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## Newborn care: 12 beliefs that shape practice (But should they?)

In many cases the evidence suggests they should not, especially when it comes to breastfeeding and jaundice

### IN THIS ARTICLE

**Current evidence  
on 12 commonly  
held beliefs that  
relate to:**

- Breast milk
- Breastfeeding
- Pacifier use
- Emesis
- Umbilical cord care
- Jaundice

#### Strength of recommendation (SOR)

- A Good-quality patient-oriented evidence
- B Inconsistent or limited-quality patient-oriented evidence
- C Consensus, usual practice, opinion, disease-oriented evidence, case series

**B**aby M is a 12-hour-old 40-week gestation boy, without any risk factors, whom you delivered vaginally to a first-time mother last evening. The following morning, his mother tells you that while she intends to breastfeed exclusively, she was told by a staff member in the nursery to give the baby some formula “until your milk comes in, so he won’t be so cranky.” The child appears entirely well.

The next morning, at 36-hours-of-age, Baby M still appears well, except that he is jaundiced. His bilirubin level is 15—just above the level at which phototherapy should be started, but well below the level at which an exchange transfusion is required. You order a transfer to the nursery for phototherapy.

You order IV fluids to prevent dehydration and to enhance the excretion of bilirubin. To bring his bilirubin level down more quickly, you advise the mother to temporarily stop breastfeeding and feed him a standard infant formula. The nursing staff gives the mother a breast pump to use until breastfeeding is re-started.

Forty-eight hours later Baby M is ready for discharge, and the mother has questions about infant feeding practices. You and the nurse explain to the mother that “breast milk provides complete nutrition” for her baby and that the baby will need no other nutrition until he starts solid foods at around 4 to 6 months of age.

### ■ Routine care, but was it appropriate?

The care you provided to Baby M and the advice you offered his mother might seem pretty routine, but look again. Was it appropriate?

In fact, your care—and that of the nursing staff—diverged from the evidence in 4 ways:

1. There was no need to give Baby M formula until his mother’s milk came in (Strength of Recommendation [SOR]: C).

2. It was not necessary to use IV fluids to treat jaundice in this otherwise healthy term newborn (SOR: C). IV fluids do not bring down bilirubin levels, and even with mild dehydration, the best fluid therapy is breast milk or formula.

3. There was no need to temporarily discontinue breastfeeding during phototherapy to bring Baby M’s bilirubin level down more quickly (SOR: C). While doing so may bring levels down a bit faster, it is not worth the risk that the mother may opt to discontinue breastfeeding entirely.

4. You should not have told Baby M’s mother that “breast milk provides complete nutrition.” In fact, the American Academy of Pediatrics (AAP) recommends that all breast-fed newborns receive supplemental vitamin D (SOR: B).

## 12 common beliefs that require a second look

Medicine has a long history of promoting practices like the ones described here, which are either not based upon scientific evidence or are in direct contradiction to existing evidence. Often, we do not realize how much of our advice is based on misunderstandings passed down from our teachers and absorbed from the cultural milieu in which we were raised.

In this article, we will review the most current evidence regarding 12 commonly held beliefs regarding newborn care. These beliefs relate to breast milk, breastfeeding, pacifier use, emesis, umbilical cord care, and jaundice. We've included them because these beliefs give rise to many of the common practices

we've seen in our combined 60 years in pediatrics.

In our effort to look at the evidence behind these beliefs, we encountered some limitations. For most of the recommendations we've put forth here, the best evidence that exists is category C—that is, recommendations based on consensus, usual practice, opinion, disease-oriented evidence, or case series for studies of diagnosis, treatment, prevention, or screening.

Though no randomized, controlled trials exist for most of the common practices reviewed here, we have included consensus statements from the best available sources, such as the Centers for Disease Control and Prevention and the AAP. Where appropriate, we also included clear, pathophysiologic reasoning to support each recommendation.



