## Wisconsin EMS Scope of Practice Change Request Worksheet

#### Use:

• To provide information which supports any proposed change in the psychomotor skills, types of medical devices, or list of medications allowed under the State of Wisconsin EMS Scope of Practice.

#### **Objective:**

• A comprehensive and standard review of proposed Scope of Practice changes will help ensure the safe and effective delivery of out-of-hospital care.

#### Please address the following statements as best possible (citing and attaching references when applicable):

- Provide a specific and detailed description of the skill, type of device, or medication you are proposing.
  - Addition of antibiotics by paramedic-level EMS for Partial/complete amputations, major soft tissue injuries (e.g., mangled extremity) and open fractures.
  - Antibiotics for Partial/complete amputations, major soft tissue injuries (e.g., mangled extremity) and open fractures has been approved in all Michigan Medical Control Authorities. See attached protocol
- What intended clinical applications are you proposing for use (complaint, condition, ages, parameters)?
  - Patients of any age with Partial/complete amputations, major soft tissue injuries (e.g., mangled extremity) and open fractures
- What EMS provider levels do you feel should have access through their scope of practice, and why?
   Paramedic Level as antibiotics are medications only covered in any depth at the paramedic level
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- List any examples of current usage in a patient care setting, both in and out of the hospital.
  - Antibiotics for open fractures are a standard of care within the emergency department and trauma/orthopedic surgery practices with an goal of administration within 1 hour of injury
- Summarize the current evidence, concerning the proposed change, both for and against it, including benefits and improved effectiveness of patient care.
   Per communication from William Fales, MD, FACEP, FAEMS (State Medical Director, Michigan Division of EMS and Systems of Care) "There have been a number of peer-reviewed articles that have drawn attention to the role of early antibiotics in open fractures (see attached). These studies have almost exclusively focused on hospital versus pre-hospital patients. That said, several studies have recommended initiation of antibiotics within 1 hour of injury. One study by Lack et al found no cases of wound infection when antibiotics were started (in the hospital) within 66 minutes of injury compared to a 17% infection rate when antibiotics were delayed beyond this time.

While there is a paucity of published evidence on pre-hospital antibiotic benefits in open fractures and mangled extremity, the current medical consensus overwelmingly seems to

support the sooner antibiotics are initiated the better the outcomes. This is far from decisive evidence however given the low cost of the IV antibiotic options in the protocol and the minimal risks associated with their use by EMS, we believe this is a reasonable intervention for Michigan EMS and will benefit our patients."

- Do you know of any current barriers or hesitations for use (laws/regulations, risks, costs, training)? How can these be addressed to allow for safe practice?
  - The primary barriers to implementation would be cost, time of administration, and allergy concerns. The State of Michigan attempted to address these concerns by limiting the choice to either Cefazolin or Ceftriaxone given either as slow IVP over 3-5min or diluted in 100mL IVF over 15-30 minutes. These limited choices reduce costs, recognize there may be a small number of patients with cephalosporin allergy that will be unable to receive antibiotics from EMS, and provides dosing options that fit into EMS work practices. In addition, neither Cefazolin nor Ceftriaxone share a side chain with penicillin antibiotic, so it can be administered to patients with a penicillin allergy.
- Describe the training you feel would be appropriate to properly implement this change.
  - Focused training on the selected antibiotic preparation and administration method and allergy considerations
- How do you plan to track usage and monitor patient care outcomes and patient safety events?
  - Tracking and monitoring can be part of exisiting trauma feedback processes given patients with Partial/complete amputations, major soft tissue injuries (e.g., mangled extremity) and open fractures will likely meet trauma review and feedback criteria
- Please cite the references used to support your responses and attach as PDFs. See attachements

Name of person completing request for State of Wisconsin Scope of Practice change:

Michael Clark, MD EMS Medical Director-Aspirus MedEvac EMS Medical Director- Gogebic/Ontonagon/Iron Counties Medical Control Authority

All requests for change in State of Wisconsin Scope of Practice will be addressed by the EMS Office via a thorough decision-making framework. Interested parties are welcome to attend open EMS Board and Committee meetings to hear discussion on the proposed change. Proposals will be handled in the order of greatest perceived importance to WI EMS.



