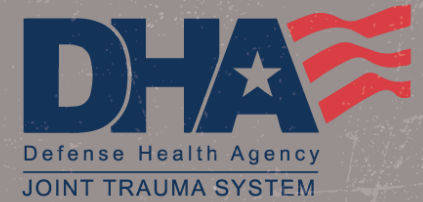




**COMBAT MEDIC/
CORPSMAN**



TACTICAL COMBAT CASUALTY CARE COURSE

MODULE 15: PAIN MEDICATIONS (ANALGESIA)



**Committee on
Tactical Combat
Casualty Care
(CoTCCC)**

TCCC TIER 1
All Service Members

TCCC TIER 2
Combat Lifesaver

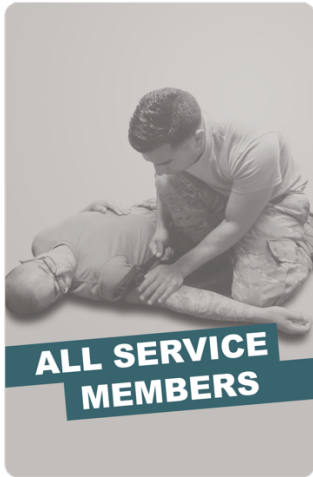
TCCC TIER 3
Combat Medic/Corpsman

TCCC TIER 4
Combat Paramedic/Provider

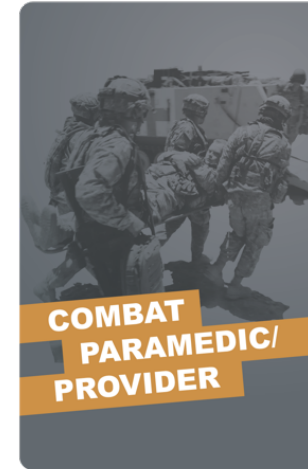
TACTICAL COMBAT CASUALTY CARE (TCCC) ROLE-BASED TRAINING SPECTRUM

ROLE 1 CARE

**NONMEDICAL
PERSONNEL**



**MEDICAL
PERSONNEL**



◀ **YOU ARE HERE**

STANDARDIZED JOINT CURRICULUM

1 x TERMINAL LEARNING OBJECTIVE

18 Given a combat or noncombat scenario, perform analgesia administration during Tactical Field Care in accordance with CoTCCC Guidelines.

- 18.1 Identify the indications and considerations of analgesia approaches in Tactical Field Care. (CLS T15:E73)
- 18.2 Identify the indications, contraindications, and administration methods of pain medications (analgesia) in Tactical Field Care. (CLS T15:E75)
- 18.3 Describe the indications, contraindications, dosage, route, and administration methods of oral acetaminophen in Tactical Field Care.
- 18.4 Describe the indications, contraindications, dosage, route, and administration methods of oral meloxicam in Tactical Field Care.
- 🌀 18.5 Demonstrate the administration of a combat wound medication pack in Tactical Field Care. (CLS T15:E76)
- 18.6 Describe the indications, contraindications, dosage, route, and administration methods of ondansetron in Tactical Field Care.
- 18.7 Describe the indications, contraindications, dosage, route, and administration methods of oral transmucosal fentanyl citrate lozenges in Tactical Field Care.
- 🌀 18.8 Demonstrate the preparation and administration of a transmucosal medication in Tactical Field Care.
- 18.9 Describe the indications, contraindications, dosage, route, and administration methods of ketamine in Tactical Field Care.
- 🌀 18.10 Demonstrate the preparation and administration of an intranasal medication in Tactical Field Care.
- 🌀 18.11 Demonstrate the preparation and administration of an intramuscular medication injection in Tactical Field Care.
- 🌀 18.12 Demonstrate the preparation and administration of an intravenous/intraosseous medication injection in Tactical Field Care.

12 x ENABLING LEARNING OBJECTIVES

= Terminal Learning Objectives ● = Cognitive ELOs 🌀 = Performance ELOs

MARCH PAWS

LIFE-THREATENING

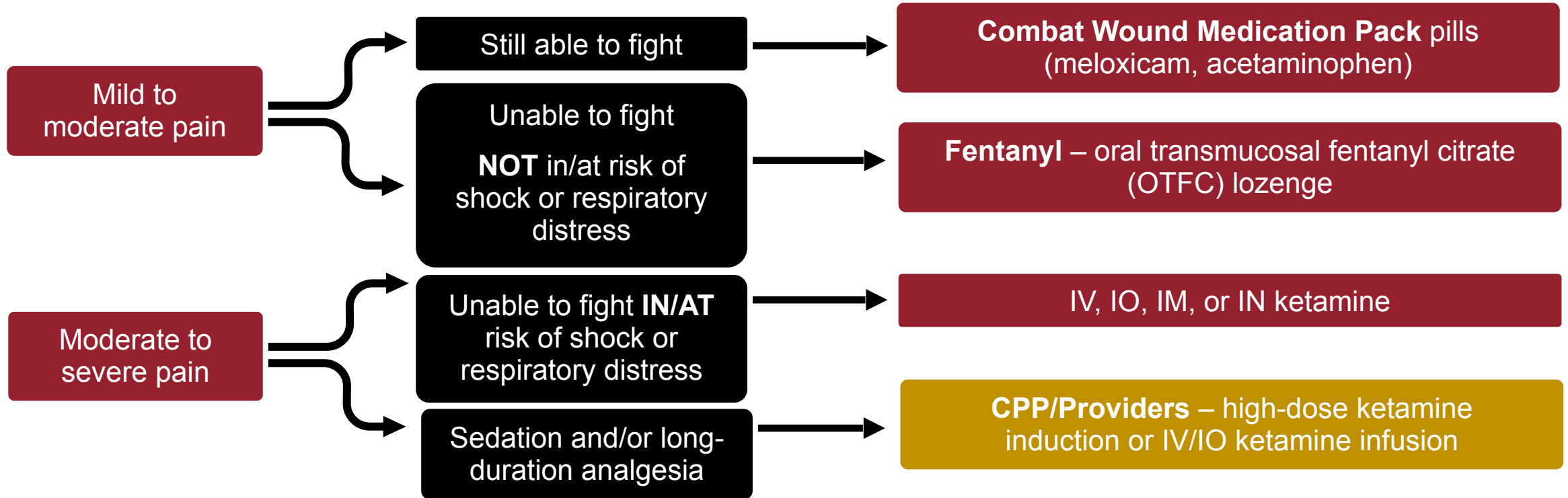
- M** MASSIVE BLEEDING
#1 Priority
- A** AIRWAY
- R** RESPIRATION (*Breathing*)
- C** CIRCULATION
- H** HYPOTHERMIA / HEAD INJURIES



