

# GUIDELINE

Protecting, promoting and supporting  
**BREASTFEEDING IN FACILITIES**  
providing maternity and newborn services



**2017**



**World Health  
Organization**

# GUIDELINE:

Protecting, promoting and supporting  
**BREASTFEEDING IN FACILITIES**  
providing maternity and newborn services

Guideline: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services.

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# Contents

<b>Publication history</b>	<b>iv</b>
<b>Acknowledgements</b>	<b>iv</b>
Financial support	v
<b>Executive summary</b>	<b>vi</b>
Purpose of the guideline	vii
Guideline development methodology	viii
Available evidence	viii
Recommendations	ix
Remarks	x
Research gaps	xi
Plans for updating the guideline	xii
<b>Introduction</b>	<b>1</b>
Objectives	2
Scope	2
Target audience	2
Population of interest	3
Priority questions	3
Outcomes of interest	4
Presentation of the recommendations	4
Description of the interventions	5
<b>Evidence and recommendations</b>	<b>8</b>
Summary of considerations common to all recommendations	8
Immediate support to initiate and establish breastfeeding	9
Feeding practices and additional needs of infants	16
Creating an enabling environment	22
<b>Implementation of the guideline</b>	<b>28</b>
Implementation considerations	28
Regulatory considerations	28
Ethical and equity considerations	28
Monitoring and evaluation of guideline implementation	29
<b>Research gaps</b>	<b>30</b>
<b>Guideline development process</b>	<b>31</b>
WHO steering group	31
Guideline development group	31
External resource persons	31
Systematic review teams	31
Management of conflicts of interests	32
Identification of priority questions and outcomes	33

Evidence identification and retrieval	33
Quality assessment and grading of evidence	33
Formulation of recommendations	34
Consensus decision-making rules and procedures	35
Document preparation and peer-review	35
<b>Dissemination and plans for updating</b>	<b>36</b>
Dissemination	36
Plans for updating the guideline	36
<b>References</b>	<b>37</b>
<b>Annex 1. Question in population, intervention, comparator, outcomes (PICO) format</b>	<b>52</b>
A. Immediate support to initiate and establish breastfeeding	52
B. Feeding practices and additional needs of infants	55
C. Creating an enabling environment	57
<b>Annex 2. Systematic review details</b>	<b>61</b>
A. Immediate support to initiate and establish breastfeeding	61
B. Feeding practices and additional needs of infants	65
C. Creating an enabling environment	69
<b>Annex 3. GRADE summary of findings tables</b>	<b>72</b>
A. Immediate support to initiate and establish breastfeeding	72
B. Feeding practices and additional needs of infants	83
C. Creating an enabling environment	91
<b>Annex 4. GRADE-CERQual summary of qualitative findings tables on values and preferences of mothers</b>	<b>97</b>
A. Immediate support to initiate and establish breastfeeding	97
B. Feeding practices and additional needs of infants	101
C. Creating an enabling environment	103
<b>Annex 5. GRADE-CERQual summary of qualitative findings tables on acceptability among health workers and stakeholders</b>	<b>105</b>
A. Immediate support to initiate and establish breastfeeding	105
B. Feeding practices and additional needs of infants	109
C. Creating an enabling environment	111
<b>Annex 6. WHO steering group</b>	<b>114</b>
<b>Annex 7. WHO guideline development group</b>	<b>115</b>
<b>Annex 8. External resource persons</b>	<b>116</b>
<b>Annex 9. Systematic reviews and authors</b>	<b>117</b>
<b>Annex 10. Peer-reviewers</b>	<b>119</b>
<b>Annex 11. WHO Secretariat</b>	<b>120</b>

## Publication history

This guideline, *Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services* is an update of, and supersedes, the Ten Steps to Successful Breastfeeding, as published in a joint statement by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) *Protecting, promoting and supporting breastfeeding: the special role of maternity services* in 1989. This complements the operational guidance of the *Innocenti Declaration on the protection, promotion and support of breastfeeding*, published in 1990 and the *Innocenti Declaration 2005 on infant and young child feeding*, published in 2005. It also complements some of the implementation guidance of the *Baby-friendly Hospital Initiative*, published in 1991 and updated in 2009 (only inasmuch as aspects of the Ten Steps to Successful Breastfeeding remain unchanged).

