This EZ-IO® Introductory Program is designed to help you understand use and teach the EZ-IO® infusion system. Our collective goal remains, immediate, safe vascular access for all critical patients. Our approach to this goal is simple – the right education and training – with the best providers – when and wherever they are needed most.

At the completion of this program if you still have questions or concerns please call us at 1.866.479.8500 or visit our web site at www.vidacare.com

We at Vidacare® appreciate what you do and the time you devote to it. Thank you for becoming a member of our team!
The EZ-IO Lithium Driver

The EZ-IO® driver is produced with Lithium Ion batteries and is delivered sealed from the factory. Do not attempt battery replacement or adjustment.

The driver is designed for 1000 human insertions.
This slide compares the EZ-IO® PD and AD needle sets.
The EZ-IO Needle Sets

This image is a piece by piece break down of the EZ-IO® needle set. The picture insets on the left are of the assembled needle sets (the top inset is shown without the needle set Safety Cap while the bottom inset has the Safety Cap in position). The inset picture on the top right clearly shows the specialized needle tip.

Note that the needle sets have multiple parts. Each part has a specific function. It's important to take a training needle set apart (excluding the metal disc) to clearly identify each component!

The needle set safety cap attaches ONLY to the catheter hub. This cap comes on the sterile needle set and is discarded once the sterile needle set is opened and prepared for use. THE NEEDLE SET SAFETY CAP SHOULD NEVER BE REPLACED. IF THE NEEDLE SET SAFETY CAP IS NOT IN POSITION WHEN OPENING A NEW EZ-IO® CARTIDGE – DISCARD THE NEEDLE SET AND OPEN A NEW CARTRIDGE.

The Catheter’s are 15 gauge, 304 stainless steel

The Catheter Hub is connected to the catheter and provides an adapter for the EZ-Connect®. The adapter is a standard Luer lock connection

The stylet is blended with the catheter to provide the cutting tip for easy insertion. The stylet is connected to the stylet hub and is initially found attached to the catheter hub. Once the needle set is inserted the stylet hub is unscrewed and the stylet is removed and placed into the stylet shuttle or bio hazard container.

The metal disc (located inside the stylet hub) is used to attach the magnetized drive shaft to the needle set.

Needle set metal discs may become dislodged after multiple training sessions or excessive pressure. The small metal disc might remain attached to the drive shaft’s magnet. Simply pull the metal disc off and dispose of the entire needle set in an appropriate container.
Precise cylindrical hole created by EZ-IO insertion

This cross section of a bone following EZ-IO® removal demonstrates the precise cylindrical insertion. This precise entry creates a tight catheter fit against the bone.

This “tight catheter fit” lessens the likelihood of extravasation.
The EZ-IO® Infusion system.

Consisting of the:

EZ-IO® Driver (and the associated hard or soft case)

EZ-IO® Needle Sets – contained in safety sealed cartridges

EZ-IO® Wristband

EZ-Connect® extension sets

IMPORTANT SAFETY CONSIDERATION – The EZ-IO® infusion system has a separate TRAINING DRIVER AND NEEDLE SETS. AD & PD training needle sets are colored RED and are NOT STERILE OR FOR HUMAN USE. Additionally training needle sets are not safety sealed or sterile and should NEVER be placed inside a kit intended for a patient care area.
Anatomy of intraosseous access

Thousands of small veins lead from the medullary space to the central circulation

With this slide we can identify the structures of the long bone. Note the vasculature crossing between the cancellous bone, through the thin cortex and into the veins – this makes IO infusion possible!
It is important to discuss pain as it relates to IO usage. Preconceived or misinformed viewpoints can lead to misunderstanding and possible complications.

There are two types of pain to consider with IO insertion. At the risk of oversimplification here is a working description:

Somatic pain could be described as the pain that you feel on the surface of your body while visceral pain could be summarized as the pain that you feel internally.

Somatic pain:
EZ-IO® insertion is fast. The insertion speed coupled with a specific, small insertion site limits the amount of somatic pain or nerve stimulation that occurs. The pain is considered tolerable by the vast majority of awake patients and the use of a local anesthetic is not usually indicated or recommended.

