Catheter Gauge Selection

Select the device with the shortest length and the smallest diameter that allows for proper administration of the prescribed therapy.

Key Points To Consider

16 GAUGE AND LARGER

Uses
• High-risk, major surgical procedures
• Trauma
• Rapid infusions of fluid and/or blood
• Transplantation procedures

Considerations
• Large gauge catheters increase likelihood for painful insertion
• Depending on location, larger catheter sizes can create increased mechanical irritation to vein wall
• Vessel should be large enough to accommodate catheter and provide adequate hemodilution

18 GAUGE

Uses
• Major trauma
• Major surgery
• Blood administration
• Rapid infusions

Considerations
• Requires vessel large enough to accommodate catheter and provide adequate hemodilution

20 GAUGE

Uses
• Minor trauma
• Suitable for most routine infusions
• Minor surgical procedures, routine outpatient procedures requiring IV access
• Appropriate for delivery of blood components, when rapid rates are not required

Considerations
• Versatile in use
• Frequently selected gauge size

22 GAUGE

Uses
• Children
• General infusions
• May be used for blood administration
• Transfusion of plasma and platelets
• Recommended for small and/or fragile veins

Considerations
• Easier to insert into small, thin, fragile veins
• Easily accommodates routine administration of antibiotics and hydration therapies
• May be difficult to insert into tough skin

24, 26 GAUGE

Uses
• Extremely small veins
• Children and neonates
• Patients with fragile veins

Considerations
• Suitable for most infusions, with slower flow rates
• May be difficult to insert into tough skin

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Reference


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**Vessel Specifics**

**Digital Vein**
- Location: Lateral and dorsal portion of fingers
- Gauge/Length Recommendations: 22 gauge or smaller
- Considerations:
  - Prone to complications due to location and poor skin quality
  - May be used when other veins aren’t available
  - High risk of infiltration due to motion of the finger
  - Catheter should be properly supported and securely taped
  - Will impact patient’s ability to use their hand
  - Do not use if veins in dorsum of hand have been recently accessed

**Cephalic Vein**
- Location: Along the lateral side of the arm
- Gauge/Length Recommendations: Use smallest gauge and shortest length appropriate for therapy
- Considerations:
  - Easy to access
  - Larger veins provide hemodilution for hypertonic and irritating solutions
  - Handles rapid infusions
  - Arm bones act as a natural splint
  - May access from the wrist to the upper arm; always access the most appropriate distal region of the vein first
  - May be obscured at the wrist by the tendons controlling the thumb
  - Vein tends to roll during insertion
  - Access in the wrist and the antecubital fossa

**Basilic Vein**
- Location: Along the medial side of the arm
- Gauge/Length Recommendations: 16 to 24 gauge
- Considerations:
  - Large, usually prominent vein
  - Larger and straighter in the upper arm than the cephalic vein
  - Often not considered due to inconspicuous positioning on the ulnar side of the forearm
  - May be accessed anywhere along its course, above as well as below the antecubital fossa
  - Vein tends to roll during insertion
  - Vein puncture and site maintenance may be awkward due to vessel position
  - Access this vessel in the forearm: place the patient’s arm across their chest and stand on the opposite side of the bed to perform the venipuncture

**Antecubital Veins**
- Consider midline or peripherally inserted catheter
- Place the patient’s arm across their chest and stand on the opposite side of the bed to perform the venipuncture

**Median Antebrachial**
- Location: Underside of forearm
- Gauge/Length Recommendations: Use smallest gauge and shortest length appropriate for therapy
- Considerations:
  - May be difficult to palpate, but generally easy to visualize
  - Easy to stabilize due to location on the flat inner aspect of the forearm
  - Avoid use on underside of wrist due to close proximity of the nerve

**Basilic Vein**
- Location along the radial aspect
- Gauge/Length Recommendations: 16 to 24 gauge
- Considerations:
  - Often used for emergency or short-term access
  - Should be reserved for a peripherally inserted central catheter or midline catheter
  - Veins may be hard if these sites have been accessed frequently

**Antecubital Veins**
- Cephalic Vein: Located along the ulnar aspect
- Basilic Vein: Located along the ulnar aspect
- Median Cubital Vein: Branches from the cephalic to the basilic vein; located between the two vessels

**Key Points to Site Selection**

**Catheter Material**
- Select smallest gauge appropriate to accommodate prescribed therapy

**Catheter Size**
- Select smallest gauge appropriate to accommodate prescribed therapy

**Site Selection**
- Consider midline or peripherally inserted central catheter
- Place the patient’s arm across their chest and stand on the opposite side of the bed to perform the venipuncture

**Duration of Therapy**
- Consider midline or peripherally inserted central catheter for therapy beyond 6 days
- Select most distal and appropriate vein first; if medication/solution has high potential for vein irritation
- Perform venipuncture proximal to a previously cannulated site
- Rotate access sites to opposite extremity, when possible

**Patient**
- Diagnosis, prior surgeries, procedures and IV therapies
- Activity
- Preference, as possible

**Avoid**
- Joint regions
- Venous or thrombosed veins
- Access near a site experiencing a recent complication (infiltration, phlebitis, infection, hematoma)
- Sites located under or adjacent to restraints
- Locations with impaired circulation, varicosities
- Legs, feet and ankles of adults
- Veins located in the affected arm of a radical mastectomy patient
- Veins located in an arm with an arteriovenous shunt or fistula