In order to produce this guideline, the rigorous procedures described in the *WHO handbook for guideline development* were followed. This document presents the direct and indirect evidence, as well as the qualitative reviews that served to inform the recommendations herein. It expands the sections on dissemination as well as those on ethical and equity considerations, summarized in the most recent reviews those on these topics.

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# Guideline<sup>1</sup>: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services

## Executive summary

Breastfeeding is the cornerstone of child survival, nutrition and development and maternal health. The World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of life, followed by continued breastfeeding with appropriate complementary foods for up to 2 years or beyond.<sup>2</sup> In 2012, the World Health Assembly Resolution 65.6 endorsed a *Comprehensive implementation plan on maternal, infant and young child nutrition*,<sup>3</sup> specifying six global nutrition targets for 2025, one of which is to increase the rate of exclusive breastfeeding in the first 6 months up to at least 50%.

In order to support women and optimize the chances of breastfeeding in line with WHO's recommendations, WHO and the United Nations Children's Fund (UNICEF) published a joint statement in 1989 on *Protecting, promoting and supporting breastfeeding: the special role of maternity services*,<sup>4</sup> which listed Ten Steps to Successful Breastfeeding. The Ten Steps were re-emphasized in the *Innocenti Declaration on the protection, promotion and support of breastfeeding*, adopted in Florence, Italy in 1990,<sup>5</sup> and the *Innocenti Declaration 2005 on infant and young child feeding*, published in 2005.<sup>6</sup> They became part of the *Baby-friendly Hospital Initiative*, published in 1991, and the updated version in 2009.<sup>7</sup>

The *Baby-friendly Hospital Initiative* provides guidance on the implementation, training, monitoring, assessment and re-assessment of the Ten Steps to Successful Breastfeeding and the *International Code of Marketing of Breast-milk Substitutes*,<sup>8</sup> a set of recommendations to regulate the marketing of breast-milk substitutes, feeding bottles and teats adopted by the 34th World Health Assembly (WHA) in 1981, and its *subsequent related WHA resolutions*.<sup>9</sup> The *Baby-friendly Hospital Initiative* has since been shown to positively impact breastfeeding outcomes as a whole, and with a dose-response relationship between the number of interventions the mother is exposed to and the likelihood of improved breastfeeding outcomes.

This guideline examines each of the practices in the Ten Steps to Successful Breastfeeding, in order to bring together evidence and considerations to inform practice. The scope of the guideline is limited to specific practices that could be implemented in facilities providing maternity and newborn services to protect, promote and support breastfeeding.

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1 This publication is a World Health Organization (WHO) guideline. A WHO guideline is any document, whatever its title, containing WHO recommendations about health interventions, whether they be clinical, public health or policy interventions. A standard guideline is produced in response to a request for guidance in relation to a change in practice, or controversy in a single clinical or policy area, and is not expected to cover the full scope of the condition or public health problem. A recommendation provides information about what policy-makers, health-care providers or patients should do. It implies a choice between different interventions that have an impact on health and that have ramifications for the use of resources. All publications containing WHO recommendations are approved by the WHO Guidelines Review Committee.

2 Global strategy for infant and young child feeding. Geneva: World Health Organization; 2003 (<http://apps.who.int/iris/bitstream/10665/42590/1/9241562218.pdf>).

3 Resolution WHA65.6. Comprehensive implementation plan on maternal, infant and young child nutrition. In: Sixty-fifth World Health Assembly, Geneva, 21–26 May 2012. Resolutions and decisions, annexes. Geneva: World Health Organization; 2012:12–13 (WHA65/2012/REC/1; [http://www.who.int/nutrition/topics/WHA65.6\\_resolution\\_en.pdf](http://www.who.int/nutrition/topics/WHA65.6_resolution_en.pdf)).