### **BELIEF** 1 Breast milk is a complete nutritional source for a healthy term newborn

**THE EVIDENCE:** Breast milk is not a complete nutritional source for healthy term newborns. In fact, breast milk provides the ideal source of nutrition, and it is *almost* a complete and perfect source of nutrition—with one important exception. The AAP recommends that all breast-fed newborns receive 200 IU/day of vitamin D until they are getting at least 500 mL/day of Vitamin-D formula or milk (SOR: **B**).<sup>1,2</sup>

The purpose of the supplementation is to prevent vitamin D deficiency and subsequent rickets. (Rickets does continue to occur in the United States.<sup>3,4</sup>) The AAP makes no mention in its recommendation of infant pigmentation or the expected amount of exposure to sunshine. The AAP recommends that vitamin D supplementation begin by the time the infant is 2 months old.

#### **FAST TRACK**

**An infant's dissatisfaction with the initial volume of breast milk actually increases the likelihood of successful breastfeeding**

### **BELIEF** 2 Supplementing with formula because the mother's milk hasn't come in yet is a reasonable, routine practice

**THE EVIDENCE:** Formula supplements are not necessary as routine practice (SOR: **C**).

Formula supplements are counterproductive,<sup>5</sup> taking away the primary stimulus for breast milk production—nursing at the breast. Infant dissatisfaction with the initial volume of breast milk produced actually works to the infant's advantage,<sup>5</sup> driving the child to the breast more often,

and thus increasing the likelihood of successful breastfeeding.

In certain circumstances, formula supplements can be reasonable, such as when an infant is hypoglycemic or when the baby is receiving phototherapy<sup>5</sup> and experiences excessive weight loss and becomes severely dehydrated. However, formula supplementation is not reasonable or necessary as routine practice.

CONTINUED

FAST TRACK

**Encourage a mother who does smoke to do so outside the home and to change clothes before holding her baby**

**BELIEF 3 Mothers on magnesium therapy should not breastfeed their infants**

**THE EVIDENCE:** Mothers on magnesium therapy may continue to breastfeed their babies (SOR: B).

The misguided recommendation that mothers who are being treated with magnesium therapy should not breastfeed<sup>6,7</sup> is based on an unreasonable fear that magnesium therapy can cause hypermagnesemia in breast-

fed newborns due to excessive magnesium levels in the breast milk. Supplemental magnesium, usually given intravenously to mothers with severe preeclampsia, does not cross over into breast milk in any significant amount, even when the mother continues to need intravenous magnesium after the birth of her baby.<sup>8,9</sup>

**BELIEF 4 Mothers who are positive for hepatitis B surface antigen or who are carriers for hepatitis C should not breastfeed**

**THE EVIDENCE:** Mothers who are hepatitis B surface antigen positive or carriers for hepatitis C can safely breastfeed their newborns<sup>10</sup> (SOR: C).

The idea that mothers who are infected with hepatitis B or C should not breastfeed their babies at first seems obvious to many who care for newborns, as the diseases are transmitted through blood exposure, and nipple cracks with associated blood loss are common in mothers

when they begin to breastfeed.

The hepatitis B immunization protocol for infants born to hepatitis B surface antigen positive mothers takes care of the first infectious concern.<sup>11</sup> In addition, no case of hepatitis C transmission from breast milk has ever been reported.<sup>11</sup> The Centers for Disease Control and Prevention confirms that the transmission rate of hepatitis C from infected mothers is the same whether the babies are breast- or bottle-fed.<sup>12</sup>

**BELIEF 5 Mothers who are febrile should not breastfeed**

**THE EVIDENCE:** In most cases, febrile mothers may safely breastfeed their infants (SOR: C).

The advice for mothers not to breastfeed while febrile seems intuitively true because of concern that the infection might pass over into the breast milk to the baby. This rarely happens. There are

only 4 contraindications to breastfeeding during maternal fever:<sup>10</sup>

1. Active, untreated maternal tuberculosis
2. Mothers who are human T-cell lymphotropic virus type I or II positive
3. Mothers who are HIV-positive
4. Mothers with a herpes simplex lesion on the breast.

