-15 minutes. Monitor patient for adverse reactions and educate patient to report any problems with promethazine
Propofol	CC			
Propranolol	CC, IntC, MS**	See above, limits on use outside CC, IntC		
Quinidine	CC			
Rocuronium	CC			
Sterile Water		Hypotonic solutions such as sterile water for injection should not be used for direct IV administration due to risk of red blood cell hemolysis.	Pharmacy may not dispense hypotonic solutions for IV infusion such as 0.225 NaCl (quarter-normal saline, 1/4 normal saline). For patient conditions where a hypotonic or low sodium solutions are required (such as hyponatremia), the Institute for Safe Medication Practices (ISMP) and the Pharmacy Department both recommend using 0.45% NaCl (half normal saline, 1/2 normal saline) which is considered a hypotonic solution or D5W or D51/4NS which both contain little or no sodium.	
Tenecteplase	CC			
Urokinase	CC			
Vasopressin	CC			
Verapamil	CC, IntC, MS**	See above, limits on use outside CC, IntC		

TITLE: Procedural Sedation**CATEGORY: Patient Care**

Check one:

☒ HOSPITAL-WIDE☐ DEPARTMENT-SPECIFIC FOR →

List department if department specific:

POLICY NUMBER:

RESOURCE PERSON:

Policy:

A. The purpose of this policy is to provide guidelines for the care of patients receiving **sedation/analgesia** while undergoing invasive, manipulative, interventional or diagnostic procedures. **Sedation/analgesia** administration is directed by the Anesthesia Section, which establishes guidelines and makes recommendations to assure that **sedation/analgesia** is administered in a safe and appropriate manner. This will be achieved through continuous quality monitoring of **sedation/analgesia** administration by the involved department. Note: This policy is not meant to address pain management; sedation of patients on ventilators; or similar situations in which medications are administered for reasons other than to provide **sedation/analgesia** (i.e., routine preoperative PO/IM medications). Pediatric patients less than 12 years of age, refer to Rocky Mountain Hospital for Pediatric Procedure/Analgesia Policy.

Definitions of Sedation:**A. MINIMAL SEDATION (anxiolysis)**

A drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected.

B. MODERATE SEDATION/ANALGESIA ("conscious sedation")

A drug-induced depression of consciousness during which patients respond purposefully* to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.

C. DEEP SEDATION/ANALGESIA

A drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully* following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

In those cases in which there is an intention for deep sedation using Etomidate or Propofol,

1. Adverse trends will be monitored in the Patient Safety Committee and in Peer Review.
2. CO2 monitoring will be used for patient monitoring.

D. GENERAL ANESTHESIA

Consists of general anesthesia and spinal or major regional anesthesia. It does not include local anesthesia. General anesthesia is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired.

Because sedation is a continuum, it is not always possible to predict how an individual patient will respond. Hence, practitioners intending to produce a given level of sedation should be able to rescue patients whose level of sedation becomes deeper than initially intended.

*Reflex withdrawal from a painful stimulus is NOT considered a purposeful response.

Qualifications/Training for Administering and Monitoring of Sedation/Analgesia:**A. CREDENTIALING**

Practitioners prescribing/administering **sedation/analgesia** must satisfy the credentialing requirements as stated by the Credentialing Committee. Personnel administering, and monitoring **sedation/analgesia** must have demonstrated competency in **sedation/analgesia**.

Competence includes, but is not limited to knowledge of pulse oximetry; medication selection, usage and complications; airway management skills; and cardiac dysrhythmias.

B. QUALIFICATIONS FOR DEEP SEDATION

The patient receiving deep **sedation/analgesia** may descend into anesthesia and require rescue breathing and airway management. Deep sedation privileges are intended to be restricted to physicians who are trained and experienced in airway management and the rescue of patients from respiratory and cardiovascular events. The privilege for deep sedation, therefore, is limited. It is intended to be granted to only three categories of physicians in addition to anesthesiologists.

1. Physicians who are board certified in emergency medicine to facilitate the care of adult patients in need of emergent care in which more than moderate sedation is necessary for a **very brief** period of time, and without which deep sedation, the patient's care could not be safely or effectively rendered.
2. Physicians who are board certified in critical care medicine for emergency airway management. These physicians may also administer propofol infusions for the sedation of patients who are mechanically ventilated; however, these guidelines do not apply to that situation.
3. Physicians who are board certified in pulmonology for the purpose of emergency airway management. These physicians may also administer propofol infusions for the sedation of patients who are mechanically ventilated; however, these guidelines do not apply to that situation.