4 Protecting, promoting and supporting breast-feeding: the special role of maternity services: a joint WHO/UNICEF statement. Geneva: World Health Organization; 1989 (<http://apps.who.int/iris/bitstream/10665/39679/1/9241561300.pdf>).

5 Innocenti Declaration on the protection, promotion and support of breastfeeding. New York: United Nations Children's Fund; 1990 ([http://www.who.int/about/agenda/health\\_development/events/innocenti\\_declaration\\_1990.pdf](http://www.who.int/about/agenda/health_development/events/innocenti_declaration_1990.pdf)).

6 Innocenti Declaration 2005 on infant and young child feeding, 22 November 2005, Florence, Italy. Geneva: United Nations Children's Fund; 2005 ([http://www.unicef.org/nutrition/files/innocenti2005m\\_FINAL\\_ARTWORK\\_3\\_MAR.pdf](http://www.unicef.org/nutrition/files/innocenti2005m_FINAL_ARTWORK_3_MAR.pdf)).

7 World Health Organization, United Nations Children's Fund. Baby-friendly Hospital Initiative: revised, updated and expanded for integrated care. Geneva: World Health Organization; 2009 (<http://apps.who.int/iris/handle/10665/43593>).

8 International Code of Marketing of Breast-milk Substitutes. Geneva: World Health Organization; 1981 ([http://www.who.int/nutrition/publications/code\\_english.pdf](http://www.who.int/nutrition/publications/code_english.pdf)).

9 The International Code of Marketing of Breast-milk Substitutes: frequently asked questions 2017 update. Geneva: World Health Organization; 2017 (WHO/NMH/NHD/17.1; <http://apps.who.int/iris/bitstream/10665/254911/1/WHO-NMH-NHD-17.1-eng.pdf?ua=1>).



This guideline does not aim to be a comprehensive guide on all potential interventions that can protect, promote and support breastfeeding. For instance, it will not discuss breastfeeding support beyond the stay at the facility providing maternity and newborn services, such as community-based practices, peer support or support for breastfeeding in the workplace. Neither will it review the articles and provisions of the *International Code of Marketing of Breast-milk Substitutes* and its *subsequent related WHA resolutions*.

This guideline complements interventions presented in the *Essential newborn care course*,<sup>1</sup> *Kangaroo mother care: a practical guide*,<sup>2</sup> *Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice*<sup>3</sup> and the *Standards for improving quality of maternal and newborn care in health facilities*<sup>4</sup> and does not supersede or replace them.

An implementation guide that will encompass the recommendations included in this guideline, the *International Code of Marketing of Breast-milk Substitutes* and the *Baby-friendly Hospital Initiative* has been developed by WHO and UNICEF and will be published separately in *Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services: the revised Baby-friendly Hospital Initiative 2017*.

## Purpose of the guideline

This guideline provides global, evidence-informed recommendations on protection, promotion and support for breastfeeding in facilities that provide maternity and newborn services, as a public health intervention, to protect, promote and support optimal breastfeeding practices, and improve nutrition, health and development outcomes.

The recommendations in this guideline are intended for a wide audience, including policy-makers, their expert advisers, and technical and programme staff at government institutions and organizations involved in the design, implementation and scaling-up of programmes for infant and young child feeding. The guideline may also be used by health-care professionals, clinicians, universities and training institutions, to disseminate information.

This guideline will affect women delivering in hospitals,<sup>5</sup> maternity facilities<sup>6</sup> or other facilities providing maternity and newborn services, and their infants. These include mother–infant pairs with term infants, as well as those with preterm, low–birth–weight or sick infants and those admitted to neonatal intensive care units. There is further guidance for low–birth–weight infants from the WHO *Guidelines on optimal feeding of low birth-weight infants in low- and middle-income countries*.<sup>7</sup> Infants who are, or who have mothers who are, living with HIV can, in addition, be referred to current guidelines on HIV and infant feeding.

