ANALGESIC MEDICATIONS

This TCCC pharmacology reference provides drug administration information based solely on TCCC Guidelines. This reference should not be used for the administration of these medications for any environment outside of tactical combat casualty care on the battlefield or in the combat/tactical setting.

ACETAMINOPHEN

Non-narcotic analgesic and antipyretic

Used by **All Service Members (ASM)**, **Combat Lifesavers (CLS)** and **Combat Medics (CM)**

For **mild to moderate** pain management with a casualty that is still able to fight.

DOSAGE(S):	**500 mg,** 2 PO every 8 hours
ROUTE(S):	PO
CONTRA-INDICATIONS:	Acetaminophen hypersensitivity, use with alcohol, considered relatively safe in pregnancy, if clinically indicated
POTENTIAL SIDE EFFECTS:	Rash, nausea, vomiting, dizziness, lethargy, diaphoresis, chills or abdominal pain with acute poisoning, elevated LFTs, hypoglycemia and hepatorenal failure with hepatic toxicity
DRUG INTERACTIONS:	Cholestyramine may decrease absorption, barbiturates, carbamazepine, phenytoin, rifampin, and excessive alcohol use may increase potential for hepatotoxicity

ONSET / PEAK / DURATION: 20-45 min/1-2 hr/3-4 hr

TACTICAL CONSIDERATIONS: Minimal to no mission impact; **DO NOT** give to K-9 casualties.

MELOXICAM

COX-2 inhibitor non-steroidal anti-inflammatory agent (NSAIA) for analgesia and fever reduction

Used by **All Service Members (ASM)**, **Combat Lifesavers (CLS)** and **Combat Medics (CM)**

For **mild to moderate** pain management in a casualty that is still able to fight.

DOSAGE(S):	**15 mg** po daily
ROUTE(S):	PO
CONTRA-INDICATIONS:	NSAIA or salicylate hypersensitivity, asthma, severe renal or hepatic disease, potential benefits may warrant use of the drug in pregnant women despite potential risks if the alternative is worse
POTENTIAL SIDE EFFECTS:	Edema, flu-like syndrome, abdominal pain, diarrhea, dyspepsia, nausea, ulceration, GI bleed, anemia, headache or insomnia
DRUG INTERACTIONS:	Decreased effect of ACE inhibitors and diuretics, increased lithium levels and toxicity, increased GI bleed risk with aspirin and warfarin

ONSET / PEAK / DURATION: 30-60 min/5-6 hr/20-24 hr

TACTICAL CONSIDERATIONS: Minimal to no mission impact; **DO NOT** give to K-9 casualties.

FENTANYL

Potent narcotic (opiate) agonist

Used by **Combat Medics (CM)**

For **mild to moderate** pain management in a casualty that **IS NOT** in shock or in respiratory distress and **IS NOT** at significant risk of developing either condition.

DOSAGE(S):	**800 mcg** transmucosal, may repeat after 15 min;
ROUTE(S):	Transmucosal – between the cheek and gum **(CM)**
CONTRA-INDICATIONS:	Fentanyl allergy, significant hypotension, MAO inhibitors, myasthenia gravis, potential benefits may warrant use in pregnant women despite potential risks if the alternative is worse
POTENTIAL SIDE EFFECTS:	Sedation, euphoria, bradycardia, hypotension, circulatory depression, miosis, blurred vision, nausea, vomiting, laryngospasm, bronchoconstriction or respiratory depression
DRUG INTERACTIONS:	Alcohol and other CNS depressants potentiate effects, MAOIs may precipitate hypertensive crisis

ONSET / PEAK / DURATION: 15-60 sec (<transmucosal)/20 sec to 4 min/1-2 hr

TACTICAL CONSIDERATIONS: Casualty weapons, communications and sensitive equipment should be secured; alterations in mental status can adversely affect assessment for shock and/or traumatic brain injury – use AVPU method to establish baseline prior to medication administration; monitor airway, breathing, and circulation closely – be prepared to administer naloxone, if indicated.

KETAMINE

Nonbarbiturate anesthetic

Used by **Combat Medics (CM)**

For **moderate to severe** pain management in a casualty that **IS** in hemorrhagic shock or in respiratory distress or **IS** at significant risk of developing either condition.