Please note: Pediatricians credentialed through and practicing in the Emergency Department may qualify for the administration of ketamine under these guidelines in addition to their moderate sedation privileges, but are NOT credentialed for the use of etomidate, methohexital, or propofol.

C. PHYSICIAN RESPONSIBILITIES

1. The physician with deep sedation privileges is responsible for rescue and although he may be assisted by others, should not delegate this responsibility to anyone other than another physician with deep sedation privileges, an anesthesiologist or a certified registered nurse anesthetist.
2. The physician with deep sedation privileges is responsible for attention to monitoring the patient's cardiac and respiratory status and level of consciousness throughout the deep sedation.
3. The physician with deep sedation privileges is responsible for assuring that the patient is recovered from the deep sedation and that the patient meets the criteria to be discharged from that recovery.

4. The standards of care and record keeping responsibilities for the non-anesthesiologist administering deep sedation are the same as those for an anesthesiologist or CRNA.

Procedure:

A. PROCEDURE TYPES

1. Deep sedation is intended only for those very brief emergent procedures in which the physician's attention is not diverted from monitoring the patient's physiological status and attending to rescue. These would include brief orthopedic procedures such as reduction of shoulder or hip dislocations as well as emergency airway management procedures.
2. Procedures performed under deep sedation in which the physician's attention is diverted from continuous monitoring and rescue should generally involve the Anesthesia department and require the presence of an anesthesiologist or CRNA, or if unavailable, require the presence of another physician credentialed in deep sedation to attend to continuous monitoring and rescue of the patient.
3. Non-emergent procedures and procedures which are not anticipated to be brief, as well as procedures in which the physician's attention is anticipated to be diverted from monitoring and the ability to immediately attend to rescue, should be scheduled with the Anesthesia department.

B. The following protocol has been established in all areas in which sedation/analgesia is administered at the moderate or deep level. Because sedation is a continuum, a patient intended to receive minimal sedation may be induced at a deeper level. Because of this, all the requirements and or equipment will need to be readily available.

1. Patient Selection is the responsibility of the physician prescribing sedation/analgesia.
2. Informed consent is required for the procedure and the administration of sedation/analgesia. This is a responsibility of the physician. Please see "informed consent for surgical-medical invasive procedures" policy for further details.
3. Hospital Locations/Departments:
Deep sedation by non-anesthesia providers may be administered to emergent patients in the Critical Care Unit or Emergency Department and extended to limited areas such as the Medical Imaging Department where the emergent patient is under the immediate care of the emergency physician.

Other areas where **sedation/analgesia** is administered including but not limited to the following:

- a. Endoscopy Dept.
 - b. Critical Care
 - c. Emergency Dept.
 - d. Minor Procedure
 - e. Cardiac Cath Lab
 - f. PACU
 - g. Operating Room
 - h. Labor & Delivery
 - i. Radiology
 - j. Cardiovascular Testing
4. Only a physician is qualified to order and/or select the medication(s) to achieve **sedation/analgesia**.
 5. Drug Administration:
 - a. The prescribing physician will order the medication used to achieve **sedation/analgesia**.
 - b. Personnel administering drugs to achieve **sedation/analgesia** will do so under the direct supervision of a physician who orders the drug, dose and route of administration. Physicians may also administer the medications.
 - c. Personnel must wait the onset interval before re-administration.
 - d. Documentation of drug, dose, route and time of administration will be recorded in the medical record.
 6. Management and Monitoring Requirements:
 - a. Intravenous access must be continuously maintained during the procedure and recovery phase for IV sedation/analgesia. For other forms of **sedation/analgesia** intravenous access is left up to the discretion of the physician prescribing.
 - b. Monitoring the patient's physiological parameters involves continuous visual observation by personnel who have demonstrated competence in sedation/analgesia and assessment for behavioral and physiological changes. This includes monitoring for hypersensitivity reactions, cardiovascular depression, respiratory depression, central nervous system depression and toxicity.
 - c. A designated individual, other than the practitioner performing the procedure, should be present to monitor the patient throughout procedures performed with sedation/analgesia. This individual may assist with minor, interruptible tasks.
 - d. The following minimal monitoring parameters are as follows:
 - i. Monitor the blood pressure, level of consciousness, heart rate and respiratory rate.
 - ii. Monitor continuous O2 saturation.
 - iii. EKG monitoring should be readily available and is performed if clinically indicated.
 - e. The following vital signs must be immediately reported to the directing/ordering physician:
 - i. Respiratory rate less than 10/minute or greater than 20/minute.
 - ii. Blood pressure variant of 30% of baseline.
 - iii. Heart rate variant of 25% of baseline.
 - iv. Oxygen saturation lower than 90%. (or per physician direction relative to patient baseline)
 - v. Level of consciousness in which the patient cannot communicate verbally or follow verbal commands.
 - f. The following emergency equipment will be immediately accessible to every location where **sedation/analgesia** is administered and includes at least the following:
 - i. Defibrillator
 - ii. Suction device
 - iii. Oxygen
 - iv. Airways
 - v. Emergency drugs, i.e., Narcan and Romazicon
 - vi. Ambu bag
 - vii. Intubation equipment
 - viii. EKG monitor
 7. Documentation Requirements:

