

A Guide to Expanding Your Practice Placement of Central Venous Catheters

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Introduction

Vascular access is one of the most common invasive procedures performed in healthcare. More than 1.5 million peripheral intravenous catheters (PIVs) and upwards of 8 million central venous access devices (CVADs) are placed in patients in the acute care setting annually. Over the past decade, vascular access has come to be recognized as a clinical specialty requiring specialized knowledge, skill and experience.

Teleflex is dedicated to achieving safe and effective outcomes for vascular access. It is our goal, through the development of superior technologies and innovations in education and training, to foster a commitment to **Zero Complications** in vascular access.



Dear Colleague,

A Guide to Expanding Your Practice: Placement of Central Venous Catheters was created by vascular access clinicians to assist other clinicians in the expansion or development of a comprehensive, multidisciplinary vascular access service. Its focus is on central venous access and it may be adapted for provision of other procedures performed by Vascular Access Services (VAS) in a variety of clinical settings. It is our belief that vascular access is truly a clinical specialty and best performed by dedicated clinicians, including physicians, nurses and other non-physician providers.

Vascular access touches all patients and is an important part of the healthcare continuum. The guide begins with an overview of a comprehensive service model. Suggested methods to add central venous access to your program are described in a 5-phase process.

It is also important to build a dynamic business plan. This is outlined and is critical to the development and implementation of a fully realized VAS program. A well-written business plan provides measurable objectives and timelines as well as a structure for monitoring and collecting data to justify the VAS program. The business plan may be revisited and revised at regular intervals, and may be used as a method of ensuring achievement of goals for the program and healthcare facility.

Finally, the Appendices provide sample documents, including policies and procedures, competency evaluation tools and references. We suggest you review and adapt these documents to meet the specific needs of your program and organization.

The ever-changing healthcare landscape requires continuous improvements in vascular access. These high-volume, high-risk and problem prone-services are directly linked to quality of care, length of stay and patient satisfaction. With your help, we can strive to achieve our goal of Zero Complications.

Sincerely,

The ARROW® Sales and Marketing Team

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Developing a Comprehensive Vascular Access Service (VAS)

Traditional Vascular Access Services (VASs) have taken many forms:

- IV Teams focused on the insertion of PIVs
- IV/PICC Teams that place PIVs, midlines, and Peripherally Inserted Central Catheters (PICCs)
- Interventional Radiology or Surgical Services that place PICCs and long-term CVADs
- Individual practitioners and hospital services that focus on a specific aspect of vascular access such as arterial lines, PICCs/midlines, or Central Venous Catheters (CVCs)
- Physicians and other Medical Providers (Nurse Practitioners and Physician Assistants) that place arterial lines and CVADs in the acute care setting

The concept of a comprehensive multidisciplinary VAS integrates all vascular access services with a goal of maximizing a healthcare organization's potential to deliver high-quality care. Collaboration among disciplines can reduce barriers that may result in poor outcomes and mitigate risks associated with vascular access, including adverse occurrences, financial loss, morbidity and mortality. Central to this concept is placement of CVADs and arterial catheters using ultrasound-guidance, appropriate tip location technology and catheter selection based on Vessel Health and Preservation® Principles.

More information on reduction of vascular access complications and Vessel Health and Preservation® Principles may be found at: <http://firstdonoharm.com> and <http://vesselhealth.org/>

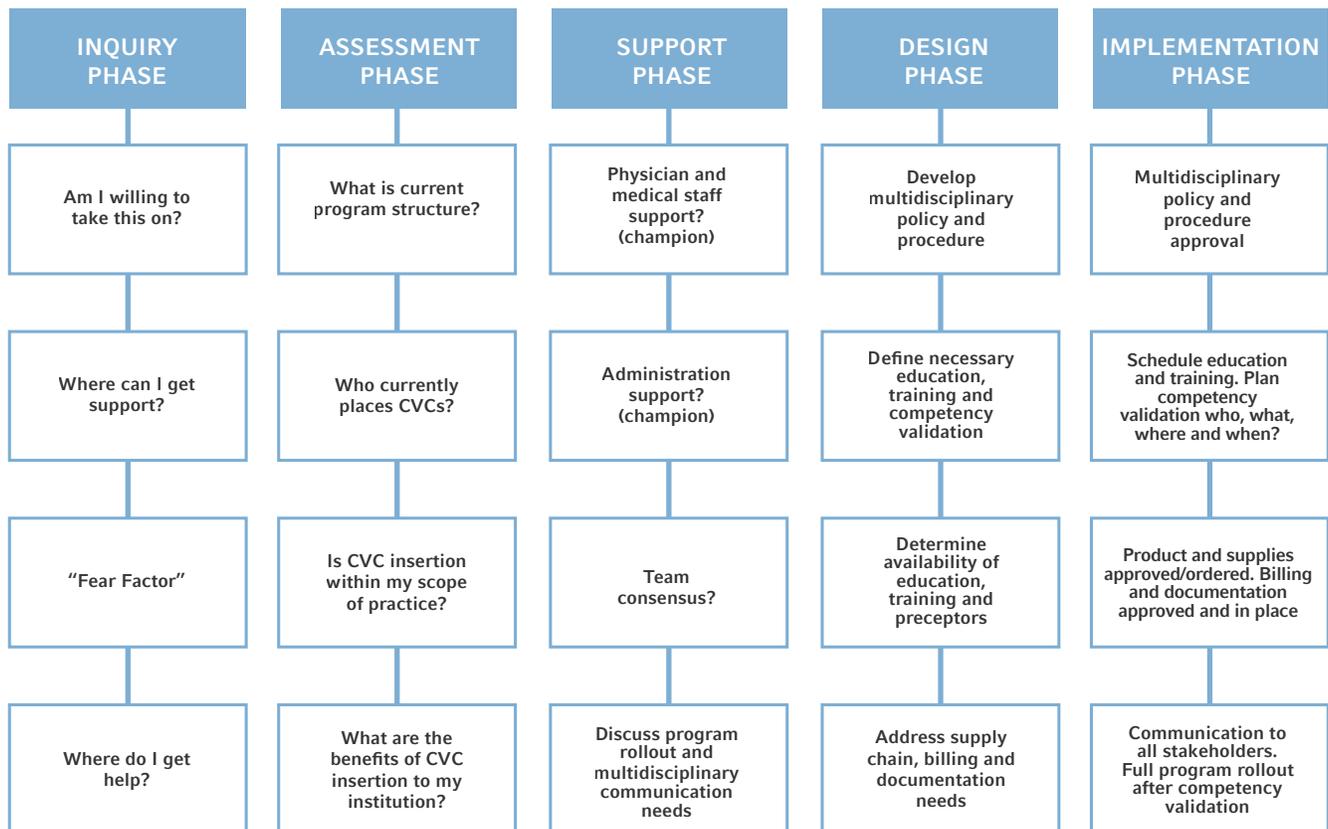
THE FIVE PHASES OF VAS DEVELOPMENT

A comprehensive multidisciplinary VAS is patient-centered; services are outcome-oriented and apply evidence-based practice for vascular access – a high-risk, high-volume and problem-prone procedure. We describe five (5) phases for the development of a multidisciplinary VAS centered on continuous program evaluation, outcomes monitoring and program/process improvement.