AFTER LIFE-THREATENING

- P** PAIN
- A** ANTIBIOTICS
- W** WOUNDS
- S** SPLINTING

APPROACH TO ANALGESIA IN TACTICAL FIELD CARE



Note: Benzodiazepines should NOT be used in conjunction with opioid analgesia

P A W S

ADMINISTRATION METHODS FOR PAIN MEDICATIONS

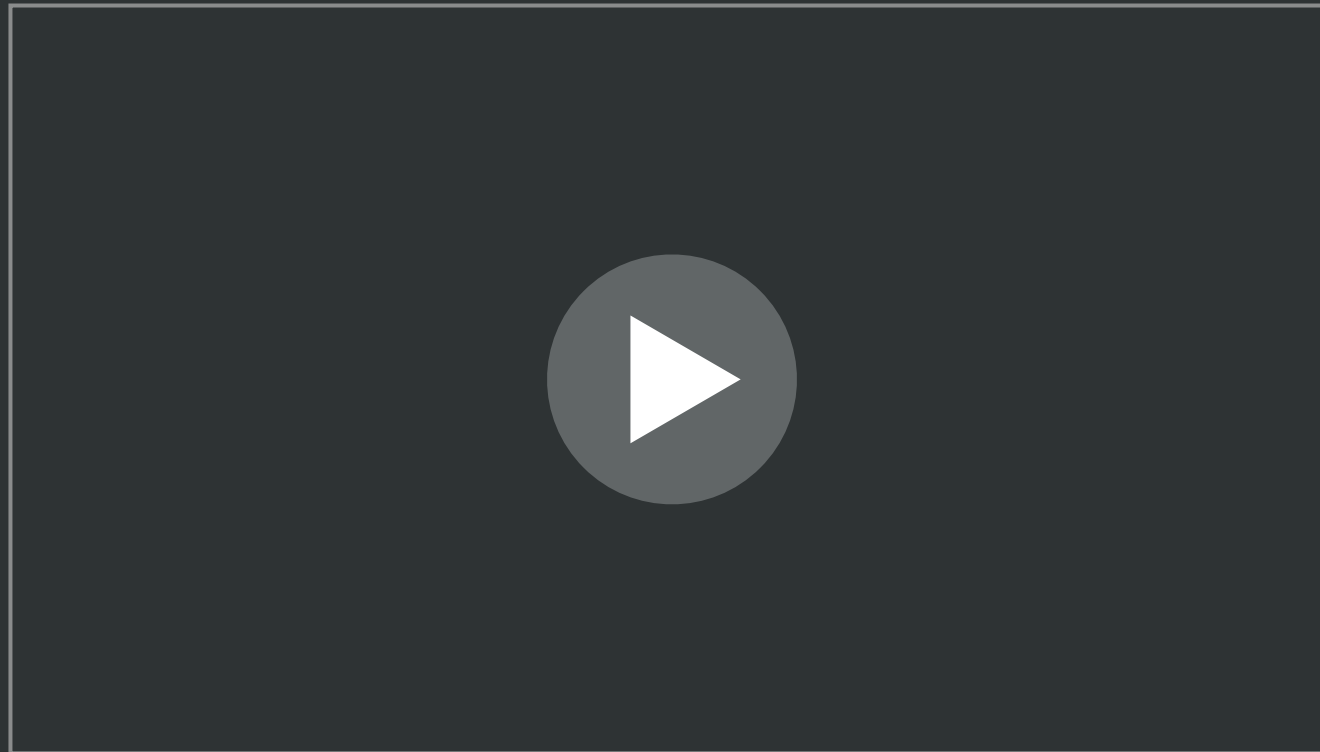
Route of Administration	Onset of Action	Advantages	Disadvantages
Oral	Variable/delayed	Self-administration; no IV/IO access needed	Delayed onset of actions
Transmucosal	Quick	No IV/IO access needed; rapid absorption	Requires casualty education on use; dose options may be limited
Intranasal (IN)	Quick	No IV/IO access needed; rapid absorption	Impractical with nasal/facial trauma
Intramuscular (IM)	Fast	No IV/IO access needed; may be absorbed slowly and have longer duration	Less predictable or incomplete dose delivery; delayed delivery with tissue perfusion compromise (shock)
Intravenous (IV)	Rapid	Rapid (direct) medication delivery	IV access takes time; risk of overmedication; IV complication risks
Intraosseous (IO)	Rapid	Rapid (direct) medication delivery	IO access takes time; risk of overmedication; IO complication risks

The **FIVE RIGHTS**:

- ✓ **RIGHT** patient
- ✓ **RIGHT** medication
- ✓ **RIGHT** dose and concentration
- ✓ **RIGHT** time
- ✓ **RIGHT** route of administration



PAIN MEDICATION OVERVIEW



Video can be found on deployedmedicine.com

COMBAT WOUND MEDICATION PACK (CWMP)

The **CWMP** should be used by **all Service members** who have mild to moderate pain and are still able to fight

CWMP should be self-administered, but might require prompt from **CLS** or **Combat Medic**

ADVANTAGES:

No sedation or altered consciousness - casualty can stay engaged in the mission



Note: Aspirin and other NSAIDs cause platelet dysfunction for up to several days – do NOT use before/while deployed



DOD Trauma Registry study

Only 84 of 11,665 casualties took CWMP (<1%)

