National survey reveals procedural errors in hospitals relating to arterial line fluids continue to pose a safety risk to patients

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The results of a national survey into practice involving connecting arterial line fluids to patients in hospitals reveals inconsistent application of national guidelines, meaning that some patients may be at risk of serious harm. The survey and its implications are being presented today (Thursday 19 September) at the Annual Congress of the Association of Anaesthetists of Great Britain and Ireland (AAGBI) in Dublin, Ireland, by Prof Tim Cook, Consultant, Department of Anaesthesia and Intensive Care Medicine, Royal United Hospital, Bath, UK. Details of the survey, the case that prompted it, and an associated editorial are all published online in Anaesthesia, the official journal of AAGBI (see links below).

The survey was undertaken by Prof Cook and colleagues in response to an adverse incident when a patient had the wrong solution attached to an arterial line. The solution contained both 5% glucose and saline rather than the intended solution of saline only. “Following this tragic incident in our own hospital, we changed many of our local practices to prevent recurrence of the event. We also conducted a national survey to see whether problems with arterial line fluids were widespread. We found this was the case,” says Prof Cook.

In 2008 the National Patient Safety Agency (NPSA) highlighted the risk of blood sample contamination from glucose-containing arterial line infusions and recommended changes in arterial line management. An important reason for Dr Cook’s survey was to see how effectively the NPSA recommendations were being followed.

The survey went to all 241 adult Intensive Care Units (ICUs) in the UK; 228 (94.6%) responded. The results indicate that although some NPSA recommendations have been widely implemented, including two-person checking fluids before use and use of only saline as flush fluid, others have been incompletely or variably implemented. The survey also identified some areas not covered by the NPSA recommendations that might still pose a latent risk - such as the widespread use of opaque pressure bags and variable arterial sampling techniques. “More importantly, the survey identified that one third of hospitals had experienced errors with arterial flush systems in ICU practice, and a further 30% for practice elsewhere in the hospital. This points to the urgent need for further national debate on standards of practice around arterial lines so we can work towards eliminating these risks,” says Prof Cook. Data from the National Reporting and Learning System - a part of the UK’s National Health Service for recording clinical incidents—shows that on average one incident of this sort is reported every per week. “The true number of incidents may be as much as 20 times higher,” says Prof Cook.

The AAGBI has responded to this challenge by establishing a working party to produce new guidelines for improving practice. Chaired by AAGBI Council member, Dr Thomas Woodcock, the working party will make proposals that reinforce the NPSA 2008 recommendations and go further, examining each part of the process of arterial line flush use and making detailed recommendations to build a safer process. Dr Woodcock commented: "The AAGBI has a long
and successful track record in advancing patient safety, and we are committed to making sure not only that best practice guidance is produced but also that it is implemented across the NHS."

Notes to editors

What is an arterial line?

In critically ill patients (normal blood pressure measurement - using a cuff on the patient’s arm that is inflated and deflated while measuring changes in pressure) is often not effective. In this circumstance a cannula (drip or ‘arterial line’) is placed inside the artery to enable direct measurement of the blood pressure. This ‘arterial line’ is also often used for blood samples.

What is an arterial line flush?

An ‘arterial line flush’ describes the practice of trickling fluid into the arterial cannula to prevent it from clotting. The flush is usually saline (i.e. 0.9% sodium chloride).

What errors occur if the wrong arterial line flush is used?

If a glucose-containing arterial line flush is used blood samples can become contaminated during routine sampling. This will lead to artificially high glucose readings in blood samples taken from the arterial line.

When elevated blood glucose levels are detected insulin may be given to correct it. In these circumstances treatment of the spuriously high glucose levels may lead to patient harm or even death.

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You can read (for free) three articles describing this topic in the AAGBI’s journal, Anaesthesia, at the following links:


You may also link to these articles for your readers in your stories, if so desired.

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About the AAGBI

The Association of Anaesthetists of Great Britain and Ireland (AAGBI) is the leading membership body for over 10,500 anaesthetists in the UK and Ireland. The AAGBI promotes patient care, safety and advances anaesthesia through education, publications, research and international work, as well as the professional aspects of the specialty.

To find out more about the work of the AAGBI, visit www.aagbi.org

About the AAGBI Annual Congress 2013

Annual Congress is the flagship event of the AAGBI and the 2013 conference is being held at Dublin from 18-20 September. The Annual Congress is one of the leading anaesthetic meetings, with an attendance of around 800-1000 national and international delegates. It features informative sessions, high profile speakers and an extensive trade exhibition. Aimed at all levels of anaesthetists from trainees to consultants, it is a European CPD accredited meeting.

For more information on the meeting, please visit www.annualcongress.org