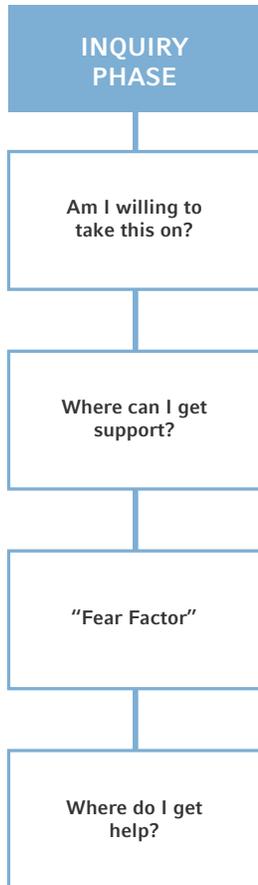


A Summary

Phases of VAS Program Development and Tasks



Multidisciplinary VAS Program Development



PHASE 1 – Inquiry Phase

In the Inquiry Phase, program planning involves asking yourself and all stakeholders to consider the “idea” of developing a multidisciplinary VAS. It is important for all involved to have a voice in the decision making process. Some specific areas that may be of concern to the primary “program planner” include:

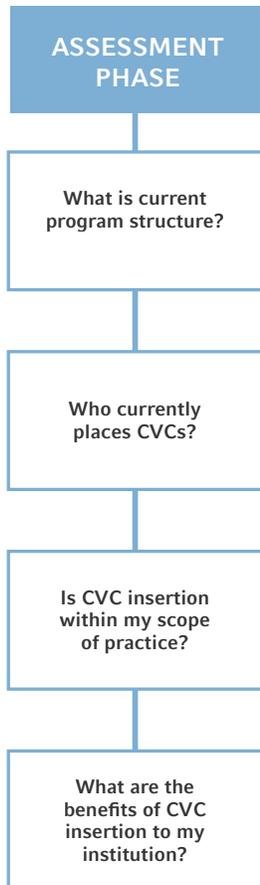
Does the core team have commitment to including CVAD insertion in their practice?

Have discussions been held with individuals and departments, such as attending physicians, Interventional Radiology, Nursing Administration and other stakeholders? Has support been identified or will this require additional information and work?

Look at current competencies and discuss how you or your team members felt about expanding practice when these procedures were new. How can you overcome fear of complexity and/or change?

This is an opportunity to seek out examples of programs similar to what you are planning. Networking with others who have been successful in creating a similar program may provide you with information that will contribute to your success. In addition, this booklet provides information you may adapt as you create your business plan. Who are the key individuals outside your facility that you can lean on for questions/support?

Multidisciplinary VAS Program Development



PHASE 2 – Assessment Phase

During the Assessment Phase, information gathering continues and forms the basis for your business plan. This phase requires an in-depth look at the strengths and weaknesses of the existing services and identification of gaps in service and opportunities for improvement.

A SWOT (Strengths, Weaknesses, Opportunities, and Threats) Analysis is one method of performing the assessment.

Additional questions that may contribute to your assessment are:

1. What is the time from order (or identified need) for CVAD and placement? (Timeliness)
2. Is ultrasound utilized for all CVAD placements by all inserters? (Skill and Accuracy)
3. What are the current complication rates (insertion-related) in your institution? (Risks)
4. Can patient satisfaction, clinical outcomes and financial outcomes be impacted through improvement of services?

STRENGTHS	WEAKNESSES
OPPORTUNITIES	THREATS

Use this information to create your plan. Define the services that will be offered. This may be referred to as “the WHAT, WHO and HOW” of your program plan.

What will you need to be successful?

Who will be instrumental to the success of your plan?

How will you build a business case for your plan?

Multidisciplinary VAS Program Development



PHASE 3 – Support Phase

During the Support Phase, stakeholders are brought into alignment to support the multidisciplinary VAS program. At this juncture in the planning process, it may be helpful to write a one-page summary of your findings in both the Inquiry Phase and Assessment Phase and present to other stakeholders to gain support.

Ensure that a champion is identified from the medical staff. The physician champion will act as an influencer as you present to administration.

Determine if a special format is required as you develop your business plan. The administrative champion will be instrumental in the research necessary to complete the costs/benefits analysis and the financials for the business plan.

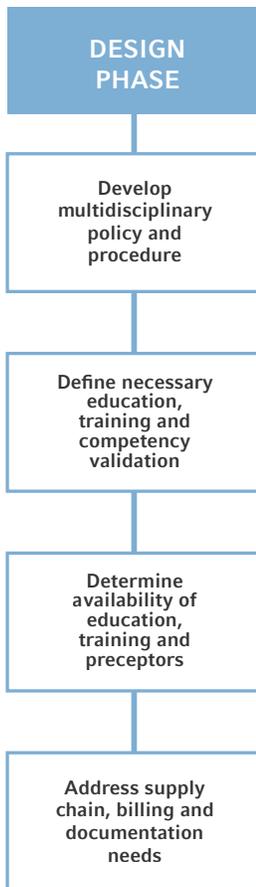
In this phase, it is also prudent to meet with your team to determine:

- ✓ If all members are in support of the proposed program.
- ✓ If only select members will be performing certain procedures such as CVC insertion.
- ✓ If any potential objections to the program exist amongst team members.
- ✓ If the team will support the program through consensus building.

The final step in Phase 3 is to identify needs related to Program Rollout:

- ✓ Gather information to support your implementation plan.
- ✓ How long will it take to gain competency for proposed procedures?
- ✓ How will this affect workflow – from order to insertion to follow-up?
- ✓ How will the new program be communicated to physician and nursing staff?

Multidisciplinary VAS Program Development



PHASE 4 – Design Phase

The Design Phase is the “backbone” of the VAS program. Tasks include:

- ✓ Determining the requirements for a multidisciplinary policy and procedure, including format, review and approval process.
- ✓ Writing the Policy and Procedure (you will find sample policies, procedures and competency forms/checklists in the Appendices of this booklet).
- ✓ Ensuring you have included provisions to qualify VAS team members for procedures (CVC), including experience, education, training and method for competency validation, and annual requirements for education and continued competency.
- ✓ Attaining agreement from individuals qualified to place Central Venous Catheters to serve as preceptor(s) or proctor(s). Be sure to define the role of the preceptor/proctor and their availability to perform as needed.
- ✓ Creating a realistic timeline for your program. Where and when will new inserters receive education and training? How long will it take to achieve competency based on current procedures performed in the institution?
- ✓ Ensuring that you have addressed product needs, charges and methods for documentation of procedures and follow-up.
- ✓ Design the data collection methodology as part of the business plan. Typically, an multidisciplinary program is required to continuously monitor productivity and outcomes.
- ✓ Writing a business plan. Remember, a business plan may be a simple or complex document. Rely on your administrative champion to guide you; some institutions have concise formats for proposals and program (business) plans. The guide to Writing Your Business Plan in this booklet provides an outline for writing a typical business plan.

Multidisciplinary VAS Program Development

IMPLEMENTATION PHASE

Multidisciplinary
policy and
procedure
approval

Schedule education
and training. Plan
competency
validation who, what,
where and when?

Product and supplies
approved/ordered. Billing
and documentation
approved and in place

Communication to
all stakeholders.
Full program rollout
after competency
validation

Phase 5 – Implementation Phase

Use the timeline created in Phase 3 to guide implementation of your program.

- ✓ Ensure that Policies and Procedures are approved.
- ✓ Schedule education and training for program personnel.
- ✓ After education and training are completed, create a schedule for individual competency validation to support program rollout goals.
- ✓ Make sure that products required for the procedure are available in stock.
- ✓ Provide an inservice program on systems requirements, such as approved forms, processes, documentation and charges.
- ✓ Create a communication plan to inform all stakeholders about the new program, how to access program personnel, how orders or referrals will be communicated to the team, assessment parameters and patient selection criteria. Be sure to include:
 - a. Nursing staff
 - b. Medical staff
 - c. Ancillary department staff
- ✓ A limited rollout of the program may be advisable until team members are deemed competent and independent in the performance of the procedure. This may help the team to gain confidence and skill prior to full program rollout.
- ✓ With full rollout, the new program becomes a reality.

Multidisciplinary VAS Program Development

Writing Your Business Plan

A well-written business plan will support your efforts to create your multidisciplinary VAS Program. A sample Executive Summary is included in this booklet. Only you can create a business plan specific to your organization.

The critical components of a comprehensive business plan are listed below. In many instances your institution will have a program proposal template that simplifies the process. It may be helpful to work with administration to determine the specific requirements for your business plan.

A comprehensive plan supporting the proposed service includes:

- Executive summary
- Proposal
- Description of product/service
- Risk/benefits analysis
- Implementation plan
- Operations plan
- Financial plan
- Supporting documents

Executive Summary

The executive summary is a one-page summary of the business plan (a sample is found on Page 17).