Emphasize to your unit that CWMP helps maintain tactical superiority and accomplish mission

P A W S

MELOXICAM ADMINISTRATION

DOSAGE(S):

15 mg PO daily



ROUTE(S):

Meloxicam is available in PO form

INDICATIONS:

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

CONTRAINDICATIONS:

NSAIDS or salicylate hypersensitivity, asthma, severe renal or hepatic disease

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

P A W S

ACETAMINOPHEN ADMINISTRATION

DOSAGE(S):

- 500 mg, 2 PO every 8 hours

ROUTE(S):

- *Acetaminophen is available in PO form*

INDICATIONS:

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

CONTRAINDICATIONS:

- Hypersensitivity

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:

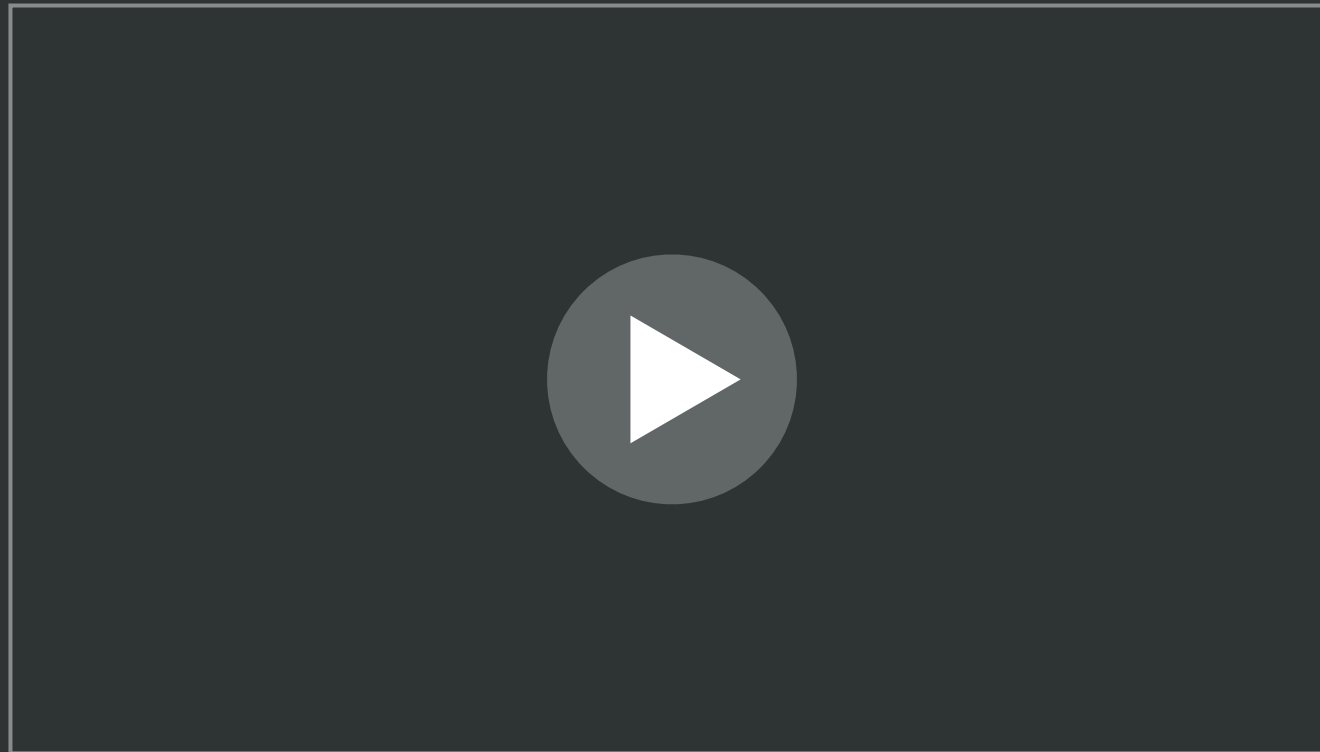
- 20-45 min/1-2 hr/3-4 hr

TACTICAL CONSIDERATIONS:

- Minimal to no mission impact;
DO NOT give to K-9 casualties



ORAL MEDICATION ADMINISTRATION



Video can be found on deployedmedicine.com

TRANSMUCOSAL MEDICATION ADMINISTRATION

ADVANTAGES

of transmucosal delivery:

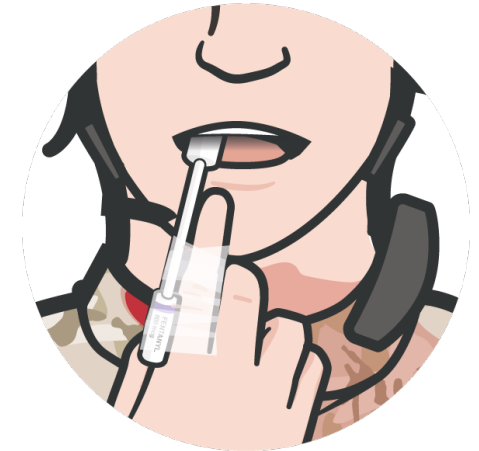
- Rapid absorption (highly vascular tissues that are very permeable)
- Can administer without IV or IO access or performing IM injection

Oral transmucosal **delivery options:**

Sublingual – medication placed under the tongue where it dissolves

Transbuccal – medication held between cheek and gums
Delivery enhanced by moving medication around or side-to-side

Translingual – medication applied or placed on the top of the tongue
Allow for dissolution and avoid swallowing until dissolved, as tolerated



Chewing and swallowing a transmucosal medication reduces its efficacy



Do **NOT** allow casualty to eat or drink during administration

P A W S

ORAL TRANSMUCOSAL FENTANYL CITRATE (OTFC) ADMINISTRATION

DOSAGE(S):

First Dose 800 mcg of FENTANYL OTFC

Second Dose may be repeated after **15 minutes** if pain uncontrolled by first

ROUTE(S):

