PERIPHERALLY INSERTED CENTRAL CATHETER (PICC)
Supporting information

This guideline has been prepared with reference to the following:

NICE. Infection: Prevention and control of healthcare-associated infections in primary and community care. 2017. NICE

http://www.nice.org.uk/guidance/cg139

Bishop I, Dougherty I, Bodenham A et al. Guidelines on the insertion and management of central venous access devices in adults. Int J Lab Hematol, 2007, 29: 261-78

Is sodium chloride 0.9% adequate as a flush solution, compared to heparinised solutions e.g. Canusal?

A 2020 systematic review of 10 clinical trials concluded that it is not clear whether the normal saline is superior to heparin solution in the flushing of the peripheral intravenous catheter for maintaining its patency and prevent complications (Sotnikova, 2020). The authors of this review commented that researchers tend to support the use of normal saline due to safety, error avoidance, efficiency, ease of use and cost-effectiveness.

A systematic review and meta-analysis of randomised controlled trials evaluating the effect of heparin on duration of catheter patency and on prevention of complications associated with the use of peripheral venous and arterial catheters concluded that heparin at doses of 10 U/ml for intermittent flushing is no more beneficial than flushing with normal saline alone (Randolph 1998).

Randolph AG, Cook DJ, Gonzales CA et al. Benefit of heparin in peripheral venous and arterial catheters: systematic review and meta-analysis of randomised controlled trials. BMJ 1998;316:969-75
http://www.bmj.com/content/316/7136/969

Sotnikova C, Fasoi G, Efstathiou F et al. The Efficacy of Normal Saline (N/S 0.9%) Versus Heparin Solution in Maintaining Patency of Peripheral Venous Catheter and Avoiding Complications: a Systematic Review. Mater Sociomed. 2020; 32: 29–34
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7219714/

Evidence Level: I

Routine catheter replacement is unnecessary?

A Cochrane Review of 7 trials in a total of 4895 participants (Webster, 2015) found “no evidence to support changing catheters every 72 to 96 hours. Consequently, healthcare organisations may consider changing to a policy whereby catheters are changed only if clinically indicated. This would provide significant cost savings and would spare patients the unnecessary pain of routine re-sites in the absence of clinical indications”.

A multicentre, randomised, non-blinded equivalence trial in 3283 patients (Rickard, 2012) compared 1593 whose catheters were replaced when clinically indicated with 1690 receiving routine replacements. Mean dwell time for catheters in situ on day 3 was 99 h (SD 54) when replaced as clinically indicated and 70 h (13) when routinely replaced. Phlebitis occurred in 114 of 1593 (7%) patients in the clinically indicated group and in 114 of 1690 (7%) patients in the routine replacement group, an absolute risk difference of 0.41% (95% CI -1.33 to 2.15%), which was within the prespecified 3% equivalence margin.

Rickard CM, Webster J, Wallis MC, et al. Routine versus clinically indicated replacement of peripheral intravenous catheters: a randomised controlled equivalence trial. Lancet 2012;380:1066-74

Webster J, Osborne S, Rickard C, et al. Clinically-indicated replacement versus routine replacement of peripheral venous catheters. Cochrane Database Syst Rev. 2015, Art. No.: CD007798
http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007798.pub4/full

Evidence Level: I

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