

Less Is More: A Quality Improvement Project to Reduce Usage of Multi-lumen PICCs

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Background

- Peripherally inserted central catheters (PICCs) are common vascular access devices, with more than 4000 devices placed per year at our institution
- These devices carry a risk of complications, particularly infection and thrombosis
- Risk of complications increases significantly with increasing number of lumens
- At our institution, multi-lumen catheters were used more frequently than single lumen catheters despite observational data suggesting that this was likely unnecessary

Objectives

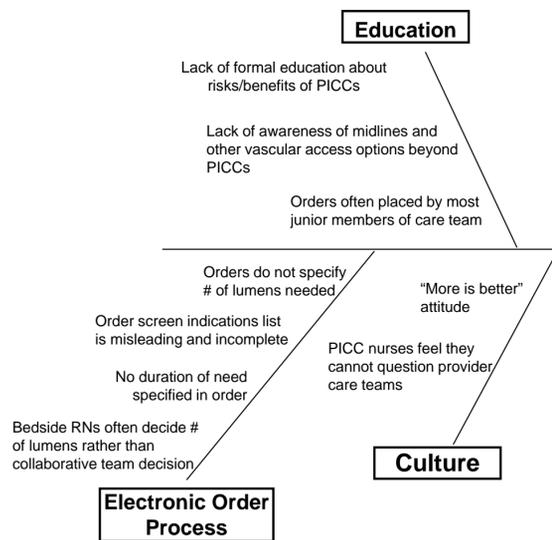
To improve the health and safety of our patients by decreasing our use of multi-lumen PICCs

- Decrease use of triple and double lumen PICCs
- Increase proportion of single lumen PICCs
- Emphasize use of midline (non-central) catheters when able

Specific Aim

To decrease the relative proportion of triple lumen PICCs placed by 25% within 6 months of implementation

Gap Analysis & Interventions



- Extensive changes to the electronic order entry system:

Education built-in to screen, Combined PICC & midline order

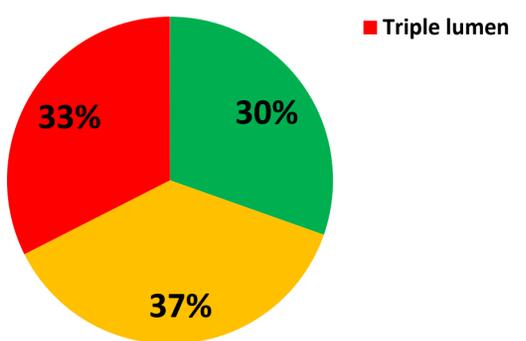
Indications & duration of need included in order

Default to single lumen unless justification for multi-lumen

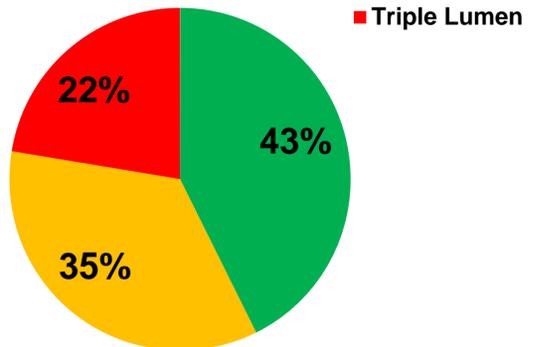
- 24/7 On-call Vascular Access Specialist team to assist in choosing the most appropriate line & support PICC RNs
- Provider education through lectures and posters in workrooms

Results

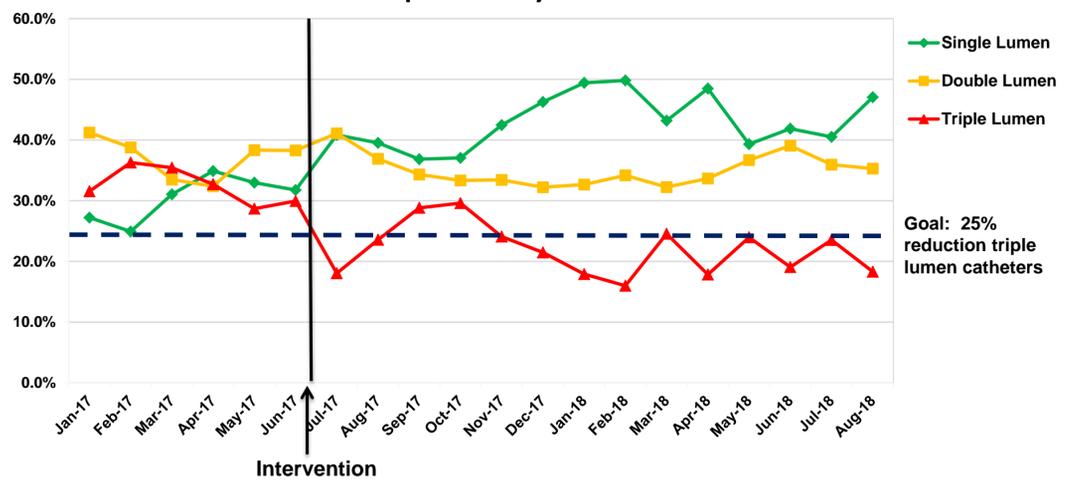
Pre-intervention (6 month average)



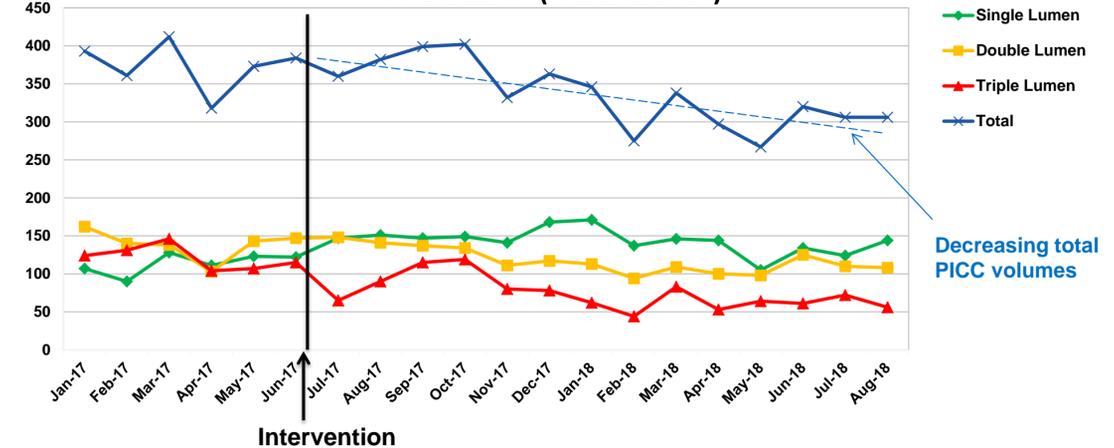
Post-Intervention (6 month average)



Relative Proportions by Catheter Lumens



PICC volumes (raw numbers)



Lessons Learned

- Changes to the electronic order entry system are an effective way to achieve significant and sustained improvements in provider ordering habits
- On-call vascular access experts are a helpful resource for provider teams and PICC nurses
- Multidisciplinary quality improvement teams with engagement of front line providers are critical to project success

References

- Chopra, V., et al. PICC-associated bloodstream infections: prevalence, patterns, and predictors. *Am J Med.* 2014; 127(4): 319-328.
- Evans RS, et al. Risk of symptomatic DVT associated with peripherally inserted central catheters. *Chest.* 2010;138(4):803.