

The impact of a vascular access team and vascular access bundles

The use of vascular access teams (VATs) and bundles has been proven to have many advantages.¹⁻³ Yet it is still common in Finland that anesthesiologists and residents at random are responsible for the insertion of PICC-lines and other vascular access devices. Nurse driven vascular access teams are emerging in the country as work transfer from anesthesiologists to vascular access nurses get more common when economical and qualitative aspects receive more attention.

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Background

The benefits of VATs are well recognized also in Finland. Still there are no full-time VATs in the country, as the VA-nurses' main task remains to function as anesthesia nurses in university hospital ORs. Due to the shortage of anesthesia nurses VATs are often considered a luxury commodity, that often gives way so the OR daily activity is secured.

Peijas hospital VAT consists of two anesthesia nurses and one anesthesiologist. The nurses have usually 1-3 days of VA-activity per week. The VA-nurses place PICC- and Midline-catheters as well as peripheral cannulas in patients with difficult venous access. The Peijas VAT is also responsible for teaching vascular access device placement to residents and future VA-nurses in the district and teaching staff nurses in the use of vascular access devices.

Materials and methods

We compared the PICC-line related CLABSI rates in Peijas hospital where vascular access nurses insert most of the PICC-lines using the latest evidence-based vascular access bundles to other hospitals in the Helsinki university district where randomly selected anesthesiologists and residents perform the PICC-line insertions using various approaches.

Results

In 2018, the Peijas vascular access team performed 255 PICC insertions and has had no CLABSI since 2014. In the non-vascular access teams group there were approximately 300 PICC-line insertions and 5 PICC-line related CLABSI in the year 2018⁴. The patient material and PICC-line indications were homogenous in both groups (mainly long-term iv-antibiotics, difficult venous access or parenteral nutrition).

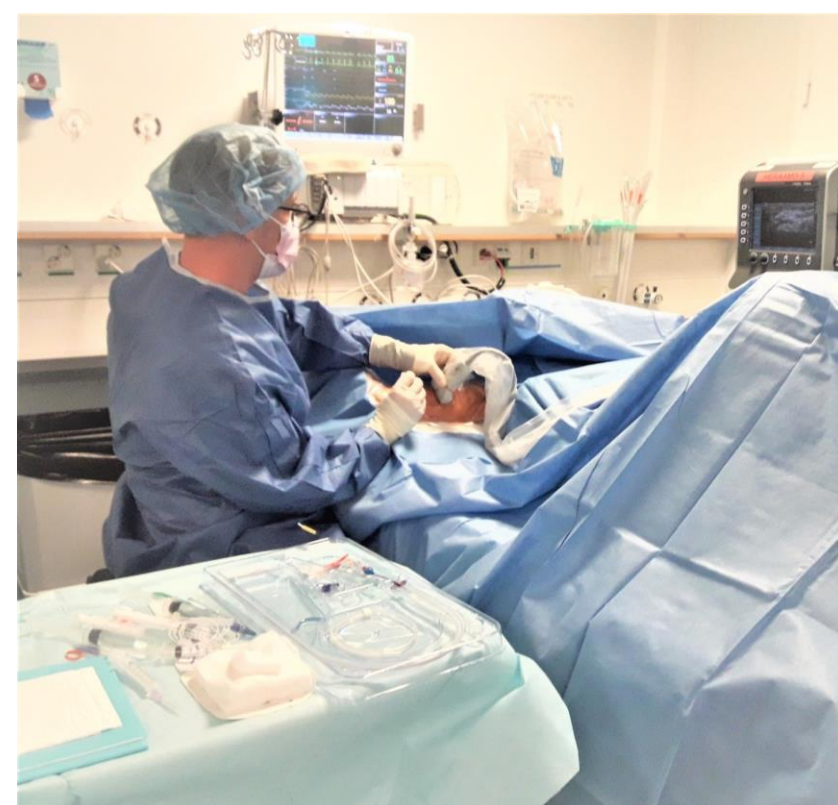
Conclusions

It has been shown that there is a fair amount of PICC-line related CLABSI in the non-vascular access team group. The cost of PICC-line CLABSI was estimated to be over 125 000 € in the year 2018. Although it cannot be extrapolated that all of these cases of CLABSI are solely due to the PICC-line inserting team, we have proven the experienced vascular access teams positive impact in workflow and infection prevention.

