MUSCULOSKELETAL TRAUMA
STATEWIDE ALS PROTOCOL

Initial Patient Contact – See Protocol #201

Splint suspected fractures as appropriate:

- Traction splinting is preferred for isolated femur fractures [1]
- Straighten severely angulated fractures if distal extremity has signs of decreased perfusion.

Assess pain on 1-10 scale
Assess Neurovascular Status distal to injury

Oral medication not contraindicated

- Place in position of comfort
- Provide verbal reassurance

If mild to moderate pain:

- **Acetaminophen**, [2] if available, 650 mg orally
  Peds 15 mg/kg (max 650 mg)
  OR
- **Aspirin** 324-650 mg orally (adult > 14 y/o only)
  OR
- **Ibuprofen**, if available, 400 mg orally [3]
  Peds ≥ 2 y/o, 10 mg/kg (max 400 mg), if available

WARNING: Do not administer these medications if patient had medication recently (within 4 hours for acetaminophen/aspirin, within 6 hours for NSAID).

Peds
< 2 y/o

Nausea or contraindication to oral medication or moderate/severe pain

- Place in position of comfort
- Provide verbal reassurance
- Initiate IV/IO NSS [4]
- If nausea, consider ondansetron, if available (see protocol 7010)
- Administer Analgesic Medication [5] (see box below)
- Monitor Pulse Oximetry (if opioid or nitrous oxide given)

CONTACT MEDICAL COMMAND

ANALGESIC MEDICATION OPTIONS (Choose one)

Fentanyl 50-100 mcg IV/IO/IN [6,7,8,9] (1 mcg/kg) slowly, maximum 100 mcg/dose
may repeat ½ dose every 5 minutes until maximum of 300 mcg total (or peds maximum 3 mcg/kg)

OR

Morphine sulfate 2-5 mg IV [6,7,8,9] (0.1 mg/kg) slowly, maximum 10 mg (pediatric max. 5 mg/dose)
may repeat dose every 5 minutes
until maximum of 20 mg total (or peds maximum 0.2 mg/kg)

OR

Nitrous Oxide (50:50) by inhalation [10]

OR

Ketorolac [3], if available, 15 mg IV/IO (30 mg IM)
(Peds 0.5 mg/kg IV/IO/IM, maximum 15 mg IV/IO or 30 mg IM)

OR

Acetaminophen, if available, 650 mg IV (slowly over 15 minutes)
(Peds 15 mg/kg, maximum 650 mg)
WARNING: Do Not Administer if patient had acetaminophen in last 4 hours.

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Criteria:

A. Patient with isolated suspected extremity fractures.

B. Patient with acute extremity pain after trauma

C. Patient with acute back pain, excluding chronic back pain

D. Patient with acute thoracic/ rib pain after trauma

Exclusion Criteria:

A. Multisystem trauma or traumatic/hypovolemic shock (Follow Multisystem Trauma or Traumatic Shock protocol #6002)

Possible Medical Command Orders:

A. Additional fentanyl or morphine or other analgesic

B. Intramuscular fentanyl or morphine

Notes:

1. Traction splinting should not be used for hip (proximal femoral neck) fractures.
2. Acetaminophen is contraindicated in patients with liver disease/failure.
3. NSAID (nonsteroidal anti-inflammatory drugs), including ibuprofen and ketorolac, are contraindicated if:
    a. Oral NSAID (e.g. ibuprofen, naproxen, etc.) taken by patient in last 6 hours
    b. Bleeding or suspected bleeding (e.g. external/internal trauma, gastrointestinal, vascular).
    c. Known kidney disease/failure or kidney transplant
4. IV/IO access is not required for administration of nitrous oxide or IM ketorolac.
5. Reassess and document 1-10 pain score 15-30 minutes after analgesic dose or at time of transfer of care.
6. Opioid pain medication may not be administered for other medical/trauma conditions (e.g. abdominal pain or multiple rib fractures) before attempted contact with Medical Command.
7. Reduce dose for patients over 65 y/o.
8. Opioid medication should not be given if:
    a. Oxygen saturation $\leq$ 95%
    b. SBP < 100 for adults
    c. SBP < 70 + 2(age in years) for children < 14 y/o
    d. Patient has altered level of consciousness
9. If respiratory depression or hypoxia occur after opioid:
    a. Administer oxygen and ventilate if necessary
    b. If significant respiratory depression, administer naloxone 0.4 mg IV, titrate additional doses until adequate ventilation or total of 2 mg.
10. Nitrous oxide should be self-administered. Patient should be coached to hold mask on his/her face, and the patient will drop mask if he/she becomes sedated. Oversedation may occur if EMS provider

holds mask to patient's face. Nitrous oxide may be administered without IV access. Avoid nitrous oxide in:

a. SBP <90 [Pediatrics < 70 + (2 x age)]
b. obvious intoxication
c. head injury with altered mental status
d. chronic lung disease
e. suspected pneumothorax
f. suspected bowel obstruction
g. decompression sickness (e.g. from diving/submersion)

Performance Parameters:

A. Pain medication given or documentation of pain medication being offered for suspected isolated extremity fractures.

B. Traction splinting used for isolated femur fractures without hypotension in all cases.

C. Vital signs and oxygen saturation documented before and after any administration of narcotic.

D. Severity of pain documented for all painful conditions, and documented before and after analgesic medications/ interventions.