PAIN MANAGEMENT DOSAGE(S):	**50-100 mg (0.5-1 mg/kg)** IN, repeat q 20-30 min prn; **50-100 mg (0.5-1 mg/kg)** IM, repeat q 20-30 min prn; 20-**30 mg (or 0.3-0.3 mg/kg)** slow IV or IO push, repeat q 20 min prn
ROUTE(S):	IN, IM, IO & IV
CONTRA-INDICATIONS:	Head injury (may worsen severe TBI), hypersensitivity to ketamine, considered relatively safe in pregnancy, if clinically indicated
POTENTIAL SIDE EFFECTS:	Edema, flu-like syndrome, abdominal pain, diarrhea, dyspepsia, nausea, ulceration, GI bleed, anemia, headache or insomnia
DRUG INTERACTIONS:	Effects of ketamine are increased when combined with other analgesics or muscle relaxants

ONSET / PEAK / DURATION: 30 sec-4 min (IV<IO<IN<IM)/1-10 min/5-25 min

TACTICAL CONSIDERATIONS: Casualty weapons, communications and sensitive equipment should be secured; IV ketamine should be administered slowly over 1 minute; alterations in mental status can adversely affect assessment for shock and/or traumatic brain injury – use AVPU method to establish baseline prior to medication administration; eye injury does not preclude the use of ketamine; medication end points include control of pain or development of nystagmus; increased secretions (be prepared to suction) monitor airway, breathing, and circulation closely – be prepared to support respirations, if indicated.

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ANALGESIC MEDICATIONS

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NALOXONE

Narcotic (opiate) antagonist

Used by **Combat Medics (CM)**

For narcotic opiate overdose and reversal of effects, including respiratory depression, sedation, and hypotension.

DOSAGE(S):	**0.4-2 mg** IV, IN or IM; repeat every 2-3 min to a max dose of 10 mg, as indicated
ROUTE(S):	IV, IN, IM
CONTRA-INDICATIONS:	Hypersensitivity to naloxone, use cautiously in patients with cardiac irritability, considered relatively safe in pregnancy, if clinically indicated
POTENTIAL SIDE EFFECTS:	Analgesia reversal, tremors, hyperventilation, drowsiness, sweating, increased BP, tachycardia, nausea, vomiting
DRUG INTERACTIONS:	Cardiotoxic drugs (may cause serious CV effects) – use together cautiously, reverses analgesic effects of narcotic (opiate) agonists

ONSET / PEAK / DURATION: 1-2 min/5-15 min/variable

TACTICAL CONSIDERATIONS: An overdose of naloxone is unlikely if used as indicated; naloxone should be readily available anytime narcotics are being administered; titrate to effect (resolving narcotic overdose signs and symptoms) but continue to manage casualty's pain; naloxone may wear off prior to opiate – observe closely for signs of recurrent opiate overdose.

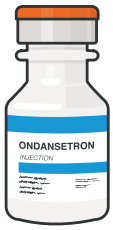
ONDANSETRON

Antiemetic (5-HT3 antagonist)

Used by **Combat Medics (CM)**

Prevention and management of nausea and vomiting associated with pain management medications.

DOSAGE(S):	**4 mg** q 8 hrs, repeat after 15 min for persistent symptoms, no more than 8 mg/8 hr time block
ROUTE(S):	IV, IO, Translingual, IM
CONTRA-INDICATIONS:	Hypersensitivity to ondansetron, use cautiously in patients with hepatic failure, considered relatively safe in pregnancy, if clinically indicated
POTENTIAL SIDE EFFECTS:	Dizziness, lightheadedness, headache, sedation, diarrhea, constipation, dry mouth
DRUG INTERACTIONS:	Rifampin may decrease ondansetron levels



ONSET / PEAK / DURATION: 20 sec-4 min (IV<IO<translingual<IM)/10-40 min/4 hr

TACTICAL CONSIDERATIONS: Do not use PO (pill form) – use translingual with the oral dissolving tablet (oral ondansetron is **NOT** an acceptable alternative to the ODT formulation); do not handle ODT preparation with wet hands; IV and IO should be given by slow push.