The summary should include the following:

- Proposal
- Plan
- Risks
- Benefits
- Implementation
- Financial impact

Proposal

The proposal provides an opportunity for you to state succinctly what you are proposing in the business plan, such as changes to your existing program, the addition of Central Venous Catheters to your service or even the creation of a new program. In addition, it should provide enough background information to support your rationale for the proposal. Finally, describe the rationale and purpose of the proposal.

Make sure you include the following (as applicable):

- Proposal statement
- Background facts
- State exactly what you want
- What is your rationale
 - Improve patient outcomes
 - Reduce costs and risks
 - Self-supporting
 - Increase productivity

Procedural/Service

In this section of the business plan list all products, services and charges applicable to the proposal. This is an opportunity to define each procedural/service that will be offered and determine the direct cost per procedure including: supplies, equipment and clinician time (include order, assessment, gathering equipment and supplies, actual procedure time, post procedure time and follow-up, charting, etc.). To calculate cost of time, take an average of nursing (hourly rate) + (cost of benefits) x (total time). List procedural/service charges (patient charges) and codes (internal or external billing codes and amount). Do not link to reimbursement – this is only related to charges you submit at the time of a procedural/service. Charges for procedures/services will be viewed as revenue and productivity measures in the Financial Plan of your Business Plan.

Be sure to:

- Define your procedure(s) and charges (these may be internal or billable charges)
- State direct costs
- Introduce charges

Risk/Benefits Analysis

In this section of the Business Plan, the proposed program, service, or change to the existing program will be tied to the stated rationale in the first section describing the proposal. Describe any research done internally or externally that supports your Business Plan. Elaborate on the risks that may exist if the proposal is not accepted or implemented. Describe the benefits gained by accepting and implementing the proposal. Make a comparison to the current situation in the organization (if applicable).

In addition, discuss the expected outcomes and monitoring that will be measured to support your assumptions and prove the benefit(s) to the organization. Outcomes monitoring should include patient outcomes, financial (productivity) outcomes and stakeholder satisfaction. Stakeholders are your internal and external customers such as ordering physicians and clinicians caring for the patient.

When writing this section consider:

- What are the risks and benefits to the organization?
 - Financial
 - Patient safety
 - Quality
 - Length of Stay

Implementation Plan

The Implementation Plan is a critical part of your Business Plan. It is used to describe, in detail, how the proposed program, service or procedure will be implemented. This may consist of descriptions, time lines, tasks, and due dates.

Consider:

- Phases of implementation (remember you do not have to implement all services at once)
- Number of FTEs required (existing and/or new FTEs? Will this be work added to current staff duties?)
- Qualification and credentialing
- Nursing and medical staff education
- Collaboration with physician or medical provider, e.g. “difficult cases” and mechanism of referral.
- Data collection
- Patient assessment/recommendation/obtaining orders

Operations Plan

The Operations Plan describes the administrative requirements for the proposed program, service or procedure.

Consider:

- Management
- Oversight
- Reporting
- Billing flow
- Supplies and equipment

Financial Plan

The Financial Plan outlines the effects of the program, service or procedure on budget and revenue.

This may be stated as assumptions and include:

- Current number of procedures and revenue
- Growth in productivity (projected number of procedures and revenue)
- Cost savings from mitigation of delays in treatment, inappropriate device use and complications
- Financial modeling (examples)
 - Projected revenue from billed charges
 - Direct cost savings (nursing vs. IR/Surgical placement, Peripheral IV or PICC used inappropriately)
 - Potential savings (reduction in length of stay and infection)
 - Process improvement

Supporting Documents

This section is where attachments that support your Business Plan are placed. They may be specific additional sections or attached as appendices. As you create the Business Plan be sure to refer to the document, page number, section number, or appendix number.

Some of the attachments may include:

- Outcomes data from published studies
- Research, Standards and Guidelines supporting the services
- Financial modeling
- Benchmarking
- Proposed Policies and Procedures
- Sample reports
- Sample program documentation
- Letters of support

A Business Plan may be written as a very short document (proposal) or a fully developed program or service plan. The Business Plan helps guide the implementation of a program, service, or addition of a procedure and includes measurable objectives and timelines. It also provides structure for monitoring and continued justification of a program, service or new procedure. The Business Plan may be revisited and revised at regular intervals to ensure your goals are accomplished.

Appendices

Sample Documents and References

Sample Business Plan

Executive Summary

Presented by:

Addressees:

MISSION

Expand the skill set and responsibilities of Vascular Access Specialists to better serve our members and staff.

VISION

Expanded skill set to include insertion of all non-tunneled vascular access devices (NTVADs). Offer vascular access services 24/7 for all areas (including emergency department).

AREAS OF ENHANCEMENT

1. Vascular Access Specialists assess the patient prior to PICC placement, place the catheter if needed, then turn the PICC care and maintenance over to staff nursing.^{8,9}
2. Vascular Access Specialists are rarely available to assist patients in the emergency department and are not available to the hospital between the hours of 1830-0700.
3. Vascular Access Specialists have limited choices of vascular access devices: PICC, Midline, or Peripheral IV.
4. Process and practice of hospital-wide surveillance of central venous catheters (CVCs) to prevent and identify catheter-related bloodstream infections (CRBSI) is not performed consistently to the newest recommendations.^{5,8}

This is a two-phase proposal which is intended to advance vascular access service. These phases are not dependent on one another. Either or both are intended to enhance patient care and improve patient outcomes and satisfaction.

PHASE ONE

Expand the skill set of experienced Vascular Access Specialists to place a variety of devices: PICCs, Midlines, Peripheral IVs in the arms and all non-tunneled central venous catheters via the internal jugular, subclavian/axillary vein and femoral vein.

DESCRIPTION

Attain certification and competency to place all NTVADs. Train all experienced Vascular Access Specialists to place NTVADs. Increase allocated Vascular Access Specialists Team FTEs from _____ to _____ over a 12-24 month time frame. Increase vascular access services to 24/7 once full staffing is achieved.

THIS WILL BE ACCOMPLISHED BY

1. Completion of a specialty workshop “Ultrasound-Guided Central Venous and Arterial Access: Compliance Within Practice”.
2. Obtain Certificate of Completion of workshop in (location) return to (your facility) and reach competency as determined by (Physician champion) who encourages and endorses this advance in practice and has agreed to offer precepting.
3. Write and receive approval for a Standardized Procedure allowing specially-trained vascular access specialists (VAS) to perform the specified procedures as well as accompanying policies and procedures.
4. Train other qualified Vascular Access Specialists.

PHASE TWO

Expand Vascular Access Services Team to provide 24/7 coverage. A vascular access nurse will round on every patient, every day, assess their access, and recommend access devices where warranted as well as provide new access and monitor/care for each central line. Additionally, when CRBSI is suspected, proper sampling and cultures will be performed to accurately assess hospital-acquired infection.

BENEFITS

By instituting a Vascular Access Service Team at _____(your facility)_____ as proposed, we will be on the cutting edge in offering the best services to our patients and staff.

1. Reduce costs and length of stay related to:
 - a. Catheter-related bloodstream infection (CRBSI) by closely monitoring, performing dressing changes, de-clotting and identifying problems early (Marshall, et al, 2008).
 - b. Reduction in replacing catheters due to dislodgement or occlusion (Kokotis, 2005).
 - c. Elimination of hospital admissions for PICC placement.
 - d. NTVADs placed by non-physician Vascular Access Specialist not MDs (Santolucito, 2001).
 - e. Accurately identifying (or ruling out) CRBSI (Mermel, et al 2009).
2. Improve patient safety and patient outcomes through:
 - a. Early identification of infiltration and phlebitis.
 - b. Early assessment and recommendations for appropriate device based on assessment of patient need, medications, and treatment regimen. (Santolucito, 2001).
 - c. Early assessment, prevention, and treatment of catheter-related venous thrombosis through surveillance.
 - d. Reducing delays in treatment due to inappropriate or unavailable vascular access.
 - e. Developing highly skilled and highly practiced clinicians.
3. Increase patient satisfaction and patient comfort by:
 - a. Attaining high first stick percentage (Kokotis, 2005).
 - b. Decreasing wait time for venous access.
 - c. Providing 24/7 coverage for VAS response.