**BELIEF 6 Mothers who smoke or drink alcohol should not breastfeed**

**THE EVIDENCE:** While this recommendation seems self-evident, the research proving harmful effects to the infant is lacking<sup>13</sup> (SOR: C).

In fact, in its most recent statement on "The Transfer of Drugs and Other Chemicals Into Human Milk," the AAP removed nicotine from a table of drugs for which adverse effects have been re-

ported in infants during breastfeeding.<sup>13</sup>

While it would be ideal if no breastfeeding mother smoked or drank alcohol, the fact of the matter is that some do. In light of this, it's wise to encourage the mother to smoke outside the home, and to change her clothes before holding her baby. In so doing, she will avoid exposing her baby to most of the effects of secondhand

smoke. In addition, while mothers who breastfeed their infants should, of course, avoid alcohol abuse, a single, occasional, small alcoholic drink is acceptable.<sup>14</sup>

**BELIEF****7****Pacifiers are bad for newborns**

**THE EVIDENCE:** It is not clear whether pacifiers are “bad” for newborns (SOR: **C**).

The belief that newborns should not have pacifiers came into being for a well-intended reason: Breastfeeding advocates were concerned that newborns would spend too much time sucking on the pacifier and too little time sucking at the breast, undermining the mother’s ability to breastfeed successfully.<sup>15</sup>

Consensus on the matter, though, is lacking. The UNICEF-World Health Organization Baby-Friendly Initiative, for instance, recommends that pacifiers not

be used.<sup>16</sup> The AAP, however, advises that pacifiers can be used once breastfeeding is well established.<sup>17</sup>

The research is also mixed. On the one hand, new evidence indicates that pacifier use may decrease the incidence of sudden infant death syndrome.<sup>18</sup> On the other hand, pacifier use for longer than 48 months has been linked to orthodontic problems and dental caries.<sup>19,20</sup>

Thus, while prolonged pacifier use may be harmful to dental hygiene, newer evidence allows that pacifiers may be acceptable in the first few years during breastfeeding.

**BELIEF****8****Newborn emesis is an indication for a formula change**

**THE EVIDENCE:** No literature supports the belief that it is appropriate to change an infant’s formula in response to emesis in the first 2 weeks of life (SOR: **C**).

The overwhelming majority of vomiting episodes in newborns have no accompanying medical problem.<sup>21</sup> A 2002 study by Miyazawa et al that looked at more than 900 infants showed more than 47% of Japanese infants ≤1 month of age had daily occurrences of regurgitation or emesis without having an underlying medical disorder.<sup>22</sup>

Newborns vomit for any number of benign reasons, including swallowed maternal blood or overfeeding.<sup>21</sup> Gastroesophageal reflux can be a manifestation of milk allergy. However, a newborn infant is too young to manifest an antibody response to the protein in the formula. Therefore, switching formula because of vomiting due to milk allergy is not prudent in the first 10 to 14 days of life, the length of time needed to mount an antibody response to an antigen<sup>23</sup> and thus, the length of time needed to become allergic to an infant formula.

**FAST TRACK**

**Pacifiers may be acceptable in the first few years during breastfeeding**

**BELIEF****9****Umbilical cord care can prevent umbilical cord infections**

**THE EVIDENCE:** There is no definitive evidence regarding the best method for preventing umbilical cord infections among babies living in developed countries (SOR: **C**).

