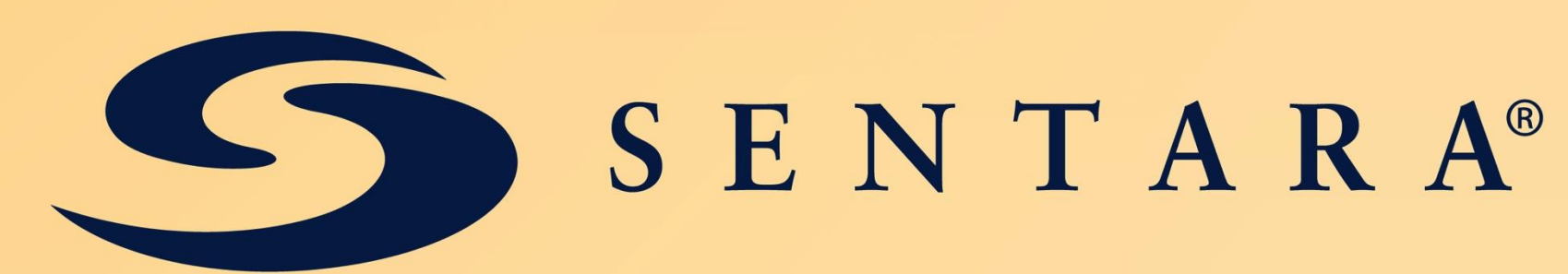




Lives are on the Line: Results of a Nurse-Led Midline Insertion Team

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Introduction

As part of a system-wide initiative to select appropriate vascular access and further reduce the incidence of central-line associated blood stream infection (CLABSI), Sentara Williamsburg Regional Medical Center implemented a nurse-led, midline catheter insertion team in July 2015. This team of registered nurses and cardiovascular invasive specialists is specially trained to evaluate the appropriateness of vascular access catheter selection and to insert midline catheters at the bedside.

Significance

Central-line associated blood stream infections are serious and preventable healthcare associated infections that contribute to increased length of stay, morbidity, and mortality. Despite intense scrutiny and efforts at prevention, the Centers for Disease Control and Prevention (CDC, 2016) report an estimated 30,000 CLABSI each year in acute care hospitals across the United States.

Primary CLABSI prevention must include efforts to avoid insertion of the central venous line (CVL) if at all possible. Midline catheters are peripheral devices that offer an alternative to CVLs in certain situations. Midline catheters are designed to provide intravenous therapy to patients who require peripheral access greater than 4 days and less than 28 days. Midline catheters may be placed at the patient bedside by nurses or technicians who are specially trained and deemed competent in this skill.

Objectives

- The primary objective of this initiative was to address the issue of excess and often unnecessary central venous line device days. Factors to be addressed included:
 - Variability in process for line selection
 - Inappropriate vascular access device selection
 - Limited midline insertion capability
- As a result of lowering the CVL device days, it was anticipated that there would also be a reduction in the number of CLABSI.

Methods

- Pre-Implementation Phase**
 - Select equipment and supplies to support practice
 - Develop policies, procedures, job aids
 - Provide training and establish competency of team members
 - Determine service availability and team schedule
- Implementation Phase**
 - Ensure appropriate selection of vascular access
 - Revise order options in electronic medical record (Figure 1)
 - Link orders to Adult Elective IV Catheter Selection Algorithm (Figure 2)
 - Complete Midline Candidate Screening Tool (Figure 3)
 - Perform bedside insertion of midline catheters
- Post-Implementation Phase**
 - Evaluate program for opportunities and success
 - Monitor metrics and outcomes
 - Number of Consults and Insertions
 - CVL Device Days
 - CLABSI

Catheter Selection									
15.	<table border="1"><thead><tr><th>Disorder</th><th>Assessment</th></tr></thead><tbody><tr><td>1. Does the patient's drug therapy require central line access?</td><td>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td></tr><tr><td>A. What is patient's venous access integrity status?</td><td>Good <input checked="" type="checkbox"/> Poor <input type="checkbox"/></td></tr><tr><td>a. What is the length of therapy?</td><td>< 14 Days <input checked="" type="checkbox"/> 14-28 Days <input type="checkbox"/> > 28 Days <input type="checkbox"/></td></tr></tbody></table>	Disorder	Assessment	1. Does the patient's drug therapy require central line access?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	A. What is patient's venous access integrity status?	Good <input checked="" type="checkbox"/> Poor <input type="checkbox"/>	a. What is the length of therapy?	< 14 Days <input checked="" type="checkbox"/> 14-28 Days <input type="checkbox"/> > 28 Days <input type="checkbox"/>
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Figure 1

