

NEAR NEEDLE HOLDER

Instructions for Use

While a needle with a trocar, such as a spinal needle, is preferable for IO use because it reduces the likelihood of lumen blockage by bone during insertion it is not always possible to find a large bore spinal needle short enough to insert easily. The Near Needle holder is a device designed to assist insertion of an intravenous needle into an intraosseous site for paediatric emergency vascular access when other IO devices are not available. It is shaped to fit the hand to allow easier rotation of the needle during insertion and more comfortable downward pressure than is possible using a syringe as a handle. It is made of surgical grade stainless steel and has smooth contours, so that it can be cleaned and sterilized for reuse as one would any surgical instrument. It will fit any large bore IV needle or the needle from any IV catheter.

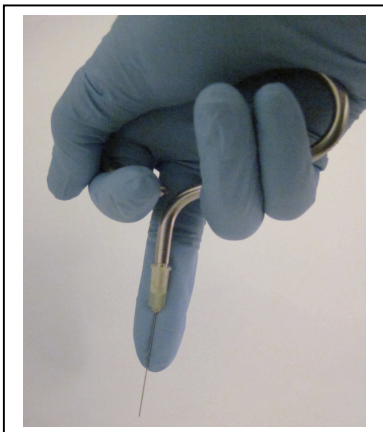
When using a needle without a trocar as an IO device, there are a number of technical considerations.

Equipment needed:

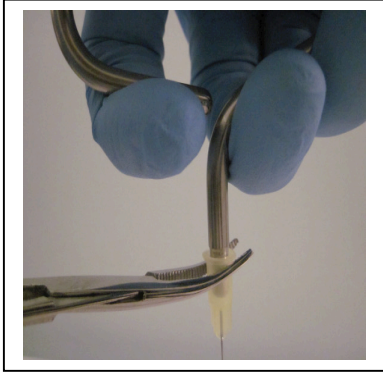
1. Needles. A 16-20F needle is suitable for children under 18 months and 12-16F for older children. It is useful to have more than one. Either an IV needle or the needle from an IV catheter can be used.
2. Near Needle Holder
3. Gloves
4. Alcohol to clean the skin
5. Towel to stabilize the leg
6. IV solution and tubing
7. Gauze and Tape to stabilize the IO insertion site
8. A 20ml syringe for bolus infusion. A 3-way stopcock and extension tubing are optimal.
9. Haemostat/forceps to grasp the needle hub when removing the holder.

Steps:

1. Stabilize the leg, put on gloves and prepare the insertion site.
2. Attach the needle holder to the hub of the IV needle
3. If the child is conscious consider using local anaesthetic.
4. Measure the needle against the leg to get an idea of how far it needs to be inserted to go into the marrow cavity. It is possible to clamp the haemostat on the needle as a guard at this point but this will make insertion more difficult as it adds weight to the needle and is not generally needed. You can stabilize and control the needle during insertion by grasping the shaft with thumb and fingers of the other hand or by supporting the shaft with the middle finger as shown.



5. Insert the needle through the skin until it touches the bone. Then, with firm downward pressure on the needle holder, rotate the needle with clockwise and counterclockwise rotation until the needle is felt to go through the cortex of the bone. The needle *does not push through* the bone, rather the beveled cutting edge of the needle **drills out a hole**. It is important to understand this and to be patient. Trying to force the needle through without the rotating motion will result in blunting the tip, which then makes it impossible to insert.



6. To remove the holder, first grasp the hub of the needle firmly with the haemostat and then twist off the holder. It is otherwise difficult to remove the holder without dislodging the needle from the site because the holder gets seated firmly into the hub with the force of the insertion. A properly sited IO needle should stand up, being held firmly by the bone. If it fails to do so, this suggests it is in the soft tissues.

7. When using a needle with a trocar for an IO, one is advised to first attempt aspiration of marrow before infusion through the needle. However, using an IV needle you may plug the lumen with bone by doing this, so it may be better instead to attempt a small bolus with the syringe, watching for swelling about the site. This will have the effect of pushing any bone debris out of the lumen of the needle.

8. In trial attempts on chicken leg models the IV needle was found to plug with bone about 10% of the time. If you are unable to instill fluid through the insertion needle, remove it and attempt to replace it with a fresh needle through the *same* hole in the bone. Do not make a new hole. Multiple holes in the bone will simply result in extravasation of fluid out of the holes into the subcutaneous tissues when infusion is attempted.

9. Stabilize the needle with a bulky gauze dressing and tape the IV line to the skin so that traction on the line does not pull on the IO insertion site.

10. IO vascular access is indicated for temporary access only. Remove the needle as soon as alternative access is established. The site does not bleed any more than a venepuncture site when the needle is removed and does not require any special dressing.

References:

1. Haas NA. Clinical review: Vascular access for fluid infusion in children Critical Care 2004; 8: 478-484
2. LaRocco BG, Wang HE. Intraosseous infusion. Prehospital Emergency Care 2003; 7: 280-285

The Near Needle Holder is a copyright design of Near Manufacturing Ltd. For questions or re-order call toll free 1-866-608-2441 or e-mail rbn@telus.net