



To assess the cost-effectiveness of peripherally inserted central catheter (PICC) placements using an ultrasound and electrocardiogram-guided system versus external measurements and confirmatory chest X-rays (CXRs)” Keller et al (2019).

Abstract:

PURPOSE: To assess the cost-effectiveness of peripherally inserted central catheter (PICC) placements using an ultrasound and electrocardiogram-guided system versus external measurements and confirmatory chest X-rays (CXRs).

MATERIALS AND METHODS: Sixty-eight guided PICC placements were performed in 63 outpatients (mean age, 43 ± 13 years; 50% male) and compared to 68 propensity score-matched PICC placements (mean age, 44 ± 13 years; 56% male) performed using external measurements by the same operators. Post-placement CXRs were used to confirm final catheter tip positioning. Cohorts were compared in terms of repositioning rates, desired tip positioning rates (in the lower third of the superior vena cava or at the cavoatrial junction), and estimated cost per PICC positioned as desired using manufacturer quotes, Medicare reimbursement rates, and hourly wages for staff time. Agreement between tip positioning according to the guided system versus CXR was also assessed.

RESULTS: Guided PICC placements required less repositioning (1.5% vs 10.3%, $P = .03$) and resulted in more catheters positioned as desired (86.8% vs 67.6%, $P = .01$) than the external

measurement approach. The cost per PICC positioned as desired was lower for guided placements (\$318.54 vs \$381.44), suggesting that the guided system was cost-effective in this clinical setting. Guided system-CXR agreement for tip position was poor ($\kappa=0.25$, $P = .002$) due to tips being slightly farther from the cavoatrial junction on CXR than indicated by the guided system.

CONCLUSIONS: The guided PICC placement system was cost-effective in outpatients treated by a single division of interventional radiology at an academic institution.

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Reference:

Keller, E.J., Aragona, E., Molina, H., Lee, J., Salem, R., Resnick, S.A., Chrisman, H. and Collins, J.D. (2019) Cost-Effectiveness of a Guided Peripherally Inserted Central Catheter Placement System: A Single-Center Cohort Study. *Journal of Vascular and Interventional Radiology*. February 14th. .

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