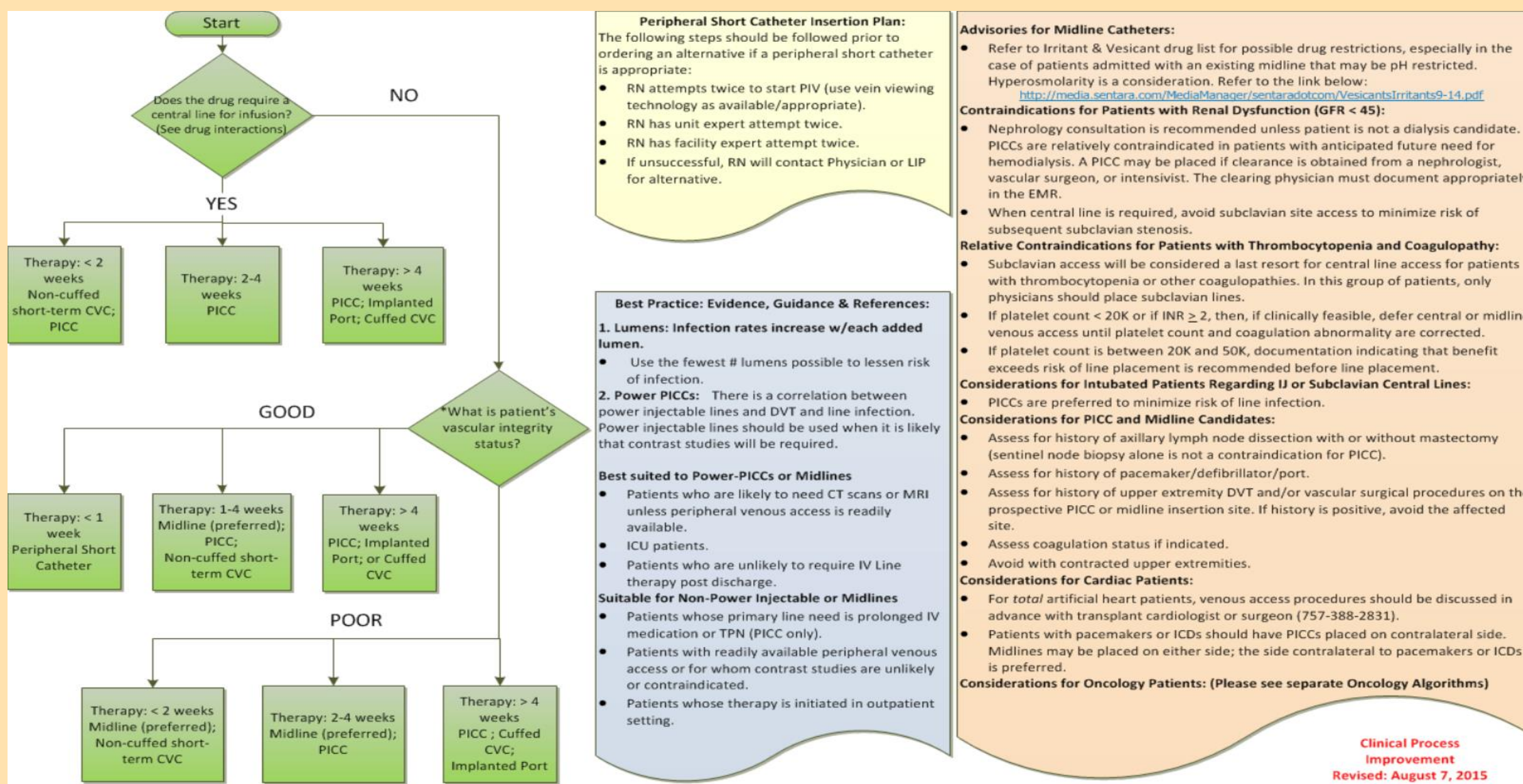


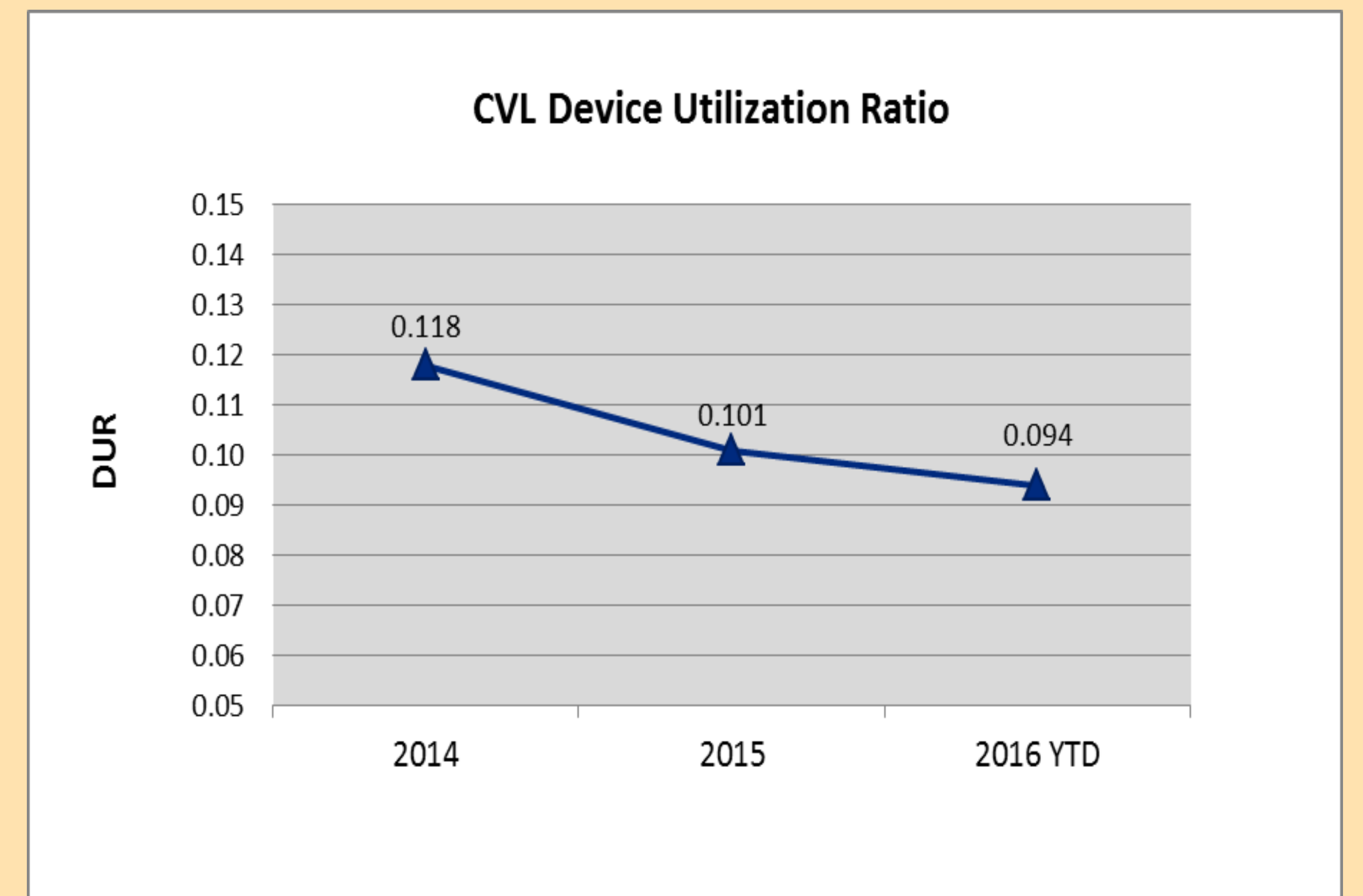
