Conservative care of the newborn baby

T. H. HUGHES-DAVIES
Odstock Hospital, Salisbury, Wiltshire

SUMMARY A method of managing ill and premature babies with little disturbance is described. The results of such care during 1969–76 compare favourably with those achieved by more intensive and active intervention.

Small or ill babies dislike being disturbed, and in the mid 1960s it seemed to me that intervention did harm as often as it did good. Here is described a way of leaving babies alone and its results.

Method

1. All babies are nursed prone and head up on an apnoea mattress. In this position the pharynx clears itself, the stomach is self winding, the lower oesophagus is protected by the gastric air bubble, and the brain drains uncongested.

2. The baby is never left naked but is covered at least by a towel napkin to reduce radiant heat loss. At night and on cold days, the nursery curtains are drawn.

3. A nasal tube is passed and feeding and watering begun within half an hour of admission. Feeds are given from outside the incubator without touching the baby. Babies fed only milk cannot satisfy their thirst and hunger independently as older children do. Most cope, but some become obese in an attempt to get enough water, or become oversalted, uraemic, and anorexic from a failure to do so. We therefore follow the example of other mammals by offering water 3 times a day to all babies. Those not sucking get their water down the tube in a volume equal to one of their milk feeds, with an increase if they are hot or uncomfortable. This is usually given as 10% glucose to the smaller babies as prophylaxis against hypoglycaemia, but water would probably be as good and perhaps safer, although we have had no trouble. Human milk expressed or from the breast, is used for the smaller babies and, if available, for the rest; but all milks seem well tolerated with supplementary water. For convenience we used pre-bottled milk when it became available. The quantity is increased from about 60 ml/kg per day on the 1st day to 120 ml/kg on the 3rd, up to 200 ml/kg by the 7th, depending on the state of the baby and the judgement of the sister.

4. At the first suspicion of respiratory difficulty an x-ray of the chest is taken, and acidaemia is anticipated and averted by adding sodium bicarbonate to the feed at a rate of 3·4–1 mmol/h. The carbon dioxide formed leaves by the oesophagus, so the neutralisation is independent of lung function. The head up tilt is increased to 30° in the hope of reducing collapse of apical alveoli during expiration.

5. Blood glucose is checked by Dextrostix, at first every hour; and bilirubin as necessary by heel prick. No venous samples are taken except for culture if an infection is suspected. Nothing is given intravenously, except occasionally during initial resuscitation, or later for the correction of anaemia.

6. A stream of piped air, or air and oxygen, is directed from a funnel at the baby’s face as a stimulus against apnoeic attacks. The concentration of oxygen is checked regularly, and enough given to prevent cyanosis.

7. Ventilators and positive pressure devices are not used, nor is phototherapy.

8. Isolation is kept to a minimum, and depends largely on the incubator and on hand washing. The nursery is open to mothers and relatives who are encouraged to help with the babies’ care from the start. Masks and overshoes are not used, and gowns only for convenience; gloves are used for passing tubes.

9. During exchange transfusion, the umbilical catheter is sandwiched between two layers of adhesive film covering the abdomen, and the baby lies prone and unfettered in his usual position in the incubator.

Results

In 8 years, 911 babies under 2500 g were born. This was 6.1% of all births, and close to the national
average of 6·3%. Of these, in 1974–76, 48·3% were
between 2500 and 2250 g, 20·7% between 2250 and
2000 g, 19·1% between 2000 and 1500 g, 7·9% be-
 tween 1500 and 1000 g, and 3·9% were under 1000
g. The corresponding figures for England and Wales
for 1975 were 48·2, 22·8, 17·9, 7·4, and 3·5% re-
spectively. Any larger baby about whom there was
concern was also admitted to the nursery, and about
one-third of all babies passed through it only for a
few hours.

Hypothermia, hypoglycaemia, enterocolitis, pne-
umothorax, and bleeding and thrombotic complica-
tions were seldom met. Exchange transfusion was
needed only for haemolytic disease, and there has
been no late evidence of kernicterus. Babies with
respiratory distress left undisturbed have done well
with no late lung disorder. Apnoea has been severe
only in babies later found at post-mortem examina-
tion to have cerebral haemorrhage from birth
trauma. One severely retarded child is partially
sighted and has retinal changes which may be related
to ventilation with pure oxygen during half an hour’s
apnoea at birth; he did not need oxygen subse-
quently.

