

# NCT EVIDENCE BASED BRIEFING

## Eating and drinking in labour

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### Introduction

This briefing paper reviews the evidence on the consumption of food and drink by women during labour and updates the evidence discussed by the authors previously.<sup>1-6</sup> It focuses on the following questions:

- How have hospital policies changed over the last decade?
- Do women want to eat during labour?
- Is it safe for them to do so?
- Does eating and drinking affect the course of labour?

### Background

In the 1940s, there were concerns about the high morbidity and mortality associated with gastric aspiration during general anaesthesia, when women regurgitated undigested food and inhaled it into their lungs. Mendelson identified the acidity of the liquid and small particles of food as the main problem with gastric aspiration, and he proposed a number of interventions based on his observations. These were:

- withholding oral feeding during labour
- providing energy intravenously
- using local anaesthesia in preference to general anaesthesia, where possible
- attempting to reduce the volume and acidity of the stomach contents
- the administration of anaesthesia only by specially trained doctors (and not by inexperienced doctors as happened in those days).<sup>7</sup>

Since then, many hospitals' policies, in the UK and around the developed world, have not only forbidden food and drink during labour, except for sips of water,<sup>8-12</sup> but have recommended the routine administration of drugs to reduce the volume and acidity of stomach contents, and have used intravenous glucose (or dextrose) to provide energy for metabolism in labour.<sup>1-5</sup> However, there is no sound evidence on the effectiveness of routine drugs in labour to reduce the volume and acidity of stomach contents.<sup>13</sup> In addition, the use of intravenous glucose in labour has been shown to cause adverse effects, such as fluid overload, low blood sodium and high blood glucose in the mother.<sup>14-16</sup> There is also evidence of a rebound low blood glucose for the baby, potentially causing increased jaundice and acidosis, with compromised babies being particularly at risk.<sup>17-19</sup> The apparatus required for intravenous fluids may also have a negative impact on women's mobility in labour and may create a sense of illness.

### Have policies on eating and drinking changed in the UK?

A survey carried out in 1984 gathered data from 220 of the 238 consultant units in England and reported that 39% never allowed women to eat in labour, 50% allowed food only in early labour, 7% allowed food throughout labour, with 86% allowing water throughout labour.<sup>8</sup> In the mid 1990s, a survey of English maternity units, with an 87.5% response rate, reported that 53% permitted consumption of food in established labour and 99% allowed fluids.<sup>10</sup> A 2003 survey, responded to by 91% of UK maternity units, showed a continuation of the liberalising trend with 81% (n= 238/294) permitting calorific drinks and/or food during labour.<sup>16,20</sup> This trend seems to be reflected in a study of 2820 women in West Hertfordshire where 46% said that they 'had access' to food and drink in hospital during labour.<sup>21</sup> This development seems to have come about as a result of a growing understanding that for healthy women in normal labour, eating a light diet is not usually problematic, and that withholding food and drink neither ensures that the stomach is empty nor reduces the acidity of the stomach contents.<sup>10,22-25</sup>

### Do women want to eat in labour?

It is suggested that in early labour, elevated levels of prolactin stimulate maternal appetite but, as labour progresses, increasing oxytocin diminishes the desire to eat.<sup>26</sup> This would indicate a normal physiological change in appetite as labour progresses. In the context of woman-centred care, it is helpful to know how important it is for women to feel that they may eat and drink according to their hunger and thirst during labour. And also, if given the opportunity to be guided by their appetite and thirst, what patterns of eating and drinking behaviour women will adopt. A number of surveys and trials can be drawn on to address these questions.

Nottingham City Hospital was at the forefront of moving away from restrictive eating and drinking in labour policies in the early 1990s. It audited its new policy in 250 women at low risk of developing problems in labour, 'allowing' them to consume certain food and drinks, and found that women appreciated having the choice to eat and drink even if they did not want to eat or drink during labour.<sup>23</sup> Around half of the women, 52% (128/250), said that they had eaten at home before coming into hospital, and only 22% (56/250) had eaten in hospital. The main reason they gave for not eating later in labour was that they did not feel like it.<sup>23</sup> A recent study in Australia regarding early labour found similar numbers of women

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chose to eat (82/176 = 47%), as chose not to eat (94/176 = 53%).<sup>27</sup> In addition, in a small retrospective postnatal survey in Scotland, involving 182 women (of whom 149 responded), assessing the proportion of women who would have wanted to eat in labour, 30% indicated they would have liked to eat something during labour, generally during the early stages. Of these, a quarter felt that food would have made a significant difference to their overall satisfaction with labour.<sup>28</sup> And more recently in West Hertfordshire, 86% of women rated having the opportunity to have something to eat or drink during labour as of medium to high importance to them.<sup>21</sup>

