

Using “MAGIC” to Facilitate Appropriate PICC Use: Implementation of a PICC Appropriateness Assessment Tool



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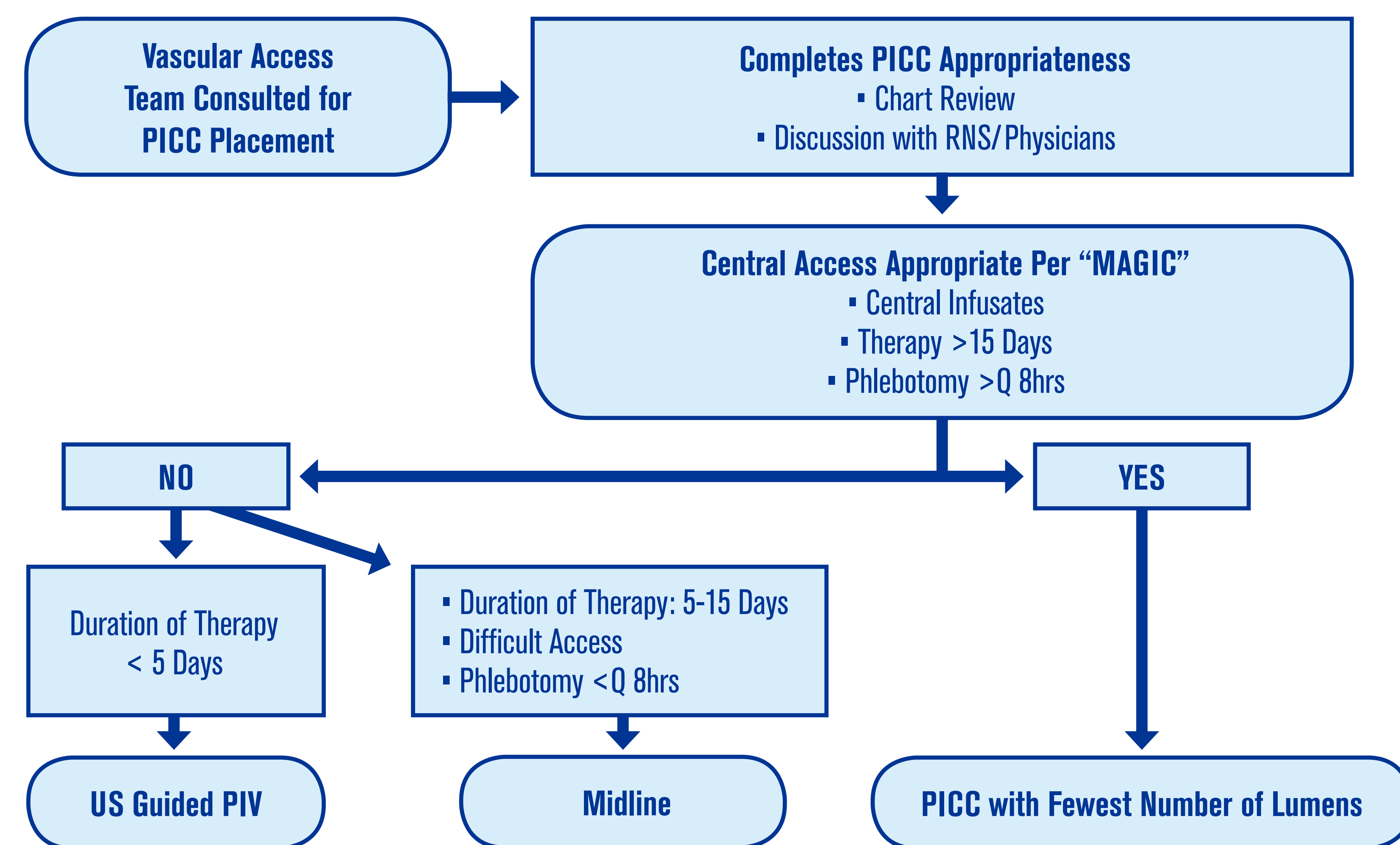
Background

