

COMPARATIVE ANALYSIS OF THE PRECISION OF A FORMULA-BASED PICC-LINE LENGTH CALCULATOR WITH CLINICIAN PREDICTIONS

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Poster

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A predictive formula for PICC-line insertion length significantly outperformed clinician estimates in a comparison study of 264 estimates from 10 clinicians across 60 anonymized cases.

KEY POINTS

- The formula achieved 50.0% accuracy within ± 2 cm, 81.7% within ± 3 cm, and 95.0% within ± 4 cm, compared to clinician estimates of 24.6%, 36.7%, and 43.2% respectively ($p < 0.05$ for ± 3 cm and ± 4 cm margins).
- The formula's average deviation from ideal PICC length was 0.4 cm, while clinician estimates averaged 6.3 cm deviation (range: 2.8–12.5 cm across participants).
- Clinician estimates showed considerable variability with accuracy ranging from 1.7% to 45.0% within ± 2 cm across the 10 participants of varying experience levels.
- The formula was developed from multivariate regression analysis of 60 retrospectively analyzed PICC-line cases and is available as a web-based calculator.
- The authors conclude that a formula-driven approach may improve precision and reproducibility in PICC-line placement, though further validation in larger and more diverse clinical settings is warranted.

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