“Heparin intermittent flushing is a standard practice in the maintenance of patency in central venous catheters. However, we could find no systematic review examining its effectiveness and safety.” López-Briz et al (20014).

Reference:

López-Briz, E., Ruiz Garcia, V., Cabello, J.B., Bort-Marti, S., Carbonell Sanchis, R. and Burls, A. (2014) Heparin versus 0.9% sodium chloride intermittent flushing for prevention of occlusion in central venous catheters in adults. The Cochrane Database of Systematic Reviews. October 8th. .

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Abstract:

BACKGROUND: Heparin intermittent flushing is a standard practice in the maintenance of patency in central venous catheters. However, we could find no systematic review examining its effectiveness and safety.

OBJECTIVES: To assess the effectiveness of intermittent flushing with heparin versus 0.9% sodium chloride (normal saline) solution in adults with central venous catheters in terms of prevention of occlusion and overall benefits versus harms.

SEARCH METHODS: The Cochrane Peripheral Vascular Diseases Group Trials Search Co-ordinator searched the Specialised Register (last searched December 2013) and the Cochrane Central Register of Controlled Trials (CENTRAL) (2013, Issue 11). Searches were also carried out in MEDLINE, EMBASE, CINAHL and clinical trials databases (December 2013).

SELECTION CRITERIA: Randomised controlled trials (RCTs) in adults 18 years of age and older with a central venous catheter (CVC) in which intermittent flushing with heparin (any dose with or without other drugs) was compared with 0.9% normal saline were included. No restriction on language was applied.

DATA COLLECTION AND ANALYSIS: Two review authors independently selected trials, assessed trial quality and extracted data. Trial authors were contacted to retrieve additional

information, when necessary.

MAIN RESULTS: Six eligible studies with a total of 1433 participants were included. The heparin concentrations used in these studies were very different (10-5000 IU/mL), and follow-up varied from 20 days to 180 days. The overall risk of bias in the studies was low. The quality of the evidence ranged from very low to moderate for the main outcomes (occlusion of CVC, duration of catheter patency, CVC-related sepsis, mortality and haemorrhage at any site).Combined findings from three trials in which the unit of analysis was the catheter suggest that heparin was associated with reduced CVC occlusion rates (risk ratio (RR) 0.53, 95% confidence interval (CI) 0.29 to 0.94). However, no clear evidence of a similar effect was found when the results of two studies in which the unit of analysis was the participant were combined (RR 0.21, 95% CI 0.03 to 1.70), nor when findings were derived from one study, which considered total line accesses (RR 1.08, 95% CI 0.84 to 1.40). Furthermore, results for other estimated effects were found to be imprecise and compatible with benefit and harm: catheter duration in days (mean difference (MD) 0.41, 95% CI -1.29 to 2.12), CVC-related thrombosis (RR 1.22, 95% CI 0.74 to 1.99), CVC-related sepsis (RR 1.02, 95% CI 0.34 to 3.03), mortality (RR 0.77, 95% CI 0.45 to 1.32) and haemorrhage at any site (RR 1.37, 95% CI 0.49 to 3.85).

AUTHORS' CONCLUSIONS: We found no conclusive evidence of important differences when heparin intermittent flushing was compared with 0.9% normal saline flushing for central venous catheter maintenance in terms of efficacy or safety. As heparin is more expensive than normal saline, our findings challenge its continued use in CVC flushing outside the context of clinical trials.

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