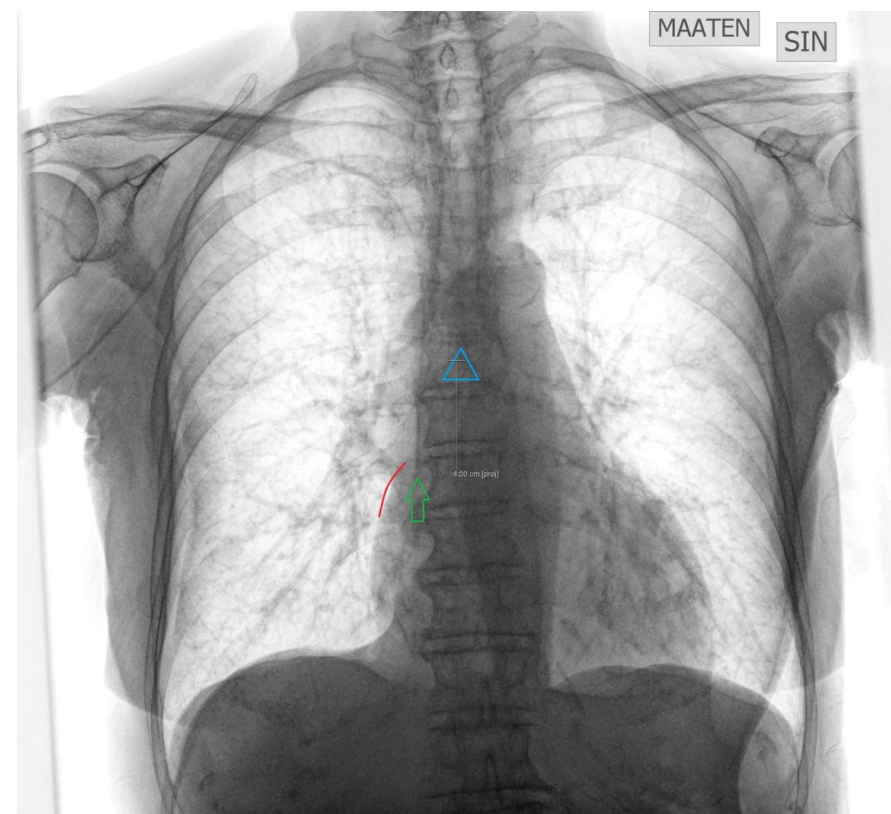
Discussion

The necessity for a vascular access team in any large university hospital is clearly apparent and warranted. As experienced VATs are trusted with inserting vascular access devices, educating residents and future VA-nurses in the insertion process as well as the staff nurses in using and caring for the PICC-lines, the quality of patient care will manifest itself as direct and indirect savings in time, money and personnel resources.

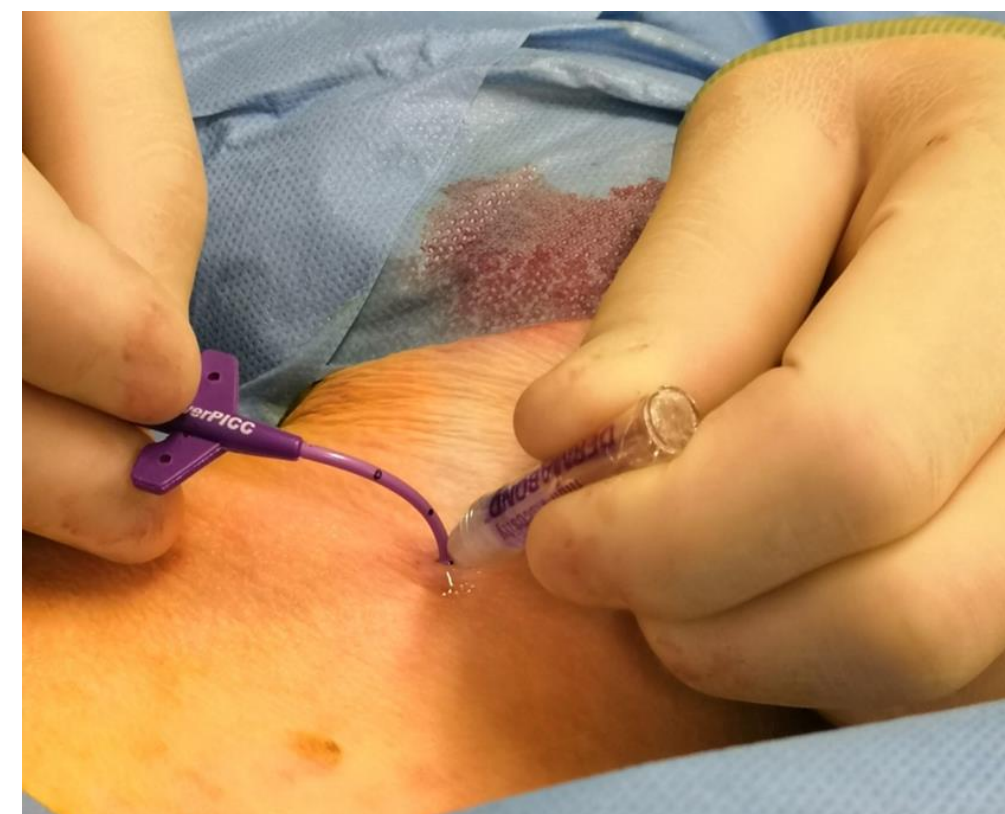
Investing in a vascular access team that is more than just a service inserting PICC- or Midline catheters will pay itself back many times over as work flow improves, infections decrease, patient safety and satisfaction increases. Screening the patients by VATs in the ward with vascular access devices for infection and thrombosis using an ultrasound device adds quality to the care and reveals non-symptomatic DVT.



