Adult CVC Placement and Exchange

Coagulopathy Threshold

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Minimum platelet threshold</th>
<th>Threshold to infuse platelets during procedure</th>
<th>INR</th>
</tr>
</thead>
<tbody>
<tr>
<td>IJ</td>
<td>20 K/microliter</td>
<td>10-20 K/microliter</td>
<td>2</td>
</tr>
<tr>
<td>Subclavian</td>
<td>30 K/microliter</td>
<td>20-30 K/microliter</td>
<td>2</td>
</tr>
<tr>
<td>Femoral</td>
<td>20 K/microliter</td>
<td>10-20 K/microliter</td>
<td>2</td>
</tr>
</tbody>
</table>

1. Assess patient history
2. History of arrhythmias (i.e., atrial fibrillation)
3. History of pacemaker
4. Current anticoagulation medication use
5. History of blood clots to upper extremity central veins (axillary, IJ, subclavian, SVC)
6. History of radiation, surgery, trauma or lesion/mass/wound to neck, chest or access site, or any visible anatomical variants that may obscure landmarks
7. Patient with renal disease\(^1\), with or without dialysis \(\text{and/or}\) Platelets < 20 K/microliter
8. Patient has no pertinent history or contraindications to procedure
9. Hemodynamically unstable\(^1\)/new onset symptoms
10. Symptoms of severe cough, chest pain, shortness of breath, fever, vomiting, diarrhea, etc.

\(^1\) Heart rate > 110 bpm or < 60 bpm, oxygen saturation < 92% and systolic blood pressure < 95 mmHg or > 170 mmHg
\(^2\) Stage 3B or higher with glomerular filtration rate < 45 mL/minute

---

Page thoracic fellow/Vascular Surgery to discuss the following:
- Safety of treatment
- Obtaining further imaging [venous ultrasound duplex study, CT chest obtained within 30 days (contact radiology for vasculature review)]
- If contralateral site is free of thrombus, then APP may attempt
- Referring case to Vascular Surgery, if needed

Consider contralateral site. If no other site available, consider utilizing alternate site for access after discussion with on-call Vascular Surgery and primary team.

- Consider IJ placement
- Consult Vascular Surgery if platelets < 10 K/microliter

Proceed to Patient Evaluation on Page 2. Also, find information for patients needing simultaneous port removal on Page 3.

- Inform primary team
- Send to EC for evaluation with nursing escort
- Contact primary team. If procedure cleared by primary team, discuss with Vascular Surgery.
- Consider having patient evaluated by EC or primary team

---

Note: This algorithm is used by Acute Care Procedures Team.
Adult CVC Placement and Exchange

Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson’s specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient’s care.

Note: This algorithm is used by Acute Care Procedures Team

**A**
- Does patient exhibit any of the following: anxiety, uncooperative behavior, or language barrier?  
  - Yes
    - Discuss with primary team and schedule procedure to be done under conscious sedation if patient has anxiety or is unable to assume position for procedure
    - Strongly consider IJ placement
    - If subclavian placement still indicated, limit attempts to 1 only by privileged APP. If attempt unsuccessful, refer to Vascular Surgery.
  - No
    - Consider IJ placement or refer to Vascular Surgery for placement as needed

**B**
- Vein can be assessed, vein depth 2-5 cm
  - Vein flat
    - Yes
      - Refer back to Box A
    - No
      - Vein still flat?  
        - Yes
          - Refer to IJ placement or Vascular Surgery and primary team
          - Discuss with primary team and schedule procedure to be done under conscious sedation if patient has anxiety or is unable to assume position for procedure
        - No
          - Vein depth < 2 cm
            - Refer back to Box A
          - Vein depth > 5 cm
            - Request for IJ placement or refer to Vascular Surgery

Post procedure:
- Patient must await final chest x-ray read from radiology before being discharged from clinic
- Procedure performed under conscious sedation should have portable chest x-ray performed to rule out malposition prior to patient being woken up for reposition to occur immediately. In outpatient clinic areas, perform ultrasound of neck to rule out neck malposition for subclavian approach.
- If post-procedure pneumothorax on chest x-ray, see Post Central Line Placement Pneumothorax Management on Page 4

For CVC exchanges only, refer to information on wire placement within Box B

If other side is appropriate for placement, have patient return next day after obtaining a bilateral duplex venous ultrasound.