This guideline aims to help WHO Member States and their partners to make evidence-informed decisions on the appropriate actions in their efforts to achieve the *Sustainable Development Goals*,<sup>8</sup> and implement the *Comprehensive implementation plan on maternal, infant and young child nutrition*,<sup>9</sup> the *Global strategy for women's, children's and adolescents' health (2016–2030)*<sup>10</sup> and the *Global strategy for infant and young child feeding*.<sup>11</sup>

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1 Essential newborn care course. Geneva: World Health Organization; 2010 ([http://www.who.int/maternal\\_child\\_adolescent/documents/newborncare\\_course/en/](http://www.who.int/maternal_child_adolescent/documents/newborncare_course/en/)).

2 Kangaroo mother care: a practical guide. Geneva: World Health Organization; 2003 (<http://apps.who.int/iris/bitstream/10665/42587/1/9241590351.pdf>).

3 World Health Organization, United Nations Population Fund, United Nations Children's Fund. Integrated management of pregnancy and childbirth. Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice, 3rd ed. Geneva: World Health Organization; 2015 (<http://apps.who.int/iris/bitstream/10665/249580/1/9789241549356-eng.pdf?ua=1>).

4 Standards for improving quality of maternal and newborn care in health facilities. Geneva: World Health Organization; 2016 (<http://apps.who.int/iris/bitstream/10665/249155/1/9789241511216-eng.pdf?ua=1>).

5 A hospital is defined as any health facility with inpatient beds, supplies and expertise to treat a woman or newborn with complications.

6 A maternity facility is defined as any health centre with beds or a hospital where women and their newborns receive care during childbirth and delivery, and emergency first aid. (This definition and the one above have been taken from Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice. Geneva: World Health Organization; 2015 (<http://apps.who.int/iris/bitstream/10665/249580/1/9789241549356-eng.pdf?ua=1>)).

7 Guidelines on optimal feeding of low birth-weight infants in low- and middle-income countries. Geneva: World Health Organization; 2011 ([http://www.who.int/maternal\\_child\\_adolescent/documents/9789241548366.pdf](http://www.who.int/maternal_child_adolescent/documents/9789241548366.pdf)).

8 United Nations Sustainable Development Knowledge Platform. Sustainable Development Goals (<https://sustainabledevelopment.un.org/sdgs>).

9 Resolution WHA65.6. Comprehensive implementation plan on maternal, infant and young child nutrition. In: Sixty-fifth World Health Assembly, Geneva, 21–26 May 2012. Resolutions and decisions, annexes. Geneva: World Health Organization; 2012:12–13 (WHA65/2012/REC/1; [http://www.who.int/nutrition/topics/WHA65.6\\_resolution\\_en.pdf](http://www.who.int/nutrition/topics/WHA65.6_resolution_en.pdf)).

10 Global strategy for women's, children's and adolescents' health (2016–2030). Survive, thrive transform. Geneva: World Health Organization; 2015 ([http://www.who.int/pmnch/media/events/2015/gs\\_2016\\_30.pdf](http://www.who.int/pmnch/media/events/2015/gs_2016_30.pdf)).

11 Global strategy for infant and young child feeding. Geneva: World Health Organization; 2003 (<http://apps.who.int/iris/bitstream/10665/42590/1/9241562218.pdf>).

This document is not intended as a comprehensive operational manual or implementation tool for the *Baby-friendly Hospital Initiative*, the *International Code of Marketing of Breast-milk Substitutes* or other breastfeeding protection, promotion and support programmes.