BENEFITS (CONT.)

4. Collect data and publish evidenced-based practice related to:
 - a. Benefits of expanded roles of the vascular access services.
 - b. Catheter-related venous thrombosis.
 - c. Benefits of 24/7 Vascular Access Specialists.
 - d. Vascular access complication rates.

BREAK-EVEN COMPARISON OF VASCULAR ACCESS DEVICES (VADS) TO SHORT PERIPHERAL INTRAVENOUS DEVICES (PIVS)

VAD	OPERATIONAL COST	BREAK EVEN
PIV	\$32	
Midline	\$110	3 PIVs
PICC	\$200	6 PIVs
Non-tunneled CVC	\$200 (excludes physician fees)	6 PIVs
Tunneled CVC	\$850-1200 (excludes physician fees)	32 PIVs

FINANCIAL PROJECTIONS

Number of CRBSI	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Hospital \$/CRBSI ¹	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000
Extended LOS related to CRBSI ³	Range 4.5 – 30.4 days				
# PICCs replaced d/t maintenance issues (estimate)					
Average Census					
Average LOS					

FINANCIAL PROJECTIONS

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Number of PIV/Day	200	200	210	210	210
Cost per PIV (includes material and labor) ³	\$32	\$32	\$32	\$32	\$32
Average attempts ² *anticipated improvement	2.18	2.18	2.18	2.18	Goal of 1.5
Delays in treatment due to lack of venous access ³	27% of inpatients	27% of inpatients	27% of inpatients	27% of inpatients	27% of inpatients
Estimated admissions for PICC services					
Estimated patients in ED needing PICC services					
Cost to implement ultrasound, advanced training, FTEs	2.4 FTEs	2.9 FTEs	\$2,500 2.9 FTEs	\$25,000 0 6.9.9 FTEs	0 0 9.0 FTEs

FINANCIAL ANALYSIS OF CURRENT WORKFLOW – PICC TEAM

VASCULAR ACCESS DEVICE	PLACEMENTS
PIV	800 - Estimated 1-4 PIVs placed per day
Midline	100 – Average number of Midlines placed 2009-2011
PICC	200 – Average number of PICCs placed 2009-2011
Total Volume	2700
FTEs	2.9

FINANCIAL ANALYSIS OF PROPOSED WORKFLOW – VASCULAR ACCESS TEAM 2011

VASCULAR ACCESS DEVICE	PLACEMENTS	GOAL
PIV	# of PIV Placements	60% of admissions X 2 PIVs per stay.
Midline	200	Likely this number will increase due to early assessment.
PICC	2500	Likely this number will increase due to early assessment.
Other NTVADs	300	This number will likely increase when more team members are trained.
Total Volume	3000	
FTEs	6.9	Train 4 FTEs in FY 2013 and an additional 2 FTEs to achieve full staffing in FY 2014 for vascular access needs.

BENEFITS

Patient safety	Each patient monitored daily for vascular access needs, concerns, and complications.
Patient satisfaction	Less discomfort due to reduced number of sticks; improved speed to recovery due to early assessment of vascular access requirements.
Reduce hospital-acquired CRBSIs	Daily surveillance and maintenance will reduce the risk of CRBSIs. Additionally, if a CRBSI is suspected, proper technique will be used to verify.
Eliminate admissions solely for NTVAD insertion	24/7 coverage will facilitate catheter troubleshooting and/or placement without the need to admit patient.
Reduction in delay of treatment	Vascular access using ultrasound enables placement of a variety of NTVADs most appropriate for patient and condition.
Reduction of need for surgical or medical provider services for vascular access	Surgical and medical providers can attend to more acute needs other than vascular access.
Exceptional care	Not only will patient safety and satisfaction increase, ____ (Your facility name here)____ will be on the forefront of non-physician led vascular access. Data collection, process improvements and research will be facilitated in this scenario.

SUMMARY

The value of this proposal to (your facility name here) is a reduction in costs related to CRBSI, as well as the number of attempts to place PIVs. Additionally, patient and staff satisfaction will increase due to the exceptional services offered.

REFERENCES

1. Tokarczyk, A., Greenberg, S., & Vender, J. (2009). Death, dollars, and diligence: Prevention of catheter-related bloodstream infections must persist! *Critical Care Medicine*, 37(7). Retrieved July 18, 2010 from <http://www.mdconsult.com>.
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7. Kokotis, K., (2005). Cost containment and infusion services. *Journal of Infusion Nursing* 28(3S).
8. Federwisch, A., (2008). Hospital's bloodstream infections down to zero. *Nurse.Com*. Retrieved July 22, 2010.
9. Harnage, S., (2007) Achieving zero catheter related blood stream infections: 15 month success in a community based medical center. *Journal Association for Vascular Access* 12(4).

This document is provided as an example only and should be modified to meet your hospital's specific requirements, including the privacy and safeguarding of the collected data. In all cases compliance with the Health Insurance Portability and Accountability Act of 1996 must be maintained.

Template is provided as a courtesy of ARROW

Sample Policy and Procedure

Jugular Vein Access – Placement of Non-Tunneled Central Venous Catheters

AUTHORIZED TO PERFORM

Insertion by a Vascular Access Specialist with proper education and validation for central venous access insertion, including a didactic and simulation course specific to insertion of central venous catheters. Competency will include _____ successfully supervised insertions.

POLICY

To provide a standardized procedure and criteria for bedside insertion of short-term non-tunneled central venous catheters (CVC) into the internal jugular vein (IJ) with use of ultrasound.

EQUIPMENT

- Maximum barrier central venous catheter kit
- Ultrasound unit
- Sterile ultrasound probe cover
- Powder-free sterile surgical gloves
- Cap and mask for all persons in room
- Needle guide and bracket (optional)
- #21 Ga. introducer needle (optional)
- Micro introducer kit (optional)

GENERAL INFORMATION

1. Licensed Independent Practitioner's order is required for bedside central venous catheter placement
2. Only qualified/validated Vascular Access Specialist will access the internal jugular veins for placement of short-term non-tunneled catheters in non-emergent situations
3. A second Vascular Access Specialist or ICU nurse must be at bedside to assist the qualified Vascular Access Specialist with CVC insertion, required time out procedure and documentation
4. No more than two (2) attempts shall be made to access the internal jugular vein during the insertion procedure. Refer to licensed independent provider (LIP) if unsuccessful
5. Central Venous Catheterization is preferred in the following situations:
 - a. Dialysis fistula
 - b. Chronic kidney disease or GRF<35
 - c. Bilateral mastectomy
 - d. Bilateral arm fractures
 - e. Bilateral wounds to the arms
 - f. Patients that are NOT a candidate for a Peripherally Inserted Central Catheter (PICC)

GENERAL INFORMATION (CONT.)

6. Jugular Central Venous Access is contraindicated in patients with:
 - a. History of or known internal jugular thrombosis
 - b. Uncompressible internal jugular vein
 - c. Inappropriate internal jugular catheter to vessel ratio
7. This policy is NOT to be used in the following patients:
 - a. Patients needing emergent vascular access
 - b. Patients with platelets of <20,000
 - c. Patients with an International Normalization Ratio (INR) >2.5
 - d. Patients that cannot be appropriately positioned for safe catheter insertion
 - e. Patients that are uncooperative, combative or anxious
8. Additional Information:
 - a. Use the smallest catheter gauge and fewest number of lumens based on IV therapy needs (*CDC, 2011*)
 - b. Ultrasound freehand or with use of needle guide is acceptable
 - c. Use of standard insertion kit components such as Raulerson Introducer Syringe or modified Seldinger technique maybe used at practitioner discretion.