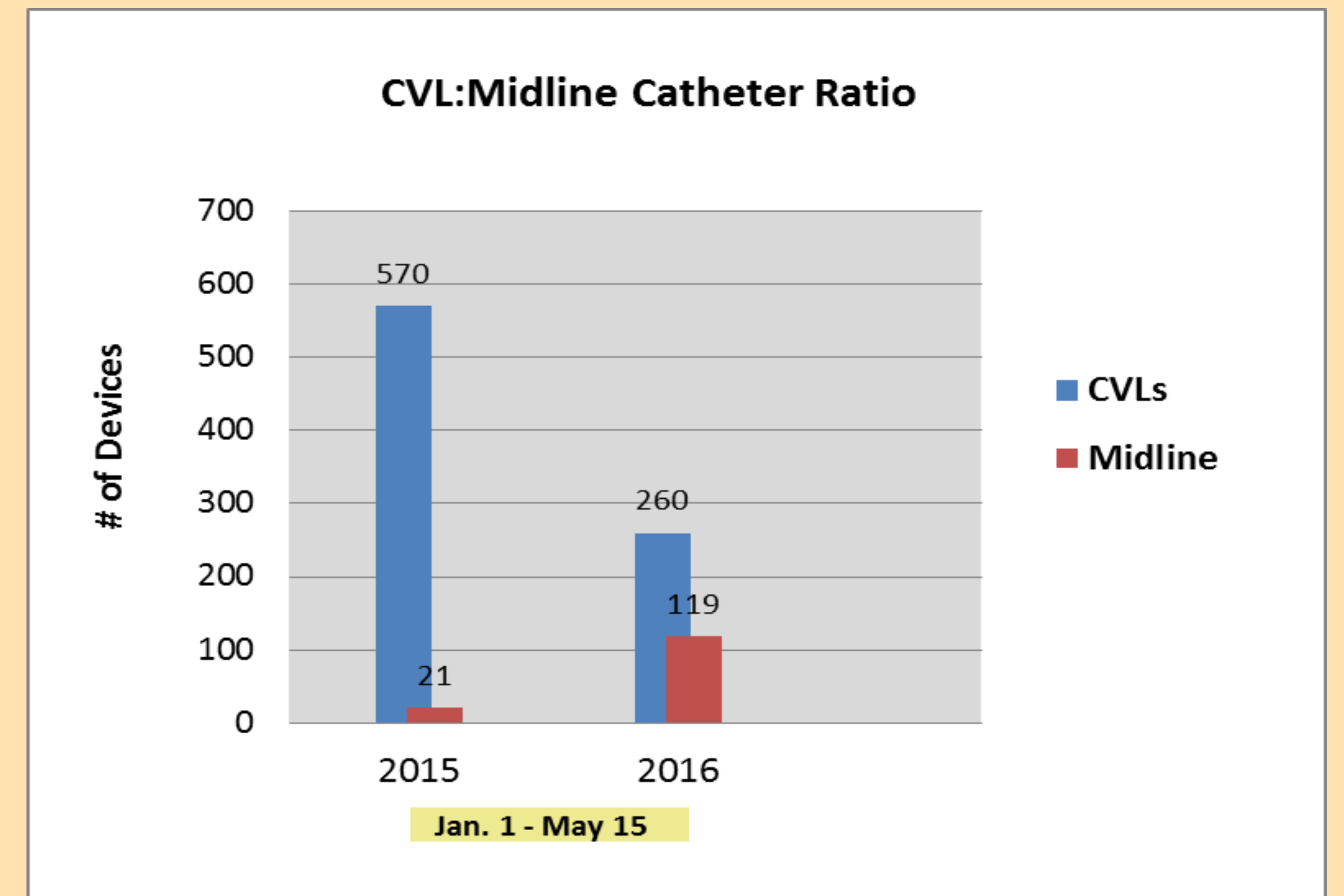
Figure 2