- Peripherally inserted central catheters (PICC) are increasingly used for vascular access in hospitalized patients due to convenience of placement and long term viability.
- PICCs also associated with multiple complications including upper extremity thromboses (2–5%) and central line blood stream infections (CLABSIs) (1–5%), which increase as the size and number of PICC lumens increase.
- Michigan Hospital Medicine and Safety Consortium (HMS) is a state wide quality collaborative focused on improving PICC utilization and decreasing PICC related complications in hospitalized patients.
- Recent study across ten HMS hospitals showed significant variation in PICC insertion indications and patterns of use not explained by patient acuity or hospital size.
- Review of our hospital's HMS data showed that over 25% PICCs were removed within 5 days of insertion pointing towards potentially inappropriate use.
- The recently released “Michigan Appropriateness Guide for Intravascular Catheters” (MAGIC) provides clinicians a framework to consider appropriateness of PICC use in various clinical scenarios.

Aim

- Our goal was to decrease inappropriate PICC utilization by implementation of a “PICC assessment tool” developed using the MAGIC criteria.

Intervention



Appropriate PICC Indications & Assessment Tool

Table 1. Appropriate Indications for PICC Use (MAGIC)

Delivery of peripherally compatible infusates when the proposed duration of such use is ≥ 6 days.
Delivery of non-peripherally compatible infusates (e.g., irritants or vesicants), regardless of proposed duration of use.
Delivery of cyclical or episodic chemotherapy that can be administered through a peripheral vein in patients with active cancer, provided that the proposed duration of such treatment is ≥ 3 months.
Invasive hemodynamic monitoring or requirement to obtain central venous access in a critically ill patient, provided the proposed duration of such use is ≥ 15 days.
Frequent phlebotomy (every 8 h) in a hospitalized patient, provided that the proposed duration of such use is ≥ 6 days.
Intermittent infusions or infrequent phlebotomy in patients with poor/difficult peripheral venous access, provided that the proposed duration of such use is ≥ 6 days.
For infusions or palliative treatment during end-of-life care.
Delivery of peripherally compatible infusates for patients residing in skilled nursing facilities or transition from hospital to home, provided that the proposed duration of such use is ≥ 15 days.

