Nurse-led bedside PICC service

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Service Improvement

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Summary

A nurse-led vascular access team at the Sunshine Coast University Hospital (SCUH) has implemented an innovative bedside service when applying peripherally inserted central catheter (PICC) line treatment. CTS ™ allows for magnetic tracking of the PICC line during insertion and confirmation of the final tip location using and echocardiogram (ECG). This has resulted in most

patients not requiring Chest Xray or fluoroscopy.
The bedside ECG method was trialled in July 2015 and implemented in February 2016. The 2016 service was offered three days a week and employed one nurse.
Today it is a seven-day a week service at SCUH, consisting of one clinical nurse consultant and 2.5 FTE clinical nurses during business hours.

Key dates

Jan 2016

Mar 2023

Implementation sites

Sunshine Coast University Hospital

Key Contacts

Leanne Ruegg

3303

william.vanheerden.ced

Clinical Nurse Consultant (VASE)

Sunshine Coast Hospital and Health Service

07 52028849

leanne.ruegg@health.qld.gov.au

Aim

To improve catheter placement, patient satisfaction and achieve economical benefits utilising the Sherlock 3CG ™ Tip confirmation system (TCS)

Benefits

- patient satisfaction improved (at the bedside)
- efficient - no transfers to Radiology
- no exposure to radiation
- cost effective
- PICC can be used immediately
- mobile (can travel between facilities with minimal equipment)

Background

Prior to 2009 all PICC insertions were limited to the medical imaging (MI) department using XRay and or Fluro as confirmation. A Hospital in the Home service was introduced in mid-2009 and at that time the MI department did not have the capacity to insert the increased number of PICCs. This led to the introduction of a Nurse-led bedside service to assist with the predicted increase of PICCs. The Nurse-led PICC service model was 'blind bedside placement' - a catheter pushed into the vein at a set distance according to anatomical measurement taken externally, followed by a confirmatory XRay. Often due to pressures there were delays waiting for logistics and medical officers to review X rays, which then delayed treatments and inhibited flow e.g. hospital in the home programmes, total parenteral nutrition (TPN)_ and chemotherapy. SCHHS has always had the option of both Fluro and blind methods. The Vascular Access Surveillance and Education service (VASE) utilised the blind method when the service commenced in 2009. Difficult insertions and certain patient populations e.g., Cystic Fibrosis are referred to Fluro directly.

VASE trialled the Sherlock 3CG TCS™ in 2015 with favourable results which included accurate tip placement, decreased malposition’s, time to treatment increased, patient satisfaction and improved patient flow.
The system allows magnetic tracking of the PICC during insertion and confirmation of the final location using ECG.

Solutions Implemented

The nurse led team utilised existing skills of ultrasound blind PICC insertion and upskilled using the 3CG catheters and TCS ™ software technology.

Evaluation and Results

The VASE performed a retrospective study to benchmark local data with current literature. Complication rates of PICCs in the literature are reportedly high. VASE's study demonstrated minimal infection and thrombus complication rates when compared with traditional central venous catheters (CVC). The low rates were attributed to an experienced nurse-led team following a standardised insertion bundle and use of the TCS™.

Lessons Learnt

The concept of a nurse-led service clearing PICC lines requires a cultural change. The support from clinical and senior medical staff played a significant role in our success.

References

Ruegg et al. Peripherally inserted central catheter-associated complications: a retrospective review of a nurse-led peripherally inserted central catheter-insertion service. Vascular Access 2020; 6(1):16-19
Bard Access Systems, Inc. Sherlock 3cg™: Tip Confirmation System (TCS). 2016. Available from bardaccess.com

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