Visceral pain:
Once the catheter is in position one should be aware that infusion pain is visceral in nature and the stimulation of nerves extends to a wide area. This pain can be extremely diffuse, perceived as extreme and may also produce nausea. For this reason we recommend that awake patients (those with a GCS of > 8) receive 20 – 40 mg of 2 % (Preservative Free) Lidocaine slowly via the EZ-IO® catheter prior to any fluid flush, bolus or infusion. You should consider “priming your extension set” with Lidocaine in these situations.
Proximal Tibial Anatomy

With this slide we can identify the structures of the tibia. Important points to note include the thin cortex at the Epiphysis (Our EZ-IO® AD insertion site) versus the thick compact bone on the Diaphysis. Again, note the vasculature crossing between the cancellous bone making IO infusion possible!
These images were created during an anatomical study at the University of Texas Health Science Center - San Antonio.
Note the distance from the proximal aspect of the tibia to the middle of the tuberosity.

Note the average skin thickness at the insertion site.

This image was also created during the anatomical study at the University of Texas Health Science Center - San Antonio.
The important anatomy of the Proximal Humerus is relatively easy to understand and appreciate provided that the model or patient is in a supine position (or at a minimum leaning back in their chair - with shoulders against the back rest) - with the arm adducted and the elbow posteriorly located.
In these two images the provider can visualize the insertion site and the relative lack of critical structures near that specific location.
Comprehensive anatomical reviews of the human shoulder and the associated structures of the proximal humerus were undertaken by the University of Texas Health Science Center’s Department of Radiology, Department of Anatomical Services and the Vidacare Corporation.
Proximal Humerus Site

This is slide 1 of 3 in a series demonstrating an anatomical review of the proximal humerus insertion site.
Proximal Humerus Site

Adult male cadaver – right proximal humerus

This is slide 2 of 3 in a series demonstrating an anatomical review of the proximal humerus insertion site.
This is slide 3 of 3 in a series demonstrating an anatomical review of the proximal humerus insertion site.

Note that the gloved finger in the above image is actually resting in the intertubercular groove or sulcus.

This 3 slide series demonstrated the large insertion site area that is relatively devoid of critical structures.
A 1. **Expose shoulder and adduct humerus** (place the patient’s arm against the patient’s body) resting the elbow on the stretcher or ground. (With the patient in this position you may immediately note the proximal humerus on the anterior-superior aspect of the upper arm or anterior-lateral shoulder)

Note that the humerus has been outlined and clearly rests anterior to the arms lateral midline.

Do not attempt insertion medial to the intertubercular Groove or the Lesser Tubercle (Defined by the RED CIRCLE in the 3 D drawing). Insertion medial to the Lesser Tubercle may injure nerves, arteries and veins!
The Proximal Humerus insertion site

A 1. **Expose shoulder and adduct humerus** (place the patient’s arm against the patient’s body) resting the elbow on the stretcher or ground. (With the patient in this position you may immediately note the proximal humerus on the anterior-superior aspect of the upper arm or anterior-lateral shoulder)

Note that the humerus has been outlined and clearly rests anterior to the arms lateral midline.
Let’s start the pediatric section with an anatomical overview. Here we identify the structures of the developing tibia. Important points to note include the thin cortex at the Epiphysis (The EZ-IO® PD insertion site) versus the thicker compact bone on the Diaphysis. Note also the vasculature crossing from the cancellous bone, through the thin cortex and into the veins – this makes IO infusion possible!

The growth plate is of particular interest with regard to pediatric intraosseous placement.

There is a great deal of discussion and a substantial body of evidence surrounding the pediatric growth plate. The fear, though unproven, suggests that permanent injury may result from the placement of an IO catheter into the growth plate. At present there are no studies in the literature associating IO placement with growth plate injury.

Research in animal models suggests that inadvertent IO placement through the growth plate does not cause any long term deformity or any other complications. Additionally, follow up x-rays in pediatric patients, whose epiphyseal plates had been inadvertently penetrated by IO needles, never demonstrated complications.

However, to be prudent you should always maintain a reasonable distance from the growth plate to avoid it’s inadvertent penetration.

The information, research and procedures in the training material will assist you in the selection and confident placement of the EZ-IO® PD in the correct anatomical locations.
These x-rays clearly help to identify the growth plate and the EZ-IO® PD insertions site.

(Repeated background information from previous slide)

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However, to be prudent you should always maintain a reasonable distance from the growth plate to avoid it’s inadvertent penetration.
This cross section of a Neonate leg - with a traditional IO catheter “in position” - clearly demonstrates the anatomical relationship between the lower extremity structures.

