Abstract:

To conduct a systematic review that compares the effectiveness of nurses using 2-D ultrasound guided insertion of peripherally inserted central catheters (PICCs) with the landmark method in adult patients. Nine electronic databases were searched, the reference lists of studies were screened, the Internet was searched, and contact was made with experts. A quality assessment checklist was used to assess study validity. Dichotomous outcome data on the failure rate to insert PICCs were calculated as relative risk (RR) with 95% confidence intervals. Data were pooled using the Mantel-Haenszel fixed effects model. From 156 studies, four eligible non-randomised studies were identified. Three studies originated from the United States and RR of failure to insert PICCs was significantly lower in the ultrasound group: 0.26 (0.10 to 0.64), 0.47 (0.38 to 0.59) and 0.28 (0.20 to 0.41). One study from the United Kingdom did not find a statistically significant difference in failure to insert PICCs between landmark and ultrasound groups: single centre RR was 0.60 (0.23 to 1.57) and multi centre RR was 0.42 (0.16 to 1.09). The pooled RR for all studies was 0.40 (0.33 to 0.48) showing that ultrasound significantly reduces failure rates by 60%. The presence of bias is evident in all studies. There is evidence to support the use of 2-D ultrasound by nurses to insert PICC lines. Further more rigorous research is required, such as
a multi-centre randomised controlled trial with economic evaluation, before the widespread uptake of this technology can be recommended.

More stories on IVTEAM


Abstract:

To conduct a systematic review that compares the effectiveness of nurses using 2-D ultrasound guided insertion of peripherally inserted central catheters (PICCs) with the landmark method in adult patients. Nine electronic databases were searched, the reference lists of studies were screened, the Internet was searched, and contact was made with experts. A quality assessment checklist was used to assess study validity. Dichotomous outcome data on the failure rate to insert PICCs were calculated as relative risk (RR) with 95% confidence intervals. Data were pooled using the Mantel-Haenszel fixed effects model. From 156 studies, four eligible non-randomised studies were identified. Three studies originated from the United States and RR of failure to insert PICCs was significantly lower in the ultrasound group: 0.26 (0.10 to 0.64), 0.47 (0.38 to 0.59) and 0.28 (0.20 to 0.41). One study from the United Kingdom did not find a statistically significant difference in failure to insert PICCs between landmark and ultrasound groups: single centre RR was 0.60 (0.23 to 1.57) and multi centre RR was 0.42 (0.16 to 1.09). The pooled RR for all studies was 0.40 (0.33 to 0.48) showing that ultrasound significantly reduces failure rates by 60%. The presence of bias is evident in all studies. There is evidence to support the use of 2-D ultrasound by nurses to insert PICC lines. Further more rigorous research is required, such as a multi-centre randomised controlled trial with economic evaluation, before the widespread uptake of this technology can be recommended.

More stories on IVTEAM