After discharge the babies were seen if necessary
at a clinic held each week in the nursery, where
the mothers were at ease and the nurses could see the
results of their care. They did well. The few affected
children were not those who had caused concern in
the first weeks, and most had evidence of an intra-
uterine infection or some other handicapping con-
dition. Some who had had unduly prolonged resus-
citation at birth, and who needed tube feeding for a
long time, remained severely retarded—the ‘failed
stillbirth’ group for whom the answer is perhaps to
limit initial ventilation for apnoea to 30 minutes or
so, when there is evidence of profound intrapartum
anoxia.

Death in the first week is the best defined measure
of comparison; the number of deaths and births by
weight is shown in Table 1, and the 3-year running
average mortality in Table 2. All deaths are included
whether they occurred in the delivery room, in the
nursery, or after transfer to another hospital for
surgery. Included in the table are the deaths in the
first month for England and Wales by weight in
1975; and also deaths among 1017 babies of <2500
g admitted to six neighbouring nurseries in 1975, but
it is likely that not all the larger babies are included
in these figures.

Among the smaller babies there was an initial
rise followed by a steady fall in the mortality. As the
care of the babies was unchanged, and the fall much
steeper than the national trend, these changes are
probably due to improvement in obstetric care.
This was reflected in a corresponding fall in the
number of babies who died after 20 minutes or
more of apnoea at birth, or who had tentorial tears
at post-mortem examination. Of the lethal deformi-
ties 19 were in babies >2500 g and 8 in smaller
ones. Table 3 gives the cause of other deaths by year
and weight. Table 4 shows the mortality of very small
babies of <1000 g. This is high, but little different
from that of babies born in University College
Hospital, London as derived from the figures of
Stewart et al. (1977), or from that reported by
neighbouring nurseries.

Discussion

Different hospitals serve different populations, and
reliable comparison between methods of care is
difficult but should be attempted. The results of
conservative treatment presented here seem no
worse than those of more intensive care; and it may
be that the method will be of use to other small
hospitals in this country and overseas. The incident
benefits were considerable; nurses and doctors as
well as babies got more rest, and it became practi-
cable if not desirable to run the nursery with one
trained and one assistant nurse or less per shift, with

<table>
<thead>
<tr>
<th>Year</th>
<th>Weight (g)</th>
<th>1001–1500</th>
<th>1501–2000</th>
<th>2001–2250</th>
<th>2251–2500</th>
<th>&gt;2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>7/12</td>
<td>5/33</td>
<td>0/36</td>
<td>3/50</td>
<td>4/1775</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>8/17</td>
<td>7/32</td>
<td>1/23</td>
<td>0/57</td>
<td>5/1763</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>3/4</td>
<td>10/26</td>
<td>0/32</td>
<td>0/46</td>
<td>5/1725</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>1/4</td>
<td>3/32</td>
<td>1/28</td>
<td>1/60</td>
<td>7/1770</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>3/12</td>
<td>2/19</td>
<td>0/23</td>
<td>0/56</td>
<td>6/1795</td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>1/2</td>
<td>1/17</td>
<td>0/26</td>
<td>1/53</td>
<td>5/1700</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>1/10</td>
<td>2/22</td>
<td>0/14</td>
<td>1/38</td>
<td>3/1750</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years</th>
<th>Weight (g)</th>
<th>1001–1500</th>
<th>1501–2000</th>
<th>2001–2250</th>
<th>2251–2500</th>
<th>&gt;2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salisbury 1969–71</td>
<td>41</td>
<td>18</td>
<td>3</td>
<td>3</td>
<td>0·3</td>
<td></td>
</tr>
<tr>
<td>1970–72</td>
<td>55</td>
<td>24</td>
<td>1</td>
<td>2</td>
<td>0·3</td>
<td></td>
</tr>
<tr>
<td>1971–73</td>
<td>48</td>
<td>22</td>
<td>2</td>
<td>0·6</td>
<td>0·3</td>
<td></td>
</tr>
<tr>
<td>1972–74</td>
<td>35</td>
<td>19</td>
<td>1</td>
<td>0·6</td>
<td>0·3</td>
<td></td>
</tr>
<tr>
<td>1973–75</td>
<td>28</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>0·3</td>
<td></td>
</tr>
<tr>
<td>1974–76</td>
<td>21</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>0·3</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 First week mortality percentage by weight—3-year running average