PROCEDURE

1. Verify LIP order
2. Review lab values
3. Review allergies
4. Review patient history to include surgical and past vascular access needs
5. Identify patient using two patient identifiers (name and date of birth). Refer to patient identification policy
6. Instruct patient and provide education related to Central Venous Catheter and the insertion procedure
7. Assess need for sedation for procedure and discuss with primary nurse
8. Obtain written approval form from patient or authorized representative
9. Clean over-bed table
10. Perform hand hygiene
11. Gather necessary equipment and supplies
12. Second (RN) assistant to assist in room setup and tray preparation
13. Clear path to ensure compliance and sterility from a head of the bed approach
14. Position patient in comfortable position. A 15-25 degree trendelenburg with patient's head turned away from the insertion site is recommended
15. Perform procedural TIME OUT
16. Assess anatomical structure and IJ vessel with use of ultrasound, mark if necessary
17. Record vessel image, measure vessel circumference with calipers, save and print image
18. Using a tape measure, measure patient from approximate insertion site to distal point of the third intercostal space
19. Assure all persons in room are wearing mask and cap
20. Limit traffic in room to those involved in procedure only
21. Don mask and cap
22. Apply needle guide bracket to ultrasound if applicable

PROCEDURE (CONT.)

23. Perform hand hygiene
24. Set up work table using sterile technique. Drop all external sterile kit components on sterile work field
25. Draw or drop sterile normal saline onto sterile field, label syringe
26. Draw lidocaine if not included in insertion tray, label syringe
27. Both inserter and assistant to don sterile gown and surgical powder-free gloves
28. Prep tray, pre-flush and cap catheter lumens; leave the distal lumen uncapped
29. Prep entire insertion site with a friction scrub midline to shoulder and from the angle of the jaw to the clavicle with 2% chlorhexidine gluconate (CHG), minimum 30 second scrub and 30 second dry
30. Don maximum barrier head-to-toe drape. Use adhesive over insertion site to maintain site integrity for insertion (CDC, 2011)
31. Don sterile probe cover ensuring adequate ultrasound gel on probe. Lay probe cover over sterile field
32. Apply sterile gel to insertion area

INSERTION WITH RAULERSON INTRODUCER SYRINGE

1. Hold the ultrasound probe in your non-dominant hand; locate the internal jugular vein
2. Use visual aid to identify vessel; administer lidocaine
3. Use dominant hand to insert the introducer needle with continuous visual aide, bevel up into the internal jugular vein, maintain a negative pressure until free flow blood is achieved
4. Release ultrasound and stabilize introducer needle assembly with non-dominant hand
5. Feed J-wire through the rear of the introducer assembly approximately 15-20 cm
6. While maintaining control of wire, remove introducer needle assembly
7. Rethread wire slightly if needed
8. Place dilator over the wire
9. Perform skin nick if necessary
10. Dilate skin at the insertion site by applying constant pressure and use a twisting motion at the distal portion of the dilator. Advance dilator one half to two thirds to create free tract for catheter insertion
NOTE: DO NOT use excessive force when advancing the dilator
11. Remove dilator, apply gauze over insertion site and maintain control of the guidewire
12. Feed catheter over the wire: wire will terminate out the distal lumen of the catheter. While maintaining control of wire, thread catheter over wire to pre-measured point
13. Remove wire while maintaining catheter position. Clamp the open lumens (on multi-lumen catheters) while retracting the wire to prevent air entry or bleeding
14. Cap distal lumen, aspirate and flush each lumen
15. Cleanse site with 2% chlorhexidine gluconate (CHG)
16. Apply securement device
17. Apply chlorhexidine-impregnated antimicrobial disk if applicable
18. Apply sterile semipermeable dressing over site
19. Time, date and sign dressing
20. Position patient upright if possible for post insertion X-ray
21. Order STAT portable chest X-ray to assess catheter tip location

INSERTION WITH MICRO INTRODUCER TECHNIQUE

1. Insert #21 Ga. introducer needle into needle guide
2. Hold the ultrasound probe in your non-dominant hand; locate the internal jugular vein
3. Use visual aid to identify vessel and administer lidocaine
4. Use your dominant hand to insert the introducer needle into the internal jugular vein with continuous visual aid
5. After obtaining a flash of blood, stabilize the needle
6. Release the needle guide assembly
7. Maintain stability with your non-dominant hand, remove syringe from introducer needle
8. With your dominant hand insert the 45 cm steel guide wire to approximately 20 cm
9. While maintaining control of the wire, remove the introducer needle
10. Perform skin nick if necessary
11. Thread 5 Fr. sheath dilator assembly over the guide wire maintaining constant control of the wire
12. Dilate skin at the insertion site by applying constant pressure; use a twisting motion at the distal portion of the dilator. Advance dilator one half to two thirds to create free tract for catheter insertion
NOTE: DO NOT use excessive force when advancing the dilator
13. Once sheath is in place, remove the dilator and wire leaving the 5 Fr. sheath in place
14. Thread larger wire through 5 Fr. sheath, approximately 15-20 cm
15. Maintain control of guide wire and remove 5 Fr. sheath
16. Advance 7 Fr. dilator over the wire by applying constant pressure; use a twisting motion at the distal portion of the dilator. Advance dilator one half to two thirds to create free tract for catheter insertion
17. Remove the 7 Fr. dilator, apply gauze over insertion site and maintain control of the guide wire
18. Feed catheter over the wire; wire tip will be beyond the the tip of the catheter. While maintaining control of wire, thread catheter over wire to pre-measured point
19. Remove wire while maintaining catheter position
20. Clamp the distal lumen while retracting the wire to prevent air entry or bleeding. Cap distal lumen, aspirate and flush each lumen
21. Cleanse site with 2% chlorhexidine gluconate (CGH)
22. Apply securement device
23. Apply antimicrobial disk if applicable
24. Apply sterile semi-permeable dressing over site
25. Time, date and sign dressing
26. Position patient upright if possible for post insertion X-ray
27. Order STAT portable chest X-ray to assess catheter tip location

DOCUMENTATION

1. Complete the “Procedure note for central vascular/arterial catheter insertion”
2. Place completed form under the progress note section of the patient’s chart; include a printed image of the internal jugular vein
3. Place a copy of the approval form with the procedure note
4. Document:
 - a. Local anesthetic
 - b. Insertion site and location
 - c. Catheter size and length, internal and external
 - d. Number of needle venipuncture attempts
 - e. Catheter securement
 - f. Dressing type
 - g. Complications
 - h. Name of inserter and RN assist
 - i. Patient/family education
 - j. “Time out”
5. Enter charges under Ad Hoc

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Template is provided as a courtesy of ARROW

Sample Standardized Procedure for Insertion of Central Venous Access Devices by a Vascular Access Specialist

Part 1 – Policy

TITLE

Insertion of Central Venous Access Devices Using the Internal Jugular, Axillary/Subclavian or Femoral Veins by Specially-Trained Vascular Access Specialists

Category: _____ Origination Date: _____

Policy Number: _____ Last Review/Revision Date: _____

DESCRIPTION

1. Function

- 1.1. This policy describes the functions which may be performed by Vascular Access Specialist to insert Central Venous Access Devices (CVADs).
- 1.2. The Vascular Access Specialist may provide comprehensive services for adult patients by placing CVADs using ultrasound guidance via the internal jugular, axillary/subclavian, and femoral veins.
- 1.3. The Vascular Access Specialist may insert arterial lines (A-Lines) with ultrasound guidance.
- 1.4. The Vascular Access Specialist may insert peripheral IVs (PIVs) into the external jugular vein using ultrasound guidance, when appropriate.
- 1.5. The Vascular Access Specialist may suture vascular access devices in place when appropriate.
- 1.6. The Vascular Access Specialist may use 1% lidocaine HCl for injection, USP (buffered or non-buffered) and/or approved topical anesthetics for insertions as needed (including PIVs).
- 1.7. The Vascular Access Specialist may order chest radiographs for catheter tip confirmation.

