

Open Book

Learning from close calls and adverse events

Bloodstream infection related to peripheral intravenous cannula

This report alerts providers to key findings and actions following review of a serious healthcare associated infection related to the insertion and management of a peripheral intravenous cannula (PIVC). The aim is to learn from the changes implemented after the event to prevent future similar events.

We advise providers to consider this report, and whether the changes and recommendations might apply to their own systems.

This report is relevant to:

- clinical staff who insert and manage PIVC
- ambulance service clinical staff
- quality improvement, clinical risk and patient safety managers.

Incident

A patient developed a severe *Staphylococcus aureus* bloodstream infection related to their PIVC. This resulted in temporary loss of vision in one eye, an extended length of stay in hospital and six weeks of intravenous antibiotics.

Chronology

- The patient was admitted to hospital by ambulance, with a PIVC in place. The PIVC had been put in by ambulance staff.
- Three days later the patient was discharged and the PIVC removed.
- Several days later, the patient went to their general practitioner who diagnosed cellulitis of the arm around the area where the PIVC had been inserted.
- The next day the patient experienced visual disturbance and was re-admitted to hospital with endogenous endophthalmitis.
- The patient became systemically unwell. Blood cultures grew *Staphylococcus aureus*, with the source identified as the PIVC site (septic thrombophlebitis) from the previous admission.

Review

- The PIVC was not handed over by the emergency department to the receiving ward as a high-risk device (ie, due to being inserted in a pre-hospital setting).
- The PIVC remained in place for three days instead of being removed or replaced as needed because ward staff were not aware of its high-risk status.
- Daily assessment of the PIVC and ongoing clinical care for the IV access was not documented.

Actions subsequently taken

- A refresher was given to all staff regarding best practice management of PIVCs – if a high-risk PIVC is found it must be assessed and either replaced or removed immediately if not clinically indicated.
- The case was shared across the organisation.
- The emergency department strengthened documentation relating to PIVCs inserted in ambulances and reviewed the process on how to manage them.
- The review findings were shared with the ambulance provider.

Health Quality & Safety Commission comment

- PIVC insertion and management can result in adverse events.
- Standard operating procedures for PIVCs should be evidence-based and include:
 - per-shift inspection (or more frequently if high-risk infusions are in place)
 - daily phlebitis assessment and scoring
 - per-shift review for clinical indication
 - daily documentation of all of the above.
- Providers should consider factors which may be barriers to PIVC replacement and address any additional systems issues to achieve best practice, every time for every line.
- Recent studies challenge routine replacement policies and recommend significant change in practice for management of PIVCs as a result. These changes shift the focus from monitoring the length of time a PIVC has been in place to ensuring compliance with best practice essential care elements. (Expert commentary on care elements is discussed in this ACC case study.¹) Such a significant shift in PIVC practice requires robust systems and audit to help introduce the changes consistently.
- In the past year there has been a slight but statistically significant increase in the rate of healthcare associated *Staphylococcus aureus* bacteraemia reported by DHBs.² The reason for the increase is unclear but it reinforces the need for heightened awareness and best practice management to prevent line-related bacteraemia.

1

www.acc.co.nz/PRD_EXT_CSMP/groups/external_providers/documents/reference_tools/wpc138530.pdf

² www.hqsc.govt.nz/our-programmes/health-quality-evaluation/projects/quality-and-safety-markers/qsms-october-december-2015 (hand hygiene section).