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A randomised controlled trial to investigate the efficacy of heparin and hydrocortisone additive to extend the life of peripheral cannulae in children.

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ABSTRACT

Repeated cannulation of children during the course of treatment is distressing for the child, their family and to their nurses. Some paediatric units endeavour to minimise re-cannulation by employing strategies to reduce complications such as phlebitis and thrombosis formation. One strategy is to infuse low dose heparin and hydrocortisone (HEPHC). However, its effectiveness in prolonging cannula survival is inconclusive. There is also concern about the potential risks of administering these preparations to children.

A randomised, controlled, blinded trial was conducted that examined the effectiveness of continuous infusion of low dose HEPHC in a group of children requiring long term intravenous antibiotics in a general paediatric unit. Comparisons of cannula complications and cannulae survival times were made in children receiving either continuous infusions of clear fluids or low dose HEPHC.

The results demonstrated that there was no statistically significant difference (Logrank statistic=1.1, $p=0.3$) in cannula survival times between the two groups. It was also found that the bacterial and fungal colonisation of cannula for these children was extremely low. Based on these findings it is recommended that routine administration of low dose HEPHC to extend cannula survival time be discontinued. The findings also support current practice of removing cannula in children only when a complication occurs on completion of treatment.

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GLOSSARY

Adult: Over the age of 16 years.

Aseptic phlebitis: Phlebitis due to chemical and mechanical factors as opposed to bacteria and fungi infections.

Cannula: Short peripheral intravenous catheter made by Ovium, (Johnson and Johnson).

Cannula complication: Cannula that experienced phlebitis, extravasation, blocking or kinking.

Cannula failure (also called event): Cannula is no longer providing access to the vein due to phlebitis, extravasation, blocking, kinking or falling out.

Cannula survival time (dwell time): The period a cannula is providing access to the vein (patent) until the cannula is no longer providing access to the vein.

Cannula censor: Cannula that is removed when no complications occur. For example completion of treatment, the cannula fell out or was removed.

Child: Under the age of 16 years.

Continuous flushing solution: Solution continually infused through a cannula when other medications are not being administered.

Dwell time (cannula survival time): The period of time a cannula is inserted into and provides access to a vein (patent) until the cannula is removed and/or no longer provides access to the vein.

Event (also called cannula failure): Cannula is no longer providing access to the vein due to phlebitis, extravasation, blocking, kinking or falling out.

Extravasation (also called infiltration and tissuing): When the cannula tip leaves the vein and infusate enters the layers of skin tissue instead of the vein.

Fibrin: Insoluble protein used to repair tissue damage.

Flushing solution: General term to describe the process of infusing a fluid through a cannula to remove chemicals and material from the catheter lumen.

Infiltration (also called extravasation and tissuing): When infusate enters the layers of skin tissue instead of the vein.

Intermittent flushing solution: Solution infused through a cannula over a short period of time to clear the cannula of medications and other material.

Patency of cannula: When a clear passage exists from the external environment to the inside of a vein, using a cannula.

Phlebitis: A general term used for inflammation of a vein, characterised by pain, redness, swelling and frequently with a palpable cord.

Septic phlebitis: Phlebitis due to bacteria and fungi colonisation as opposed to chemical or mechanical factors.

Tissuing (also called infiltration and extravasation): When an infusate enters the layers of skin and fatty tissue instead of the vein.