

## **WARMING OF BLOOD AND BLOOD PRODUCTS**

We have encountered instances where theatre staff are using fluid warming cabinets for warming blood products. This is a practice that is disallowed by all the relevant guidance bodies.

### **NICE guideline:**

<http://www.nice.org.uk/nicemedia/pdf/CG65Guidance.pdf>

On page 46 the end of the first paragraph reads (GDG=Guideline Development Group):

“The GDG also considered it clinically negligent not to warm intravenous fluids, other than those for the delivery of drugs. Taking all these things into consideration, they recommended that when IV fluids of 500ml or more are given, they should be warmed using a fluid warming device and not taken from a warming cabinet.”

It's not made explicit that blood must not be placed in a warming cabinet, but then NICE isn't trying to point out obvious and dangerous misuse of equipment. However, when NICE say 'fluid warmer' they do not mean warming cabinet, so it's implicit that nobody should warm blood in a cabinet.

### **MHRA Guidance:**

“We are currently regulating freezers, fridges and transport coolers intended to preserve tissues, fluids and blood intended for re-introduction, as they satisfy the definition of a medical device in Article 1 of Directive 93/42/EEC. We do consider that the same should happen to fluid warming cabinets where the fluids are intended for infusion. In-line warmers certainly provide the most common and recommended practice for warming blood and blood products.”

### **Handbook of Transfusion Medicine 4th edition, page 21**

#### **Blood warmers**

Hypothermia impairs blood clotting. Studies in surgical patients have found an association between hypothermia at the end of surgery and an increased incidence of post-operative infections and myocardial ischaemia. Hypothermia during surgery should be avoided. Blood and other infused fluids should be warmed. Rapid infusion of cold fluids (> 100 ml/minute) has been reported to cause potentially lethal cardiac arrhythmias. Infusion through a central catheter terminating in or near the right atrium may increase the risk. Only CE-marked commercial blood warmers should be used and the manufacturer's instructions must be strictly followed. Some blood warmers operate at up to 43°C but are safe provided they are used and serviced according to manufacturer's instructions.

Blood must never be warmed in an uncontrolled way (e.g. in a microwave, in hot water, or on a radiator).

#### **Rapid infusion devices**

Rapid infusion devices that are CE marked may be used when large volumes have to be infused rapidly. Typical devices can infuse from 6 l/hr up to 30 l/hr. Rapid infusers usually incorporate a blood-warming device.

**Suitable Blood Warming Devices such as the Nuova 05plus are available from QED Scientific.**  
**Please call 01663 735494 for full details.**