#### *Michigan* TRAUMA AND ENVIRONMENTAL SOFT TISSUE AND ORTHOPEDIC INJURIES

Initial Date: 5/31/2012 Revised Date: 08/11/2023

# Soft Tissue & Orthopedic Injuries

- 1. Follow General Pre-hospital Care Protocol.
- Pediatric patients (< 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
- 3. Control bleeding (refer to Bleeding Control (BCON)- Procedure Protocol)
  - A. Utilize direct pressure.
  - B. Consider early tourniquet use (refer to **Tourniquet Application-Procedure Protocol**).
  - C. Consider MCA approved hemostatic agents and hemorrhage control devices.
  - D. Consider use of pressure dressings with deep wound packing.
  - E. Consider pelvic binding for suspected unstable pelvic fracture.
- 4. For uncontrolled bleeding with hemorrhagic shock see **Hemorrhagic Shock-Treatment Protocol**
- 5. If appropriate, maintain spinal precautions for patient per **Spinal Injury Assessment-Treatment Protocol.**
- 6. Assess pain on 1-10 scale and treat per Pain Management-Procedure Protocol.
- 7. Immobilize/splint orthopedic injuries as appropriate.
  - A. Special Considerations
    - i. Consider traction splinting for closed femur fractures (excluding hip/femoral neck).
    - ii. Straighten severely angulated fractures if distal extremity has signs of decreased perfusion.
    - iii. Evaluate and document neurovascular status before and after splinting.
- 8. Partial/complete amputations, major soft tissue injuries (e.g., mangled extremity) and open fractures.
  - A. Control bleeding as above
  - B. Cover wounds with sterile dressings moistened with sterile solution.
  - C. Splint extremity.
  - D. Recoverable amputated parts should be brought to hospital as soon as possible.
  - E. Wrap amputated part in sterile dressing moistened with sterile solution. Seal in a plastic bag and, if available, place bag in container of ice and water. DO NOT place part directly on ice.
  - S F. Obtain IV access per Vascular Access and IV Therapy-Procedure Protocol.
  - G. Administer antibiotics (per MCA selection).



#### *Michigan* TRAUMA AND ENVIRONMENTAL SOFT TISSUE AND ORTHOPEDIC INJURIES

Initial Date: 5/31/2012 Revised Date: 08/11/2023

Section 2-5

MCA Selection for Antibiotics
<ul> <li>Ceftriaxone Slow IV Push: 2gm diluted with 20ml NS</li> <li>1. Adult: 2 gm (diluted) slow IVP 3-5 min</li> <li>2. Pediatrics &gt; 2 months of age:         <ul> <li>a. Administer diluted dose according to MI MEDIC cards.</li> <li>b. If MI MEDIC cards are not available, administer 50 mg/kg (diluted) slow IVP 3-5 min (Maximum dose 2 gm)</li> </ul> </li> </ul>
<ul> <li>Ceftriaxone Infusion: Diluted dose added to 100 mL NS bag</li> <li>1. Adult: 2 gm (diluted) added to 100 mL NS bag. Infuse over 15-30 min</li> <li>Pediatrics ≥ 7 years of age:         <ul> <li>a. Ceftriaxone Infusion according to MI MEDIC cards</li> <li>b. If MI MEDIC cards are not available, add 50 mg/kg (diluted) to 100 mL NS bag. Max dose 2 gm. Infuse over 15-30</li> </ul> </li> </ul>
<ul> <li>Cefazolin Slow IV Push: 2 gm diluted with 20 ml or NS,</li> <li>1. Adults: 2 gm (diluted) slow IVP 3-5 min</li> <li>2. Pediatrics:         <ul> <li>a. Administer diluted dose according to MI MEDIC cards.</li> <li>b. If MI MEDIC cards are not available, administer 30 mg/kg (diluted) slow IVP 3-5 min (Maximum dose 2 gm)</li> </ul> </li> </ul>
<ul> <li>Cefazolin Infusion. Diluted dose added to 100 mL NS bag</li> <li>1. Adult: 2 gm (diluted), added to 100 mL bag of NS. Infuse over 15-30 minutes.</li> <li>2. Pediatrics ≥ 7 years of age:         <ul> <li>a. Cefazolin Infusion according to MI MEDIC cards.</li> <li>b. If MI MEDIC cards are not available, add 30 mg/kg (diluted) to 100 mL NS bag. Max dose 2 gm. Infuse over 15- 30 minutes.</li> </ul> </li> </ul>

- H. Frequent monitoring of circulation, sensation, and motion distal to the injury during transport.
- 9. For severe crush injuries, refer to General Crush Injury-Treatment Protocol.
- 10. Impaled objects are left in place and stabilized. Removal of impaled objects is only with approval of Medical Control.
- 11. Follow MCA transport protocol.
  - 12. Provide pain management per Pain Management-Procedure Protocol.