## Guideline development methodology

WHO developed the present evidence-informed recommendations using the procedures outlined in the *WHO handbook for guideline development*.<sup>1</sup> The steps in this process included: (i) identification of priority questions and critical outcomes; (ii) retrieval of the evidence; (iii) assessment and synthesis of the evidence; (iv) formulation of recommendations, including research priorities; and planning for (v) dissemination; (vi) implementation, equity and ethical considerations; and (vii) impact evaluation and updating of the guideline. The Grading of Recommendations Assessment, Development and Evaluation (*GRADE*)<sup>2</sup> methodology was followed, to prepare evidence profiles related to preselected topics, based on up-to-date systematic reviews. The Developing and Evaluating Communication Strategies to support Informed Decisions and Practice based on Evidence (*DECIDE*)<sup>3</sup> framework, an evidence-to-decision tool that includes intervention effects, values, resources, equity, acceptability and feasibility criteria, was used to guide the formulation of the recommendations by the guideline development group.

The scoping of the guideline and the prioritization of the outcomes was done by the guideline development group – nutrition actions 2016–2018, on 11–13 April 2016, in Geneva, Switzerland. The development and finalization of the evidence-informed recommendations were done in a meeting held in Florence, Italy on 7–11 November 2016. Three options for types of recommendations were agreed, namely: (i) recommended; (ii) context-specific recommendation (recommended only in specific contexts); and (iii) not recommended. Fourteen experts served as technical peer-reviewers of the draft guideline.

## Available evidence

The available evidence included 22 systematic reviews that followed the procedures of the *Cochrane handbook for systematic reviews of interventions*<sup>4</sup> and assessed the effects of interventions to protect, promote and support breastfeeding in facilities providing maternity and newborn services. All studies compared a group of participants who received advice on, or practised, one of the behaviours described in the Ten Steps to Successful Breastfeeding, which appeared in the 1989 joint statement by WHO and UNICEF on *Protecting, promoting and supporting breastfeeding: the special role of maternity services*,<sup>5</sup> to a group that received a placebo or usual care, or did not practise the intervention. For the studies to be included in the reviews, co-interventions other than the practices of interest had to have been used for both the control and intervention study arms. The overall quality of the available evidence varied from very low to high, for the critical outcomes of breastfeeding rates, nutrition or health in the different interventions.<sup>6</sup>

Additional syntheses of qualitative evidence served to assess the values and preferences of mothers on the benefits and harms associated with each intervention and the acceptability of each of the interventions to health workers. The findings of the qualitative reviews were appraised using the GRADE confidence in the evidence from reviews of qualitative research (*GRADE-CERQual*)<sup>7</sup> approach. Overall confidence in the evidence from reviews of qualitative research was based on four components: (i) methodological limitations of the individual studies; (ii) adequacy of the data; (iii) coherence of the evidence; and (iv) relevance of the individual studies to the review findings. The overall confidence in the synthesis of qualitative evidence was very low to

1 WHO handbook for guideline development, 2nd ed. Geneva: World Health Organization; 2014 ([http://www.who.int/kms/handbook\\_2nd\\_ed.pdf?ua=1](http://www.who.int/kms/handbook_2nd_ed.pdf?ua=1)).

2 GRADE (<http://www.gradeworkinggroup.org/>).

3 DECIDE 2011–2015. Evidence to Decision (EtD) framework (<http://www.decide-collaboration.eu/evidence-decision-etc-framework/>).

4 Higgins J, Green S, editors. Cochrane handbook for systematic reviews of interventions. Version 5.10. York: The Cochrane Collaboration; 2011 (<http://handbook-5-1.cochrane.org/>).

5 Protecting, promoting and supporting breast-feeding: the special role of maternity services: a joint WHO/UNICEF statement. Geneva: World Health Organization; 1989 (<http://apps.who.int/iris/bitstream/10665/39679/1/9241561300.pdf>).

