BACKGROUND
Central Lines refer to large lumen catheters which terminate in the heart. They are used in medical practice for:
+ High pressure / high volume treatment
+ Infusion of vesicant medication and antibiotics
+ Longer term treatment
+ Blood collections for difficult venous access patients
+ Monitoring (venous pressure / cardiac output)

Peripheral Intravenous Catheters refer to the most commonly used intravenous device. They are used for therapeutic purposes such as:
+ Administration of medications, fluids and/or blood products
+ Blood collection on insertion, but not reliable over time due to venous obstructions, occlusions, collapsing/kinking, etc.

Challenges
+ Central lines are a necessary for critically ill patients, but can become infected causing associated blood stream infections (CLABSI)
+ CLABSI are too common (>90,000/year, CDC) and have a high mortality rate (attributable 5% increase) [ref Chaisson], are very costly (up to $30,000, SHEA)
+ Draws from peripheral IVs are avoided because they are associated with dilution effects and significantly higher risk of hemolyzed/rejected samples, which are very costly ($208 for rejected inpatient; $337 for rejected ED)

PROJECT AIM
Phase I:
+ Describe common usage of central lines
+ Identify differences by unit (CICU, MICU, SICU)
+ Categorize line accesses

Phase II:
+ Assess the ability of the new PIVO™ device to obtain a good quality blood sample from Peripheral IV
+ Determine whether the use of PIVO shortens overall IV dwell time.
+ Evaluate patient’s pain level associated with use of PIVO and overall satisfaction

FINDINGS
Phase I:
+ Over 22% of all accesses of a line are due to blood collections
+ Fluxes delivered independent of medications or monitoring make up 12% of all accesses
+ The blood collection rate was similar for CVC and PICC line. This rate was over 22% of all accesses of a line are due to blood collection
+ MICU accessed lines most frequently
+ MICU was more likely to use line for monitoring and blood collection

Phase II:
+ PIVO successfully collected a sample 81% of the draws (95% CI 74.0% - 88.0%)
+ 100% of the samples were non-hemolyzed
+ PIVO successfully collected a sample 81% of the draws (95% CI 74.0% - 88.0%)
+ Over 22% of all accesses of a line are due to blood collections
+ MICU settings (MICU, SICU, CICU)
+ 5 nurses per setting
+ 10 shifts per nurse
+ Total expected = 150 shifts of data

PROJECT DESIGN /STRATEGY
Phase I—Observational count and type of line access documented for 12-hour shift:
+ ICU settings (MICU, SICU, CICU)
+ 5 nurses per setting
+ 10 shifts per nurse
+ Total expected = 150 shifts of data

Phase II—Prospective, randomized control study:
+ GI Surgical Unit
+ 160 patients undergoing gastrointestinal surgery

IMPLICATIONS AND SUGGESTED CHANGES IN PRACTICE
+ Almost 1/3 of daily CVC access can be reduced if blood collections were redirected to peripheral IV’s
+ Blood draws are painful dissatisfiers from the perspective of patients
+ Inpatients could avoid a significant portion of needle-based blood draws
+ PINC success was constrained by the condition of the peripheral IV; those patients’ weight, location of the IV, use of continuous versus intermittent IV fluids, medication, comorbidities, and use of irritant IV fluids did not affect the likelihood that the PIVO would obtain a good sample of blood

FINANCIAL DISCLOSURES
+ None