

<b>Confirm Indication</b>	<ol style="list-style-type: none"> <li>1. Inadequate peripheral IV access</li> <li>2. Peripherally incompatible infusions (TPN/vasopressors/chemo)</li> <li>3. Hemodynamic monitoring (CVP/ScvO2/PCWP)</li> <li>4. Venous interventions (catheter-directed tPA) and device placement (pacemaker)</li> <li>5. Extracorporeal therapies (HD/plasmapheresis/ECMO) - *only with large-bore catheters, not TLC*</li> </ol>				
<b>Contraindications</b>	<ol style="list-style-type: none"> <li>1. Overlying infection</li> <li>2. Vessel thrombosis or noncompatible anatomic defect</li> </ol>				
<b>Obtain Consent</b>	<p>Explain &amp; confirm the patient’s understanding:</p> <table border="0"> <tr> <td>1. Procedural process</td> <td>3. Risks &amp; techniques to mitigate them (see reverse side)</td> </tr> <tr> <td>2. Potential benefits</td> <td>4. Risks of not performing &amp; alternatives</td> </tr> </table>	1. Procedural process	3. Risks & techniques to mitigate them (see reverse side)	2. Potential benefits	4. Risks of not performing & alternatives
1. Procedural process	3. Risks & techniques to mitigate them (see reverse side)				
2. Potential benefits	4. Risks of not performing & alternatives				
<b>Optimize Procedural Environment and Positioning</b>	<ol style="list-style-type: none"> <li>1. Lightly secure head, if indicated</li> <li>2. Consider addressing pain and/or anxiety</li> <li>3. Bed raised to proceduralist’s waist and placed in Trendelenburg</li> <li>4. Bed away from the wall and remove the headboard</li> <li>5. Position US in clear view</li> <li>6. Procedural table and trash by proceduralist</li> </ol>				
<b>Pre-procedural Ultrasound</b>	<ol style="list-style-type: none"> <li>1. Identify the IJ vein based on compressibility and location anterior and lateral to the IC</li> <li>2. Confirm patency of vessel down to the level of the clavicle</li> </ol>				
<b>Supplies</b>	See reverse side for details. Verify all necessary supplies are available				
<b>Timeout</b>	Confirm name, DOB, procedure, location, allergies				
<b>Sterile Preparations</b>	<ol style="list-style-type: none"> <li>1. Open kit in a sterile fashion</li> <li>2. Don cap, face mask, eye protection, sterile gown &amp; sterile gloves</li> <li>3. Prep site with 2 chlorhexidine x 30 seconds</li> <li>4. Apply full body drape</li> <li>5. Prep ultrasound transducer with sterile probe cover</li> </ol>				
<b>Prepare Supplies</b>	<ol style="list-style-type: none"> <li>1. Draw up lidocaine with the largest needle or filtered catheter provided</li> <li>2. Prime the guidewire</li> <li>3. Flush and cap catheter ports</li> <li>4. Lay out critical supplies in order of use</li> </ol>				
<b>Procedural Steps</b>	<ol style="list-style-type: none"> <li>1. Use 21-25g needle to inject lidocaine in dermal wheal then <b>anesthetize tract</b> to ~2cm under US guidance</li> <li>2. <b>Advance introducer needle</b> at an angle of 45-60° under ultrasound guidance with ‘follow-the-tip’ technique while maintaining negative pressure</li> <li>3. <b>Introduce wire</b> through the needle</li> <li>4. <b>Withdraw the introducer needle</b> over the wire</li> <li>5. <b>Confirm the wire position</b> in IJ using ultrasound</li> <li>6. <b>Nick skin</b> with a knife/scalpel to ½ the width of the blade</li> <li>7. <b>Advance the dilator over the wire</b> to the IJ, then remove the dilator</li> <li>8. <b>Advance catheter over the wire</b> to appropriate depth (12-15cm depending on patient size)</li> <li>9. <b>Remove wire</b></li> <li>10. <b>Confirm blood return, flush, clamp, cap ports</b></li> <li>11. <b>Suture catheter</b> to skin, clean site, apply chlorhexidine-impregnated sponge and sterile dressing</li> </ol>				
<b>Clean up &amp; line verification</b>	<ol style="list-style-type: none"> <li>1. Dispose of sharps</li> <li>2. Reassess vital signs and update RN</li> <li>3. Perform bedside US or review CXR to evaluate line placement and rule out pneumothorax</li> <li>4. Place an order for “okay to use”</li> </ol>				



Procedure video

All teaching resources



Supplies		
Items		Quantity
Central Line Kit (contents vary):		1
1. Sterile skin prep (chlorhexidine) 2. Sterile Drape 3. Needle for drawing up solution (blunt, filter, or 18g) 4. 1% Lidocaine without epinephrine 5. 5-10cc syringe 6. 10cc syringe 7. Introducer needle	8. Guidewire 9. Scalpel 10. Dilator 11. Triple Lumen Catheter 12. Needle driver 13. Suture with a needle 14. Sterile 4x4 gauze	
Sterile ultrasound probe cover with sterile gel		1
Sterile Gloves		1-2/participant
Cap, mask		1/participant
Sterile Gown		1/participant
Saline flushes		2-3
Luer lock caps for catheter ports		3
Chlorhexidine-impregnated sponge		1
Sterile Dressing		1-2

Informed Consent	
<b>Emergency Settings</b>	Consent is presumed for emergency treatment when the patient is unable to provide it and a delay due to the standard informed consent process would the health or safety of the patient.
<b>Mechanical Risks</b>	Bleeding: 8/1000 persons Pneumothorax 2/1000 persons Transient nerve injury: 1/1000 persons A severe mechanical complication that requires intervention: 2/1000 persons
<b>Delayed Risks:</b>	Infection: 0.8 central line infections/1000 central line days in the United States.

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