When should peripheral venous catheters be replaced?

Review question
What are the effects of replacing a peripheral intravenous catheter when clinically indicated, versus removing and re-siting the catheter routinely among patients who receive intravenous therapy in acute and community settings?

Nursing implications
Certified nurses are permitted to perform peripheral intravenous cannulation for patients who require intravenous therapy. Therefore, from initiating cannulation to catheter removal, nurses play an important role in caring for, and maintaining the catheter to prevent complications such as infection and occlusion.

Study characteristics
Six randomised controlled trials consisting of a total of 3,455 participants were included in the review. The inclusion criteria considered any participants who received intermittent or continuous intravenous therapy, except parenteral fluids. There was no age limitation. The intervention of interest was any type of catheter that was routinely replaced between 48 and 96 hours, compared with catheters being replaced when clinically indicated for conditions such as blockage, pain, redness, infiltration, swelling, leakage and phlebitis. The primary outcome measures were suspected device-related bacteraemia, thrombophlebitis and cost.

All trials reported adequate computer-generated randomisation and allocation concealment, but blinding was not possible in any of the trials. Five of the six trials included were free of other potential biases, apart from a reported higher antibiotic use in the “routinely replaced group” in one of the five studies. These five trials also used an intention-to-treat analysis for their outcome measures.

Summary of key evidence
Two trials reported that removal of peripheral venous catheters when clinically indicated reduced the cannulation costs significantly. In five studies, there was a 43% reduction in suspected device-related bacteraemia compared with routine replacement, but this was not statistically significant.

There was a statistically significant increase in catheter blockage in four studies, and a non-significant increase in phlebitis of 24% in six trials in the clinically indicated group. There was also a non-significant increase in catheter failure due to infiltration of 13% in three studies among clinically indicated groups.

The incidence of local infection was not statistically different in clinically and routinely indicated groups in three studies.

When phlebitis incidence was assessed per 1,000 device days, there was no statistical difference between groups.

Best practice recommendations
The results from this review suggest that peripheral venous catheters should be replaced when clinically indicated for those patients who receive intravenous therapy in acute and community settings. The evidence recommends discouraging the routine change of catheters every 72-96 hours.

The full review report, including references, can be accessed at tinyurl.com/coch-catheter

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Reference

A peripheral catheter inserted into the arm of a patient to deliver chemotherapy drugs and outcome measures were reported in accordance with a planned protocol.