

# Routine 72– 96 hour replacement of peripheral venous catheters

NICE has developed the Cochrane Quality and Productivity topics to help the NHS identify practices that could be significantly reduced or stopped completely, releasing cash and/or resources without negatively affecting the quality of NHS care. Each topic has been derived from a Cochrane systematic review that has concluded that the evidence shows that the practice is harmful or ineffective and should not be used, or that there is insufficient evidence to support widespread use of the practice.

Unless otherwise stated, the information is taken with permission from the Cochrane systematic review.

### **NICE summary of Cochrane review conclusions**

This Cochrane systematic review concluded that there is insufficient evidence to support the routine replacement of patients' peripheral intravenous catheters every 72 to 96 hours. Clinical teams should inspect catheter insertion sites for signs of infection at each shift change and adopt a policy of replacing catheters only when clinically indicated. Such a policy would lead to significant cost savings and prevent unnecessary discomfort for patients associated with routine catheter replacement.

### **The 'Implications for practice' section of the Cochrane review stated:**

'The review found no difference in catheter-related bloodstream infection or phlebitis rates whether peripheral intravenous catheters are changed routinely every 72 to 96 hours or when clinically indicated. The consistency in these results, which include a very large multi-site study, indicate that healthcare organisations should adopt a clinically-indicated replacement policy. This would provide significant cost savings and would also be welcomed by patients, who would be spared the unnecessary pain of routine re-sites in the absence of clinical indications. Busy clinical staff would also reduce time spent on this intervention. To minimise peripheral catheter-related complications, the insertion site should be inspected at each shift change and the catheter removed if signs of inflammation, infiltration, or blockage are present.'

## Details of Cochrane review

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### **Cochrane review title**

Clinically-indicated replacement versus routine replacement of peripheral venous catheters (Review)

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### **Citation**

[Webster J, Osborne S, Rickard CM, New K. Clinically-indicated replacement versus routine replacement of peripheral venous catheters. Cochrane Database of Systematic Reviews 2015, Issue 8. A rt. No.: CD007798. DOI: 10.1002/14651858.CD007798.pub4.](#)

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### **When the review content was assessed as up to date**

25 March 2015

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# Cochrane Quality and Productivity topics

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Relevant codes	OPCS	ICD10	HRG
	N/A	N/A	N/A

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Programme budget:  
Infectious diseases

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## Evidence

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### Relevance to the NHS

Most hospital patients receive fluids or medications via an intravenous catheter at some time during their hospital stay. These catheters are often replaced every 3 to 4 days to try to prevent irritation of the vein or infection of the blood. However, the procedure may cause discomfort to patients and is costly overall due to the large number of catheters changed.

The Cochrane review included all randomised controlled trials up to March 2015, which compared routine 3-4 day catheter changes with changing the catheter only if there were signs of inflammation or infection.

Seven trials with a total of 4895 patients were included in the review. The quality of the evidence was high for most outcomes but was considered moderate for catheter-related bloodstream infections (CRBSI). This was due to wide confidence intervals, which created a high level of uncertainty around the effect estimate. CRBSI was assessed in 5 trials (4806 patients). There was no significant between-group difference in the CRBSI rate (clinically-indicated 1/2365; routine change 2/2441). The risk ratio (RR) was 0.61 (95% CI 0.08 to 4.68; P = 0.64).

No difference in phlebitis rates was found whether catheters were changed according to clinical indications or routinely (clinically -indicated 186/2365; 3-day change 166/2441; RR 1.14, 95% CI 0.93 to 1.39). This result was unaffected by whether infusion through the catheter was continuous or intermittent. The data was analysed by number of device days and no differences between groups were observed (RR 1.03, 95% CI 0.84 to 1.27; P = 0.75).

One trial assessed all-cause bloodstream infection. There was no difference in this outcome between the 2 groups (clinically-indicated 4/1593 [0.02%]; routine change 9/1690 [0.05%]; P = 0.21).