<table>
<thead>
<tr>
<th>Years</th>
<th>Weight (g)</th>
<th>1001–1500</th>
<th>1501–2000</th>
<th>2001–2250</th>
<th>2251–2500</th>
<th>&gt;2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>England and Wales 1975</td>
<td>45</td>
<td>13</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wessex neighbours 2001–2500</td>
<td>46</td>
<td>14</td>
<td>3·3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conservative care of the newborn baby

Table 3  Cause of death other than lethal deformities, prolonged intrapartum asphyxia, and tentorial tears

<table>
<thead>
<tr>
<th>Year</th>
<th>Weight (g)</th>
<th>1001–1500</th>
<th>1501–2000</th>
<th>2001–2250</th>
<th>2251–2500</th>
<th>&gt;2501</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total born (1969–76) 1969</td>
<td>None</td>
<td>73</td>
<td>None</td>
<td>203</td>
<td>Klebsiella pneumoniae</td>
<td>211</td>
</tr>
<tr>
<td>1970</td>
<td>5 prematurity 1 cerebral bleed</td>
<td>1 cerebral bleed</td>
<td>None</td>
<td>1 respiratory distress</td>
<td>(twin 2)</td>
<td>1 Escherichia coli 026 enteritis</td>
</tr>
<tr>
<td>1971</td>
<td>Prematurity</td>
<td>Pulmonary haemorrhage</td>
<td>None</td>
<td>1 cerebral bleed</td>
<td>Respiratory distress</td>
<td>None</td>
</tr>
<tr>
<td>1972</td>
<td>Prolapsed cord</td>
<td>Posterior fossa bleed</td>
<td>None</td>
<td>Respiratory distress after section for fetal distress</td>
<td>1 cot death after section for prolapsed cord</td>
<td>1 viral pneumonia</td>
</tr>
<tr>
<td>1973</td>
<td>Prematurity</td>
<td>Admitted at 2 hours with hypothermia and adrenal bleeds</td>
<td>None</td>
<td>None</td>
<td>751–1000 (all ages)</td>
<td>Septicaemia after operation for covered anus</td>
</tr>
<tr>
<td>1974</td>
<td>Admitted at 2 hours with hypothermia and adrenal bleeds</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>1975</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>1976</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Table 4  Very small babies

<table>
<thead>
<tr>
<th>Born</th>
<th>Died</th>
<th>Mortality (%)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salisbury (1969–76)</td>
<td>11</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>UCH, London (1966–75)</td>
<td>20</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>England and Wales (1975)</td>
<td>1298</td>
<td>1029</td>
<td>79</td>
</tr>
<tr>
<td>Wessex neighbours (1975)</td>
<td>31</td>
<td>23</td>
<td>74</td>
</tr>
<tr>
<td>UCH, London (1966–70)</td>
<td>36</td>
<td>29</td>
<td>81</td>
</tr>
<tr>
<td>(1971–75)</td>
<td>33</td>
<td>26</td>
<td>79</td>
</tr>
<tr>
<td>Salisbury (1969–76)</td>
<td>21</td>
<td>16</td>
<td>76</td>
</tr>
<tr>
<td>UCH, London (1966–75)</td>
<td>49</td>
<td>35</td>
<td>71</td>
</tr>
<tr>
<td>Salisbury (1969–76)</td>
<td>21</td>
<td>16</td>
<td>76</td>
</tr>
<tr>
<td>UCH, London (1966–75)</td>
<td>21</td>
<td>32</td>
<td>80</td>
</tr>
</tbody>
</table>

medical cover from a single doctor who also had responsibility for all the other paediatric work in the hospital.

It has been suggested that small babies should be transferred to regional centres. Table 4 shows that there has been little change in the mortality of very small babies in successive 5-year periods in one of the best of these; and that when babies of 30 weeks' gestation or more are removed the mortality differs little from the national average. Our experience suggests that improvement in perinatal mortality depends largely on the care of the mother and her baby before and during birth.

I am indebted to Sister Rowlands and the staff of Salisbury special care nursery for their help, and to neighbouring paediatricians for their kindness in providing figures.

Reference


Correspondence to Dr T. H. Hughes-Davies, Central Hospital, Honiara, Solomon Islands.

Received 4 May 1978
Conservative care of the newborn baby

T. H. Hughes-Davies

Arch Dis Child 1979 54: 59-61
doi: 10.1136/adc.54.1.59

Updated information and services can be found at:
http://adc.bmj.com/content/54/1/59

These include:

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/