In a recent trial, conducted in England, 301 women were randomised to being free to eat and drink in labour (unless complications arose), compared with being allowed sips of water only. The consensus was that food low in fat and fibre, with a neutral pH, would probably help gastric emptying and should be offered, or suggested, for those who wished to eat in the intervention arm of the trial, while highly acidic, very sweet or fatty foods and carbonate drinks were to be avoided. Most of the women (80%) in the group who were free to eat, chose to eat in early labour, but all except one chose to stop eating by approximately 5cm of cervical dilatation.<sup>29</sup> Questioned postnatally about their experience, 97% of the group who were able to eat responded (n=107) and said they were satisfied or very satisfied to have been randomised into the group who were free to eat to appetite. Just over half (55%) of those in the control group, who were allowed nothing but sips of water, expressed disappointment at being in this group as they would have liked the opportunity to eat in labour.

It seems, therefore, that many, perhaps most, women want to eat something in the early part of labour but very few choose to do so in strong active labour. However, women appreciate having the freedom to choose for themselves whether or not to eat and drink. In addition, it is generally agreed that it is good to drink to thirst, recognising that it is often warm in hospital and labour is hard work.

## Is it safe to eat during labour?

### For the mother

There is no strong evidence over the last few decades, as policies have been liberalised in the UK, that safety is compromised if women eat and drink during labour.<sup>16,19,30</sup> When Mendelson undertook his work, women were encouraged to eat heavy meals during labour to keep their energy levels up, and anaesthetic techniques were very different from those of today (for example, using ether or chloroform) and anaesthetics were often applied by new or inexperienced doctors.<sup>7</sup> In the UK, in the early 1900s, GPs sometimes administered general anaesthetics at home for instrumental births.<sup>19</sup> However, since the 1950s, every maternal death in the UK has been individually investigated on a confidential basis and from these investigations there have been no suggestions over recent decades of a link between maternal mortality and women eating and drinking in labour.<sup>30</sup> In fact, the old anaesthetic techniques and inexperienced practitioners have been considered as a major factor contributing to maternal deaths from the 1960s to the 1990s.<sup>22</sup>

Since the late 1990s, the advice within the anaesthetic literature seems to have shifted away from recommending a blanket policy of no food or drink for all labouring women as a means of trying to minimise the volume and acidity of the stomach contents, although there seems to be a lack of consistency.<sup>19,31</sup> Whilst not favouring food in labour, one UK report suggests that 'it is rational . . . to allow clear fluids in order to promote maternal comfort in labour. Women who wish to eat solid foods during labour should be informed of the known risks and benefits'.<sup>19</sup> For example, narcotics for pain relief during labour are known to slow down gastric emptying and so leave more food and fluid in the stomach.<sup>22,16</sup> This is considered to increase the risk of gastric aspiration but there are no figures on the differing levels of risk. However, women need to be aware of this potential problem.

Fatalities from Mendelson's syndrome have now fallen to a very low level indeed – estimated at four cases per the ten million deliveries in the past 15 years – and this improvement is considered to be due mainly to better anaesthetic technique, skilled anaesthetic care and the increased use of regional anaesthesia rather than general anaesthesia for caesarean section, complicated operative vaginal birth or manual removal of placenta, if required.<sup>16,19,22</sup> A systematic review on food and fluids in labour is in development, but will not have sufficient power to assess any impact on maternal mortality as this outcome is so rare these days.<sup>32</sup>

In the UK, for healthy women with a normal pregnancy, there is about a one in six chance of having an unplanned caesarean section during labour,<sup>33</sup> though for primigravid women, the chance is higher than for women who have previously had a vaginal birth. Most women who have an unplanned caesarean during labour have the operation with regional anaesthesia (77% in 2001 in the UK) which is safer than a general anaesthesia.<sup>33,19</sup> Women who express a preference for general anaesthesia for caesarean birth should be informed about the increased risk gastric aspiration, which is greater in those women who are obese or who smoke. Most unplanned caesareans undertaken during labour, while classed as 'emergency' procedures as opposed to a 'planned' operations, do not involve acute time pressure, so if an epidural has not been used earlier, there is time to set up a spinal anaesthetic. The Caesarean Section Sentinel Audit reported 16% of emergency caesarean sections (affecting about 2% of women in labour) were for what was considered an 'immediate threat to the life of mother or baby'. Of these about a half were under general anaesthesia.<sup>33,34</sup> A systematic review is underway assessing the value of acid prophylaxis drugs once the decision to perform a caesarean section has been made.<sup>35</sup>