In this view you can also see various compartments that can be compressed or filled should fluid be inadvertently infused in the incorrect area. This leakage (or extravasation) can lead to compartment syndrome. The decrease in circulation to a distal area secondary to compartment syndrome may cause significant injury. For this reason it is imperative to:

- Plan placement depth based upon patient size and weight
- Gently insert the catheter (DO NOT USE EXCESSIVE FORCE OR SPEED)
- Advance the catheter slowly (ALLOW THE DRIVER TO DO THE WORK)
- Feel the needle set tip drop into the medullary space (STOP WHEN YOU FEEL THE POP)
- Frequently monitor the insertion site and extremity for the signs and symptoms of extravasation or compartment syndrome.

THE EZ-IO® PD gives you the control to precisely place the Needle Tip into the medullary space. By GENTLY and SLOWLY advancing the catheter you will maintain control and avoid SERIOUS COMPLICATIONS!

FOR THIS REASON:
DO NOT ATTEMPT EZ-IO® PD INSERTION UNTIL PROPERLY TRAINED BY A QUALIFIED INSTRUCTOR USING APPROPRIATE TRAINING EQUIPMENT AND SIMULATORS.
Now let’s compare the density of the relatively small patient (previous slide) to that of this much larger patient.

Note the bone density and tuberosity lateral to the insertion site!
EZ-IO Access

The art of insertion

Now that we understand where to place the EZ-IO® let’s talk about how to do it!
Indications for EZ-IO Access

➢ Altered level of consciousness
➢ Respiratory compromise
➢ Hemodynamic instability

To gain intraosseous access in emergencies

Listed here are the primary indications. Can you think of specific conditions that would fit each indications?

*Examples of disease states often meeting these criteria include, but are not limited to the following:*

Cardiac arrest, Status epilepticus, All shock states, Atrrhythmias, Dehydration Burns, Drug Overdose, DKA (diabetic), Renal failure, Stroke, AMI, Coma, OB complications, Thyroid crisis, Trauma, Anaphylaxis, CHF, Emphysema, Respiratory arrest, Hemophiliac crisis
Contraindications for EZ-IO Access

- Fracture
- Previous orthopedic procedures near insertion site
- Infection at the insertion site
- Inability to locate landmarks or excessive tissue

These are the contraindications.

Recent fractures may cause fluid or drugs to leak – thus not reaching target tissue and possibly causing additional significant injury.

Certain orthopedic procedures at or near the insertion site. An example of an orthopedic procedure that would cause problems for the EZ-IO® would be a joint replacement. This would render the IO space inaccessible secondary to the indwelling device. Another example would be a recent (within the past 24 hours) IO placement in the same extremity. This “extra penetration” might allow extravasation (leakage) into surrounding soft tissue from the initial IO site (that has not yet closed). *Not all orthopedic procedures pose a contraindication or concern to EZ-IO® usage.*

Infections at the insertion site pose a risk because they could be introduced into the bone and systemic circulation.

Inability to locate the EZ-IO® landmarks could result in an attempted placement that is unacceptable and dangerous.

Lastly, Excessive tissue over the insertion site may result in the needle set failing to reach the intraosseous space.

*With each of the contraindication listed above the provider should consider alternate appropriate sites. Additionally, a risk versus benefit assessment should always be considered prior to any IO placement.*
Observe Body Substance Isolation Precautions

Anytime you are providing care to the public it is important to protect yourself as well as the patient. Practicing proper Body Substance Isolation (BSI) is vital to quality patient care and is recommended anytime the EZ-IO® infusion system is in use.
Here we can identify the major structures of the upper and lower leg as well as the three **EZ-IO® landmarks**, the **Tibia** (anterior or most forward lower leg bone), **Patella** (knee cap) and **Tibial tuberosity** (bump or raised area on the anterior aspect or front of the tibia)

Can you identify the landmarks on yourself or someone else?

**Helpful reminders:** “**If you want to get in – think in!**” (rational – If you want to get inside (the IO space or bone) – think inside – (the medial aspect of the leg.)

“**Big Toe – Go EZ-IO®**” (rational – the EZ-IO® is placed on the medial (inside) aspect of the leg – the big toes is found on the medial (toward the inside) aspect of the leg.
Identify the Proximal Humerus insertion site

To begin the discussion on humeral access we must first position the arm for maximum proximal humerus exposure. Adduct the patient’s humerus then posteriorly locate the elbow to the same “plane” as the spine. Next, place the patient’s hand on the patient’s abdomen – at or near the umbilicus. This position will provide for a more prominent insertion site as well as ensure protection for the vital neurovascular structures located under the patient’s arm.