6 The GRADE approach defines the overall rating of confidence in the body of evidence from systematic reviews as the extent to which one can be confident of the effect estimates across all outcomes considered critical to the recommendation. Each of the critical outcomes had a confidence rating based on the quality of evidence – high, moderate, low or very low. High-quality evidence indicates confidence that the true effect lies close to that of the estimate of the effect. Moderate-quality evidence indicates that moderate confidence in the effect estimate and that the true estimate is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different. Low-quality evidence indicates that confidence in the effect estimate is limited and the true effect may be substantially different from the estimate of the effect. Very low-quality evidence indicates very little confidence in the effect estimate and the true effect is likely to be substantially different from the estimate of effect.

7 GRADE-CERQual. Confidence in the evidence from reviews of qualitative research (<http://www.cerqual.org/>).

moderate for maternal values and preferences and very low to moderate for health-facility staff acceptability.<sup>1</sup> A search of the published literature was also performed to inform on resource use, feasibility and equity and human rights issues for each of the interventions.

A decision-making framework was used to promote deliberations and consensus decision-making. This included the following considerations: (i) the quality of the evidence across outcomes critical to decision-making; (ii) the balance of benefits and harms; (iii) values and preferences related to the recommended intervention in different settings and for different stakeholders, including the populations at risk; (iv) the acceptability of the intervention among key stakeholders; (v) resource implications for programme managers; (vi) equity; and (vii) the feasibility of implementation of the intervention.

## Recommendations

### Immediate support to initiate and establish breastfeeding

1. Early and uninterrupted skin-to-skin contact between mothers and infants should be facilitated and encouraged as soon as possible after birth (*recommended, moderate-quality evidence*).
2. All mothers should be supported to initiate breastfeeding as soon as possible after birth, within the first hour after delivery (*recommended, high-quality evidence*).
3. Mothers should receive practical support to enable them to initiate and establish breastfeeding and manage common breastfeeding difficulties (*recommended, moderate-quality evidence*).
4. Mothers should be coached on how to express breast milk as a means of maintaining lactation in the event of their being separated temporarily from their infants (*recommended, very low-quality evidence*).
5. Facilities providing maternity and newborn services should enable mothers and their infants to remain together and to practise rooming-in throughout the day and night. This may not apply in circumstances when infants need to be moved for specialized medical care (*recommended, moderate-quality evidence*).
6. Mothers should be supported to practise responsive feeding as part of nurturing care (*recommended, very low-quality evidence*).

### Feeding practices and additional needs of infants

7. Mothers should be discouraged from giving any food or fluids other than breast milk, unless medically indicated (*recommended, moderate-quality evidence*).
8. Mothers should be supported to recognize their infants' cues for feeding, closeness and comfort, and enabled to respond accordingly to these cues with a variety of options, during their stay at the facility providing maternity and newborn services (*recommended, high-quality evidence*).
9. For preterm infants who are unable to breastfeed directly, non-nutritive sucking and oral stimulation may be beneficial until breastfeeding is established (*recommended, low-quality evidence*).
10. If expressed breast milk or other feeds are medically indicated for term infants, feeding methods such as cups, spoons or feeding bottles and teats may be used during their stay at the facility (*recommended, moderate-quality evidence*).
11. If expressed breast milk or other feeds are medically indicated for preterm infants, feeding methods such as cups or spoons are preferable to feeding bottles and teats (*recommended, moderate-quality evidence*).

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<sup>1</sup> According to the GRADE-CERQual, high confidence indicates that it is highly likely that the review finding is a reasonable representation of the phenomenon of interest. Moderate confidence indicates that it is likely that the review finding is a reasonable representation of the phenomenon of interest. Low confidence indicates that it is possible that the review finding is a reasonable representation of the phenomenon of interest. Very low confidence indicates that it is not clear whether the review finding is a reasonable representation of the phenomenon of interest.