Documentation during **sedation/analgesia** reflects continued assessment, planning, implementation and evaluation of the patient.
 8. Pre-Procedure:
 - a. A valid History & Physical will be on the chart.
 - b. A physician shall perform a pertinent pre-procedural assessment immediately prior to the procedure to include:
 - i. Abnormalities of the major organ systems
 - ii. American Society of Anesthesia (ASA)/Anesthesia **sedation/analgesia** classification
 - iii. Verification of past and present medical and drug history, previous anesthesia experience(s)
 - iv. Focused physical examination including auscultation of the heart and lungs and evaluation of the airway/neck
 - v. Assessment of pain status
 - vi. A note indicating that the patient is an appropriate candidate for **sedation/analgesia**, including high-risk patients for **sedation/analgesia**.

High-risk patients are defined as those with:

- A history of sleep apnea, airway trauma, or prior difficult intubation.
 - Morbid obesity.
 - Known abnormal airway.
- c. If there is not a valid H&P, the pre-sedation MD assessment will be completed, including the following:
- i. Abnormalities of the major organ systems
 - ii. ASA/Anesthesia **sedation/analgesia** classification
 - iii. Verification of past and present medical and drug history, previous anesthesia experience(s)
 - iv. Focused physical examination including auscultation of the heart and lungs and evaluation of the airway
 - v. Assessment of pain status
 - vi. A note indicating that the patient is an appropriate candidate for **sedation/analgesia**, including high-risk patients for **sedation/analgesia**.

High risk patients are defined as those with:

- A history of sleep apnea, airway trauma, or prior difficult intubation.
 - Morbid obesity.
 - Known abnormal airway.
- d. The physician shall also obtain consent for **sedation/analgesia** and the procedure to be performed.
- e. A clinician will collect the following data and document appropriately:
- i. Current medications and drug allergies
 - ii. Time and nature of last oral intake/NPO (nothing by mouth) status, including guidelines
 - iii. History of tobacco, alcohol or substance abuse
 - iv. Blood pressure, pulse, and respirations
 - v. Level of consciousness and response
 - vi. Pulse oximetry reading (room air oximetry should be greater than or equal to 90% saturation)
 - vii. Any age specific education provided for the specific procedure and other relevant health care needs.
- f. Document assessment of NPO status:
NPO STATUS GUIDELINES:
ADULT: NPO status - 2 hours clear liquids - 8 hours all other intake
EXCEPTION: Emergency situations
- g. Document current weight in kilograms (pediatrics).

9. Intra-Procedure:

- a. The first evaluation of level of consciousness (LOC), blood pressure (B/P), pulse, respirations, CO², oximetry and pain scale must be prior to sedation and at a minimum of every five minutes.
- b. O² saturation is documented at a minimum of every five minutes. High-risk patients (see G.1.a) should have oxygen administered continually. If oxygen saturation cannot be maintained at or above 90% during the procedure, anesthesia consultation or assistance should be considered.
- c. Medications/fluids, including drug, dosage (bolus and maintenance), route, time(s) and person administering them are documented.
- d. Any unusual occurrences and their management (i.e. hypersensitivity) are documented.
- e. EKG monitoring.