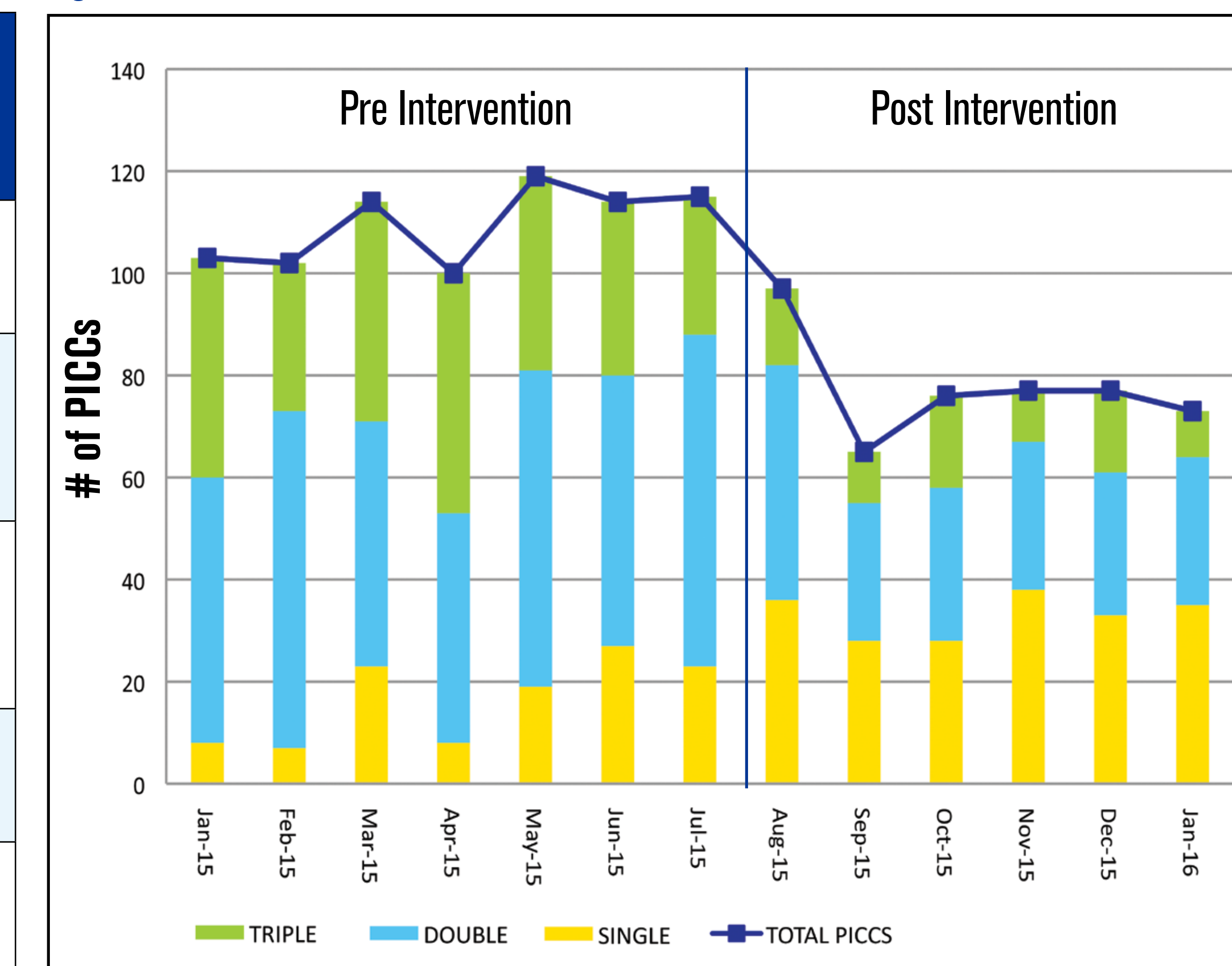
Figure 1. PICC Assessment Form

Results

Table 2. PICC and Midline Utilization, Pre and Post Implementation

Average Monthly Utilization	March 2015 - July 2015	Aug 2015 - Jan 2016	
Overall PICCs/Month	112 (± 7)	73 (± 5)	P < 0.001
Triple Lumen PICCs/Month	37 (± 8)	13 (± 4)	P < 0.0002
Single Lumen PICCs/Month	20 (± 7)	33 (± 4)	P < 0.01
Midlines/Month	4 (± 3)	14 (± 3)	P < 0.008
Patient-Days/Month	13,228 \pm 582	12,750 \pm 611	P > 0.2

Figure 2. PICC Utilization / Month Jan 2015-Jan 2016



Discussion

- Decision to order PICC line was often made without thoughtful consideration to other vascular access devices. The screening process empowered vascular access providers to insert a device based on appropriate clinical indication.
- Decrease in PICC placements placed for provider/ patient convenience.
- PICCs requested for difficult vascular access re-directed towards midlines (usage increased by 50%).
- Decrease in triple lumen PICC lines which were often requested for having “back-up” lumens.
- Review of HMS data shows significant decrease in PICC utilization < 5 days. Impact on UE VTE and CLABSI rates pending.
- Patients requiring frequent phlebotomies and those with difficult blood draws still pose a challenge as alternative devices have not been well studied and have varying success rates.

Conclusions

- Choosing wisely campaigns have identified PICC utilization as an opportunity to improve practice especially to decrease PICCs placed for patient or provider convenience.
- A simple PICC assessment tool to assess PICC appropriateness prior to insertion can reduce inappropriate PICC utilization, decrease # of lumens and can be replicated at other institutions.
- Further studies are needed to assess the impact of decrease in utilization on PICC related complications.

References

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