

## RADIOLOGY (CT or MRI) TECHNOLOGIST: Policy for Power Injection

\*\* CVDs with TPN infusions cannot be used for contrast injection unless TPN has been disconnected and vigorously flushed by RN prior to exam, before patient leaves the floor.

**NOTE:** No IV medication drips should be stopped or restarted without an RN's help. Injector should not be used with any IV that has questionable patency. If in doubt, question the radiologist or the patient's care givers.

### CVD's – Adult use

<b>Catheter</b>	<b>Used for CT Inject.</b>	<b>Lumen Size</b>	<b>Max Injection Rate</b>	<b>Max PSI</b>
<b>Power PICCS (Bard) or equivalent from other manufacturer</b>	<b>Yes</b>		<b>Check Hub</b>	<b>Check hub</b>
<b>Power Ports (Bard) or equivalent port from other manufacturer</b>	<b>Yes</b>	<b>6.5-10 French</b>	<b>5cc/sec.</b>	<b>300</b>
<b>Power Hickmann</b>	<b>Yes</b>		<b>Check hub</b>	<b>Check hub</b>
<b>Non Power Injectable or unknown<sup>1</sup> ports</b>	<b>Yes</b>		<b>1 cc/ sec</b>	<b>100</b>
<b>Micropuncture introducers placed by IR</b>	<b>Yes</b>	<b>5 French</b>	<b>5 cc</b>	<b>300</b>
<b>IV catheters in a foot vein</b>	<b>Yes</b>	<b>18g-22g IV access</b>	<b>1 cc/sec</b>	<b>100</b>
<b>EJ or IJ - IV access (Including Cordis)</b>	<b>Yes</b>	<b>18g-22g IV access</b>	<b>2 cc/ sec.</b> <i>*can be increased if no other access available pending radiologist approval</i>	<b>300</b>
<b>Triple-Lumen (Arrow)</b>	<b>Yes</b>	<b>16g=brown port- Used whenever possible</b> <b>18g=blue port</b>	<b>1 cc/sec (unless higher rate listed on hub)</b>	<b>100 (lines that list higher injection rates at hub are usually OK to inject up to 300 psi)</b>

<sup>1</sup> Review Epic (lines and drains section) to research if type of port is known. If unknown, and need to inject at higher rate can review chest xray or scout image with radiologist to see if port is labeled with "CT" icon denoting power injectable port.

<b>Power Mid Lines</b>	<b>Yes</b>	<b>4/5 French</b>	<b>5 cc / sec</b>	<b>300</b>
<b>Quinton/ Non-Power Hickman/ Permacath</b>	<b>NO</b>			
<b>Non- Marked Piccs</b>	<b>NO</b>			

**Process –**

- 1.) Following Hand Hygiene Policy at all times: wash or Purell, don gloves, when completed remove gloves, then wash or Purell.
- 2.) *RN must access and de-access all indwelling Ports* – CVD lumen access may be performed by the Technologist to inject contrast.
- 3.) *Prior to use:* All CVAD lines used for contrast with injector or hand injection must have a 15 sec. hub scrub with approved disinfectant and allowed to air dry (minimum 15 sec.). **(All CVD's must be checked for patency and blood return, using a 10 cc saline syringe with 3 cc removed. Flush line with 10 cc sterile saline after.** A CVD should not be used without verification of blood return.
- 4.) Technologist should monitor injection site for the duration of injection when possible.
- 5.) The contrast for all CVD's is Omnipaque 350. If prior contrast reaction to Omnipaque, alternative agent like Isovue 370 may be used)

**Script –**

**Adult Power Hickman – In-Patients:** Call the floor to check IV status. If the RN states the patient has a Hickman two (2) questions need to be asked:

- 1.) Is the Hickman a **Power Hickman** (Needs to be labeled on the clamp with maximum injection rate, if not Is a P or an X seen within the line on the Chest X-Ray or is there documentation in EPIC.
  - 2.) Has there been **TPN** running?
    - a. If **Yes:** to flush vigorously now and Disconnect TPN and to clearly mark lumen used for TPN.
    - b. Send patient with no meds running. (Open flush is allowed)
    - c. Instruct RN that the patient will return **without** the catheter being flushed with heparin.
    - d. If the TPN cannot be stopped and flushed before leaving the floor, the Hickman may not be used for the contrast injection.
    - e. Follow 15 second hub scrub and allow to air dry (min. 15 seconds).
    - f. Do not disconnect injector prior to exam completion or the hub scrub will need to be repeated.
    - g. Maximum flow rate will be listed on the lumen clamp.

