

Establishing Best-Practice Guidelines for Confirming Placement of Central Venous Catheters

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Introduction

Northwell Health *System Patient Care Services Policy PCS.1602* establishes the health system's standards for the insertion, use, and care of central venous catheters (CVCs).

In mid-2023, South Shore University Hospital experienced a number of unfortunate adverse patient outcomes due to arterial cannulation and placement of CVCs, despite use of ultrasound, xray, and appropriate supervision.

In response, we established enhanced processes for confirming proper CVC placement, and aim to foster education, reduce procedural complications, and improve patient care.

Current Practices

Ultrasound guidance is strongly advised and a standard of care for Internal Jugular (IJ) and Femoral CVCs.

Chest Xray (CXR) is performed for all IJ and Subclavian (SC) CVCs.

All CVCs require a documented procedure note confirming placement and suitability for use.

New Process

All trainees took part in a comprehensive re-training and re-education program utilizing both interactive didactic sessions and simulation.

We establish a new categorization of **Primary**, **Secondary**, and **Tertiary** Levels of CVC confirmation.

IJ and Femoral CVCs require ultrasound guidance as **primary** confirmation.

CXR is required for all IJ and SC CVCs as **secondary** confirmation.

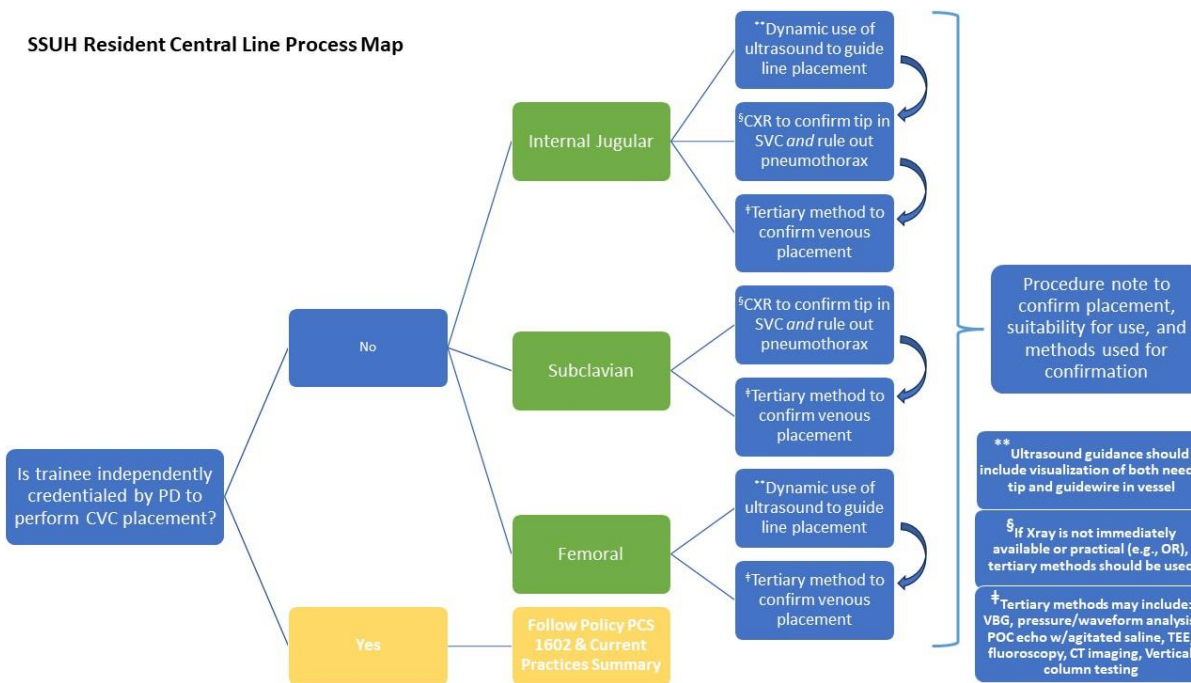
As CXRs have been misinterpreted, we require a **tertiary** means of confirmation for all CVCs.

Tertiary methods may also be used in lieu of CXR if Xray is not immediately available or practical.

Examples of **tertiary** confirmation:

- Venous blood gas sampling
- Venous pressure and waveform analysis
- vertical column testing via extension tubing
- POCUS-echo with agitated saline
- TEE
- fluoroscopy
- CT imaging

SSUH Resident Central Line Process Map



Results and Future Directions

Our new CVC Confirmation Process launched in January, 2024.

While data is limited, we have experienced no inadvertent arterial cannulations since inception.

We continue to audit all CVC procedures throughout the hospital to ensure compliance and avoidance of adverse events.