Title: Dry Heat Intravenous Blood Warming Devices and the Risk for Blood Borne Infection: Safety And Guidelines For Use

Date: 02 July 2008

Research questions:

1. What is the evidence that dry heat intravenous blood warming devices pose less risk for blood borne infections than water bath based blood warmers?

2. What are the guidelines for use of blood warming devices?

Methods:

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 2, 2008), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international HTA agencies, and a focused Internet search. Results include articles published between 2003 and June 2008, and are limited to English language publications only. No filters were applied to limit the retrieval by study type. Internet links are provided, where available.

The summary of findings was generated from the abstracts or the summaries of the relevant information.

Results:

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews and meta-analyses are presented first. These are followed by randomized controlled trials, observational studies and evidence-based guidelines.

Four clinical practice guidelines that described the use of blood warmers were identified. The use of dry heat blood warming devices was discussed in only one of the guidelines. No health
technology assessments, systematic reviews or randomized controlled trials were identified to answer the research questions. Additional information that may be of interest is included in the Appendix.

**Overall summary of findings:**

In a guideline produced by Australian & New Zealand Society of Blood Transfusion, the authors stated that: "red cells should only be warmed using a specifically designed commercial device with a visible thermometer and audible warning. Blood components must not be warmed using improvisations such as putting the pack into hot water, in a microwave or on a radiator."\(^1\) It was also recommended that dry heat blood warming equipment should replace water baths due to the risk of contamination from infected water baths.\(^1\)

Two guidelines suggested that a blood warmer is indicated: a) at flow rates of >50mL/kg/hour in adults, b) at flow rates >15mL/kg/hour in children, c) for exchange transfusions in infants, and d) when transfusing patients with clinically significant cold agglutinins.\(^1,2\) One guideline also suggested that manufacturer's guidelines must be followed for all blood warmers.\(^2\) In addition, only approved blood warmers that are calibrated and maintained not to warm blood beyond 37°C may be used.\(^2,3\)

One guideline developed in a Melbourne children's hospital stated that red blood cells need to be warmed in the following situations: 1) patient's receiving massive transfusion, 2) the hypothermic patient requiring transfusion and 3) exchange transfusion.\(^4\)
References summarized:

**Health technology assessments**
No literature identified.

**Systematic reviews and meta-analyses**
No literature identified.

**Randomized controlled trials**
No literature identified.

**Observational studies**
No literature identified.

**Guidelines and recommendations**


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Appendix – further information:

Randomized controlled trials


Observational studies


Additional references


*Note: see Arizant Healthcare Inc.*