Important note: By placing the hand on the umbilicus (rather than the entire forearm across the abdomen) you will be able to retain the elbow on the stretcher or the ground and maximize your approach to the proximal humerus.
The patient should be in a supine position.

Expose shoulder and adduct humerus (place the patient’s arm against the patient’s body) resting the elbow on the stretcher or ground.

A Palpate and identify the mid-shaft humerus and continue palpating toward the proximal aspect or proximal humerus. As you near the shoulder you will note a protrusion. This protrusion is the greater tubercle insertion site.

A With the opposite hand you may consider “pinching” the anterior and inferior aspects of the proximal humerus while confirming the identification of the greater tubercle. This will ensure that you have identified the midline of the humerus itself.
B Identify the greater tubercle insertion site approximately two finger widths inferior to the coracoid process and the acromion. One can envision the location of this site by creating a “T” - the upper portion connecting the coracoid process and the acromion while the “leg” reaches inferiorly and slightly anteriorly - approximately two finger widths- on the midline of the humerus.
Confirm and clean insertion site

Once the site has been identified and confirmed, clean the location according to local protocol.
If the patient “fits” on the Broselow™ Tape THINK PINK* and use the EZ-IO PD

*Obese pediatric patients may require the EZ-IO AD needle Set

The Broselow™ tape can add a straightforward decision making tool for the EZ-IO® PD (provided that the pediatric patient is not obese).
Important: The tibial tuberosity is often difficult or impossible to palpate on very young patients! For this reason - the EZ-IO® PD 3-12 kg trainer does not have a palpable tibial tuberosity! The traditional approach for IO insertions in small patients - where the tibial tuberosity cannot be palpated - is to identify the insertion site - “TWO FINGER WIDTHS BELOW THE PATELLA and then medial along the flat aspect of the TIBIA”.

On the other hand our EZ-IO® PD 13-39 kg trainer DOES have a palpable tibial tuberosity reflecting the natural growth process. The traditional approach to IO insertion in more mature patients - where the tuberosity can be palpated - is “One finger width distal to the tibial tuberosity along the flat aspect of the medial tibia”.

* Once the patients reaches maturity (or adult size) the most acceptable site for EZ-IO® insertions is directly medial to the tibial tuberosity.
As patients mature the Tibial Tuberosity becomes easier to identify

If the Tibial Tuberosity CAN be palpated the insertion site is one finger width below the Tuberosity (and then) medial along the flat aspect of the Tibia

Important: The tibial tuberosity is often difficult or impossible to palpate on very young patients! For this reason - the EZ-IO® PD 3-12 kg trainer does not have a palpable tibial tuberosity! The traditional approach for IO insertions in small patients - where the tibial tuberosity cannot be palpated - is to identify the insertion site -“TWO FINGER WIDTHS BELOW THE PATELLA and then medial along the flat aspect of the TIBIA”.

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* Once the patients reaches maturity (or adult size) the most acceptable site for EZ-IO® insertions is directly medial to the tibial tuberosity.
Here we can identify the major structures of the upper and lower leg as well as the three EZ-IO® landmarks, the Tibia (anterior or most forward lower leg bone), Patella (knee cap) and Tibial tuberosity* (bump or raised area on the anterior aspect or front of the tibia). As mentioned previously – the tibial tuberosity can be difficult to identify in patients under 13 kg.

Can you identify the landmarks on pediatric patients of various sizes?

Helpful reminders: “If you want to get in – think in!” (rational – If you want to get inside (the IO space or bone) – think inside – (the medial aspect of the leg.)

“Big Toe – Go EZ-IO®” (rational – the EZ-IO® is placed on the medial (inside) aspect of the leg – the big toes is found on the medial (toward the inside) aspect of the leg.)
Humeral access for pediatric patients also begins with positioning the arm for maximum proximal humerus exposure. Adduct the patient’s humerus then posteriorly locate the elbow to the same “plane” as the spine. Next, place the patient’s hand on the patient’s abdomen – at or near the umbilicus.

This position will provide for a more prominent insertion site as well as ensure protection for the vital neurovascular structures located under the patient’s arm.

Important note: By placing the hand on the umbilicus (rather than the entire forearm across the abdomen) you will be able to retain the elbow on the stretcher or the ground and maximize your approach to the proximal humerus.