Yosh, Robin K, RN	Registered Nurse	Signed	Progress Notes
MIDLINE CANDIDATE SCREENING TOOL			
ALLERGIES: Does the patient have known or suspected allergies to material contained in the device: No			
LAB VALUES: • GFR: >60 • Platelet Count: >240 • INR: <1.5 • If Platelet count is less than 20 or INR is equal to greater than 2, then (if clinically feasible) midline placement will be deferred until platelet count and coagulation abnormality are corrected. • If midline placement is not deferred, documentation indicating that benefit exceeds risk of line placement recommended before line placement • If Yes, documentation indicating that benefit exceeds risk of line placement recommended before line placement			
CLINICAL ASSESSMENT: • Condition of patient's veins: Poor • Does patient have contracted upper extremities: No • If Yes, what side? • Has patient had a stroke: No • If Yes, what side? • Has patient had past radiation: No • Does patient have a history of upper extremity DVT and/or vascular surgical procedures on the prospective midline insertion side: No • If Yes, what side? • Does patient have a history of axillary lymph node dissection with or without mastectomy on the prospective midline insertion side: No • If Yes, what side? • Does patient have a history of pacemaker/defibrillator port: No • If Yes, what side? • Does patient have a history of total artificial heart transplant: No			
Based on the Midline Catheter Screening, patient does meet qualifications for Midline Catheter placement. Patient education provided on Midline indications, placement and use.			

Figure 3

Outcomes

- 20% Reduction in CVL Device Utilization
- Zero CLABSI since July 2015



Lessons Learned/Conclusion

- A nurse-led midline insertion team is an effective solution to address CVL device utilization.
- Utilize electronic solutions to support clinical decision making.
- Consider training additional members to supplement the primary midline insertion team.

