Tel: (091) 232 5131 Ext. 25034
Direct Line/Fax: (091) 227 5168

JL
Your copy back
(cc File

THE ROYAL VICTORIA INFIRMARY
Queen Victoria Road, Newcastle upon Tyne NE1 4LP. Tel: 091 232 5131. Fax: 091 201 0155.

NEWCASTLE NEONATAL SERVICE

Our Ref: DWAM/AS

Your Ref:

27 April 1994

Mr T I Wagstaff
Clinical Director
Obstetrics & Gynaecology
Royal Victoria Infirmary

Dear Ian

Incident involving bypass of relief valve during resuscitation

On the night of April 23rd a newborn baby was being resuscitated in the Red Area of Ward 35 using the standard set up of a cone connector supplied with oxygen from a flow meter via a pressure relief block (Viamed). The set up was connected correctly with green tubing connecting the oxygen flow meter to the inlet port of the block and opaque white Laerdal tubing connecting the outlet port of the block to the cone connector and thence to the baby.

Because the baby was not responding to the maximum pressure achievable on the block in use (30 cms) a Laerdal bag was connected to the distal (baby) end of the opaque Laerdal tubing and, because the purpose of changing to this system was to achieve higher pressures in the circuit (up to 49 cms H2O is regularly achieved with a standard Laerdal bag), the proximal end of the opaque tubing was disconnected from the block and connected directly to the oxygen flow meter. Connected in this fashion the system was safe and effective.

It was then decided to ventilate the baby using the cone connector again and this was substituted directly for the Laerdal bag on the distal end of the Laerdal tubing. Normally the proximal end of the Laerdal tubing would always be connected to the block but in this instance the proximal end of the tubing had been disconnected and reconnected directly to the flow meter. As a result the baby was temporarily exposed to direct gas pressure from the flow meter (potentially up to 4 bar).

EXISTING PRECAUTIONS

Existing safety precautions include a rule that green tubing is used to connect a flow meter to a subsidiary device (such as the pressure relief block) and that opaque white tubing is used to connect the block to the baby via a cone connector. This avoids confusion when there is more than one oxygen tube in the incubator and should ensure that the baby is connected to the correct gas source. This should be via a block with a variable pressure blow off and a maximum of 45 cms H2O in the Red and Blue areas, and via a fixed blow off at 30 cms H2O in the Green area. Each high dependency room should also have one Laerdal bag to use in unusual circumstances when higher pressures are needed.

PROBLEMS IDENTIFIED

1. The proximal end of the opaque white tubing was disconnected from the block and connected directly to a flow meter. The two systems had the same tapered male connectors.

2. A review of the blow off valves in place on the ward on the morning of April 25th revealed that four high dependency spaces had inappropriate fixed pressure 30 cms valves and two had no valve at all on the rail. The remainder had appropriately connected variable 45 cms valves. Two rooms had no Laerdal bag.

PROPOSED SOLUTIONS

1. A stringent check will be carried out daily by the senior nurse in charge of each area to ensure that each high dependency space is equipped with an appropriately connected 45 cms variable blow off valve.

2. All staff will be reminded that the opaque Laerdal tubing should only be connected to the block and never to a flow meter.

3. The outlet connector on the block will be changed to a fitting which cannot mate with anything other than the piece of tubing running to the cone connector (the design of this piece of tubing may also need to be changed). Discussions with the manufacturers of the block have already begun.

4. Removing the Laerdal bags from circulation would potentially remove one reconnection hazard but it is considered that, with appropriate education, this system can be life saving in a handful of babies who do not respond to the maximum 45 cms H_2O available on the existing blocks.

I will let you know when we have a permanent solution in place.

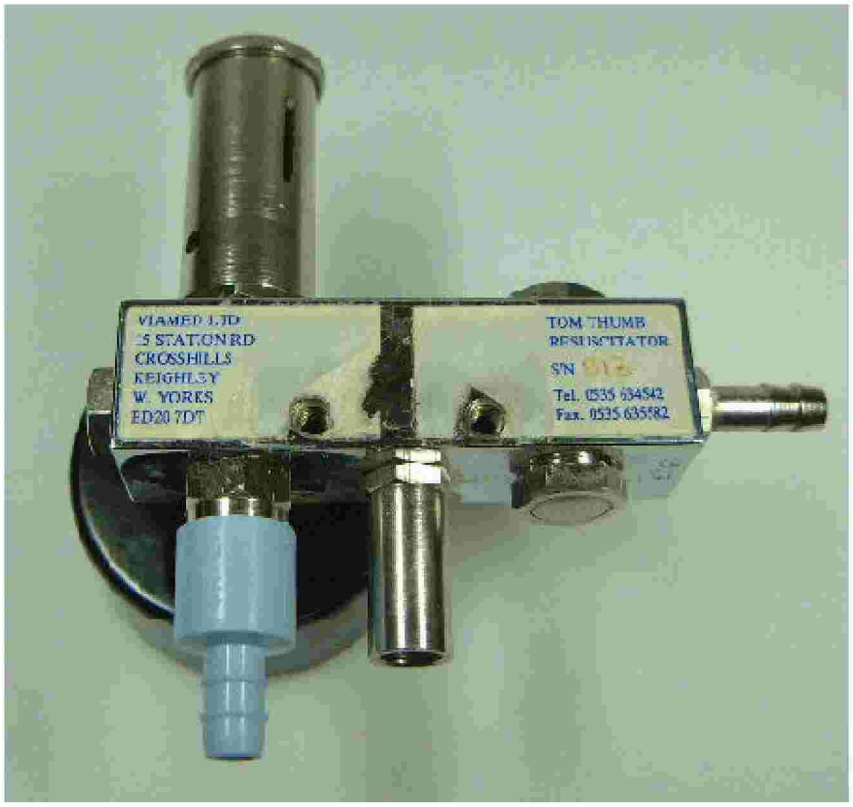
Yours sincerely

D W A MILLIGAN
CONSULTANT PAEDIATRICIAN

cc. Mr D Shardlow, Health Care Manager, Obstetrics and Gynaecology
Heather Carter, Clinical Coordinator, Special Care Baby Unit
Mr M Hallam, Electronics Department, RVI

TT54

Repair from Royal Victoria Infirmary (Newcastle). w/s no. 52253




TOM THUMB
10
20
30
40
50
60
0
-5
cmWG


VIAMED LTD
5 STATION RD
CROSSHILLS
KEIGHLEY
W. YORKS
BD20 7DT
TOM THUMB
RESUSCITATOR
S/N 913
Tel. 0535 634542
Fax. 0535 635582