CAUTION – Identifying the proximal humerus on patients weighting less than 35 kg may be difficult because the Greater Tubercle has not developed. Ensure that you have identified and confirmed the Greater Tubercle insertion site before attempting placement.

Expose shoulder and adduct humerus (place the patient’s arm against the patient’s body) resting the elbow on the stretcher or ground.

A Palpate and identify the mid-shaft humerus and continue palpating toward the proximal aspect or proximal humerus. As you near the shoulder you will note a protrusion. This protrusion is the greater tubercle insertion site.
Insert AD needle set into appropriate site

Position the EZ-IO Driver at a 90 degree angle to the bone

Remember “EZ does it”

Lightly holding the EZ-IO driver will improve usage

40 kg and greater usage

Don’t force the needle set into position - “allow the driver to do the work”

Stabilize the site and insert the EZ-IO® AD - maintaining a 90 degree angle during the insertion process.

IMPORTANT - Stabilize the needle set prior to any attempt at removing the driver. Failure to stabilize the catheter may cause inadvertent dislodgment.

REMEMBER – “Easy Does It”. Do not treat an IO insertion like a construction project – it’s a medical procedure. Insert the needle set gently with the calculated procession and ease that the system was designed for!

Hold the driver lightly in your hand – Relax your grip and guide the procedure!
Insert PD needle set into appropriate site

Position the EZ-IO Driver at a 90 degree angle to the bone

Select needle set based on patient size & weight

3 - 39 kg usage

Lightly holding the EZ-IO driver will improve usage

Stabilize the site and place the powered EZ-IO® PD - maintaining a 90 degree angle during the insertion process.

IMPORTANT - Stabilize the needle set prior to any attempt at removing the driver. Failure to stabilize the catheter may cause inadvertent dislodgment.

REMEMBER – “Easy Does It”. Do not treat IO insertion like a construction project – it’s a medical procedure. Insert the needle set gently with the calculated procession and ease that the system was designed for!

Hold the driver lightly in your hand – Relax your grip and guide the procedure!
Important needle set insertion tip

User induced recoil may lead to needle set dislodgement or extravasation

Multiple insertions with the EZ-IO® AD and PD training needle sets, drivers and mannequins will properly prepare you for your first IO placement. Keep in mind that you need to:

1. Place the needle set tip on the insertion site at a **90 degree angle** to the tibia.

2. Lightly hold the driver in your dominant hand.

3. **Allow the driver to do the work!**

4. **DO NOT PUSH** – instead – **Gently Guide!**

5. **Carefully feel for the “pop” or “give” indicating penetration into the medullary space! STOP - WHEN YOU FEEL THE “POP”**

*Don’t panic when you “feel the pop”! You have not penetrated the opposite cortex – simply release your finger from the trigger and allow the rotation of the needle set to slow while the needle tip advances another mm.*
Remove the stylet and syringe flush catheter

Remove the stylet (1 & ½ counterclockwise rotations) and secured it. Attach the EZ-Connect® extension set to the standard Luer lock & confirm placement of the catheter. This can be accomplished by identifying several important findings:

- The catheter is firmly seated and does not move.
- You note blood at the catheter hub.
- You are able to aspirate blood or marrow from the catheter (We recommend aspiration of only a small amount of blood due to its extremely viscous nature).
- Drugs or fluids flow without difficulty – there are no signs of extravasation (leakage) in or around the tissue. CAUTION: Conscious patients will experience pain with infusion prior to Lidocaine! Flow rates may be slow or nonexistent prior to the 10 ml bolus.
- You also may have checked the stylet tip for blood prior to placing it in the stylet shuttle or biohazard container.

Other indicators of proper placement include:

- noted effects of administered drugs
- X-Ray confirmation

Remember to protect the sterile connection point on the catheter hub!

Four Important points to consider once the EZ-IO® has been established:

- Routinely reconfirm that the EZ-IO® catheter is secure and in position.
- Maintain appropriate protection at the insertion site guarding against accidental bumping or dislodgement.
- Frequently monitor the EZ-IO®, fluid and the extremity.
- Remove the EZ-IO® within 24 hours.
Avoid rocking the EZ-IO catheter during usage

Use the EZ-Connect supplied with the needle set!

Attempt to avoid connecting a syringe directly the EZ-IO® during treatment. Use of the EZ-Connect® will help to avoid complications (such as rocking the catheter).
Begin infusion with pressure

A pressure bag, infusion pump or syringe will improve the flow rates

* If you need a blood sample for lab analysis – we recommend drawing blood directly from the EZ-Connect® with a syringe. Be certain to adequately flush the tubing after the sample is obtained.