<u>Medication Protocols</u> Cefazolin Ceftriaxone

MCA Name: Gogebic / Ontonagon / Iron MCA Board Approval Date:10/20/23 MCA Implementation Date: MDHHS Approved: 8/11/23

# M·TQIP

### Timely Antibiotic in Femur/Tibia Open Fractures

Siebler, J., Ogden, B., Deans, C., McCarthy, M., Lyden, E., Hewlett, A., & Mormino, M. (2020). A Performance Improvement Project in Antibiotic Administration for Open Fractures. Journal of the American Academy of Orthopaedic Surgeons, 28(1), e34-e40. doi:10.5435/jaaos-d-18-00528. This single-center retrospective cohort study compared patients with open fractures before and after implementation of a performance improvement project addressing timely antibiotic administration. Percent of patients receiving antibiotics within 1 hr improved from 34% to 84%, while those receiving antibiotics within 3 hrs improved from 91% to 99%.

Harper, K. D., Quinn, C., Eccles, J., Ramsey, F., & Rehman, S. (2018). Administration of intravenous antibiotics in patients with open fractures is dependent on emergency room triaging. PLoS ONE, 13(8), e0202013. doi:10.1371/journal.pone.0202013. This single-center retrospective cohort study of 117 open fracture patients were evaluated for timeliness to antibiotic administration and compared by triaging discipline. Patients received IV cefazolin significantly faster when trauma surgeons evaluated the patient rather than emergency medicine.

Johnson, J. P., Goodman, A. D., Haag, A. M., & Hayda, R. A. (2017). Decreased Time to Antibiotic Prophylaxis for Open Fractures at a Level One Trauma Center. Journal of Orthopaedic Trauma, 31(11), 596-599. doi:10.1097/bot.00000000000928. This single-center retrospective cohort study of 100 adult open fracture patients compared before and after implementation of a QI effort to improve timeliness of IV antibiotic administration. After protocol implementation, time from admission to antibiotic administration decreased significantly from 123.1 to 35.7 minutes (P = 0.0003). Each time component decreased significantly: admission to order decreased from 94.1 to 26.1 minutes, and order to administration decreased from 29.0 to 9.5 minutes (P = 0.0046 and P = 0.0003).

Lack, W. D., Karunakar, M. A., Angerame, M. R., Seymour, R. B., Sims, S., Kellam, J. F., & Bosse, M. J. (2015). Type III open tibia fractures: immediate antibiotic prophylaxis minimizes infection. Journal of Orthopaedic Trauma, 29(1), 1-6. doi:10.1097/bot.00000000000262. This single-center observational study of antibiotic timing in type III open tibia fractures showed that time from injury to antibiotics and to wound coverage independently predict infection of Type III open tibia fractures. Both should be achieved as early as possible, with coverage being dependent on the condition of the wound. Given the relatively short therapeutic window for antibiotic prophylaxis (within an hour of injury), prehospital antibiotics may be warranted.

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antibiotic administration. Significant improvement in the timing and reproducibility of antibiotic administration was noted. One hour is an appropriate benchmark for antibiotics to be administered to open fracture patients at a busy trauma center.

Hoff, W. S., Bonadies, J. A., Cachecho, R., & Dorlac, W. C. (2011). East Practice Management Guidelines Work Group: Update to practice management guidelines for prophylactic antibiotic use in open fractures. Journal of Trauma, 70(3), 751-754. doi:10.1097/TA.0b013e31820930e5. This EAST guideline notes that antibiotics are an important adjunct to the management of open fractures and should be initiated as soon as possible. Gram-positive coverage is recommended for Type I And Type II Fractures. Broader antimicrobial coverage is recommended for type III fractures.