



Patient Safety Alert

Stage One: Warning

Risk of hypothermia for patients on continuous renal replacement therapy

6th February 2014

Alert reference number: NHS/PSA/W/2014/001

Alert stage: One - Warning

Continuous renal replacement therapy (CRRT) is used in intensive care settings for patients critically ill with acute kidney injury. In three recently reported patient safety incidents¹, integrated fluid warmers on CRRT equipment had been turned off and patients received large volumes of unheated fluid. Two patients became severely hypothermic and one of these patients has since died.

An example incident report states:

".... The ... device ... has alarmed regularly.... Blood flow is fast, temp set at 37 for default and no lines were wrapped to warm them. This alarm kept stopping the blood pump. We have had to turn the heater off for the blood pump to run as patient has been very unstable so did not want another [equipment] change at this time."

To avoid the risk of hypothermia, CRRT equipment continuously monitors the temperature of fluid being administered; if the measured temperature differs from the set target, the equipment alarms and if the heater is integrated, it stops the pump.

In the incidents reported to us, it appeared that when the equipment alarmed repeatedly, staff were not always sure how to access urgent advice on repair or replacement, and mistakenly believed the priority was maintaining CRRT. They therefore switched off the fluid warmer and restarted the pump without it, believing they would be able to detect and manage hypothermia before it harmed the patient.

However, administering unheated fluid for CRRT can rapidly lower patients' core temperature and returning cool blood to the patient also has detrimental effects on coagulation, the immune system and metabolic function.

Because of this, it is never safe to use CRRT equipment without a fluid warmer even for short periods.

Actions

Who: All hospitals that provide continuous renal replacement therapy

When: As soon as possible but no later than 6th March 2014

- 1** Establish if continuous renal replacement therapy (CRRT) is used within your organisation and if similar incidents have occurred.
- 2** Consider if immediate action needs to be taken locally and develop an action plan, if required, to reduce the risk of a similar incident occurring.
- 3** Disseminate this Alert to all nursing, medical and engineering staff who are using or maintaining CRRT equipment.
- 4** Share any learning from local investigations or locally developed good practice resources by emailing: patientsafety.enquiries@nhs.net

Supporting information

For more detailed information to support the implementation of this guidance go to www.england.nhs.uk/patientsafety/psa

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Technical notes

NRLS search dates and terms

The NRLS was searched on 27th November 2013 for incidents, which were reported to the NRLS since 1st January 2013 and which contain the following keywords: (CVVH or CRRT) AND (temperature or heater or *thermia). In total, 23 incidents were identified and three of these describe that fluid warmers on CRRT equipment had been turned off.

Stakeholder engagement

The draft Patient Safety Alert was circulated to the NHS England Medical Patient Safety Expert Group (see www.england.nhs.uk/patientsafety for membership details) who fully supported the publication of this Alert.