2. Definitions and Criteria

- 2.1. Central Venous Access Device (CVAD) – A device that permits access to the central vascular system. A catheter is inserted with the tip residing in the lower one-third of the superior vena cava, or above the level of the diaphragm in the inferior vena cava (Infusion Nursing Standards of Practice, 2011, p. S102).
- 2.2. Non-Tunneled Catheter – A vascular or nonvascular access device inserted by puncture directly through the skin and into the intended location without passing through subcutaneous tissue (Infusion Nursing Standards of Practice, 2011, p. S106).
- 2.3. Peripherally Inserted Central Catheter (PICC) – A central venous access device inserted into an extremity and advanced until the tip is positioned in the vena cava (Infusion Nursing Standards of Practice, 2011, p. S106).
- 2.4. Tunneled Catheter – A vascular access device; the proximal end is tunneled subcutaneously from the insertion site and brought out through the skin at an exit site (Infusion Nursing Standards of Practice, 2011, p. S108).
- 2.5. Vascular Access Device (VAD) – Catheters, tubes, or devices, inserted into the vascular system including veins, arteries and bone marrow. (Infusion Nursing Standards of Practice, 2011, p. S108).
- 2.6. Local Anesthetic Agents – Local Anesthetic Agents include, but are not limited to, topical transdermal agents, intradermal lidocaine, iontophoresis, and pressure-accelerated lidocaine, should be considered and used according to manufacturers' directions for use and in keeping with institutional policy and procedure (Infusion Nursing Standards of Practice, 2011, p. S43).
- 2.7. Medical Provider – Licensed physician, nurse practitioner, physician assistant or other provider with prescriptive authority.

3. Treatment Goal

- 3.1. Provide and maintain the most appropriate VAD for each patient with the least risk of complications and discomfort.
- 3.2. Place CVAD in femoral vein as a last resort.

REQUIREMENTS

1. Patient Condition: Inclusion Criteria

- 1.1. Medical Provider order for VAD.
- 1.2. Adult, aged 18 and older.
- 1.3. Informed consent documented (except in emergency situations).

2. Patient Condition: Exclusion Criteria

- 2.1. Informed consent not documented (except in emergent situations).
- 2.2. Coagulopathy – Patients with hyper- or hypo- coagulopathies may be excluded. Consultation with medical provider prior to line insertion is recommended.
- 2.3. Inadequate venous anatomy.

3. Policy

The Vascular Access Specialist who has met the experience, education and competency requirements listed below may perform the placement of CVADs using ultrasound guidance via the internal jugular, axillary/subclavian and femoral veins in addition to the ongoing practice of PICC and PIV placement. Assessment of pertinent lab results, medical history, vascular pathology and need for device will be completed before the procedure is initiated.

The Vascular Access Specialist who has met the experience, education and competency requirements listed below may perform arterial line placement with ultrasound guidance. Assessment of pertinent lab results, medical history, arterial pathology and need for device will be completed before the procedure is initiated.

The Vascular Access Specialist who has met the experience, education and competency requirements listed below may suture CVADs and arterial lines in place when indicated.

The Vascular Access Specialist who has met the experience, education and competency requirements listed below may insert peripheral IVs in the external jugular vein when appropriate.

The Vascular Access Specialist who has met the experience, education and competency requirements listed below may utilize topical anesthetic agents and/or injectable 1% buffered lidocaine (may use un-buffered 1% lidocaine when buffered is unavailable).

4. Protocol

Vascular Access Specialist will have:

- 4.1. Met the experience, education and competency requirements for PICC insertion using modified Seldinger technique (MST) and ultrasound guidance with a minimum of 3 years experience.
- 4.2. Completed a comprehensive CVAD insertion program which includes:
 - 4.2.1. Necessary qualifications for Vascular Access Specialist inserting CVADs.
 - 4.2.2. Anatomy and physiology of the upper extremities, neck, chest and groin.
 - 4.2.3. Indications and contraindications for CVAD placement.
 - 4.2.4. Indications, contraindications and side effects of lidocaine HCl for injection, USP for CVAD, arterial line and peripheral IV placement.
 - 4.2.5. Recognition, intervention and management of potential complications related to CVAD insertion.
 - 4.2.6. Appropriate documentation for CVAD insertion, policies and validation process.
 - 4.2.7. Demonstration of psychomotor skills necessary for insertion of CVADs.
 - 4.2.8. Successfully complete a minimum of ten (10) internal jugular placements, ten (10) axillary/subclavian placements and ten (10) femoral placements supervised by a qualified preceptor. The VAS may perform CVAD placement independently after documentation of 10 observed placements.
 - 4.2.9. Successful completion of a minimum of three (3) arterial line placements supervised by a qualified preceptor.

VAS STANDARDIZED PROCEDURE

1. Standard

The Vascular Access Specialist renders direct patient care by meeting the vascular access needs of the patient. The requirements for qualification as a Vascular Access Specialist must be based on assessed and documented knowledge and skills acquired after specialized preparation and formal instruction.

2. Policy

2.1 Vascular Access Specialist practices under the direction of the ordering medical provider.

2.2 Vascular Access Specialist may perform the following technical functions:

2.2.1. Insertion of a variety of central venous access devices (CVADs) with ultrasound guidance via the internal jugular, axillary, subclavian or femoral veins.

2.2.2. Insertion of arterial catheters with ultrasound guidance via the radial, brachial or femoral artery.

2.2.3. Suturing catheters to the skin when appropriate.

2.2.4. Insertion of peripheral IVs via the external jugular vein when appropriate.

2.2.5. Use of approved topical and injectable anesthetic agents for patient comfort during procedures.

2.3 Vascular Access Specialist will notify ordering medical provider at the earliest opportunity if any complication or suspected complication occurs during or post procedure.

2.4 Vascular Access Specialist will immediately contact a medical provider if a serious or potentially life threatening complication occurs or is suspected.

2.5 Vascular Access Specialist will order a chest radiograph to confirm catheter tip location after insertion of CVAD (a KUB Radiograph for tip confirmation for catheters placed in femoral vein).

STANDARDIZED PROCEDURE – SUTURED STABILIZATION OF CVAD AND/OR A-LINE

Procedure: Post catheter insertion device stabilization.

Personnel: Vascular Access Specialist

Purpose: To direct the Vascular Access Specialist in performing proper securement of CVAD and A-lines using sutures when indicated.

Desired Outcome: Catheter will be stabilized at desired position without complications from the suturing process

Supportive Data: Proper suturing may be required for A-lines and CVADs to prevent inadvertent removal or tip migration.

Process: The Vascular Access Specialist will suture appropriate catheters, using instruments and suture material.

1. Demonstrate knowledge, experience and competency of the basic techniques.
2. Anesthetize area for patient comfort.
3. Securely suture skin to provide catheter stabilization at desired location.
4. Tie knots firmly to avoid slipping.

Validation of Competency: Suturing competence will be established in conjunction with CVAD and Arterial line preceptorship (*see appendix A*).

Validation of Continued Competency: Vascular Access Specialist will keep record of all CVAD and A-line insertions. A minimum of ten (10) sutured insertions are required annually to maintain competence (suturing competence may be met with arterial line placement procedures). If not met, Vascular Access Specialist will be required to demonstrate competency to a qualified preceptor on an annual basis.

STANDARDIZED PROCEDURE – INSERTION OF ARTERIAL LINE

Procedure: Insertion of arterial catheter for hemodynamic monitoring.

Personnel: Vascular Access Specialist

Purpose: To direct the VAS in performing proper insertion of arterial lines.

Desired Outcome: Arterial catheters will be inserted using sterile technique, with or without ultrasound guidance using four attempts or less.

Supportive Data: “Operator experience, irrespective of specialty, is the key to limiting complication rate and regular audits are necessary to prove their efficiency” (*Gopal, Fitzsimmons, & Lawrance, 2006*)

Process: The Vascular Access Specialist will insert arterial catheters using sterile technique. The following criteria must be met:

1. Demonstrated knowledge of the basic technique of arterial cannulation.
2. Minimum of three (3) years experience performing ultrasound-guided PICC insertions.
3. Provide proof of training in proper technique of arterial line placement.
4. Provide proof of training and competency validation for suturing as a method of catheter securement.
5. Provide proof of training and competency validation for local anesthesia.

