

**AN (NI) 2001/04**

**DATE: June 2001**

**For Attention and Action by:  
Chief Executive of each HSS Trust  
General Manager/Chief Executive of each HSS Board  
Chief Executive of each Agency**



**HEALTH ESTATES  
ESTATE POLICY**

**NORTHERN  
IRELAND  
ADVERSE  
INCIDENT  
CENTRE**

**TITLE:**

**THE USE OF CENTRAL INTRAVENOUS  
ACCESS IN NEONATAL PARENTERAL  
FEEDING**

**MANUFACTURER/SUPPLIER**

Various

**PROBLEM**

Long line catheters can migrate towards the heart wall during long term use causing cardiac tamponade with potentially fatal consequences.

**DISTRIBUTION**

This notice should be brought to the attention of all who need to know or be aware of it, including those listed below, in accordance with local procedures. This will include:

- Liaison Officers
- Risk Managers
- Neonatal Intensive Care Units
- Medical Directors
- Nursing Directors
- Paediatricians
- Neonatologists
- Paediatric Units
- Neonatal Units
- Directors of Radiology
- Radiologists
- Principal Radiographers

Boards/Trusts should ensure that if appropriate, this information is passed to all persons having the responsibility for the premises registered under "THE REGISTERED HOMES (NI) ORDER 1992.

**ADVISE**

**NOTICE**

## IMMEDIATE ACTION

A report into a series of deaths in neonates has recommended that central venous catheter tips should no longer be placed within the heart for the administration of total parenteral nutrition. This report will be published shortly.

Following consultation with the British Association of Perinatal Medicine and the Royal College of Paediatrics and Child Health, NIAIC advises that the guidance below should be followed:

- Clinicians should check the manufacturer's catheter placement instructions provided with the product prior to beginning the insertion.
- Central venous catheters should be inserted using a full sterile technique. The site of insertion should be treated carefully with regard to sterility and contamination.
- For the purposes of parenteral feeding, venous catheters should be positioned so that the tip is situated at the junction of the superior or inferior vena cava and right atrium just outside the heart. In the very rare clinical situations that determine otherwise, the decision to place the catheter in the heart should be documented and the rationale given.
- Correct catheter placement should be verified by chest x-ray at the time of insertion and staff should perform regular observation to detect any catheter migration, along with periodic chest x-ray. If this is inadequate to identify the tip, an experienced radiologist should be consulted to discuss alternative imaging techniques.
- The catheter should be secured externally to minimize the potential for migration.
- Cardiac tamponade should be suspected if any of the following symptoms occur in a patient who has a long line in situ: acute or refractory hypotension, acute respiratory deterioration, arrhythmias, tachycardia, and unexplained metabolic acidosis. This diagnosis can be confirmed by a x-ray showing a widened mediastinum or enlarged cardiac shadow when compared with a film taken prior to the catheter insertion, or by the presence of pericardial fluid on echocardiogram.
- If tamponade is diagnosed, steps should be taken immediately to drain the pericardial fluid and withdraw the venous catheter. The patient will deteriorate rapidly with a potentially fatal outcome if left untreated.

## BACKGROUND

The Department has been made aware of several fatalities in neonates that occurred directly from the use of long line catheters for the provision of parenteral nutrition. In all cases cardiac tamponade ensued following catheter movement either into or within the heart.

Historically, the catheter tip has been placed either at the junction of the SVC or IVC with the right atrium, or within the right atrial cavity. There are complications associated with both placements, along with the possibility of catheter migration when the line remains in situ long term.

The presence of TPN within the vena cavae can cause inflammation, phlebitis, and ultimately thrombo-embolic occlusion. This complication develops relatively slowly and allows time for diagnosis and treatment.

The presence of the catheter tip within the right atrial cavity can result in myocardial erosion, pericardial effusion, and cardiac tamponade. This is a comparatively rare complication with fatal outcome, usually causing the patient to deteriorate rapidly and allowing only a short time for diagnosis and treatment.

The full report on the review of this practice and its link to neonatal deaths will be published shortly.

Adverse incidents involving long line catheters should be reported to NIAIC.



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## ENQUIRIES

Enquires to NIAIC should quote the reference number AN (NI) 2001/04 and be addressed to:

Northern Ireland Adverse Incident Centre (NIAIC)  
Health Estates  
Estate Policy Directorate  
Stoney Road  
Dundonald  
Belfast BT16 1US  
Marked for the attention of Mr Brian Godfrey

Tel: 02890 523714

Fax: 02890 523900

Email: [brian.godfrey@dhsspsni.gov.uk](mailto:brian.godfrey@dhsspsni.gov.uk)

Brian Godfrey  
NIAIC Manager



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### HOW TO REPORT ADVERSE INCIDENTS

Adverse Incidents relating to medical devices, non-medical equipment, plant and buildings should be reported to NIAIC as soon as possible. Advice on how to report is given in Safety Notice SN (NI) 2000/NIAIC. If you are in doubt about how to report incidents, please speak to your liaison officer or contact NIAIC using the telephone number provided.

*Heath Estates is an Executive Agency of the Department of Health, Social Services and Public Safety  
Áisíneacht Feidhmeannach don Roinn Sláinte. Serbhíst Sóisialta agus Sábháilteacht Phoiblí*