

Administration of Antibiotics by EMS for Open Fractures

Statewide Pilot Program

Bureau of EMS, Pennsylvania Department of Health

7/9/2020

Purpose: The early administration of antibiotics is associated with reduced rates of infection in patients with open fractures. The greatest benefit occurs when antibiotics are administered within 60 minutes of injury. EMS providers are the first healthcare professionals to treat most patients with open fractures, therefore paramedics have the best chance of ensuring that antibiotics are administered within a 60-minute window. This statewide pilot will attempt to decrease the time to antibiotics for patients with open fractures and will collect data to determine time to administration by EMS in a variety of settings across the state.

Overview: ALS agencies approved by the Bureau through participating regional councils will be permitted to carry cefazolin, and paramedics (and other providers above the level of AEMT) in these agencies can administer cefazolin to patients with open long-bone fractures. Approved participating agencies will be provided a waiver and their providers will follow the pilot protocol for open fracture care. Data must be collected for each administration, and data collection and appropriate use will be overseen by the EMS agency medical director and the regional MAC and QI Committee.

Details:

Pharmacology

- Approved EMS agencies will carry cefazolin with their ALS medications
- Adult Dose: 2 gm slow IV push over 3-5 minutes or hang mixed solution (cefazolin 2 gm in 50-100 mL NS).
- Pediatric Dose: 1 gm slow IV push over 3-5 minutes or hang mixed solution (cefazolin 1 gm in 50-100 mL NS) for patients 9-14 y/o. Weighing approximately 30-50 kg.

Pilot Program Logistics:

Patient Population

Inclusion Criteria:

- Open fracture (angulation or crepitus, with bone protruding or laceration over fracture site)
- Any age \geq 9-year-old or \geq 30 kg

Exclusion Criteria:

- History of allergy to any cephalosporin antibiotic
- History of anaphylaxis to penicillin

EMS Agency Oversight: For each EMS agency approved to participate, the EMS agency medical director must oversee training of paramedics (and other providers above the level of AEMT) who will administer

cefazolin. The EMS agency must ensure that a data form is completed for each administration, and the EMS agency medical director must review all administrations for appropriateness and safety. Additionally, when possible, the EMS agency medical director or agency leadership will follow-up to determine if patient had a diagnosis of open fracture. The EMS agency and medical director will provide monthly reports of all administrations using the pilot program standardized form. The Bureau may withdraw the waiver to participate for any EMS agency that does not submit the required data on each case monthly or does not participate/cooperate with regional oversight.

Education: Each paramedic participating in the pilot must have completed the BEMS online continuing education course on the TRAIN learning management system. The required course (#1000033337) will qualify for 1.0 CE credits. Each paramedic must also be credentialed by the EMS agency medical director for the skills necessary to reconstitute, mix and administer the antibiotic properly.

Regional Oversight: Participating EMS regions must have regional medical advisory and QI committees that oversee approval of EMS agencies and review data submitted by agencies at least quarterly. Regions must submit quarterly summary reports of cefazolin administration by all agencies within the region to the Bureau. The regions will maintain and submit to the Bureau a list of every ALS agency that they recommend for participation in this pilot, and the Bureau will approve each agency. An agency may not participate in this pilot until the region is notified of approval, and the region or Bureau can revoke the approval to participate at any time for reasons of safety or compliance with quality improvement audits.

Every participating region will send a list of proposed participating ALS services within their region to the BEMS for approval of participating EMS agencies/services. Approval by the BEMS will allow the EMS agency providers a waiver to follow the Pilot Project Statewide ALS Antibiotics for Open Fractures Protocol.

Data Submission: All patient protected health information will be stored and transmitted in a secured manner. Data forms will include patient identifiers to permit audits or medical director follow-up on fracture diagnoses, but quarterly summary data transmitted to the Bureau will use unique identifiers for deidentification of patients. The following data will be collected on a pilot form for each patient and subsequently submitted monthly for every case of suspected open fracture by each participating agency using the standardized Excel spreadsheet: Unique ID number, date of injury, time of injury, mechanism of injury (fall, motorized vehicle, machinery, or sports-related), bone involved (e.g. face/skull, humerus, forearm, wrist, hand, pelvis, femur, tibia/fibula, ankle, or foot), time of initiating antibiotic administration, exclusion criteria (if antibiotic not administered), complications after administration (e.g. rash, dyspnea, hypotension, facial/airway edema, wheezing), name/type of initial destination hospital (e.g. trauma center level), and verification of fracture diagnosis by agency medical director when possible.

EMS agencies must submit a summary of all cases of use of antibiotic administration in the pilot program during a month to the regional council by the 15th day of the following month.

EMS regional councils must submit a summary of all cases submitted by EMS agencies during the quarter by the last day of the month following the quarter. Quarters will end on March 31, June 30, September 30, and December 31.

Duration of Pilot: The pilot will begin in 2020 after approval by the regional MAC from any participating region and the Bureau. The pilot will continue through June 2021, and the Bureau may extend the pilot by announcement to participating agencies/regions. Data from the pilot will be used to determine whether the program is formalized in the 2021 Statewide ALS Protocols.