When a woman gives birth in the Western world today, she has a series of choices to make. Some of these choices will be more explicit than others; some will be intrinsically linked to other decisions she has made previously. Many of the choices a woman makes will be framed by the person she chooses to care for her during childbirth, who will outline the decision for her when offering her the information relating to the issue. The personal philosophy of the attendant goes a long way to help this framing of the question; we are only human, and our own beliefs form an important part of the messages we convey to women about the ability (or otherwise) of their and their babies' bodies to keep them healthy.

Deciding whether or not to have vitamin K given to her newly born baby is one of the choices a woman must make. It is also one of those areas where the evidence and current thinking is dominated by the medical model. How can we bring all of the different philosophies and evidence together in order to make sense of this for ourselves - and for women - and to begin building a theory which is useful for women and for midwifery?

In the UK, the standard information given to women in hospitals goes something like this:

> *"In this hospital we offer all babies vitamin K. The reason for this is that all babies are born with low levels of vitamin K. Babies need vitamin K to prevent haemorrhagic disease, which can cause serious complications. There are also low levels of vitamin K in breastmilk, so if you choose oral vitamin K and are breastfeeding we will give your baby three doses of vitamin K rather than the one which we give to formula-fed babies. (Formula contains the high amounts of vitamin K which babies need.)"*

This may be followed by a further explanation of the possible routes via which vitamin K can be given. The attendant may also expand on some of the research into the different routes, notably to outline the question surrounding the risk of cancer. In my experience, the information the woman is given about this aspect of vitamin K administration varies widely between attendants and institutions, while the first part outlined above has become fairly standard.

A Question of Philosophy

An interesting starting point in this area is an analysis of the statements which are made - with the best intentions - by the medical model and repeated by many of those who attend childbearing women.

1. All babies are born with low levels of vitamin K.

Some fairly obvious questions are raised by this statement:

· What is a 'low' level of vitamin K?
· Semantically, can all babies have low levels?
· Low in relation to what?
· How do we define low levels and normal levels?
· Surely someone needs to have a normal level against which this is measured?
· Who has normal levels of vitamin K?

Actually, although the 'all babies have a low level' argument is heard in practice and not something which I have ever seen analysed 'in the literature', babies are deemed to have low levels of vitamin K relative to adult levels. Babies also have large heads relative to adult head size, but this is not perceived as pathological. It is deemed a good thing, because the human brain needs to be large at birth. Yet the fact that relative vitamin K levels differ between newborn and adult is perceived as pathological. Why?

Philosophically, the question is raised that, if all babies have what is perceived as a 'low' level of vitamin K, then surely this must become the 'normal level' of vitamin K for babies to have. Even if proponents of vitamin K think that this is 'too low' a level for some reason, they need to state this, rather than

telling women their baby is deficient in an essential substance. Doesn't this just feed back into the idea that women are relatively inefficient at making babies and need to be supplemented by the skills and technology of hospitals and doctors?

2. Babies need vitamin K to prevent haemorrhagic disease, which can cause serious complications.

This may also not be as clear-cut as some people suggest; this seems to suggest that all babies are at equal risk from haemorrhagic disease, when this is not the case. It would seem to me that it would be clearer and more helpful to give women reliable estimates of the relative risks in this situation; this is discussed below, in relation to some of the research which has been carried out in this area.

3. There are also low levels of vitamin k in breastmilk. (Formula contains the high amounts of vitamin K which babies need.)

Again, 'low' levels in relation to what? To formula? Which came first? Surely we can't be using artificially treated and processed cow's milk as the baseline against which to measure the constituents of human breast milk? Yet this is the undertone of the statements which are being offered to some women. What does this suggest to women about their body's ability to feed and nurture their baby? What impact does it have on breastfeeding rates? In any case, the research which first suggested that breastmilk was relatively low in vitamin K was carried out at a time when women were told to restrict the number of feeds, apply limits to the time the baby spent on each breast and, in some areas, to express colostrum without giving this to the baby. The net result of this was a reduction in the amounts of fat-rich colostrum and hindmilk which babies were recieving. Vitamin K is fat soluble and so is found mostly in colostrum and hindmilk. Would a study conducted on women who were breastfeeding now show different results?

Even if we accepted that the originators of these statements felt sure that they were correct in their assumptions, putting the first and last of these statements together raises one of the most important questions in this area:

· Babies have relatively low levels of vitamin K.
· There are relatively low levels of vitamin K in breastmilk.

Well, either nature (or God/dess) has dealt us a double whammy, or the vast majority of babies don't need too much vitamin K. Personally, considering what I know about the process of birth, I would suggest the second is the more likely. In fact, the co-existence of these statements simply seems to reinforce the idea that babies may not need this substance for the first part of their lives. Perhaps the relative (to adults) lack of it serves them well, possibly preventing the development of clotting problems in the first few weeks of life? Of course, it may also be that medical intervention has reduced the levels of vitamin K in both cases and that these would be higher both in babies and breastmilk which was not interfered with.