Validation of Competency: Arterial line insertion competency will be established by a qualified preceptor. Vascular Access Specialist will perform a minimum of three (3) Arterial line insertions under the guidance of a qualified preceptorship (*See appendix A*).

Validation of Continued Competency: Vascular Access Specialist will keep record of all arterial catheter placements. A minimum of ten (10) arterial line insertions are required annually to maintain competency. If not met, Vascular Access Specialist will be required to demonstrate competency to a qualified preceptor on an annual basis.

STANDARDIZED PROCEDURE – INSERTION OF CENTRAL VENOUS ACCESS DEVICE

Procedure: Insertion of Central Venous Access Devices (CVADs).

Personnel: Vascular Access Specialist

Purpose: To direct the Vascular Access Specialist in performing proper insertion of CVADs.

Desired Outcome: CVAD will be inserted using sterile technique under ultrasound guidance using four (4) or less attempts.

Supportive Data: “Operator experience, irrespective of specialty, is the key to limiting complication rate and regular audits are necessary to prove their efficiency” (*Gopal, Fitzsimmons, & Lawrance, 2006*)

Process: The Vascular Access Specialist will insert CVADs, using sterile technique and ultrasound guidance. The following criteria must be met:

1. Comprehensive knowledge and appropriate techniques for venous cannulation.
2. Minimum three (3) years experience performing ultrasound guided PICC insertions.
3. Provide proof of training for the placement of CVADs.
4. Provide proof of training and demonstrated competency of suturing as a method of catheter securement.
5. Provide proof of competency in proper technique to anesthetize the insertion site for patient comfort.

Validation of Competency: Successfully complete a minimum of ten (10) internal jugular placements, ten (10) axillary/subclavian placements and ten (10) femoral placements supervised by a qualified preceptor. As soon as ten (10) observations/placements are completed for the procedure the nurse may perform that procedure independently.

Validation of Continued Competency: Vascular Access Specialist will keep records of all CVAD insertions. A minimum of ten (10) CVAD insertions annually are required to maintain competency. If not met, Vascular Access Specialist will be required to demonstrate competence to a qualified preceptor on an annual basis. If a Vascular Access Specialist has a major complication, such as but not limited to inadvertent arterial cannulation, a “lost wire,” or air embolus, events will be reviewed in a quality peer review process and corrective action initiated as recommended.

**APPENDIX A:
CENTRAL VENOUS ACCESS DEVICE VASCULAR ACCESS SPECIALIST PLACEMENT CHECK-OFF LIST**

CLINICIAN					
	MRN	DEVICE TYPE	OUTCOME	PRECEPTOR	DATE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

**APPENDIX B:
CENTRAL VENOUS ACCESS DEVICE VASCULAR ACCESS SPECIALIST SKILL PERFORMANCE RECORD**

PERSONNEL AUTHORIZED FOR PRECEPTING AND INDEPENDENT PRACTICE UNDER THIS STANDARD PROCEDURE

CVAD PLACEMENT	DATE	ARTERIAL LINE PLACEMENT	DATE	SUTURING	DATE	USE OF TOPICAL ANESTH.	DATE	EXTERNAL JUGULAR PIVS	DATE

**APPENDIX C:
CENTRAL VENOUS ACCESS DEVICE VASCULAR ACCESS SPECIALIST APPROVAL SHEET**

STANDARDIZED PROCEDURE APPROVAL SHEET

VASCULAR ACCESS SPECIALIST	INITIAL
Insertion of Central Venous Access Devices (CVADs)	
Insertion of Arterial Lines	
Arterial Line and CVAD Suturing	
Insertion of External Jugular PIVs	
Name of Standardized Procedure	
Department	

Chief of Service _____ Date _____

Department Administrator _____ Date _____

Chair, Multidisciplinary Practice Committee _____ Date _____

Chair, Executive Committee _____ Date _____

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Sample Standardized Procedure for Insertion of Central Venous Access Devices by a Vascular Access Specialist

Part 2 – Procedure

PURPOSE

To outline the steps for inserting a CVAD in adult patients (also applies to PICC placement for patients 12 years of age and older).

DEFINITION

A CVAD is a venous access device that is placed in a vein in the arm, neck, chest or groin with the tip residing in the inferior or superior vena cava. Tip location defines CVAD, not device used. Included in this description are:

Peripherally Inserted Central Catheters (PICC)

Central Venous Catheters (CVC)

Non-Tunneled Central Venous Catheters (CVC)

POLICY

- CVADs may be placed by a VAS who has been specially trained and has successfully completed CVAD insertion training. Advanced training is required for other than arm insertions (Standardized Procedure describes requirements and training in detail).
- The veins of the arm, neck, chest or groin may be accessed for CVAD insertion.
- Prior to CVAD placement, the Vascular Access Specialist confirms the medical provider order (physician, nurse practitioner, physician assistant or other provider with prescriptive authority) and documented informed consent for catheter placement, reviews the chart for indications and contraindications for catheter placement, and provides the patient/family with information related to the CVAD procedure. The VAS completes pre-procedure checklist (attachment A). The goal is to use the smallest catheter for patients with fewest number of lumens appropriate for treatment plan.
- CVAD placement may be contraindicated for patients with the following (If contraindication is present, the VAS will discuss with ordering medical provider prior to insertion):
 - Recent history (within two months) of surgery or trauma to head or neck.
 - Existing central venous access device, fistula, pacemaker or automated implantable cardioverter-defibrillator (AICD).
 - Previous episodes of venous thrombosis or vascular surgical procedures at the prospective placement site or _____ affecting the selected venous pathway.
 - Hypo-coagulable state
 - INR greater than 1.5 (Not a contraindication for PICC placement)
 - Thrombocytopenia: Platelets less than 50 thou/mm³. (Not a contraindication for PICC placement)
 - Hyper-coagulable
 - Factor V Leiden or prothrombin G20210A mutation
 - Protein C deficiency, protein S deficiency, or antithrombin III deficiency
 - Chronic Kidney Disease (CKD) stage 3 or greater (PICC contraindicated, not internal jugular (IJ) placed CVC)
 - Contracture or paralysis of upper extremity (PICC contraindicated, not CVC)
 - Breast cancer with lymph node dissection (PICC contraindicated, not CVC)
- Competency:
 - See Hospital Policy (for neck, chest and femoral insertions)

PROCEDURE

1. Check order, allergies, site restrictions and complete pre-procedure checklist (unless emergent procedure).
2. Arrange sedation if required.
3. Explain procedure to patient and/or family.
4. Review risks, benefits and alternatives of procedure; verify signed consent.
5. Perform hand hygiene.
6. Scan veins with ultrasound for appropriate vein selection:
 - a. Avoid using femoral vein when possible.
 - b. Subclavian is preferred insertion site over internal jugular (IJ) when appropriate.
 - c. Avoid subclavian for chronic renal disease patients (IJ preferred).
7. Verify patient identification using two patient identifiers prior to procedure.
8. Perform hand hygiene, position patient and place mask on patient.
9. Position patient, place mask.
10. Measure catheter length.
11. Clean insertion site.
12. Perform hand hygiene. Don mask, cap and eye protection.
13. Prepare sterile field and CVAD.
14. Prep insertion site a minimum of 3 inches above, below, and to the sides of planned insertion site with 2% chlorhexidine gluconate and 70% isopropyl alcohol. Solution must be dry before breaching skin with needle.
15. Don sterile gown and gloves.
16. Apply full body drape.
17. Place sterile cover over ultrasound probe.
18. Anesthetize local area with 2 mL to 5 mL of 1% lidocaine (may use 1% lidocaine buffered with sodium bicarbonate) under ultrasound visualization.
19. When insertion site is anesthetized, enter vein with needle under ultrasound visualization and ensure brisk blood return.
20. Thread guidewire.
21. Pull needle out of vein over the guidewire; be careful not to pull out guidewire.
22. Enlarge cutaneous puncture site with cutting edge of scalpel, if necessary, to allow the CVAD to enter the skin.
23. CVAD insertion through sheath - modified Seldinger technique: carefully advance sheath dilator over guidewire, remove dilator from sheath, remove guidewire and slowly insert CVAD through sheath to predetermined position.
24. Insertion via chest, neck, or femoral veins using Seldinger technique: carefully introduce dilator over wire to dilate skin tract allowing for CVAD insertion over-the-wire. Remove dilator and gently advance CVAD over guidewire through sheath and into vein to predetermined position. Pull out guidewire, covering hole to reduce possibility of air embolus and to minimize blood loss.
25. Ensure brisk blood return when catheter reaches predetermined position. If no blood return, reposition catheter until a >5 mL blood return is obtained.
26. Flush each lumen with 10 mL normal saline.
27. Clean skin, secure CVAD line with a sutureless securement device.