In fact, there is no evidence that any topical preparation, be it a dye, an antiseptic, or an antibiotic, is any better at prevent-

ing umbilical cord infections than keeping the area clean and dry.<sup>24</sup> Umbilical cord infections such as omphalitis or tetanus neonatorum are more common in developing countries than high-income countries.<sup>16</sup> In developed countries, cord care with topical antimicrobial agents is frequently unnecessary.<sup>24</sup>

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Infants who were delivered at home and those who room in with their mothers have no need of a topical antimicrobial therapy. If an infant is kept in a hospital nursery or intensive care unit, topical antimicrobial therapy to the cord may have some benefit in keeping down cord colo-

nization with pathological bacteria such as methicillin-resistant *Staphylococcus aureus*.<sup>24</sup>

Umbilical cord infections sometimes occur even when the cord area is kept clean and dry,<sup>25</sup> so healthcare providers must be attentive to signs of possible infection.<sup>16</sup>

**BELIEF**  
**10** **It's easy to spot when a newborn is jaundiced**

**THE EVIDENCE:** Jaundice is actually difficult to detect in darkly pigmented babies,<sup>5</sup> and in babies sent home within 24 hours of birth, because bilirubin levels reach maximum levels between the third and fourth days of life<sup>26</sup> (SOR: **C**).

Years ago, when infants stayed longer in the nursery, doctors had the chance to see them when their bilirubin level was highest and when the babies were most jaundiced. The current emphasis on early discharge does not allow this practice.

The AAP recommends clinical assessment of a newborn's state of jaun-

dice and that a bilirubin level be obtained whenever a physician is in doubt about the degree of clinical jaundice. The AAP also recommends that physicians consider obtaining a routine screening bilirubin in all newborns at the time of hospital discharge even if, by clinical assessment, the child is not jaundiced.<sup>5</sup> (The AAP stopped short, though, of saying that such a screening test is required.) The AAP made these recommendations because of an increasing concern that the incidence of kernicterus in America is rising.<sup>27</sup>

**BELIEF**  
**11** **All infants who require phototherapy need IV fluids to prevent dehydration and enhance excretion of bilirubin**

**THE EVIDENCE:** Unless the baby is clinically dehydrated, IV fluid therapy for infants under phototherapy is not needed<sup>28</sup> (SOR: **C**).

Though IV fluid therapy is commonly used to increase the excretion of bilirubin and combat dehydration, the research tells us that IV fluids do not bring down bilirubin levels and that

even with mild dehydration, the best fluid therapy is breast milk or formula because it inhibits the enterohepatic circulation of bilirubin.<sup>5</sup> Intravenous fluid therapy should be reserved for jaundiced newborns with moderate to severe dehydration, or those with mild dehydration<sup>5</sup> who are not able to take fluid by mouth.

**BELIEF**  
**12** **Breast-milk jaundice is best treated by stopping breastfeeding for 24 to 48 hours**

**THE EVIDENCE:** Breastfeeding should not be discontinued as a way to treat breast-milk jaundice (SOR: **C**).

In fact, breastfeeding should not be discontinued for jaundice due to any cause, as demonstrated in the opening scenario, unless you believe a baby is at risk of requiring an exchange transfusion. The need

for phototherapy alone is not a sufficient reason to discontinue breastfeeding.<sup>5</sup>

Breast-milk jaundice is a common problem facing parents and physicians, but it is not a disease and does not represent an abnormality in and of itself. Rather, this normal physiologic condition gains its importance only in that it must be distinguished from pathological

**FAST TRACK**

**You should consider a routine screening bilirubin in all newborns, even if the child is not visibly jaundiced**

causes of newborn jaundice.<sup>29</sup> Breast-milk jaundice is believed to affect 1%<sup>21</sup> to 33%<sup>30</sup> of breastfed infants.

One treatment measure—to stop breastfeeding—began, in part, as a cost-effective way to diagnose breast-milk jaundice.<sup>31</sup> Rechecking the bilirubin 24 to 48 hours after breastfeeding is discontinued would reveal a significant drop in

the bilirubin level, confirming the diagnosis of breast-milk jaundice<sup>32</sup> and obviating the need for testing for more serious medical illness.

The consequence of this misguided treatment approach, ie, discontinuing breastfeeding, is that some mothers are more likely to stop breastfeeding altogether.<sup>33</sup> ■

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