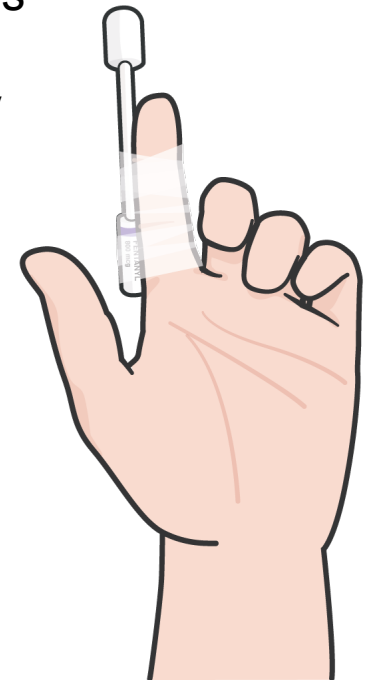
OTFC is administered transmucosally – place between the cheek and gum (Transbuccal)



Administering OTFC in a prehospital setting is an off-label use (not FDA approved), but consistent with expert panel recommendations

OTFC ADMINISTRATION:

- Place between cheek and gum
- DO NOT** chew or swallow
- Tape lozenge-on-a-stick to casualty's finger OR attach to the casualty's uniform or plate carrier with a safety pin and rubber band
- Reassess in 15 minutes
- Use second lozenge, in other cheek, as needed
- Monitor for respiratory depression



OTFC ADMINISTRATION cont.

INDICATIONS:

Fentanyl is the medication of choice for a casualty in mild to moderate pain who **IS NOT** in shock or respiratory distress or at significant risk of developing either condition



CONTRAINDICATIONS:

- Hypovolemic shock
- Respiratory distress



POTENTIAL SIDE EFFECTS:

- Sedation, euphoria, bradycardia, hypotension, circulatory depression, miosis, blurred vision, nausea, vomiting, laryngospasm, bronchoconstriction or respiratory depression

Ketamine should be used if one of these contraindications exist



OTFC ADMINISTRATION cont.

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



TREATMENT END POINTS:

- Pain reduction (to tolerable level)
- No respiratory compromise, signs of shock or altered mentation

ADVANTAGES:

- Rapid analgesia **without** an IV/IO
- Saves time
- Low-light IV/IO access difficult even with NVGs
- Safeguards resources for casualties who might need them

800 mcg of **FENTANYL** provided equivalent pain control to **10 mg** of **MORPHINE**



ONDANSETRON ADMINISTRATION

DOSAGE(S):

Ondansetron **4 mg** q 8 hrs, repeat after 15 min for persistent symptoms, no more than 8 mg/8 hr time block

ROUTE(S):

Ondansetron is available in IV, IO, IM, or Oral Dissolving Tablet (ODT) form

INDICATIONS:

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



CONTRAINDICATIONS:

Hypersensitivity

POTENTIAL SIDE EFFECTS:

Dizziness, lightheadedness, headache, sedation, diarrhea, constipation, dry mouth

In 2014 ondansetron replaced promethazine as the TCCC antiemetic of choice

ONDANSETRON ADMINISTRATION cont.

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:

- Applied translingually by placing pill on top of tongue
- Advise the casualty NOT to swallow (don't take orally)




ADVANTAGES:

- Lack of sedation or mental status alteration
- No respiratory depression
- No hypotension



SKILL STATION

CWMP and Transmucosal Medication Administration

-  Administration of Combat Wound Medication Pack (CWMP)
-  Transbuccal OTFC Lozenge Administration
-  Translingual Ondansetron Oral Disintegrating Tablet (ODT) Administration

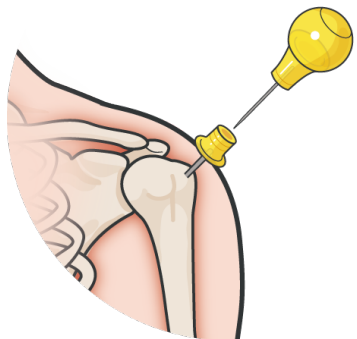
KETAMINE ADMINISTRATION



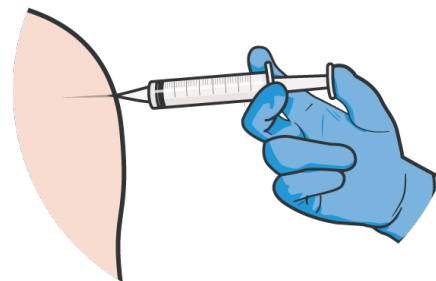
Intranasal
(IN)



Intravenous
(IV)



Intraosseous
(IO)



Intramuscular
(IM)

DOSAGE(S):

- 20-30 mg (or 0.2-0.3 mg/kg) slow IV or IO push (over one minute), then repeat q 20 min prn
- 50-100 mg IM or IN, repeat q 20-30 min prn

ROUTE(S):

- Ketamine is available in IN, IV, IO, or IM form*

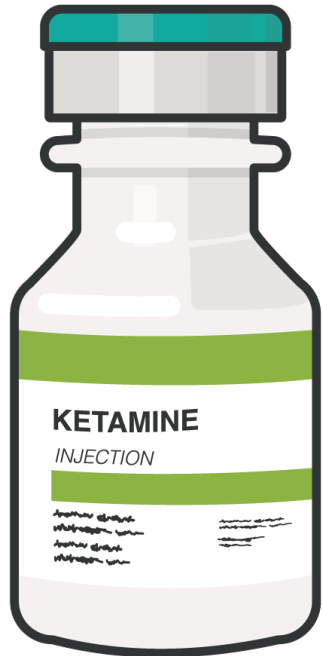
INDICATIONS:

- KETAMINE** is the medication of choice for a casualty in moderate to severe pain and/or who **IS** in shock or respiratory distress or **IS** at significant risk of developing either condition

CONTRAINDICATIONS:

- Prior known allergy

KETAMINE ADMINISTRATION cont.



