



Performance Standard		7601
Effective April 1, 2018	Expires March 31, 2019	
Category IV Skill – Low Frequency/Low Risk: Intraosseous Infusion	Approval: Medical Director Reza Vaezazizi, MD	Signed
Applies To: AEMT, PM, MICN, BHP, EMS System	Approval: REMSA Director Bruce Barton	Signed

Terminal Performance Objective

To establish, maintain, and ensure intraosseous vascular access for the delivery of drugs and fluids as allowed by the advanced emergency medical technician (AEMT) or paramedic scope of practice.

Before establishing intraosseous access, AEMTs and paramedics must:

1. Confirm that intraosseous access is clinically indicated and required for emergency stabilization.
2. Do not place if any of these contraindications to intraosseous access are present:
 - a. Fracture of insertion site bone
 - b. Inability to clearly identify insertion site (absence of anatomical landmarks / excess tissue / other problem)
 - c. Infection at insertion site
 - d. Previous orthopedic procedure at insertion site (IO attempt within last 48 hours / joint replacement / prosthetic)

While establishing intraosseous access AEMTs and paramedics must:

1. Select the most appropriate insertion site based on clinical needs, operational requirements, and the available device:
 - a. AEMTs:
 - i. Vidacare’s EZ-IO Power Driver may be used by AEMTs while following a standing order at these insertion sites:
 - Distal tibia in pediatrics
 - Proximal tibia in pediatrics
 - ii. Waismed’s Bone Injection Gun (B.I.G.) may be used by AEMTs while following a standing order at these insertion sites:
 - Proximal tibia in pediatrics
 - b. Paramedics:
 - i. Vidacare’s EZ-IO Power Driver may be used by paramedics while following a standing order at these insertion sites:
 - Distal tibia in adults & pediatrics
 - Proximal humerus / humeral head in adults
 - Proximal tibia in adults & pediatrics
 - ii. Waismed’s Bone Injection Gun (B.I.G.) may be used by paramedics while following a standing order at these insertion sites:
 - Proximal tibia in adults & pediatrics
 - iii. Any clinically indicated insertion site may be used by paramedics in any patient following discussion with the base hospital physician concerning the risks and benefits, the operator’s training and experience, and limitations of the available device.
2. Identify the insertion site using anatomical landmarks.
3. Select the size of needle set or device based on patient size, the selected insertion site, and tissue depth.
4. Cleanse and prepare the insertion site using aseptic technique.
5. Assemble and prepare equipment using aseptic technique.
6. Establish intraosseous access by following the manufacturer’s instructions for the available device:
 - a. AEMTs:
 - i. EZ-IO with pink or blue needle sets:

<http://www.teleflex.com/en/usa/ezioeducation/index.html>
<http://ezioapp.com/>

- ii. B.I.G. red device: <http://www.waismed.com/Training-pedibig.html>
- b. Paramedics:
 - i. EZ-IO with pink, blue, or yellow needle sets:
<http://www.teleflex.com/en/usa/ezioeducation/index.html>
<http://ezioapp.com/>
 - ii. B.I.G. red device: <http://www.waismed.com/Training-pedibig.html>
 - iii. B.I.G. blue device: <http://www.waismed.com/Training-adultbig.html>
7. Verify Intraosseous placement:
 - a. Needle is free standing, without support
 - b. Aspiration of blood/marrow
 - c. Infusion without extravasation
8. Attach IV set and adjust infusion rate as clinically indicated.
 - a. Despite proper placement, pressure infusion may be needed to achieve the required flow rates.
 - b. Give Lidocaine 2% as ordered by the applicable treatment protocol or a base hospital order for infusion pain in the conscious patient.
9. Secure the insertion site and splint the limb to maintain intraosseous vascular access despite scene activity, patient movement, and transport.
10. Routinely reassess the insertion site to ensure vascular access.
11. Document the procedure.

Critical Success Targets for IO

1. Aspiration of blood/marrow from the intraosseous access site.
2. Infusion without extravasation.

System Benchmark

Number of intraosseous access attempts successfully established.

Applicable Protocols

The REMSA Treatment Protocol: Universal Patient.