10. Immediate Post-Procedure:

Document the following:

- a. Patient's tolerance to sedation and procedure, and physiologic and psychological status.
- b. Place location transferred to and name of person receiving the patient.
- c. B/P, pulse and respirations.
- d. Continuous pulse oximeter reading.
- e. Level of consciousness and response.
- f. Assessment and management of pain

11. Performance Improvement:

All use of reversal agents will be referred to pharmacy for internal review by a multidisciplinary committee that convenes quarterly. An occurrence report and reversal tool will be completed within 24 hours.

- a. Documentation review will be completed on a quarterly basis by the departments in which **sedation/analgesia** is administered. Action is required at the department level for significant deficiencies. Findings and action taken are sent to the Quality Management Department for compiling of statistics on a quarterly basis.

12. Post-Procedure:

- a. Post procedure monitoring should take place at least every fifteen minutes until stable. Vital signs should include but are not limited to LOC, B/P, pulse, respirations, assessment and management of pain, and pulse oximeter reading. Vital signs (VS) must be stable as compared to baseline readings taken pre-procedure (+ 30% of pre-procedure). Minimum recovery period is 30 minutes after time of last sedation given.

13. Discharge for Outpatients:

- a. Patients should meet the discharge criteria for the department to include but not limited to:
 - i. Patients should be alert and oriented; infants and patients whose mental status was initially abnormal should have returned to their baseline. Practitioners must be aware that pediatric patients are at risk for airway obstruction should the head fall forward while the child is secured in a car seat.
 - ii. Vital signs should be stable and within 30% of pre-procedure.
 - iii. If reversal agents are given, sufficient time (2 hr) should have elapsed after the last administration to ensure that patients do not become resedated after reversal effects have abated. Monitoring will continue during this time.
 - iv. Patient and/or responsible adult have received verbal and written instructions relative to the post-procedure, medications, activities, signs and symptoms of complications with course of action to take if complications develop.
- b. Outpatients who receive sedation or narcotic analgesia shall not be allowed to drive themselves home.
- c. Outpatients who are not accompanied by an adult and do not meet discharge criteria shall be admitted for extended recovery per order of the attending physician.
- d. Any exception to the above shall require discharge confirmation from the physician.

14. Evaluation of Program:

The Anesthesia Department, in collaboration with the Pharmacy and Therapeutics' Committee monitors, evaluates and reviews the program and quality improvement on a yearly basis.

Medications Used for Sedation/Analgesia

Maximum dosages are not specified because **sedation/analgesia** is a continuum and an individual patient response is not always predictable. See table to follow.

Only a physician who is credentialed for deep sedation is qualified to order and/or select the medication(s) to achieve deep sedation. Medications that are categorized as deep sedation agents include propofol (Deprival) and etomidate (Amidate). Whenever these agents are used (except for sedation of mechanically ventilated patients) these deep sedation guidelines will apply. Etomidate (Amidate) is not recommended for deep sedation for children under ten years of age by non-anesthesiologists. Propofol (Deprival) is safe in children at least 3 years of age.

Ketamine (Ketalar)

Ketamine is recognized as a unique dissociative agent and its use is restricted to physicians granted privileges for deep sedation administration as well as emergency room pediatricians covered under these guidelines. Specific monitoring requirements will be based on dosages administered. The guidelines for drug dosages can be found on Attachment A. It should be emphasized that the effects of ketamine are potentiated by all sedatives (i.e. midazolam and chloral hydrate) and all narcotics (i.e. fentanyl and morphine). Therefore ketamine dosages should be adjusted accordingly and titrated to effect.

1. Doses up to 5mg/kg IM or PO, 2mg/kg IV require continuous visual observation by a RN competent in sedation/analgesia administration and assessment for behavioral and physiologic changes. Additionally the presence of an appropriately privileged physician is required.
 - a. Doses less than or equal to 1mg/kg IM or PO, 0.25mg/kg IV do not typically cause dissociative effects and therefore do not fall under the Procedural Sedation policy.
2. Doses over 5mg/kg IM or PO, 2mg/kg IV require an additional physician credentialed in deep **sedation/analgesia** or an anesthesiologist or CRNA to continuously monitor and provide cardiac and respiratory support as needed.