POTENTIAL SIDE EFFECTS:

- Well tolerated at analgesia doses
- Sedation, dissociation, or emergence reactions at higher doses used in anesthesia

ADVERSE EFFECTS:

- Nausea
- Headache

DRUG INTERACTIONS:

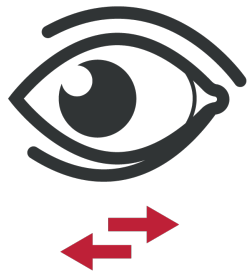
- Effects of ketamine are increased when combines with other analgesics or muscle relaxants

ONSET/PEAK/DURATION:

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

KETAMINE can be safely used in head and eye injuries despite prior concerns over a potential increase ocular/cerebral pressures

KETAMINE ADMINISTRATION cont.



TACTICAL CONSIDERATIONS:

- Disarm and remove comm equipment from casualties
- Assess and Document mental status prior to ketamine administration (AVPU)
- Monitor airway and breathing

TREATMENT END POINTS:

- Pain control
- Nystagmus
-

ADVANTAGES: (compared to opioids):

- Equivalent pain relief
- Doesn't contribute to hypotension
- No respiratory depression

NALOXONE ADMINISTRATION

DOSAGE(S):

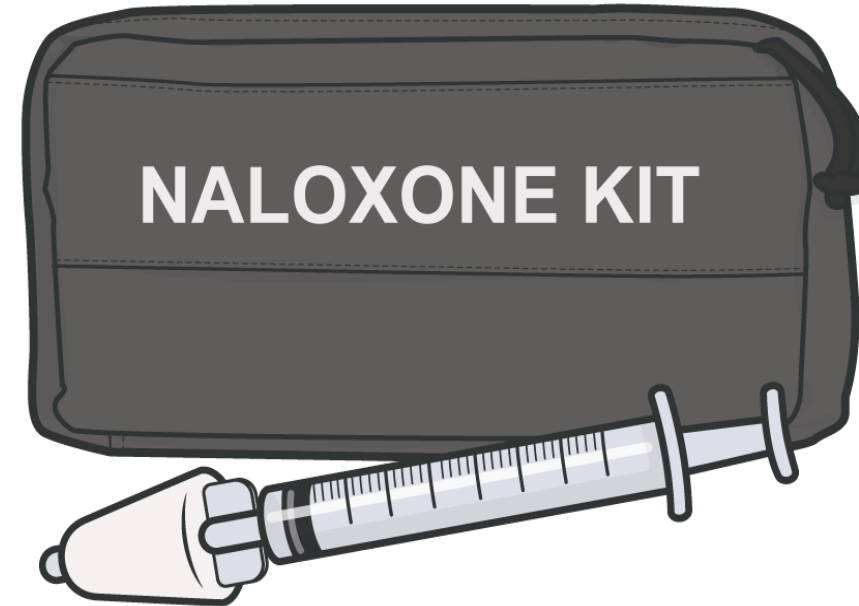
0.4-2 mg (IN, IM, or IV/IO)
Repeat q 2-3 min until symptoms
reverse or max dose of **10 mg**

ROUTE(S):

*Naloxone is available in IN, IM,
or IV/IO form*

INDICATIONS:

- Opioid overdoses
- Hypotension
- Respiratory depression or distress
- Excess alteration of mentation or unconsciousness



Titrate to effect (resolving narcotic overdose signs and symptoms) but continue to manage casualty's pain; naloxone may wear off prior to opiate

NALOXONE ADMINISTRATION cont.

CONTRAINDICATIONS:

- Hypersensitivity

POTENTIAL SIDE EFFECTS:

- Analgesia reversal, tremors, hyperventilation, drowsiness, sweating, increased BP, tachycardia, nausea, and vomiting

DRUG INTERACTIONS:

- Cardiotoxic drugs (may cause serious cardiovascular effects)

ONSET/PEAK/DURATION:

- 1-2 min/5-15 min/variable

TACTICAL CONSIDERATIONS:

- Have naloxone on hand whenever administering opioid analgesics
- Administer as quickly as possible (don't delay for IV access to be established use IN or IM preparations)

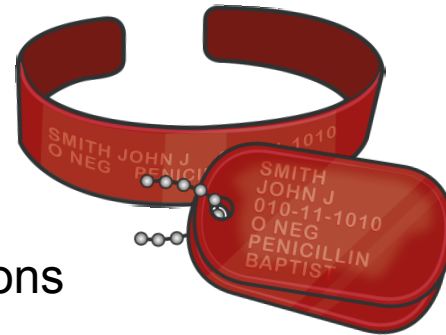
INTRANASAL MEDICATION ADMINISTRATION

ROUTES OF ADMINISTRATION:

- Check to ensure that the casualty has no known drug allergies to the medication(s) being administered (ask the casualty or locate their red allergy dog tag or bracelet).
- Gather necessary medication(s)
- Verify the five “rights”

Prepare for intranasal administration:

- Confirm nasal passages clear of obstructions (select least obstructed side)
- No blood or fluids present
- Have casualty blow nose, if possible



TCCC medications delivered by IN route: ketamine and naloxone; **also, fentanyl** (by Combat Paramedics or providers)



