

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:

**CARDIOTOCOGRAPH (CTG) MONITORING
OF FETUS DURING LABOUR — UPDATE**

MANUFACTURER/SUPPLIER

Various

PROBLEM

A number of stillbirths have occurred in the presence of CTG traces interpreted as being normal. This caused distress for the mothers and clinical staff involved.

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
- Health & Safety Officers/Advisors
- Device Managers
- Consultant Obstetricians
- Midwifery Managers and Supervisors
- General Medical Practitioners
- Nurse Directors
- Medical, and Midwifery Staff
- Community Midwives
- Maternity Wards

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.

ACTION

Users should be aware that in the presence of a dead fetus the CTG may still display a tracing apparently from the fetus and within the normal heart rate range. In order to minimise this possibility users should take the following actions:-

Before Use

Establish the presence of a fetal heartbeat by auscultation, before starting CTG monitoring, by using a Pinard stethoscope [and before re-connection after a break in monitoring].

- If there are any indications of a problem (mother reports no fetal movements, difficulty with auscultation), ultrasound imaging should be used to establish the condition of the fetus.
- Users must read the manufacturer's instructions and use the monitor in accordance with those instructions.

SAFETY

NOTICE

During Use

Record maternal pulse rate regularly and check that it is different from the fetal heart rate (**FHR**).

- Compare the recorded maternal pulse rate with the CTG display and chart.
- Compare the actual maternal pulse with the sound from the loudspeaker.
- If the maternal pulse is synchronised with the sound from the loudspeaker, the CTG is monitoring maternal heart rate (**MHR**).
- Be aware that the CTG may be displaying a “doubled” **MHR** ($80 \times 2 = 160$ bpm), or “half” **FHR** ($150 \div 2 = 75$ bpm).
- Fetal scalp electrodes are considered to be more reliable than ultrasonic transducers, although there is still a need to confirm that **FHR** is being correctly displayed.
- Categorise **FHR** trace as a whole, with reference to individual features and the clinical picture. (For further information see ‘Clinical Practice Algorithm’ within NICE Clinical Guideline).
- If there are any problems establishing or confirming a fetal heartbeat then treat CTG displays with caution.

If in doubt, consult clinical colleagues.

BACKGROUND

Further to the publication of Safety Notice SAN(NI)98/19 in April 1998, additional reports to the Medical Devices Agency (MDA) indicate that there is still a problem with the use of cardiotocographs.

Cardiotocographs monitor the fetal heart rate in relation to maternal contractions. They assist in the management of labour, but should not be relied upon to diagnose the condition of the fetus.

Five reports have been received this year where CTG machines have produced an apparently normal trace during labour and the baby was delivered stillborn. In all these cases the baby had been dead for a number of hours. Two cases showed values of $MHR \times 2$ and three showed values of $MHR \times 1.5$, although there is some dispute as to the source of these signals.

It is known that CTGs can display double the maternal heart rate ($MHR \times 2$) and half the fetal heart rate ($FHR \div 2$). However, MHR multiplied by one and a half is a confusing artefact that is difficult to recognise.

CTGs use a low power ultrasound Doppler signal to detect movement within the mother’s abdomen. The fetal heartbeat is a weak signal in a noisy environment. Signal processing techniques are used to extract a periodic/repetitive signal. In the majority of cases the **FHR** is correctly displayed and accelerations and decelerations are faithfully reproduced.

However, it would appear that when there is no fetal heart beat the CTG may respond to a weak signal derived from a combination of the maternal aorta, iliac and uterine arteries. The resulting trace shows reactivity and variability due to maternal heart rate changes and muscle contractions. This condition only occurs in a small number of stillbirths but causes distress for all those involved.

FURTHER GUIDANCE

National Institute for Clinical Excellence – The Use of Electronic Fetal Monitoring, Clinical Guideline: NICE May 2001. Web: www.nice.org.uk

Royal College of Obstetricians and Gynaecologists – The Use of Electronic Fetal Monitoring: RCOG May 2001. Web: www.rcog.org.uk

NIAIC: Cardiotocograph (CTG) monitoring of foetus during labour, Safety Action Notice: SAN (NI) 98/19 April 1998.



HEALTH ESTATES
ESTATE POLICY

**NORTHERN
IRELAND
ADVERSE
INCIDENT
CENTRE**

SAFETY

NOTICE

ENQUIRIES

Enquires to the NIAIC should quote the reference number SN(NI) 2002/28 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

Brian Godfrey
NIAIC Manager



HEALTH ESTATES
ESTATE POLICY

**NORTHERN
IRELAND
ADVERSE
INCIDENT
CENTRE**

SAFETY

NOTICE

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) 2002/01. If you are in doubt about how to report incidents, please speak to your liaison officer or contact NIAIC using the telephone number provided. Adverse Incident reporting forms and an on-line reporting facility are available on the NIAIC website at www.dhsspsni.gov.uk/niaic

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