

Product Comparison

FEATURES	DEVICE		
Manufacturer	EZ-IO Vidacare, USA	FAST1 Pyng Medical, Canada	BIG Waismed, Israel
Use	Single use needle set. Inserted by battery or manually powered driver. No removal tool	Single use needle set. Manually inserted Removal tool	Single use needle set Spring loaded device No removal tool
Power source for insertion	Battery or manually operated	Manually operated	Compressed Spring
FDA & CE cleared Insertion Site(s)	Adult & pediatric proximal tibia. Adult Humerus	Adult sternum (Manubrium)	Adult & pediatric proximal tibia
Depth control	Needle set depth control by operator	Governed depth control by device	Depth not controlled
IO site securing	Low profile, wide hub in contact with skin. 90 degree extension set.	Transparent dome - flexible infusion tube	None
Average/minimum time from decision to obtain access - to IO fluid flowing with site secured	< 30 seconds	> 1 minute	< 30 seconds
Estimated drug delivery time	25 seconds humeral access. 51 seconds tibial access	25 seconds sternal access	51 seconds tibial access
Field effectiveness	87% (Frascone et al)	72% (Frascone et al)	Unknown
Compatibility with other systems	Standard luer lock	Requires proprietary extension set (connected to target patch)	Non-standard connect
Pediatric Version Available	Yes	No	Yes

Frequently Asked Questions

Q: What are the risks or complications associated with this product?

A: The documented overall complication rate associated with intraosseous insertion and infusion is less than 1 percent. Potential complications include extravasation (leakage), dislodgement of the catheter, compartment syndrome, bone fracture, pain related to infusion of medications/fluids and infection.

Q: What is the infection rate associated with the use of IO and the EZ-IO product system?

A: Overall IO experience in thousands of children and adults show the infection rate to be less than 0.6 percent. Complications are most often not serious and can be treated in an outpatient capacity.

Q: What is the pain/trauma associated with IO vs. IV?

A: EZ-IO AD (40 kg and greater) insertion has been well documented in conscious patients. Studies have shown that EZ-IO insertion is well tolerated by conscious patients and is no more painful than a large bore peripheral IV stick. Conscious patients have reported pain after EZ-IO insertion associated with the initial

administration of fluid or medication. This is due to the extensive network of pressure sensitive nerves located within the medullary cavity. An initial bolus of preservative-free Lidocaine has proven effective in alleviating this discomfort.

Q: How long may the EZ-IO catheter be left in place?

A: The catheter should be removed within 24 hours.

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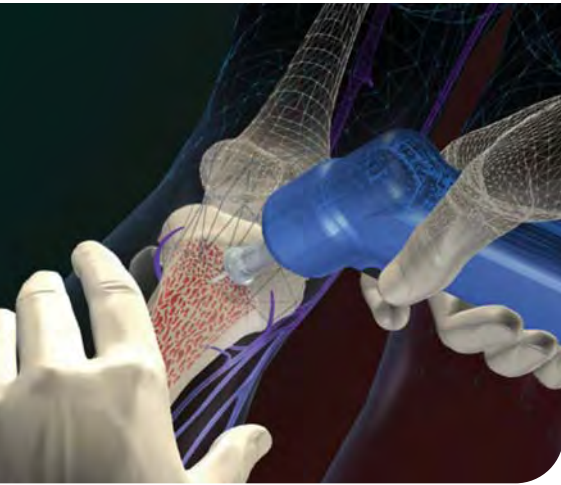
EZ-IO Product System

Why Use IO?

- Immediate Vascular Access
- Equivalent to IV for Effectively Delivering Fluids and Medications
- Supported by the 2005 AHA ACLS Guidelines and the ERC Guidelines

Challenging vascular access is a critical problem in 5-10 percent of patients of all ages and weight in the pre-hospital and hospital settings. This equates to approximately 6 million patients in the U.S. annually. From onset of illness or initial injury, through patient transport and treatment in the Emergency Department, vascular access is critical to the survival of patients. In patients suffering from conditions such as shock, cardiac arrest, drug overdose, dehydration, diabetic coma, renal failure and altered states of consciousness, it may be impossible to find an accessible vein. In the hospital, central line access has long been the primary alternative to failed IV access, however it takes longer, costs more, has a higher risk of complications and most often requires a physician.

Increasingly, in the hospital, physicians and nurses are turning to the intraosseous (IO) route as the first alternative to IVs, rather than central lines. In the pre-hospital environment, emergency medicine providers are finding that IO is quick, safe and effective venous access. The intraosseous space functions as a non-collapsible vein with any fluid or medication reaching the central circulation within seconds, with minimal patient discomfort.



