



“James A. Haley Veterans’ Hospital tested an advanced electronic positioning system for central lines that could hypothetically reduce malpositions. Little data has previously been published about this technology.” Smith et al (2014).

Reference:

Smith, L., Brown, C.M. and Mendoza, J. (2014) Novel Catheter Positioning System for Intravenous Central Lines: A Report of 1 Hospital’s Experience. The Journal of the Association for Vascular Access. 19(3), p.167-171.

Review of a novel catheter positioning system for central venous catheters
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Abstract:

Background: Malpositioned peripherally inserted central catheters (PICCs) can create serious complications. Confirmatory chest radiographs, the standard method for certifying proper central-catheter tip position, are sometimes imprecise and unreliable. James A. Haley Veterans’ Hospital tested an advanced electronic positioning system for central lines that could hypothetically reduce malpositions. Little data has previously been published about this technology.

Methods: Before the positioning system could be approved for use at the hospital, efficacy data had to pass reviews by multiple individuals/entities. The hospital's PICC team initially conducted a 2-week trial of the vascular positioning system, using it on 28 patients. Permission was granted to continue using the new system and to request acquisition of the technology. Use of confirmatory radiographic images continued during this further evaluation.

Results: The overall malposition rate during the first 12 months of system use was reduced by about half—a statistically significant finding. The system could be used optimally with 594 of 834 placements (71.2%) at an accuracy rate of 98.5%. The system could be used suboptimally (eg, with patients who have pacemakers) for 240 of the 834 placements, at an accuracy rate of 84.6%. The overall malposition rate was 5.5%—about half the 10.8% rate seen during the 12-month period before system use.

Conclusions: The statistically significant results, from the largest data set reported at 1 site using the system, were judged sufficient to switch to using the system instead of confirmatory radiographic images when the system indicated correct PICC placement in the heart's cavoatrial junction. The malposition rate with the system continues to improve as the PICC team gains experience in using the system. Additional study is needed on this and other positioning systems.

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