Research: relative risks

As above, it may be more helpful to give women estimates of the relative risks and benefits in this area than to give information based only on the personal philosophy of the attendant. What is the likelihood of a baby developing haemorrhagic disease of the newborn (HDN) if a woman declines vitamin K? A figure for this was calculated by Von Kries and Hanawa (1993), who suggested that the risk of late onset HDN without vitamin K is between 1 in 10,000 and 1 in 25,000. Late-onset HDN may be a serious condition for those babies who develop it, but if between 10,000 and 25,000 babies have to be given vitamin K in order to prevent one case, we have to ask whether it is worth it? Or, rather, each woman has to ask herself whether it is worth it. This is especially relevant when we consider that we already have information on which babies may benefit from vitamin K;

those who have traumatic births are far more likely to develop HDN than those who are born physiologically or, at least, without undue trauma.

The other side of this particular decision is related to the risks of giving otherwise healthy babies a substance which they do not need. The risk of healthy babies developing cancer as a result of being given vitamin K may be higher than the risk of developing HDN without (Parker et al 1998, Passmore et al 1998). Unfortunately, the studies which have looked at this have tended to use retrospective ('backwards-looking') research designs, which are never as reliable as forward-looking prospective trials. The only way to reliably assess the level of risk and benefit of having vitamin K through scientific research would be to conduct a prospective, randomised controlled clinical trial. This is echoed by Slattery (1994) who argues that a trial is the only way we can establish the real risks and benefits of vitamin K for those babies at low risk of HDN.

However, there remain problems with the clinical trial suggestion. In order to run such a trial, researchers need to recruit hundreds or thousands of mothers and babies. These enormous numbers are needed so that the frequency of very rare or occasional outcomes can be accurately estimated. The most efficient way of recruiting such large numbers of women is to access them through hospitals. Which, of course, means that very few of the babies in the study will be experiencing truly physiological birth - a problem which exists in many areas of midwifery practice where the research is only carried out on medically-managed birth. How can we then relate the results of such a trial to women who choose to birth 'the way nature intended'?

Other Practice Issues

It is also quite possible that issues other than the type of birth impact upon this situation. I might be going out on a limb here, but from my experience as a midwife and researcher, I would suggest it is extremely unlikely that the relationship between vitamin K levels and HDN is a simple one. I can think of several birth-related factors which might affect this issue. For instance, we should ask a woman what happened during the third stage of her labour? Was the cord cut quickly, or was the baby allowed as much time as she needed to regulate the amount of blood she would keep? What difference does this make to the amount of clotting factors and other relevant components in the baby's blood? What impact does the woman's diet during pregnancy have on the situation? And what are the possible reasons that nature intended babies to have low levels of vitamin K? Could this be an important part of our design? And for what purpose?

Experiential evidence might also help move this debate forward. I worked in a community midwifery practice at a time when the decision was made to increase the (oral) vitamin K given to breastfed babies from one to three doses. The first dose was given at birth, and the second on the seventh day postpartum. While we would generally stop seeing women on the tenth day postpartum, the other midwives and I noticed that, almost as soon as this new policy became practice, we suddenly had moderate numbers of women who were not 'discharged' from midwifery care until the 12th or 13th day. Analysis of the records showed that the majority of these women had babies who were becoming jaundiced on the 8th or 9th day - following their second dose of vitamin K. Is this coincidental? I have talked to other midwives on Internet discussion lists who have had the same experience; at least one of whom has suggested that perhaps babies cannot handle the increased prothrombin which comes about as a result of receiving vitamin K. Perhaps this would explain why babies are born with their relatively low levels?

Von Kries (1998) summarises some of the recent history of vitamin K, which in some areas was not given until the early 1980's as late-onset HDN had not been a problem until then. This in itself should raise concerns. Surely

if all babies were pathologically deficient in vitamin K, someone would have noticed in these areas sometime before the 1980's? How does the increase (in some areas) of late-onset HDN relate to the changes in the practices women experience during childbirth? Did the 'need' for routine vitamin K increase alongside increasing medicalization of birth?

Von Kries also points out that some of the babies who were diagnosed as having HDN caused by vitamin K deficiency actually have HDN caused by underlying cholestatic disease. Even if giving vitamin K to these babies could prevent the development of HDN, we should not be saying that they have HDN because they were not given vitamin K. This just confuses and confounds the issue and is a bit like saying that someone who was hit on the head by a block of wood has a headache because they weren't given an aspirin. The idea of giving vitamin K to all babies may then be akin to the suggestion that we should all take an aspirin before going outside just in case we are hit on the head by a block of wood.

Ultimately, women may want to hear this kind of midwifery model perspective and the medical model viewpoint in order to choose. This may be one way in which they can be sure their choice is informed. There is still work to be done in developing a midwifery model perspective on vitamin K, much of which involves further analysis and research into the area. Yet for those who believe in the midwifery model some relatively simple truths remain. Babies are born with pretty much everything they need. The length of their umbilical cords almost always enables them to reach their mother's breast to suckle while their placenta is still attached inside her uterus. That's not a coincidence. Neither is the way the hormones of labour help the mother and baby to fall in love with each other. For the majority of babies, birth works very well.

For the minority of babies who are at increased risk of HDN, vitamin K may well be a good idea. But a clinical trial on vitamin K carried out on low-risk babies born to women experiencing medical management may not be helpful to those women who choose out-of-hospital birth. Now is the point at which we have to ask ourselves whether we really believe that babies are born with less vitamin K than they need, or whether there might be another explanation.

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