### For the baby

There is insufficient trial data to be able to say whether maternal eating and drinking in labour, or withholding of food, has an impact on outcomes for the baby. No significant differences have been found in Apgar scores and NICU admissions in trials of women eating and drinking in labour compared with water only,<sup>36,37,29</sup> or in trials of carbohydrate drinks in labour.<sup>38,39</sup> However, this aspect of care is clearly under-researched.

## Excessive fluids

Although the confidential enquiries into maternal deaths have not identified serious problems associated with eating and drinking in labour in recent decades,<sup>30</sup> there have been reports of adverse effects for the mother and baby of women drinking very large volumes of fluid during labour (around seven to eight litres). It is known that excessive drinking can cause water intoxication in those undertaking strenuous, lengthy exercise and consuming large quantities of fluid. Now there are some case reports of women and their babies becoming hyponatraemic due to excessive consumption of water and other drinks during labour.<sup>40,41</sup> Midwives and antenatal teachers need to be aware of this risk, and make parents aware of it. It is important for the mother to listen to her body, but she should be careful not to drink excessively in labour.

## Does the freedom to eat and drink to appetite affect the course of labour?

'Although the negative aspects of eating and drinking during labour have been described extensively, the possible beneficial aspects remain relatively unstudied.'<sup>42</sup>

Current evidence is limited because the trials to date have been small in number and have been undertaken in a range of different healthcare settings, namely the UK,<sup>36,38,29</sup> the Netherlands,<sup>39,43</sup> and Canada.<sup>37</sup> It is not always clear in study reports whether women were free to eat and drink to appetite, or whether they were encouraged to eat and drink in labour. No clear patterns have emerged from these trials in terms of differences in the duration of labour, nausea and vomiting, or obstetric interventions such as operative births. However, there was considerable variation in the general provision of care between these trial settings. In some trials, there were epidural rates of over 70-80% for pain relief in labour.<sup>37,38</sup> This means that other components of an active physiological labour, such as the freedom to move about, to use immersion in water for analgesia and not to be continuously monitored, will be under-represented. In another setting, half of the women used opioids, known to dramatically slow down gastric motility.<sup>27</sup> In addition, 80% of the women included in the Dutch study had a pregnancy considered to be at high risk.<sup>43</sup> From this heterogeneous research, it may be difficult to reach a general conclusion about whether the freedom to eat to appetite would lead to different labour outcomes for women in the UK, or for specific groups of women, such as those most likely to have an uncomplicated labour. A larger trial is currently underway in the UK which may be able to address these questions.<sup>44</sup>

This question has been addressed in two reviews,<sup>19,16</sup> and a protocol for a Cochrane systematic review has been published.<sup>32</sup> Currently, the available evidence can be summarised as follows:

### 1. Length of labour

There is insufficient evidence to say whether eating in labour affects the length of labour. Two randomised controlled trials (RCTs) have found no significant difference in the length of labour between women who were either unrestricted or were encouraged to eat

during labour and those permitted ice chips and water only. But both these trials were small, involving 94 and 328 women respectively.<sup>36,37</sup> Two RCTs comparing carbohydrate drinks with water found no significant difference in the length of labour (n=60, n=201).<sup>38,39</sup> In one unpublished RCT involving 301 women, the group allocated to eat during labour had significantly shorter labours than the group allowed sips of water only, but no data were available.<sup>29</sup>

### 2. Nausea and vomiting

There is no clear evidence that women vomit more if they eat during labour, though one trial has found this to be the case. However, this RCT found a significant difference, with almost twice as many women who were offered a prescribed light diet in labour vomiting compared with those permitted water only (38% vs. 19%). However, numbers in the study were small (n=94), and this was not the primary focus of the trial, which was to assess metabolic substances on the blood.<sup>36</sup> Three other trials have found no evidence of significant difference in nausea and/or vomiting when women were allowed isotonic sports drinks in labour compared with water only (n=60);<sup>38</sup> comparing women encouraged to eat and drink in labour with those restricted to ice chips and water (n=328);<sup>37</sup> and those who were free to eat and drink compared with those allowed only water (n=301).<sup>29</sup>