If unable to pull out wire after inserting, do not pull forcefully. Attempt rotation or consult a more experienced provider.

If arterial puncture or severe venous bleeding occurs post-dilation and/or catheter insertion, do not remove dilator or catheter; leave in place for tamponade/hemostasis and consult Vascular Surgery immediately.

Approved by the Executive Committee of the Medical Staff on 08/18/2020

Department of Clinical Effectiveness V3

Copyright 2020 The University of Texas MD Anderson Cancer Center
Central line placement contralateral to port removal side

Patient pending simultaneous CVC placement and port removal

Central line placement ipsilateral to port removal side

Is central line placement successful?

Yes

Proceed with central line placement first

No

For ipsilateral attempt, consider obtaining bilateral venous duplex ultrasound prior to placement to rule out obstruction

If attempting subclavian catheter placement on same side as IJ port, do not remove port first. Proceed with placing subclavian catheter first before port removal.

Do not attempt ipsilateral subclavian CVC placement with subclavian port as well as IJ CVC placement with IJ port

Proceed with port removal (refer to Implanted and Tunneled Port and Catheter Removal algorithm)

Do not remove port-a-cath; consult Vascular Surgery for central line placement and port removal

If patient has history of multiple attempts on each side (PICC line or port or catheter), obtain ultrasound prior to referral to Vascular Surgery

Note: This algorithm is used by Acute Care Procedures Team

Copyright 2020 The University of Texas MD Anderson Cancer Center

Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care.
**Post Central Line Placement Pneumothorax Management**

Pneumothorax found on post-line insertion chest x-ray →
- **Yes**
  - Is patient symptomatic and/or hemodynamically unstable?¹?
    - **Yes**
      - Place patient in Clinical Decision Unit (CDU) for monitoring
    - **No**
      - Perform chest x-ray at 1 hour and 3 hour intervals after diagnosis

- **On-call surgical attending must determine whether to admit to:**
  - Vascular Surgery service
  - Primary team’s service
  - General Internal Medicine (per the determination of the Admitting Service Workflow (#ATT1942) within the Clinician Scope of Services and Responsibilities Policy [#CLN0598])

- **Proceduralist APP should round on inpatient until discharged home or delegate to scheduled ITT proceduralist on the subsequent day**

- **Consult IR for pigtail catheter placement**
- **Schedule repeat chest x-ray the subsequent morning with ongoing evaluation**

- **Normal chest x-ray result**
  - Discuss with surgical fellow for clearance

- **Abnormal chest x-ray result**
  - Patient scheduled through CDU for repeat chest x-ray the subsequent morning

- **Is pneumothorax 20% or less and/or 2 cm or less?**
  - **Yes**
  - Consult IR for pigtail catheter placement
  - **No**
  - Schedule repeat chest x-ray the subsequent morning with ongoing evaluation

---

¹ Heart rate > 110 bpm or < 60 bpm, oxygen saturation < 92% and systolic blood pressure < 95 mmHg or > 170 mmHg
SUGGESTED READINGS


Continued on Next Page
Continued on Next Page
SUGGESTED READINGS - continued


This practice consensus statement is based on majority opinion of the Acute Care Services experts at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

Ivy Cocuzzi, PA-C (Acute Care Services)\(^T\)
Wendy Garcia, BS*
Marina George, MD (Inpatient Medical Practice)
Susanna Girocco, PA-C (Acute Care Services)
Tam Huynh, MD (Thoracic & Cardiovascular Surgery)
Christina Perez*
Amy Pai, PharmD*
Kimberly Tripp, MBA, BSN, RN (Acute Care Services Administration)

\(^T\) Core Development Team
* Clinical Effectiveness Development Team