

# How often should IV drips be changed?

This Cochrane review shows that there is probably little or no difference in safety if you change IV drips (peripheral venous catheters) only when clinically indicated compared to routine replacement. To change IV drips only when clinically indicated probably costs less than routine replacement of these.

## What does the research tell us?

In systematic reviews, available research is collected and critically appraised. The research question in this systematic Cochrane review was: What is the effect of clinically indicated replacement compared to routine replacement (every 3-4 days) of peripheral venous catheters (IV drips) among patients receiving infusions for medication therapy?

Results show that clinically indicated change of IV drips:

- may make little or no difference to the number of patients that get IV drips-related blood stream infection
- probably makes little or no difference to the number of patients that get all-cause blood stream infection
- probably makes little or no difference to the number of patients that get thrombophlebitis
- probably reduces the cost of IV drips-related care



## Effectiveness of clinically indicated change compared to routine replacement of IV drips

What happens?	Routine replacement	WITH clinically indicated change	Certainty of evidence <sup>1</sup>
IV drips-related blood stream infection Clinically-indicated change of IV drips may make little or no difference to the number of patients that get IV drips-related blood stream infection	1 per 1000 patients	0 per 1000 patients (0 to 3)*	⊕⊕○○ Low
All-cause blood stream infection Clinically-indicated change of IV drips probably makes little or no difference to the number of patients that get all-cause blood stream infection	5 per 1000 patients	3 per 1000 patients (1 to 8)*	⊕⊕⊕○ Moderate
Thrombophlebitis <sup>2</sup> Clinically-indicated change of IV drips probably makes little or no difference to the number of patients that get thrombophlebitis	82 per 1000 patients	88 per 1000 patients (76 to 103)*	⊕⊕⊕○ Moderate
Cost <sup>3</sup> Clinically-indicated change of IV drips probably reduces the cost of IV drips-related care by approximately 7 Australian dollars (AUD) per patient	51.02 AUD per patient	44.14 AUD per patient This is 6.96 AUD less per patient (-9.05 to -4.86)*	⊕⊕⊕○ Moderate

\* The confidence interval (95% CI) reflects the extent to which the [play of chance](#) may be responsible for an [effect estimate](#) from a [study](#). <sup>1</sup> Indicates the extent to which one can be confident that an estimate of effect is correct. <sup>2</sup> Thrombophlebitis is an inflammation in the vein just under the skin that forms a blood clot that causes swelling and pain. <sup>3</sup> Costs in terms of materials and labour

## Background

Most hospital patients receive fluids or medications via a peripheral intravenous catheter at some time during their hospital stay. An intravenous catheter (also called an IV drip, an IV line or intravenous cannula) is a short, hollow tube placed in the vein to allow administration of medications, fluids or nutrients directly into the bloodstream. These catheters are often replaced every three to four days to try to prevent irritation of the vein or infection of the blood. However, replacing the catheter may cause discomfort to patients because insertion of a peripheral intravenous catheter may be painful, especially when placed in the hand or wrist, with an average score of 4.5 on a 10-point pain scale. Another important factor to consider is that more frequently changes of these catheters may have cost implications for the facility in terms of materials and labour associated with IV drips-related care.

The authors of this review wanted to find out if there are any important differences in the effects and safety if the catheter is changed when there are signs or symptoms of a problem with the catheter remaining in place versus a routinely change of catheter (every 3-4 days).

## What is this information based on?

The Cochrane authors searched for relevant studies in research databases up to April 2018. They found nine studies (randomised controlled trials) with a total of 7392 patients. They found seven studies that recruited adult patients with an average age around 60 years. Two studies recruited patients of all ages, one with an average age around 40 years and the other 60 years. Eight studies included patients receiving either continuous infusions or intermittent infusions for medical treatment whereas one study was about intermittent medical treatment only.

The intervention in all studies was to remove catheters when clinically indicated. Five studies defined clinically indicated as either signs of phlebitis, local infection, bacteraemia, infiltration (a type of vascular damage that can occur when the catheter for instance loosens or goes through the wall of the vein) or blockage. Two studies defined it as when the site became painful, the catheter dislodge, or sign of peripheral vein infusion thrombophlebitis. Two studies did not describe what their definition of clinically indicated was. The comparison was routine replacement of catheters within a 3-4 days cycle (7 studies) or a 2-days cycle (2 studies). They did not report on what types of peripheral intravenous catheters the studies they found used (material, coating (if any), dressing (if any)). Five of the studies were conducted in single-centre, acute inpatient settings, two were multicentre studies in large tertiary hospitals, one study was a cluster study which randomised 20 hospital wards, and the last study was undertaken in a community setting. The studies were carried out in Australia (5 studies), Brazil, China, UK, and India.

Here we present four of the seven most important outcomes reported in the Cochrane review's Summary of Findings table. For the two remaining main outcomes, infiltration and catheter blockage, they found a slight increase of incidences for both outcomes with the clinically-indicated change compared to routine replacement. The certainty was mostly moderate for all outcome. The main reasons for downgrading are inconsistency and risk of bias.

## Reference

Webster J et al. Clinically-indicated replacement versus routine replacement of peripheral venous catheters. Cochrane Database of Systematic Reviews 2019, Issue 1. Art. No.: CD007798. DOI: 10.1002/14651858.CD007798.pub5.

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## Systematic review

In systematic reviews you search for and summarise studies that answer a specific research question. The studies are identified, assessed and summarised by using a systematic and predefined approach (read more [Cochrane Consumer Network](#)).

## Certainty of the evidence (GRADE)

When we summarise studies and present the result (effect estimate), we also need to say something about how certain we are about this result. The certainty of the evidence tells us something about how sure we can be that the result reflects real life or reality. [GRADE](#) is a system (or a tool) that we use to make these judgements. Among the elements we judge in GRADE are:

- how well the studies were conducted
- if the studies are large enough
- if the studies are similar enough
- how relevant the studies are
- if all relevant studies have been identified