# Triple-Option Analgesia and Antibiotics

## MARCH PAWS

# OVERVIEW

- Triple-Option Analgesia (pain medication)
- Antibiotics

# LEARNING OBJECTIVES

Please Read Your

Terminal Learning Objectives

And

Enabling Learning Objectives

# TRIPLE-OPTION ANALGESIA

**Analgesia**

- **Analgesia on the battlefield should generally be achieved using one of three options:**

# TRIPLE-OPTION ANALGESIA

- **Option 1**
  - **Mild to Moderate Pain Casualty is still able to fight**
    - **TCCC Combat Wound Medication Pack (CWMP):**
      - **Tylenol – 500 mg tablet, 2 PO every 8 hours**
      - **Meloxicam - 15 mg PO once a day**

# TRIPLE-OPTION ANALGESIA

- **Option 2**
  - **Moderate to Severe Pain**
    - **Casualty IS NOT in shock or respiratory distress AND**
    - **Casualty IS NOT at significant risk of developing either condition**
    - **Oral transmucosal fentanyl citrate (OTFC) 800 ug**
      - **May repeat once more after 15 minutes if pain uncontrolled by first**
      - **Place lozenge between the cheek and the gum**
      - **Do not chew the lozenge**

# TRIPLE-OPTION ANALGESIA

- **Option 3**
  - **Moderate to Severe Pain**

    **Casualty IS in shock or respiratory distress OR Casualty IS at significant risk of developing either condition**

    - **Ketamine 50-100 mg IM or IN**
      - **Repeat doses q20-30min prn for IM or IN**
    - **Ketamine 30 mg slow IV or IO**
      - **Repeat doses q20min prn for IV or IO**

    * **End points: Control of pain or development of nystagmus (rhythmic back-and-forth movement of the eyes)**

# TRIPLE-OPTION ANALGESIA

- **Casualties may need to be disarmed after being given OTFC or ketamine.**
- **The goal of analgesia is to reduce pain to a tolerable level while still protecting their airway and mentation.**
- **Document a mental status exam using the AVPU method prior to administering opioids or ketamine.**
- **For all casualties given opioids or ketamine – monitor airway, breathing, and circulation closely.**

# OTFC

- **Directions for administering OTFC:**
  - **Recommend taping lozenge-on-a-stick to casualty's finger as an added safety measure OR utilizing a safety pin and rubber band to attach the lozenge (under tension) to the casualty's uniform or plate carrier.**
  - **Reassess in 15 minutes**
  - **Add second lozenge, in other cheek, as necessary to control severe pain**
  - **Monitor for respiratory depression**

# OTFC

**Safety Note:**

- **There is an FDA Safety Warning regarding the use of fentanyl lozenges in individuals who are not narcotic tolerant.**
- **Multiple studies have demonstrated safety when used at the TCCC-recommended dosing levels.**
- **Fentanyl lozenges have a well-documented safety record in Afghanistan and Iraq - BUT NOTE:**
- **DON'T USE TWO WHEN ONE WILL DO!**

# MORPHINE

- **IV Morphine is an alternative to OTFC if IV access has been obtained.**
  - **5 mg IV/IO**
  - **Reassess in 10 minutes**
  - **Repeat dose every 10 minutes as necessary to control severe pain**
  - **Monitor for respiratory depression**

# WARNING: MORPHINE AND FENTANYL CONTRAINDICATIONS

- **Hypovolemic shock**
- **Respiratory distress**
- **Unconsciousness**
- **Severe head injury**

- **DO NOT give morphine or fentanyl to casualties with these contraindications.**

# TRIPLE-OPTION ANALGESIA

- **TBI and/or Eye injury does not preclude the use of ketamine.**
  - **Use caution with TBI patients, might be difficult to perform a neurologic exam**
  - **The risk of additional damage to the eye from using ketamine is low.**
  - **Maximizing the casualty's chance for survival takes precedence if the casualty is in shock or respiratory distress or at significant risk for either.**

# KETAMINE

- **Ketamine may be a useful adjunct to reduce the amount of opioids required to provide effective pain relief.**
  - **It is safe to give ketamine to a casualty who has previously received morphine or OTFC.**
  - **IV Ketamine should be given over 1 minute.**
- **If respirations are noted to be reduced after using opioids or ketamine, provide ventilatory support with a bag-valve-mask or mouth-to-mask ventilations.**

# KETAMINE

- At lower doses, potent analgesia and mild sedation
- At higher doses, dissociative anesthesia and moderate to deep sedation
- Unique among anesthetics because pharyngeal-laryngeal reflexes are maintained
- Cardiac function is stimulated rather than depressed
- Less risk of respiratory depression than morphine and fentanyl
- Works reliably by multiple routes
  - IM, IN, IV, IO

# KETAMINE - SAFETY

- **Ketamine has a very favorable safety profile.**
- **Few, if any, deaths have been attributed to ketamine as a single agent.**

# KETAMINE - SIDE EFFECTS

- **Respiratory depression and apnea can occur if IV ketamine is administered too rapidly.**
- **Providing several breaths via bag-valve-mask ventilation is typically successful in restoring normal breathing.**