Unit-dosed pump sprays

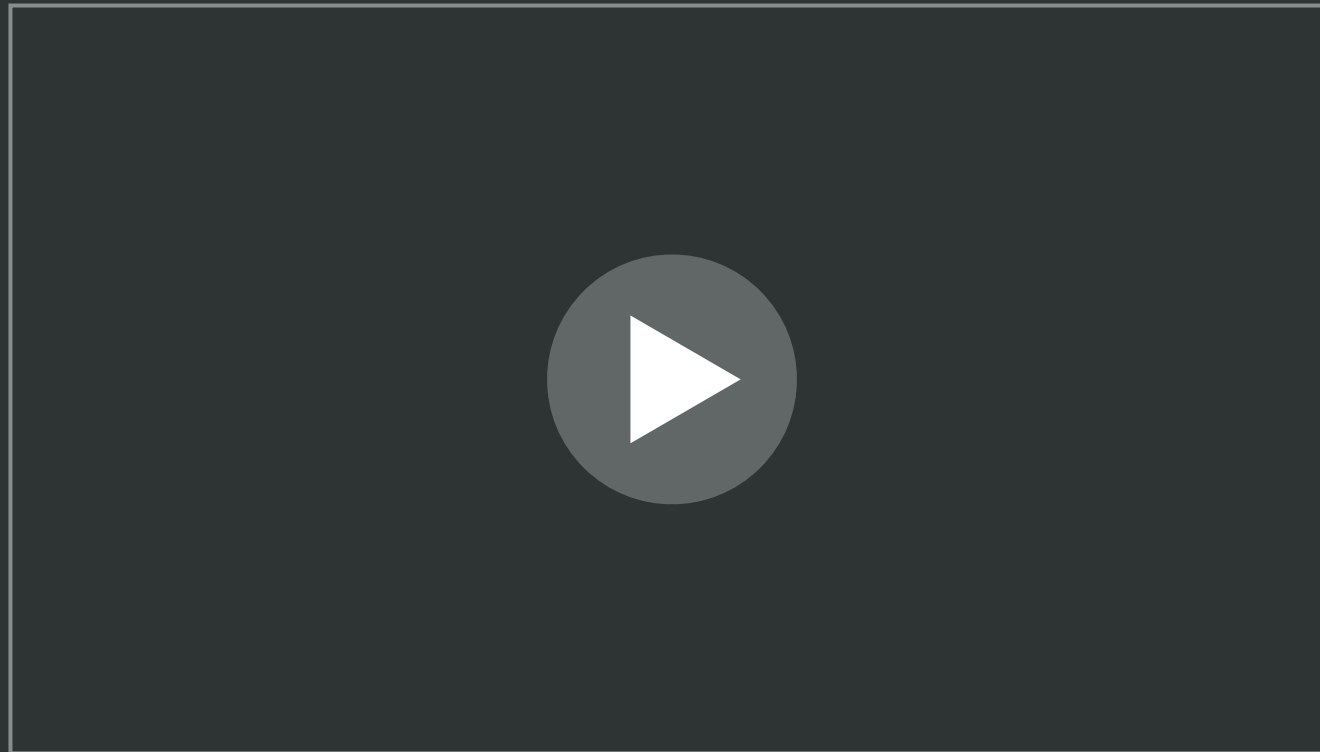
- Set volume using plunger
- Spray tip atomizes to form mist for unit dose and individual dose



Individual-dose plungers or syringes

- Set volume
- Atomized mist from spray tip

INTRANASAL MEDICATION ADMINISTRATION



Video can be found on deployedmedicine.com

INTRAMUSCULAR MEDICATION ADMINISTRATION

Choosing an IM site:

DELTOID

Center of the deltoid muscle; 22-gauge, 1 inch needle

THIGH

Halfway between knee and hip, lateral to the midline; 22-gauge, 1½ inch needle

BUTTOCK

Center of the upper, outer quadrant of the gluteal region; 22-gauge, 1½ inch needle

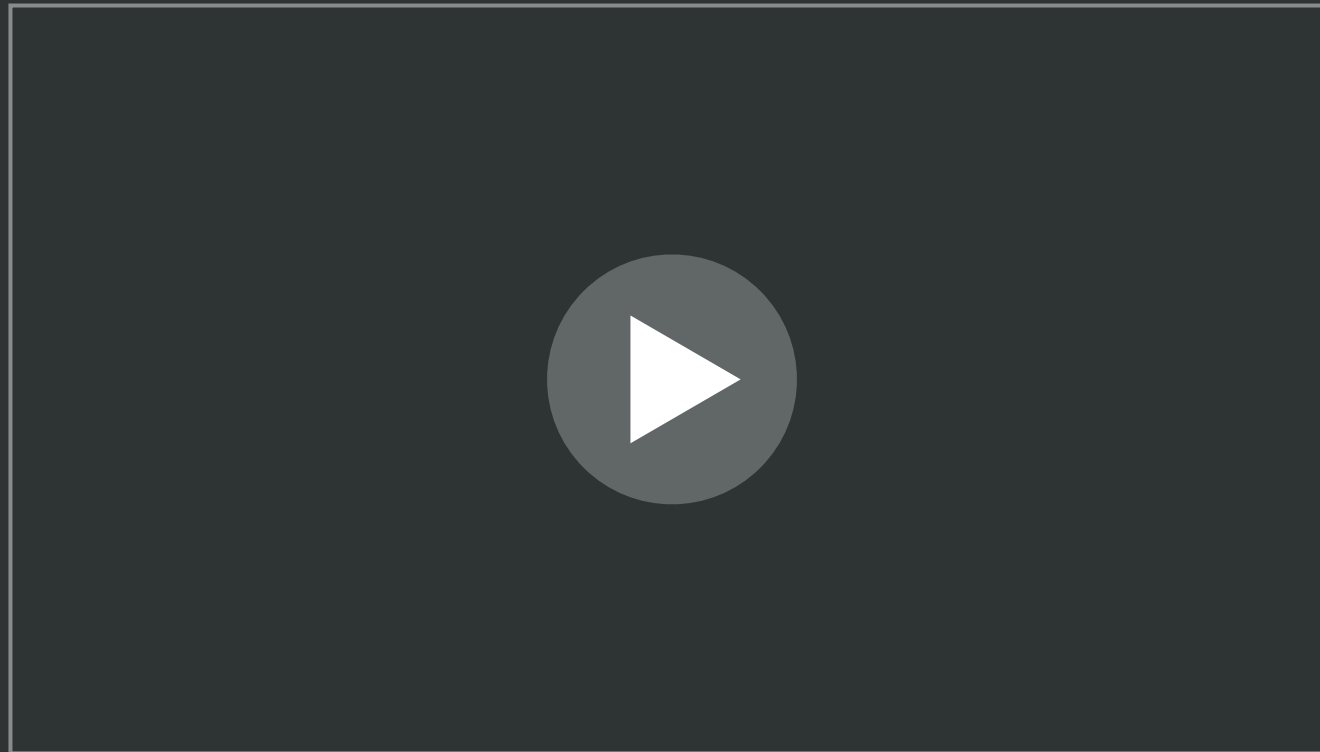
INJECTION CONSIDERATIONS:

- Inject air into medication vial before withdrawing to avoid negative pressure effects
 - Ensure no air present in syringe and needle
 - Insert needle with your dominant hand
 - Press plunger fully to deliver full dose
- If you encounter an auto-injector:
- Confirm dose
 - Keep tight against skin
 - Maintain in place for 10 sec after activation to ensure full delivery

TCCC pain medications delivered by IM route: ketamine, naloxone, and ondansetron

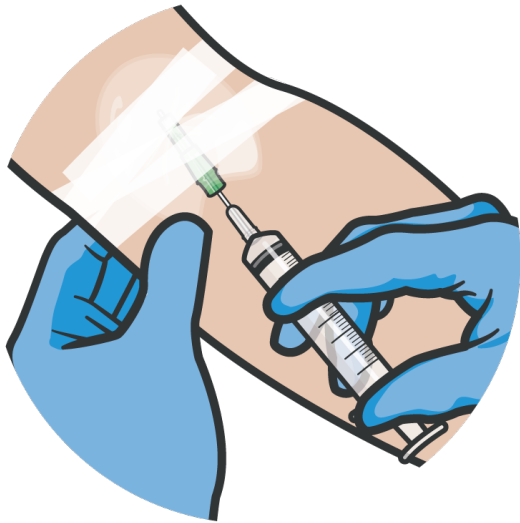


INTRAMUSCULAR MEDICATION ADMINISTRATION



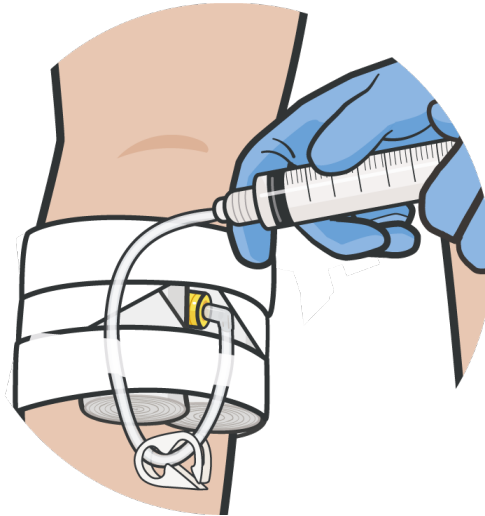
Video can be found on deployedmedicine.com

INTRAVENOUS/INTRAOSSEOUS MEDICATION ADMINISTRATION



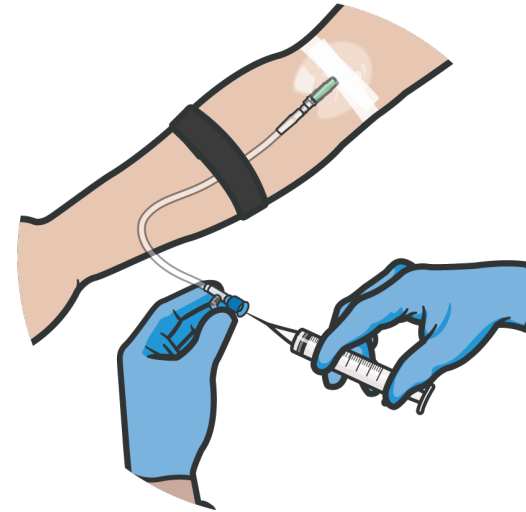
IV saline locks

- Flush with 0.9% NS or LR to ensure med delivery and keep lock patent



IO extension sets

- Clamp extension set when cap open
- Use syringe without needle
- Flush like IV saline lock



IV tubing (using IV or IO access)

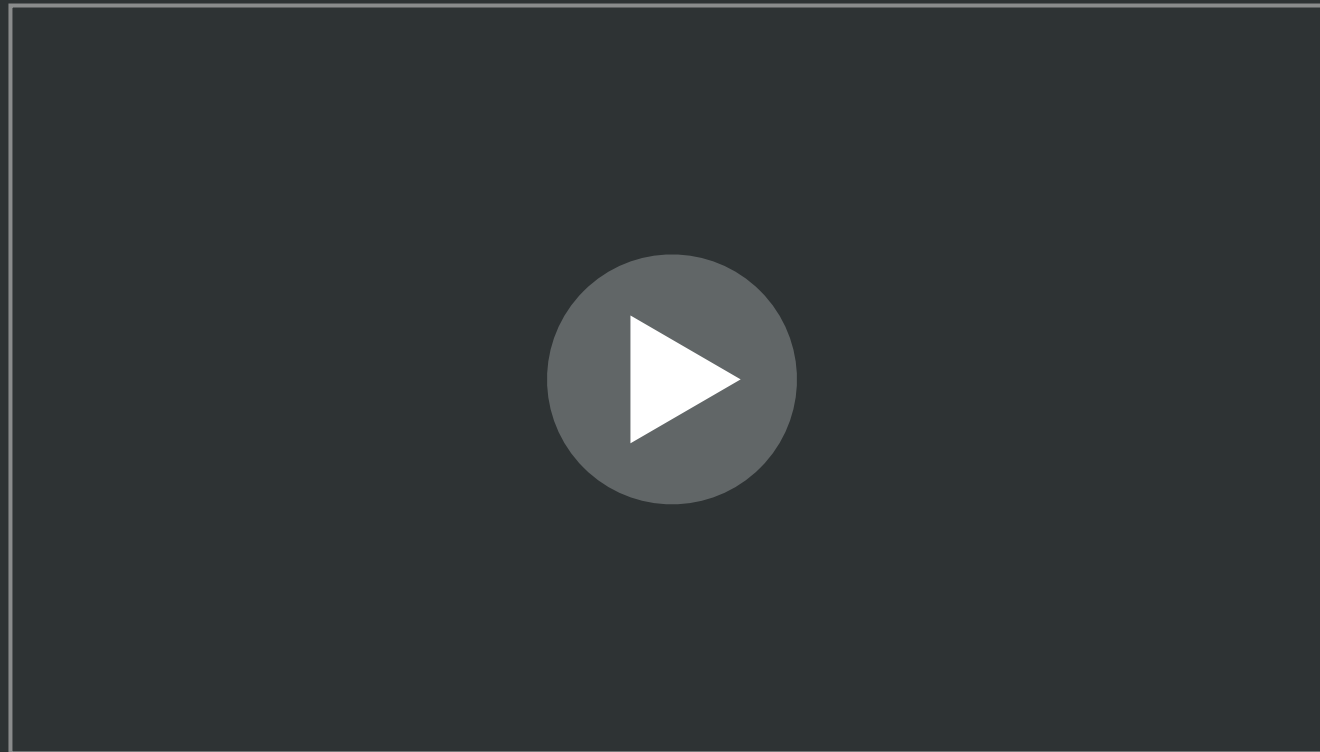
- Close clamps or pinch tubing above injection port during administration
- Flush like IV saline lock