### 3. Operative birth

There is insufficient evidence to show whether women who are free to eat during labour have a differing risk of operative births compared with women whose eating is restricted. RCTs measuring these outcomes found no evidence of a significant difference, but once again they were all small studies and unlikely to be large enough to show a difference.<sup>36-38</sup> With the consumption of carbohydrate drinks, one small RCT (n=201) found a significantly higher caesarean section rate in women who had carbohydrate drinks in labour compared with those drinking only water (21/102 = 21% cf 9/99 = 9%).<sup>39</sup> The other study on carbohydrate solutions in labour found no significant difference in caesarean sections between the groups (carbohydrate drink group: 6/30 = 20% cf water only group: 8/30 = 27%).<sup>38</sup> The reason for these differences is unclear and may be related to the small size of the study. Further trials need to assess this outcome fully.

## Conclusion

Eating and drinking in response to hunger and thirst, or the desire for comfort, are freedoms that we take for granted in everyday life. It can, therefore, be disempowering and stressful for women who are otherwise healthy to be told when in labour that they must limit their intake to sips of water only. It sets labour apart as being different – a medical event, rather than a normal social process. A policy of withholding food and fluids in labour is an intervention. If it is to be recommended, robust evidence is required to show that it results in more good than harm, and the onus of proof should lie with those who wish to set such restrictions.<sup>45</sup>

In summary, policies and practice appear to have become more liberal in recent years after a period when it

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had been usual to tell 'low risk' as well as 'higher risk' women not to eat or drink during labour. Evidence suggests that many women do not want to eat in active labour, but are grateful for the freedom to do so if they wish. There has been no evidence in recent years that eating and drinking during labour increases the risk of problems for women or their babies. There is insufficient high-grade evidence to say whether eating and drinking in labour can affect the course or progress of labour.

The Royal College of Midwives takes the view that 'there is insufficient evidence to support the practice of starving women in labour in order to lessen the risk of gastric aspiration ... while there are no risk factors for general anaesthesia, women who wish to eat and drink in labour should be offered a light, nutritious and easily absorbable diet.'<sup>46</sup>

## Key points

- Women appreciate having the freedom to choose for themselves whether or not to eat and drink in labour.
- Healthy women in normal labour should be free to eat and drink to appetite, if they wish.
- Few women choose to eat in strong active labour.
- Easily digested foods are likely to be most acceptable to women.
- Women should be informed about the potential risks of water intoxication from drinking too much water, and about the delaying effect on gastric emptying of narcotic drugs.

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## Statistics Digest: Scotland

Maternity statistics for Scotland have been published for the year ending 31 March 2005.

### Key points

- 52,721 babies were born in hospital in Scotland in 2004-05.
- Births are now more common in the age group 30-34 years than in any other, accounting for 29.7% of all maternities. This is a slight fall from the previous year when it was 30.5%
- The percentage of births to women over 35 has risen steadily since 1976 (from 6.0% to 19.9%), and the number of births to women in this age group is now more than those aged 20-24.
- Forceps deliveries have fallen steadily over the years from 13.4% in 1976 to 7.1% in 2005. Conversely, vacuum births have risen from 0.5% in 1976 to 4.7% in 2005, although this is less than the previous year when it was 5.2%.
- The caesarean section rate has risen to 24.9% overall. This is up from 2004 when it was 24.4%.
- The normal birth rate in Scotland is 39.3%, calculated by BirthChoiceUK using official statistics. Normal birth is defined as 'spontaneous onset, spontaneous birth with no general or regional anaesthesia'.

- The proportion of singleton babies born at low birthweight (less than 2500g) has remained steady since 1976, fluctuating around 6%.
- The percentage of women smoking at time of first antenatal booking (usually within first three months of pregnancy) has decreased from 29% in 1995 to 22.7% in 2005.

### Live births – mode of delivery

|                             |       |
|-----------------------------|-------|
| Spontaneous vaginal births  | 64.0% |
| Induced                     | 24.1% |
| Emergency caesarean section | 15.4% |
| Elective caesarean section  | 9.5%  |
| Forceps                     | 7.1%  |
| Vacuum extraction           | 4.7%  |
| Vaginal breech              | 0.3%  |

*NB: Spontaneous vaginal births are vaginal births without forceps or ventouse, but include interventions such as induction or epidural anaesthesia.*

### Sources

- [www.isdscotland.org/isd/4028.html](http://www.isdscotland.org/isd/4028.html)
- [www.birthchoiceuk.com/Scotland.htm](http://www.birthchoiceuk.com/Scotland.htm)
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