Arterial line blood sampling: preventing hypoglycaemic brain injury

Summary:

Drawing samples from an indwelling arterial line is the method of choice for frequent blood analysis in adult critical care areas. Sodium chloride 0.9% is the recommended flush solution for maintaining the patency of arterial catheters, but it is easy to confuse with glucose-containing bags on rapid visual examination. The unintentional use of a glucose-containing solution has resulted in artefactually high glucose concentrations in blood samples drawn from the arterial line, leading to insulin administration causing hypoglycaemia and fatal neuroglycopenic brain injury. Recent data show that it remains a common error for incorrect fluids to be administered as arterial line flush infusions. Adherence to the National Patient Safety Agency’s 2008 Rapid Response Report on this topic may not be enough to prevent such errors. This guideline makes detailed recommendations on the prescription, checking and administration of arterial line infusions in adult practice. We also make recommendations about storage, arterial pressure monitoring and sampling systems and techniques. Finally, we make recommendations about glucose monitoring and insulin administration. It is intended that adherence to these guidelines will reduce the frequency of sample contamination errors in arterial line use and capture events, when they do occur, before they cause patient harm.

Other intravenous and vascular access resources that may be of interest (External links –
IVTEAM has no responsibility for content).

Guide for intravenous chemotherapy and associated vascular access devices from Macmillan. An example of peripheral cannulation OSCE from OSCE Skills.