Core Competency Requirements to be covered during education/training on IO infusion

1. Assessment
2. Anatomy and physiology
3. Differences between neonatal, pediatric, adult, and bariatric patients
4. Indications and contraindications
5. Device specific:
 - a. Equipment and site selection
 - b. Precautions and complications

Equipment Requirements

1. Personal protective equipment
2. An intraosseous access device:
 - a. AEMTs, either:
 - i. EZ-IO with pink (15g / 15 mm) or blue (15g / 25 mm) needle sets
 - ii. B.I.G. red (18g pediatric) device
 - b. Paramedics, either:
 - iii. EZ-IO with pink (15g / 15 mm), blue (15g / 25 mm), and yellow (15g / 45 mm) needle sets
 - iv. B.I.G. red (18g pediatric) and blue (15g adult) devices
3. 10 mL syringe containing 3 to 5 mL of normal saline
4. Normal saline
5. IV administration set

6. Tape
7. Antiseptic
8. Gauze
9. Any other equipment required by the device manufacturer

Instructor Resource Materials

1. Paramedic Care Principles & Practice, Third Edition, Bledsoe, Porter, Cherry

Intraosseous Infusion Validation

PERFORMANCE CRITERIA: 100% accuracy required on all items marked with an *

Before establishing intraosseous infusion the AEMT or paramedic must:

Points	Score	Performance Steps	Additional Information
1		Take or verbalize body substance isolation. *	Selection: gloves, goggles, mask, gown, booties, P100 PRN
1		Confirm that intraosseous access is clinically indicated. *	
1		Do not place if contraindications to intraosseous access are present. *	<ol style="list-style-type: none"> 1. Fracture of insertion site bone 2. Inability to clearly identify insertion site (absence of anatomical landmarks / excess tissue / other problem) 3. Infection at insertion site 4. Previous orthopedic procedure at insertion site (IO attempt within last 48 hours / joint replacement / prosthetic)

While establishing intraosseous infusion the AEMT or paramedic must:

Points	Score	Performance Steps	Additional Information
1		Select the most appropriate insertion site based on clinical needs, operational requirements, and the available device.	<ol style="list-style-type: none"> 1. AEMTs: <ol style="list-style-type: none"> a. Vidacare's EZ-IO Power Driver may be used while following a standing order at these insertion sites: <ul style="list-style-type: none"> Distal tibia in pediatrics Proximal tibia in pediatrics b. Waismed's Bone Injection Gun (B.I.G.) may be used while following a standing order at these insertion sites: <ul style="list-style-type: none"> Proximal tibia in pediatrics 2. Paramedics: <ol style="list-style-type: none"> a. Vidacare's EZ-IO Power Driver may be used while following a standing order at these insertion sites: <ul style="list-style-type: none"> Distal tibia in adults & pediatrics Proximal humerus / humeral head in adults Proximal tibia in adults & pediatrics b. Waismed's Bone Injection Gun (B.I.G.) may be used while following a standing order at these insertion sites: <ul style="list-style-type: none"> Proximal tibia in adults & pediatrics
1		Identify the insertion site using anatomical landmarks. *	
1		Select the size of needle set or device based on patient size, the selected insertion site, and tissue depth. *	<ol style="list-style-type: none"> 1. AEMTs, either: <ol style="list-style-type: none"> a. EZ-IO with pink (15g / 15 mm) or blue (15g / 25 mm) needle sets b. B.I.G. red (18g pediatric) device 2. Paramedics, either: <ol style="list-style-type: none"> a. EZ-IO with pink (15g / 15 mm), blue (15g / 25 mm), and yellow (15g / 45 mm) needle sets b. B.I.G. red (18g pediatric) and blue (15g adult) devices

1		Cleanse and prepare the insertion site using aseptic technique. *	
1		Assemble and prepare equipment using aseptic technique. *	
1		Establish intraosseous access by following the manufacturer's instructions for the available device. *	
1		Verify Intraosseous placement. *	<ol style="list-style-type: none"> 1. Needle is free standing, without support 2. Aspiration of blood/marrow 3. Infusion without extravasation
1		Attach IV set and adjust infusion rate as clinically indicated. *	<ol style="list-style-type: none"> a. Despite proper placement, pressure infusion may be needed to achieve the required flow rates. b. Paramedics: Give Lidocaine 2% as ordered by the applicable treatment protocol or a base hospital order for infusion pain in the conscious patient.
1		Secure the insertion site and splint the limb to maintain intraosseous vascular access despite scene activity, patient movement, and transport. *	
1		Routinely reassess the insertion site to ensure vascular access. *	
1		Document the procedure.	

Critical Failure Criteria

- ___ Failure to take or verbalize BSI appropriate to the skill prior to performing the skill.
- ___ Failure to confirm that intraosseous access is clinically indicated.
- ___ Placement when any contraindication to intraosseous access is present.
- ___ Failure to identify the insertion site using anatomical landmarks.
- ___ Failure to select the size of needle set or device based on patient size, the selected insertion site, and tissue depth.
- ___ Failure to cleanse and prepare the insertion site using aseptic technique.
- ___ Failure to assemble and prepare equipment using aseptic technique.
- ___ Failure to follow the manufacturer's instructions for the available device.
- ___ Failure to attach IV set and adjust infusion rate as clinically indicated.
- ___ Failure to secure the insertion site and splint the limb.
- ___ Failure to routinely reassess the insertion site to ensure vascular access.
- ___ Any procedure that would have harmed the patient