Guidelines for Medications Used in Sedation/Analgesia

Drug	Dosing Recommendations	Onset	Duration	Complications	Considerations
OPIOID ANALGESICS – do not give if respirations are less than 12 per minute. Use cautiously in patients with head injury, increased ICP, seizures, asthma, COPD, hepatic or renal disease.					
Morphine	2-10 mg IV (approx 0.1 mg/kg). Titrate to effect with 1-2 mg increments.	5 min	4-5 hrs	Hypotension, bradycardia, respiratory depression, N/V	
Meperidine	25-100 mg (approx. 0.5-1 mg/kg) IV or IM. Titrate to effect with 12.5-25 mg increments.	5 min	1-3 hrs	Hypotension, bradycardia, respiratory depression, N/V	Administer IV very slowly, preferable as a diluted solution. Contraindicated if patient has MAO inhibitors in last 2 days.
Fentanyl	25-100 mcg (approx. 0.5-1 mcg/kg/dose) IV. Titrate to effect.	3 min	60 min	Hypotension, bradycardia, respiratory depression, N/V	
Hydromorphone	0.5-2 mg IV or 0.01 mg/kg not to exceed 4 mg	15 min	2-3 hrs	Hypotension, bradycardia, respiratory depression, N/V	
BENZODIAZEPINES – potentiates the effects of narcotics and other sedatives. Decrease dose by 25% in elderly, debilitated, or chronically ill patient. If use with opiate, decrease dose by 30% in younger patients and 50% in elderly.					
Diazepam	2.5-10 mg IV, may titrate up to 20 mg total or approx. 0.1 mg/kg	5 min	2-4 hrs	Hypotension, bradycardia, respiratory depression	Do not mix with any other drug. Give in large vein.
Midazolam	0.5-2.5 mg IV, may titrate up to 20 mg total or approx. 0.1 mg/kg	2 min	1-2 hrs	Hypotension, bradycardia, respiratory depression, apnea	Has beneficial amnestic effect which can diminish patient recall of events during the procedure.
Lorazepam	0.5-4 mg IV or 0.05 mg/kg	5 min	6-8 hrs	Hypotension, bradycardia, respiratory depression	Infuse IV over 2-3 min not to exceed 2 mg/min.

Drug	Dosing Recommendations	Onset	Duration	Complications	Considerations
OTHER AGENTS					
Propofol	1-2 mg/kg, may repeat dose at 0.5-1 mg/kg/min	10-30 sec	5-10 min	Hypotension, bradycardia, pain on injection, respiratory depression, apnea	Use with patients with a history of severe cardiac or respiratory disease, seizures, increased ICP. Use lower doses in elderly, debilitated, or hypovolemic patients and ASA III or IV.
Etomidate	0.2-0.6 mg/kg IV over 30-60 sec. Repeat with small increments.	1-2 min	4-10 min	Involuntary muscle movements, hypertension, hypotension, hyperventilation, hypoventilation, apnea, laryngospasm, N/V	Use with caution in patients with marked hypotension, severe asthma, or severe cardiovascular disease. Relatively minimal effects on cardiovascular and respiratory systems.
Ketamine	1-3 mg/kg IV, 3-5 mg/kg IM. Repeat increments of half initial dose.	30 sec	5-10 min	Hypertension and tachycardia, psychological disturbances, enhanced skeletal muscle tone.	Give over at least 60 sec (faster may cause respiratory depression). Dilute with NS, D5W or SW to 50 mg/mL. Physiologic disturbance upon emergence less common in patients < 15 or > 65 years old. Contraindicated in head trauma and intracranial bleed or mass.
REVERSAL AGENTS					
Flumazenil	0.2 mg IV over 15 sec. May repeat at 60 sec intervals up to 1 mg.	1-2 min	30 min	Dizziness, N/V, seizures.	Administer as a series of small injections and not as a single bolus dose so that reversal can be controlled. Not for patients with coma of unknown origin, unknown or suspected mixed drug overdose, or history of seizure disorders. Patients who consume alcohol regularly or have received benzos for long-term therapy are especially at risk for seizure. Duration of benzo may be greater than that of flumazenil so repeated dose may be necessary.
Naloxone	0.1-2 mg IV, IM, or SC up to a total of 10 mg. Repeat doses at 2-3 min intervals. Titrate to effect.	2-3 min	30-90 min	May cause hypertension, arrhythmias, pulmonary edema, ventricular fibrillation.	Duration of opioids may exceed that of naloxone so repeated doses may be necessary.

7335 East Orchard Road
Greenwood Village, Colorado 80111-2512
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