

TABLE 1 Medications Recommended in the TCCC Pain and Analgesia Guidelines

Medication	Dose(s)	Action(s)	Contraindications	Side Effects
Acetaminophen (Paracetamol, Tylenol)	Two 500mg tablets (1000mg total) by mouth every 8 h	Antipyretic, analgesic via unknown mechanism	Liver failure patients, unable to tolerate PO medication, known allergy	No major side effects
Meloxicam (Mobic)	15mg tablet by mouth 24 h	NSAID	Renal injury/failure, severe life-threatening bleeding, unable to tolerate PO, known allergy	Increased bleeding
Fentanyl OTFC*	800 μ g transmucosal, repeat $\times 1$ in 15 min if pain is uncontrolled	Opiate mu-agonist, OTFC dose made to drop from casualty's mouth when altered	Significant facial wounds, hemodynamic instability, opioid allergy, significantly altered mental status	Increased altered mental status, respiratory depression, potential drop in hemodynamic status
Fentanyl*	50 μ g(0.5–1 μ g/kg) IV/IO or 100 μ gIN; repeat every 30 min as needed	Opiate mu-agonist, redistributes in adipose tissue and multiple doses can "stack" with increased effect/side effects	Hemodynamic instability, opioid allergy, significantly altered mental status	Increased altered mental status, respiratory depression, potential drop in hemodynamic status
Ketamine* (ANALGESIA)	20–30mg (0.2–0.3mg/kg) slow IV/IO, repeat every 20 min as needed or 50–100mg (0.5–1mg/kg) IM/IN, repeat every 20–30 min, as needed	NMDA and glutamate receptor antagonist, dissociative anesthetic, partial opiate mu agonist	History of laryngospasm, prior ketamine hypersensitivity or allergy, schizophrenia or active psychosis	Nausea, vomiting, diplopia, drowsiness, dysphoria, confusion, emergence reactions, increased secretions, laryngospasm, tachycardia, increased blood pressure, enhanced skeletal muscle tone
Ketamine Infusion* (SEDATION)	Initial dose: 1–2mg/kg slow IV/IO until dissociation <i>then</i> Maintenance: 0.3mg/kg in 100mL 0.9% NS over 5–15 min, repeat every 45 min as needed	Same as above	Same as above	Same as above, though slower RATE of administration has been shown to decrease many side effects

*Providers should have appropriate reversal agents (naloxone for all opioids) as well as all components of MSMAID to address any negative side effects of these medications.

IN = intransal; IO = intraosseous; IV = intravenous; MSMAID = monitor, suction, machine [ventilatory support], airway, IV/IO, drugs; NMDA = N-methyl-D-aspartate; NS = normal saline; NSAID = nonsteroidal anti-inflammatory drug; OTFC = oral transmucosal fentanyl citrate; PO = by mouth; TCCC = Tactical Combat Casualty Care.