RATE OF INFUSION CONSIDERATIONS:

- Some medications must be pushed slowly
- Small volumes over long pushes are hard to manage – consider dilution to have larger volume

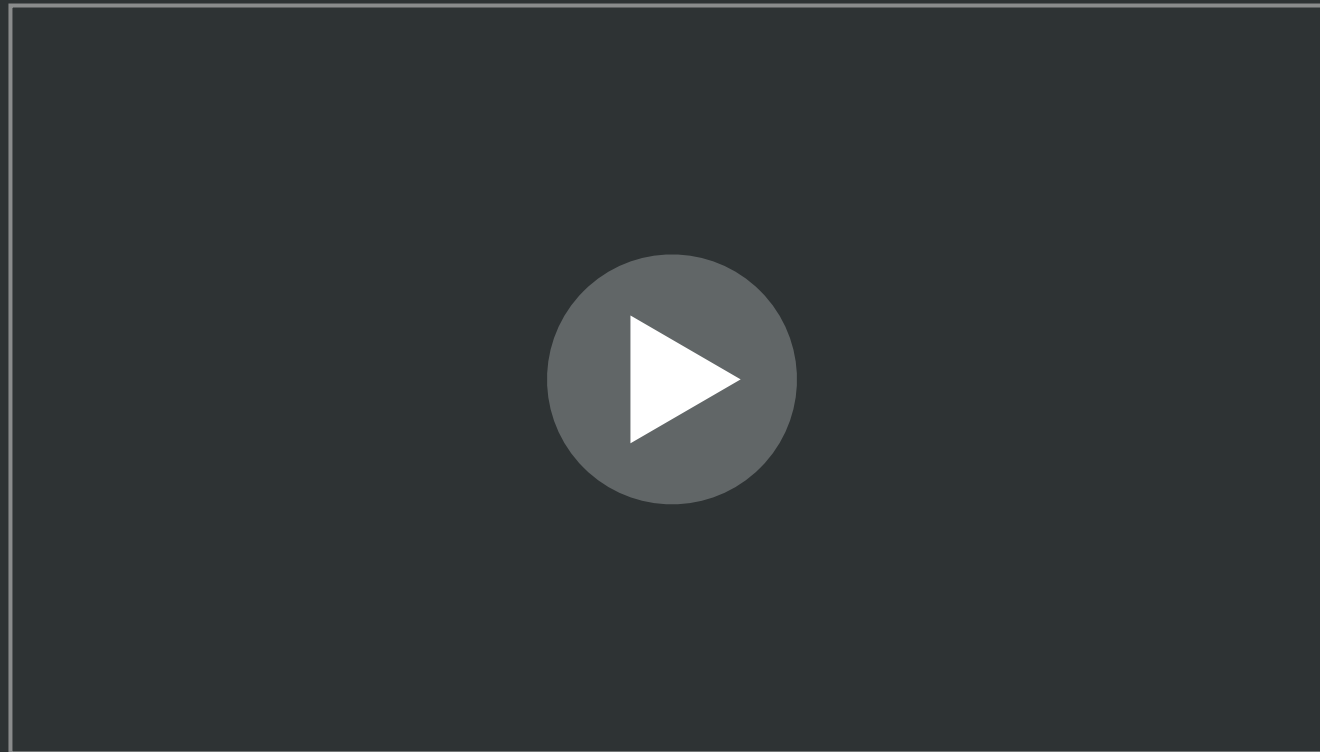
TCCC Pain Medications delivered by IV or IO route: ketamine, ondansetron, and naloxone; also fentanyl and midazolam (by Combat Paramedics or providers)

INTRAVENOUS MEDICATION ADMINISTRATION



Video can be found on deployedmedicine.com

INTRAOSSEOUS MEDICATION ADMINISTRATION



Video can be found on deployedmedicine.com

SKILL STATION

IN, IM and IV/IO Medication Administration



Intranasal Medication Administration








Intramuscular Medication Administration

SUMMARY

- The current TCCC approach to analgesia
- Combat Wound Medication Pack indications and administration
- Oral transmucosal fentanyl citrate (OTFC) administration
- Ondansetron indications and ODT administration
- Transmucosal medication administration
- Ketamine indications and contraindications
- Naloxone indications and contraindications
- Intranasal medication administration
- Intramuscular medication administration
- Intravenous/intraosseous medication administration

CHECK ON LEARNING

-  What are the contraindications of using the oral transmucosal fentanyl citrate (OTFC) lozenges for the management of moderate pain?
-  Which CoTCCC-recommended analgesia medications can be given by the intranasal route?
-  What is the difference between meloxicam and other common NSAID medications?
-  What is the pharmacological agent of choice to treat moderate to severe pain in a casualty that is in shock?
-  What anatomical sites can be used to safely administer an intramuscular injection?



ANY QUESTIONS?

REFERENCES

TCCC: Guidelines

by JTS/CoTCCC

These guidelines, updated regularly, are the result of decisions made by CoTCCC in exploring evidence-based research on best practices.

PHTLS: Military Edition, Chapter 25

by NAEMT

Prehospital Trauma Life Support,
Military Ninth Edition