**Power Hickman: Out- patient:** Follow 15 sec. hub scrub and allow to air dry (minimum 15 sec.) Maximum flow rate will be listed on the lumen clamp. Do not disconnect injector prior to exam completion or the hub scrub will need repeating. Call South Pavilion Core IR RN, Prep Hold RN, or RN in your respected area's to flush heparin post injection per YNHH policy.

Injection rate for use of PEDIATRIC peripheral IV injections. For neck/foot veins see chart above.

Lumen Size	Max Flow Rate	PSI
18g, 20g IV access	5cc / sec	150
22 g IV access	3cc / sec	150
24 g IV access	1.5 cc / sec	50

### PEDIATRIC CENTRAL LINES INCLUDING BROVIAC

**\*\*\*Only Pediatric Central Lines 4 French (around 24G) or larger should be used for contrast injections.\*\*\***

**Gauge: Higher number= smaller line**

**French: Higher number= bigger line**

Many neonate PICC's are between 1.5-3F and have a high chance of being damaged by a contrast injection. They should not be used unless approved by radiologist and ordering attending provider

**Pedi- All Central Lines including Broviac: In- Patient patients:** Call the RN. Instruct RN to accompany the patient. Pedi RN will need to follow YNHh hub scrub policy. Pedi RN will hub scrub and access the pediatric patient's **Central Line** and the technologist will connect the contrast. Omnipaque 350 may be injected @ 1 cc / sec. at 100 PSI. With the help of the CT Tech, the Pedi RN will disconnect the injector and follow YNHh heparin flush policy.

**Pedi Broviac: Outpatient:** Call Out Patient Pedi Nursing (follow same process as above)

## !ALERT!

Attention all technologists who inject contrast. If you see a Pall Posidyne ELD filter or a Baxter INTERLINE System Extension Set (air eliminating filters) hooked up to a patient, please stop the line and let a nurse know before proceeding. These particular filters are used for patients with patent foramen ovale, as any air introduced into their body could result in a very serious reaction. They should NEVER be used with a power injector.

If you have any questions, please contact Dave Facchini:

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## CT Intraosseous Iodinated Contrast Injection Policy

IO lines may be used for power injection of iodinated contrast for CT

1. Flush IO line with 20cc IO saline. If IO line does not flush easily, do not use.
2. If Patient is unconscious, no analgesia is required. If patient is conscious and responsive to pain, IO 2% epinephrine free lidocaine should be administered just prior to contrast as per the protocol below:

### ADULT:

- Prime EZ-Connect extension set with lidocaine *Note that the priming volume of the EZ-Connect is approximately 1.0ml.*
- Slowly infuse lidocaine 40 mg IO over 2 minutes.
- Allow lidocaine to dwell in IO space for 1 minute.
- Flush with 5 to 10 mLs of normal saline.
- Slowly administer and additional 20 mg of lidocaine IO over 1 minute.

### Pediatric:

- Usual dose is 0.5mg/kg, not to exceed 40mg.
- Prime EZ-Connect extension set with lidocaine.
- *Note that the priming volume of the EZ-Connect is approximately 1.0ml.*
- Slowly infuse lidocaine over 2 minutes.
- Allow lidocaine to dwell in IO space for 1 minute.
- Flush with 2-5 mLs of normal saline.
- Slowly administer subsequent lidocaine (half the initial dose) IO over 1 minute.

3. Hook power injector tubing directly to IO line hub.

4. Inject contrast through IO line. No guidelines exist on rates for injection so use lowest injection rate possible (up to 5cc/sec) for the study and do not exceed 300 psi.

5. Disconnect power injector tubing from the IO line hub and flush the IO line with 20 cc IO saline.