# WARNING: OPIOIDS AND BENZOS

- **Ketamine can safely be given after a fentanyl lozenge.**
- **Some practitioners use benzodiazepine medications such as midazolam to avoid ketamine side effects BUT:**
- **Midazolam may cause respiratory depression, especially when used with opioids.**
- **Avoid giving midazolam to casualties who have previously gotten fentanyl lozenges or mørphine.**

# TRIPLE-OPTION ANALGESIA

- **Naloxone (0.4 mg IV or IM) should be available when using opioid analgesics.**
- **Both ketamine and OTFC have the potential to worsen severe TBI. The combat medic, corpsman, or PJ must consider this fact in his or her analgesic decision, but if the casualty is able to complain of pain, then the TBI is likely not severe enough to preclude the use of ketamine or OTFC.**

# TRIPLE-OPTION ANALGESIA

- **Ondansetron, 4 mg ODT/IV/IO/IM, every 8 hours as needed for nausea or vomiting. Each 8-hour dose can be repeated once at 15 minutes if nausea and vomiting are not improved. Do not give more than 8 mg in any 8 hour interval. Oral ondansetron is NOT an acceptable alternative to the ODT formulation.**

**Reassess – Reassess – Reassess!**

# TRIPLE-OPTION ANALGESIA VIDEO

Video on Deployed Medicine Link

Video on YouTube Link

# ANTIBIOTICS

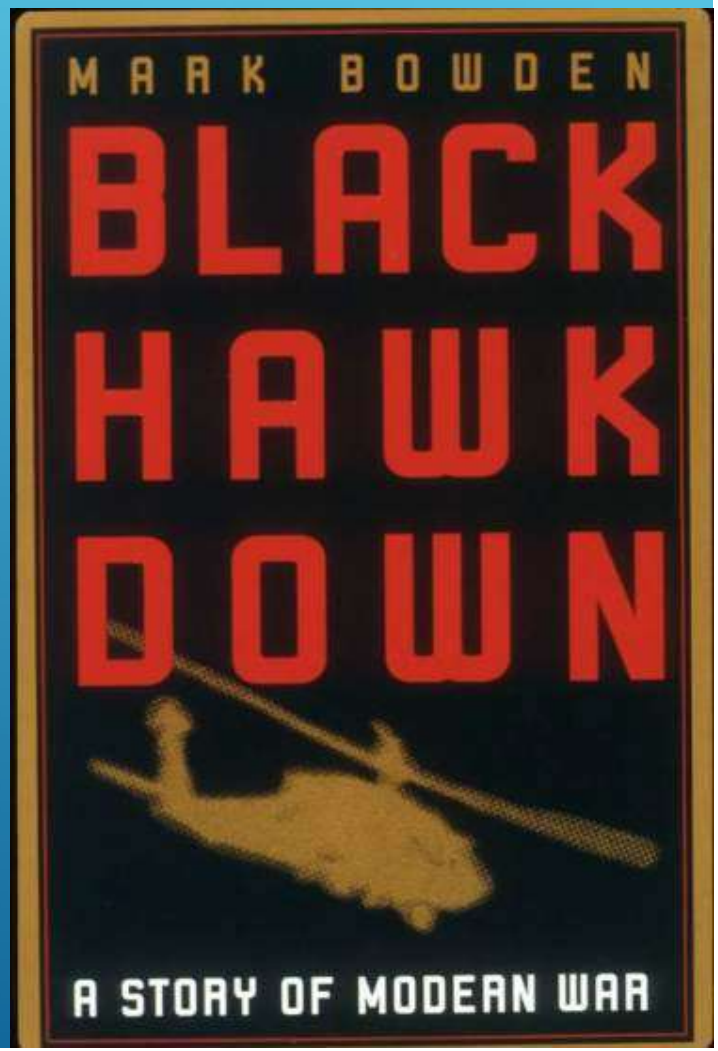
**Recommended for all open combat wounds:**

- **If able to take PO meds:**
  - **Moxifloxacin (from the CWMP), 400 mg PO once a day**
- **If unable to take PO (shock, unconsciousness):**
  - **Ertapenem, 1 g IV/IM once a day**

# OUTCOMES: WITHOUT BATTLEFIELD ANTIBIOTICS

- **Mogadishu 1993**
- **Casualties: 58**
- **Wound Infections: 16**
- **Infection rate: 28%**
- **Time from wounding to Level II care – 15 hrs.**

***Mabry et al***
***J Trauma 2000***



# OUTCOMES: WITH BATTLEFIELD ANTIBIOTICS

**Tarpey – AMEDD J 2005:**

- **32 casualties with open wounds**
- **All received battlefield antibiotics**
- **None developed wound infections**
- **Used TCCC recommendations modified by availability:**
  - **Levofloxacin for an oral antibiotic**
  - **IV cefazolin for extremity injuries**
  - **IV ceftriaxone for abdominal injuries.**

# OUTCOMES: WITH BATTLEFIELD ANTIBIOTICS

- **MSG Ted Westmoreland**
- **Special Operations Medical Association presentation 2004**
- **Multiple casualty scenario involving 19 Ranger and Special Forces WIA as well as 30 Iraqi WIA**
- **11-hour delay to hospital care**
- **Battlefield antibiotics given**
- **No wound infections developed in this group.**

# BATTLEFIELD ANTIBIOTICS VIDEO

Video on Deployed Medicine Link

Video on YouTube Link

# TRIPLE-OPTION ANALGESIA AND ANTIBIOTICS

## MARCH PAWS