It was found that cannulation costs were lower by approximately \$7.00 (Australian) per patient in the clinically-indicated group (mean difference (MD) -6.96, 95% CI -9.05 to -4.86; P ≤ 0.00001). This included both lower costs of consumables and staff time.

The review 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. To minimise peripheral catheter-related complications, the insertion site should be inspected at each shift change and the catheter removed if signs of inflammation, infiltration, or blockage are present.

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### Relevant NICE guidance and products

[CG139 Healthcare-associated infections: prevention and control in primary and community care \(NICE 2012\)](#)

### Other accredited guidance and products

No other accredited guidance was available at the time of publication (March, 2016).

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# Cochrane Quality and Productivity topics

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## Potential productivity savings

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### Estimate of current NHS use

- There is no activity data available regarding the number of peripheral intravenous catheters used in the NHS, but most hospital patients will receive intravenous fluids or medications during an inpatient stay. Therefore the potential saving is unknown.
- However, Tuffaha et al. (2014) performed a cost-effectiveness analysis from the perspective of the NHS based on a clinical trial by (Rickard, Webster et al. 2012). They estimated that if only one third of the 11.5 million hospital admissions to NHS hospitals in England every year required peripheral venous catheterization for more than three days, the expected population for the proposed implementation strategy over 5 years would be around 20 million patients. Accordingly, if this recommendation was fully implemented in all NHS hospitals in England, then the cost savings to the system would be around £40 million over five years.

### Level of productivity savings anticipated

- Peripheral venous access catheters cost from £7.70—£8.70 for a box of 10 units (NHS Supply Chain 2015).
- Reduced frequency of changing peripheral venous catheters will free up staff time that could be used in other areas of healthcare need.

### Type of saving

- Real cash savings resulting from fewer replacement catheters. Also productivity savings as a result of reduced activity around catheter replacement.

### Any costs needed to achieve the savings

- No additional costs are needed for implementation.

### Other information

- The savings will benefit service providers through reduced catheter costs and increased productivity due to reduced frequency of changing catheters.

## Potential impact on quality of NHS care

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### Impact on clinical quality

Not anticipated to have any impact on mortality or morbidity. There were no significant differences in outcomes between patients who had peripheral venous catheters changed regularly, and those whose catheters were changed only when clinically indicated.

### Impact on patient safety

Not anticipated to have any impact on safety. There were no significant differences in adverse events between patients who had peripheral venous catheters changed regularly, and those whose catheters were changed only when clinically indicated.

### Impact on patient and carer experience

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# Cochrane Quality and Productivity topics

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The patient experience should improve as unnecessary painful peripheral venous catheter changes are avoided.

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## Likely ease of implementation

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### Time taken to implement

Can be implemented quickly (0-3 months). Some training and alteration of policies may be required, but this can be done quickly for a relatively simple change.

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### Healthcare sectors affected

Affects a whole organisation across a number of teams or departments. The change could be implemented in individual departments, but savings will be greater if it is adopted across an organisation.

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### Stakeholder support

Likely to achieve good buy-in from key influencers, however in some areas the practice of changing catheters regularly may be well established. The rationale for the change should be clearly explained as it might go counter to older guidance that recommended regular peripheral catheter changes.

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## References

[NHS Supply Chain \(2015\) Peripheral venous catheters](#)

[CG139 National Institute for Health and Care Excellence \(2012\) Healthcare-associated infections: prevention and control in primary and community care](#)

[Rickard CM, Webster J, Wallis MC, Marsh N, McGrail MR, French V, Foster L, Gallagher P, Gowardman JR, Zhang L, McClymont A, Whitby M \(2012\) Routine versus clinically indicated replacement of peripheral intravenous catheters: a randomised controlled equivalence trial. Lancet 2012; 380 \(9847\):1066e1074](#)

[Tuffaha HW, Rickard CM, Inwood S, Gordon L, Scuffham P \(2014\) The epic3 recommendation that clinically indicated replacement of peripheral venous catheters is safe and cost-saving: how much would the NHS save? Journal of Hospital Infection 87 \(2014\), 182–184.](#)