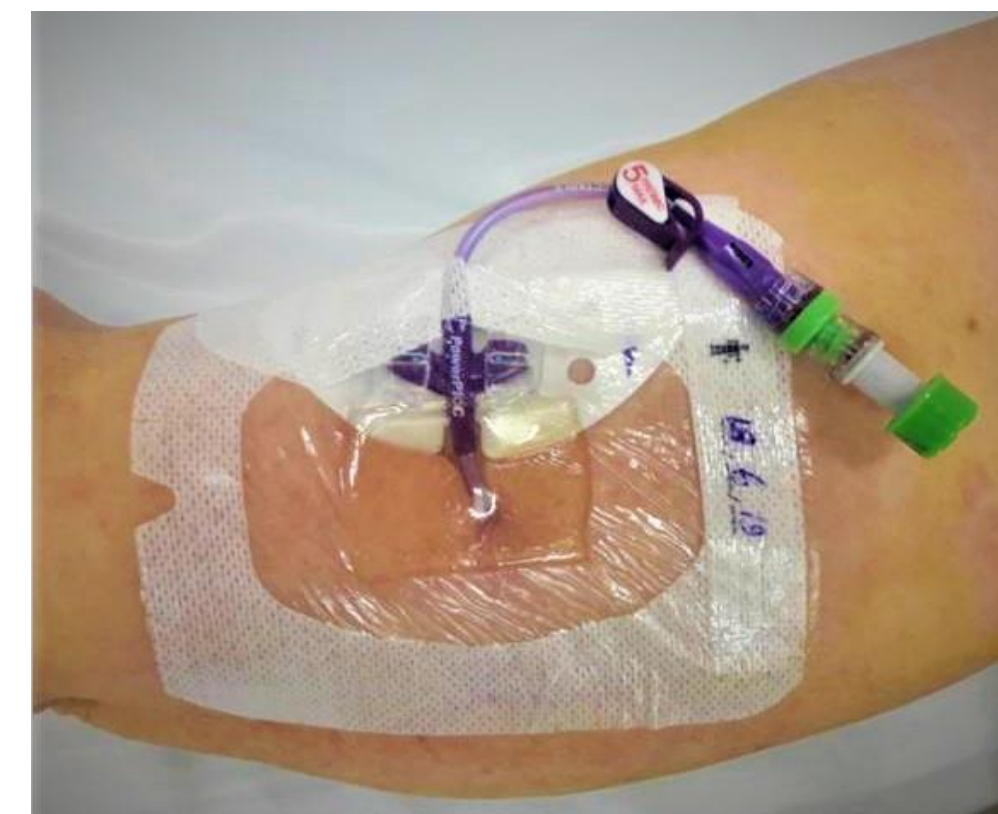
Maximal barrier ultrasound assisted insertion technique



EKG and CXR PICC tip location confirmation



Sterile cyanoacrylate tissue glue



CHG dressing, anti-reflux connector, port protector

Pre-insertion checklist

- Patient ID (bracelet bar code matching patients ID number)
- Confirmation of indication and ruling out contraindications
- Measurement and evaluation of PICC-line length
- Check crucial lab results
- Patient monitoring: ECG and pulse oximetry
- Selection of the dexterity and the vein
- Confirmation of indication ICD code

Post-insertion checklist

- Oral and written instructions for catheter care and use to the patient and/or caretaker and ward
- Instructions and hospital contact information for the OPAT patient in case of emergency
- Information given to the patient and/or caretaker of CLABSI and thrombosis symptoms

The key elements considered vital in the infection and thrombosis prevention scene

- Checklist pre- and post insertion
- Pre-op ultrasound scan of the arm, selection of vein
- Hand hygiene
- Skin disinfection with 80% alcohol
- Maximal barrier measurements
- Sterile line insertion technique
- PICC tip confirmation by ECG-navigation and post op CXR
- Sealing PICC entry site with cyanoacrylate glue
- Transparent semi-permeable CHG dressing
- Anti-reflux needleless connector
- 40 ml saline post insertion flush of the PICC-line
- Port protector cap
- Completion of electronic medical record

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