Prior to any drug or fluid administration be certain to Syringe flush the EZ-IO® AD catheter with 10 ml of fluid (5 ml for the EZ-IO® PD catheter).

NOTE: THERE IS A DISTINCT DIFFERENCE BETWEEN THE “SYRINGE FLUSH OR BOLUS” DESCRIBED ABOVE AND FLUID “GIVEN OR PUSHED WITH AN ADMINISTRATION SET”. This difference relates specifically to:

The pressures generated by the syringe – clearing the “pathway for treatment” (Which is necessary because of the anatomy and nature of the IO space) Versus the relatively slow, low pressure “supportive administration” of fluids given over time.

“NO FLUSH = NO FLOW” Failure to “syringe flush” may result in a limited or no flow IO situation

* If the patient is awake slowly administer 20 - 40 mg of 2% (Preservative free) Lidocaine IO prior to the initial bolus. IO fluid administration causes pain for conscious patients and is related to intramedullary pressure. Lidocaine has proven to be an extremely effective treatment for this pain. (Utilizing a Lidocaine pre-filled syringe simplifies this process – but must be approved by protocol)

Insure that you protect the patient and the sterile connection point on the catheter hub!
Removal of the EZ-IO® catheter from any location is straightforward and simple!

Follow these steps to ensure that you have no complications:

Step 1: Remove the attached EZ-Connect® extension set (note the inset pictures in addition to the illustrations) CAUTION: The patient may bleed from the exposed catheter hub and you now have an open portal to the patient’s vascular system – thus maintain sterility.

FROM THIS POINT FORWARD ENSURE THAT YOU MAINTAIN A 90 DEGREE ANGLE

Step 2: Attach a sterile 5 or 10 cc Luer lock syringe that is “zeroed out” (The syringe will act as longer handle easing the removal process)
EZ-IO Removal

Rotate the syringe clockwise

Maintain a 90 degree angle

FROM THIS POINT FORWARD ENSURE THAT YOU MAINTAIN A 90 DEGREE ANGLE

Step 3: Rotate the syringe (and catheter) clockwise (this relieves the “tension between the catheter and the bone).
EZ-IO Removal

Maintain a 90 degree angle

Rotate the syringe clockwise

Gently pull

Maintain 90 degree angle, Rotate clockwise and gently Pull

FROM THIS POINT FORWARD ENSURE THAT YOU

MAINTAIN A 90 DEGREE ANGLE

**Step 4:** While continuing to rotate begin gently pulling the catheter out. AVOID EXCESSIVE FORCE WHILE PULLING. A slow steady rotation and gentle axial pulling will safely remove the catheter. Use of excessive force may cause “recoil” injuring you or the patient.

Immediately upon removal place the catheter in an approved biohazard sharps container.
Once the catheter has been removed and placed in an approved biohazard sharps container return your attention to the insertion site.

Experience demonstrates that there is minimal bleeding after the majority of IO removals and a small Band Aid™ will usually suffice as coverage.

THIS HOWEVER IS NOT THE RULE.

Some patients may continue to slowly bleed following catheter removal. Holding direct pressure or applying a small pressure dressing for a short period of time will elevate this complication.

Monitor your patient for complications.

Prophylactic antibiotic administration is not recommended following routine EZ-IO® usage.
Complications resulting from EZ-IO® catheter removal are extremely rare.

One complication that has been noted occurs following inadvertent, awkward or untoward catheter manipulation. This would include accidental striking, rocking or bending – which will loosen the "catheter/hub" connection and cause separation.
Possible Complications

If breakage occurs Grasp the exposed catheter with hemostats – rotate and pull

24 hour emergency support 1.800.680.4911

If the catheter and hub separate or break simply grasp the exposed catheter tip (similarly to an impaled object) with a hemostat (always maintaining the catheter at a 90 degree angle) then rotate the catheter (clockwise / counter clockwise) while gentle pulling.

DO NOT ROCK, BEND OR USE EXCESSIVE FORCE ON THE EXPOSED CATHETER!

If you have any removal questions please call the 24 hour emergency support line at 1.800.680.4911
Vidacare’s EZ-IO® is now in use around the world.

Dedicated medical professionals have realized the clinical difference and are saving lives 24 hours a day, seven days a week.

Let a member of our team a moment show you what immediate vascular access can do for your very next emergency.