PROCEDURE (CONT.)

28. Apply antimicrobial sponge dressing around catheter and cover entire site with transparent semipermeable dressing.
29. Date dressing.
30. Place all sharps in sharps containers.
31. Discard gloves, gown and drapes.
32. Perform hand hygiene.
33. Order X-ray for CVAD tip confirmation.
34. Document procedure in procedure notes.
35. If repositioning/adjustment is required, it must be performed by a Vascular Access Specialist, Physician Assistant, Nurse Practitioner, or MD.

Approved by

Reviewed:

Revised:

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Sample Pre-Procedure Checklist Central Venous Access Device Part 1

VASCULAR ACCESS NOTE

Patient: _____ Room #: _____

Device Request: _____

ALL CVAD INSERTIONS

Verify order	Yes <input type="radio"/>	No <input type="radio"/>
Verify any allergies and procedure/side/site	Yes <input type="radio"/>	No <input type="radio"/>
Review chart/X-rays	Yes <input type="radio"/>	No <input type="radio"/>
Review current medications and anticoagulant therapies	Yes <input type="radio"/>	No <input type="radio"/>
If Yes	INR <input type="radio"/>	Platelets <input type="radio"/>
Is patient hyper-/hypo- coagulable	Yes <input type="radio"/>	No <input type="radio"/>
Verify indications/contraindications for CVAD placement	Yes <input type="radio"/>	No <input type="radio"/>
History of stage 3 or greater CKD	Yes <input type="radio"/>	No <input type="radio"/>
If Yes	GFR <input type="radio"/>	CR <input type="radio"/>
History of pacemaker or AICD	Yes <input type="radio"/>	No <input type="radio"/>
Current CVAD	Yes <input type="radio"/>	No <input type="radio"/>
Prior CVAD History	Yes <input type="radio"/>	No <input type="radio"/>
Culture or sensitivities pending	Yes <input type="radio"/>	No <input type="radio"/>
History of venous thrombosis and/or IVC or SVC filter	Yes <input type="radio"/>	No <input type="radio"/>
SPECIFICS FOR PICC INSERTION		
History of axillary lymph node dissection?	Yes <input type="radio"/>	No <input type="radio"/>
History of upper extremity contracture or paralysis?	Yes <input type="radio"/>	No <input type="radio"/>

Planned insertion site: _____

Planned number of lumens: _____

Reason for placement/device selection: _____

Person completing checklist: _____

Vascular Access Services ext.: _____

Pager #: _____

Sample Pre-Procedure Checklist Central Venous Access Device Part 2

Patient Name: _____ Date: _____

Patient I.D.: _____ Date of Birth: _____

Age: _____ Sex: Male Female

	LAB RESULTS REVIEW	DATE/TIME
INFECTION	PT TEMP	
	WBC	
RENAL	CR	
	GFR	
	PLT	
COAGULATION	INR	
	PT	
	PTT	

Reason for consult:

Line necessity:

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PROCEDURE	CLINICIAN INITIALS	ACHIEVED
Verifies order		Y <input type="radio"/> N <input type="radio"/>
Obtains informed consent		Y <input type="radio"/> N <input type="radio"/>
Consent signed		Y <input type="radio"/> N <input type="radio"/>
Assesses pre-pain	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10	
Verifies for allergies & procedure/site/site		Y <input type="radio"/> N <input type="radio"/>
Reviews chart/X-ray		Y <input type="radio"/> N <input type="radio"/>
Reviews current medications and anticoagulant therapies		Y <input type="radio"/> N <input type="radio"/>
Verifies indications		Y <input type="radio"/> N <input type="radio"/>
Reviews contraindications		Y <input type="radio"/> N <input type="radio"/>
Performs pre-assessment sliding lung procedure		Y <input type="radio"/> N <input type="radio"/>
Culture or sensitivities pending		Y <input type="radio"/> N <input type="radio"/>
History of pacemaker or AICD		Y <input type="radio"/> N <input type="radio"/>
History of CVAD		Y <input type="radio"/> N <input type="radio"/>
History of venous thrombosis		Y <input type="radio"/> N <input type="radio"/>
History of chronic kidney disease		Y <input type="radio"/> N <input type="radio"/>
History of SVC or IVC filter		Y <input type="radio"/> N <input type="radio"/>
History of implanted or tunneled catheter		Y <input type="radio"/> N <input type="radio"/>

PRE-PROCEDURE PLAN		
Device	Insertion Site	Number of Lumens

Signed by Verifying Clinician _____ 2nd Verifier _____
 Vascular Access Specialist Signature _____ Pager # _____

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Sample Central Venous Access Device Competency Assessment Checklist

Candidate Name: _____ Date: _____

Proctor/Preceptor Name: _____

Number of Attempts: _____ Location: PCXR Tip Position:

MRN: _____ Sex: Male Female

Primary Reason for CVAD (Choose one):

Primary Diagnosis:

Relevant History:

PROCEDURE	ACHIEVED
Explains procedure to patient, if applicable	<input type="radio"/> Y <input type="radio"/> N
Performs hand hygiene	<input type="radio"/> Y <input type="radio"/> N
Universal protocol – Time out	<input type="radio"/> Y <input type="radio"/> N
Verifies allergies and contraindications	<input type="radio"/> Y <input type="radio"/> N
Assesses and selects appropriate site for cannulation using ultrasound	<input type="radio"/> Y <input type="radio"/> N
Uses sterile technique: organizes equipment and supplies, inspects catheter, flushes all lumens, prepares lidocaine	<input type="radio"/> Y <input type="radio"/> N
Positions patient to maximize safe cannulation	<input type="radio"/> Y <input type="radio"/> N
Uses maximum sterile barriers	<input type="radio"/> Y <input type="radio"/> N
Prepares insertion site with antiseptic solution	<input type="radio"/> Y <input type="radio"/> N
Anesthetizes skin and deeper tissue with local anesthetic	<input type="radio"/> Y <input type="radio"/> N
Accesses vein under ultrasound guidance, assesses for venous versus arterial puncture, threads guidewire	<input type="radio"/> Y <input type="radio"/> N
Dilates skin and vessel with tissue dilator	<input type="radio"/> Y <input type="radio"/> N
Inserts catheter over guidewire to desired location – maintains control of guidewire at all times	<input type="radio"/> Y <input type="radio"/> N
Sutures catheter or secures catheter with stat-lock, applies antimicrobial dressing and occlusive dressing	<input type="radio"/> Y <input type="radio"/> N
Dates and initials dressing	<input type="radio"/> Y <input type="radio"/> N
Correctly disposes all sharps and supplies used in procedure	<input type="radio"/> Y <input type="radio"/> N
Orders portable chest X-ray	<input type="radio"/> Y <input type="radio"/> N
Documents procedure in health connect	<input type="radio"/> Y <input type="radio"/> N

This document is provided as an example only and should be modified to meet your hospital's specific requirements, including the privacy and safeguarding of the collected data. In all cases compliance with the Health Insurance Portability and Accountability Act of 1996 must be maintained.

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Notes

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