The EZ-IO Product System

- Small battery-powered device and a beveled, hollow drill tipped needle set
- Specifically designed for safety and controlled intraosseous vascular access
- Developed for patients of all ages and sizes with two needle sizes available, one for patients 3 - 39 kg and one for patients 40 kg and greater
- Creates a secure stable port allowing access into the intraosseous space
- Fluids and drugs administered reach the central vascular system within seconds
- Superior speed, control, safety and effectiveness result from unparalleled technological advancement making the system the best product on the market today

The EZ-IO product system is a valuable addition to life-saving emergency medical technology that is now available to emergency transport services, hospitals and emergency departments and other locations where emergency access is required.

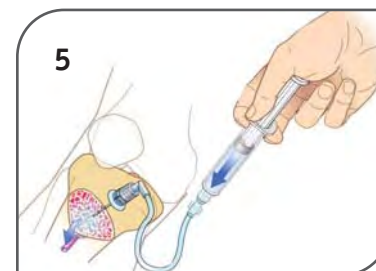
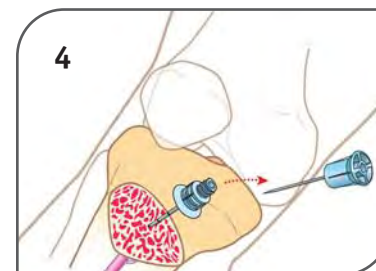
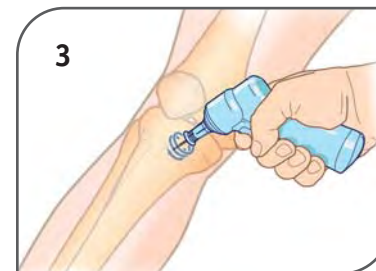
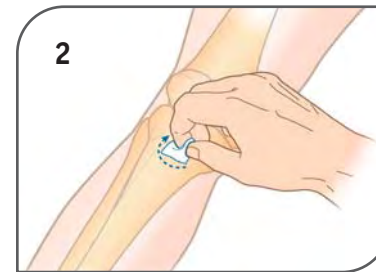
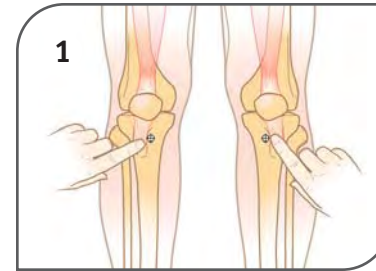
American Heart Association ACLS Guidelines

- Now recommend IO as the first alternative to IV in adult cardiac arrest patients
- Declare IO access a safe and effective route for accessing the central vascular system
- State that IO is now the standard of care for cardiac arrest patients
- Support the theory that IO access is similar to central line access and carries less risk of complications for emergency medical physicians

Summary of AHA ACLS Guidelines for Establishing Vascular Access in Cardiac Arrest Patients:

1. Establish IV or IO access for administration of cardiac drugs in cardiac arrest.
2. Central lines are not needed in most CPR attempts.
3. Adult IO cannulation provides venous access similar to that achieved by central venous access.

4. Adult IO access is safe and effective, according to several trials cited in the guidelines.
5. IO vascular access should be established if IV access is unavailable.
6. IO drug administration is preferred over endotracheal (ET) tube administration. IO drug administration provides more predictable drug delivery and pharmacological effect.
7. Throughout the ACLS protocols and algorithms, IO is paired with IV access and is recommended over central lines and ET tube drug administration for cases of cardiac arrest.



Indications for Use

- Altered level of consciousness
- Arrhythmias
- Burns
- Cardiac arrest
- Dehydration
- Head injury
- Hypotension
- Respiratory arrest
- Seizures
- Shock
- Traumatic injuries

*Other medical conditions when immediate vascular access is required, but standard IV access is not possible.

Contraindications for Use

- Fracture of the tibia or femur (fluid may extravasate into subcutaneous tissue)
- Absence of adequate anatomical landmarks for proper insertion site identification
- Pre-existing medical condition on the extremity selected for insertion
- Infection at area of insertion
- Previous, orthopedic procedure near site
- Excessive pre-tibial soft tissue

Distinguishing Features

Speed of insertion – Stable and secure – Drugs reach the central vascular system within seconds

- 15 gauge, 25 mm long needles for patients weighing 40 kg and greater
- 15 gauge, 15mm long needles for patients weighing between 3 kg and 39 kg
- Needles made of 304-stainless steel
- Battery power makes insertion effortless and guided
- Standard luer-lock catheter
- Easy removal – no special tool needed
- Compact size and weight makes it an ideal addition to emergency crash carts

Benefits

- Insertion time in 10 seconds or less
- Delivers fluid, medications and blood products directly into the vascular system with blood levels equivalent to IV administration
- Effective and safe multi-site placement for patients of all weights



Immediate Vascular Access...
When You Need It MostSM