MWLC EMSS Skills Sheet
IO Access

Name:	1st attempt:		Meets Standard		Does not meet standard
Date:	2nd attempt:		Meets Standard		Does not meet standard

Instructions: The purpose of this skills sheet is to outline the requirements for obtaining IO access.
Required items to meet standards are indicated with an asterisk.

Performance standard NP=Step not performed. 0=Does not meet standard. Unsuccessful; critical or excess prompting; improper technique. 1=Meets Standard. Successful; minimal to no prompting; proper technique.	**1st attempt**	**2nd attempt**
* BSI: Gloves & Eye Protection. (minimum required)		
***Identify indications for IO infusions.** ☐ Unstable pt urgently needing IV fluids or critical life-saving meds, esp. if circulatory collapse; difficult, delayed, or impossible venous access; or conditions preventing venous access at other sites. May be used prior to IV attempt in cardiac arrest (medical/trauma). ☐ Not intended for prophylactic use. Always consider benefit vs. risk. ☐ States total # of attempts per site (1).		
***Verbalize CONTRAINDICATIONS for IO infusions:** ☐ Fracture of the bone selected for IO infusion ☐ Infection at the site selected for insertion (*use alternate sites*) ☐ Previous ortho procedure (joint replacement, *IO within 48 hrs, prosthesis – use alternate site*) ☐ Re-existing medical condition (tumor near site, severe peripheral vascular disease (PVD) ☐ Inability to locate landmarks (Morbid obesity, tissue edema) (*consider alternate sites*)		
***Select appropriate IO needle set; assemble equipment** ☐ EZ-IO driver ☐ IV NS & reg drip tubing ☐ Pressure infuser bag ☐ (2) 10 mL syringes w/ NS to prime connect tubing & flush IO ☐ Conscious pt: Lidocaine 2% (100 mg/5 mL) w/o preservative ☐ Extension set or EZ Connect tubing ☐ Skin prep: Chlorhexidine (CHG 2%)/(IPA 70%) ☐ EZ-IO® needle sets: • Bariatric or humeral insertion : Yellow (45 mm) • 40 kg or greater: Blue (25 mm) • 3-30 kg: Pink (15 mm) consider for peds ☐ Tape; EZ stabilizer ☐ Attach pressure infuser to IVF bag; prime IV tubing; inflate pressure infuser to 300 mmHg. ☐ Inspect Needle Set packaging to ensure sterility ☐ *Fill syringes w/ at least 10 mL of NS (if not prefilled) – attach syringe to EZ-Connect ® extension tubing; prime tubing (tubing requires 1 mL; leave at least 9 mL NS in syringe). Leave syringe attached to EZ Connect tubing. **Note:** Due to anatomy of IO space, flow rates slower than per IV cath. A 10mL NS rapid bolus/flush w/ syringe, improves flow rates. Attach a pressure infuser device around bag of IVF.		

MWLC EMSS Skills Sheet
IO Access

Preparation and procedure:** ☐ **LOCATE INSERTION SITE:** Position pt and palpate site(s) to identify appropriate anatomical landmarks and needed needle size. **Preferred: proximal medial tibia;** alternate: proximal humerus. ☐ Follows insertion site specific procedures outlined in videos on MWLC EMSS website. ☐ If driver fails, insert manually using gentle twisting motion. ☐ **Conscious pts (before NS flush):** Remove NS syringe on connecting tubing and replace w/ lidocaine syringe. Give **LIDOCAINE 2% 1 mg/kg (max 50 mg**) (2.5 mL) ***slow **IO BEFORE NS FLUSH**, unless contraindicated. Medications intended to remain in medullary space, such as a local anesthetic, must be given very slowly until the desired anesthetic effect is achieved. ☐ ***ALL pts**: Using syringe, flush w/ at least 10 mL of NS. Observe for swelling around site. ☐ Confirm placement: Needle firm in bone and able to infuse w/o extravasation. (Do NOT rock needle in bone) ☐ Inability to aspirate blood is NOT a reliable indicator of non-placement. ☐ If placement in doubt: leave needle in place w/ connecting tubing & syringe attached (for ED to evaluate placement) & attempt IO on alternate site, or IV. ☐ Secure tubing to extremity with tape. ☐ Apply wristband to pt w date & time (reminds hospital to remove w/in 24 hrs). ☐ * Monitor IO site and pt condition.		
***Possible complications:** ☐ Bone fracture. ☐ Insertion through bone. ☐ Misplacement. ☐ Infection.		
Evaluator name, signature, comments:		

MWLC EMSS Skills Sheet

IO Access

EZ-IO 15mm: (commonly for 3-39 kg)	**Consider tissue density over the landmark desired** • **Proximal Tibia -** If NO tuberosity is present, insertion is located ~4 cm below patella and then medial along the flat aspect of the tibia. If the tuberosity IS present, the insertion site is ~2cm medial to the tibial tuberosity along the flat aspect of the tibia. Carefully feel for the "give" or "pop" indicating penetration into the medullary space. • **Not approved in MWLC EMS: Proximal Humerus – See above; plus** *the proximal humerus may be difficult or impossible to palpate in children < 5 years of age as the greater tubercle has not yet developed. In these cases the insertion will most likely be a shaft insertion.*
EZ-IO 25mm: (commonly for 40 kg and over)	• **Proximal Tibia** – insertion is located ~4 cm below patella and then medial along the flat aspect of the tibia. If the tuberosity IS present, the insertion site is ~2cm medial to the tibial tuberosity along the flat aspect of the tibia. Carefully feel for the "give" or "pop" indicating penetration into the medullary space. • **Proximal Humerus** – Insertion site is located directly on the most prominent aspect of the greater tubercle. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm (depending on pt anatomy) above the surgical neck is the insertion site. Ensure patient's hand is resting on the abdomen and that the elbow is adducted (close to the body).
EZ-IO 45mm:	Recommended for proximal humerus in patients with excessive tissue over insertion site or when a black line not visible after penetration into the tissue. • **Proximal Tibia** – See above. • **Proximal Humerus** –See above.