## Creating an enabling environment

12. Facilities providing maternity and newborn services should have a clearly written breastfeeding policy that is routinely communicated to staff and parents (*recommended, very low-quality evidence*).
13. Health-facility staff who provide infant feeding services, including breastfeeding support, should have sufficient knowledge, competence and skills to support women to breastfeed (*recommended, very low-quality evidence*).
14. Where facilities provide antenatal care, pregnant women and their families should be counselled about the benefits and management of breastfeeding (*recommended, moderate-quality evidence*).
15. As part of protecting, promoting and supporting breastfeeding, discharge from facilities providing maternity and newborn services should be planned for and coordinated, so that parents and their infants have access to ongoing support and receive appropriate care (*recommended, low-quality evidence*).

This guideline is an update of, and supersedes, the Ten Steps to Successful Breastfeeding, as published in a joint statement by WHO and UNICEF in 1989, [Protecting, promoting and supporting breastfeeding: the special role of maternity services](#). It complements the operational guidance of the [Innocenti Declaration on the protection, promotion and support of breastfeeding](#), adopted in Florence, Italy in 1990, and the [Innocenti Declaration 2005 on infant and young child feeding](#), published in 2005. It also complements some of the implementation guidance of the [Baby-friendly Hospital Initiative](#), published in 1991 and updated in 2009 (only inasmuch as aspects of the Ten Steps to Successful Breastfeeding remain unchanged).

## Remarks

The remarks in this section are points to consider regarding implementation of the recommendations, based on the discussions of the guideline development group and the external experts.

- Focused and optimal immediate support to initiate and establish breastfeeding in the first hours and days of life have positive effects far beyond the stay at the facilities providing maternity and newborn services.
- Although there is evidence of benefit for immediate and uninterrupted skin-to-skin contact starting at less than 10 minutes after delivery, this practice can often be started much sooner, by the second or third minute after delivery, while continued assessment, drying and suctioning (if needed) are done while the infant is experiencing skin-to-skin contact. Uninterrupted skin-to-skin contact ideally lasts for more than an hour, and longer periods, when well tolerated by both mother and infant, should be encouraged.
- During early skin-to-skin contact and for at least the first 2 hours after delivery, sensible vigilance and safety precautions should be taken, so that health-care personnel can observe for, assess and manage any signs of distress.
- Early initiation of breastfeeding has been shown to have positive effects when done within the first hour after delivery. Among healthy term infants, feeding cues from the infant may be apparent within the first 15–20 minutes after birth, or may not be apparent until later.
- Because there is a dose–response effect, in that earlier initiation of breastfeeding results in greater benefits, mothers who are not able to initiate breastfeeding during the first hour after delivery should still be supported to breastfeed as soon as they are able. This may be relevant to mothers that deliver by caesarean section, after an anaesthetic, or those who have medical instability that precludes initiation of breastfeeding within the first hour after birth.
- Mothers should be enabled to achieve effective breastfeeding, including being able to position and attach their infants to the breast, respond to their infants' hunger and feeding cues, and express breast milk when required.
- Expression of breast milk is often a technique used to stimulate attachment and effective suckling during the establishment of breastfeeding, not only when mothers and infants are separated.

- Mothers of infants admitted to the neonatal intensive care unit should be sensitively supported to enable them to have skin-to-skin contact with their infants, recognize their infants' behaviour cues, and effectively express breast milk soon after birth.
- Additional foods and fluids apart from breast milk should only be given when medically acceptable reasons exist. Lack of resources, staff time or knowledge are not justifications for the use of early additional foods or fluids.
- Proper guidance and counselling of mothers and other family members enables them to make informed decisions on the use or avoidance of pacifiers and/or feeding bottles and teats until the successful establishment of breastfeeding.
- Supporting mothers to respond in a variety of ways to behavioural cues for feeding, comfort or closeness enables them to build caring, nurturing relationships with their infants and increase their confidence in themselves, in breastfeeding and in their infants' growth and development. Ways to respond to infant cues include breastfeeding, skin-to-skin contact, cuddling, carrying, talking, singing and so forth.
- There should be no promotion of breast-milk substitutes, feeding bottles and teats, pacifiers or dummies in any part of facilities providing maternity and newborn services, or by any of the staff.
- Health facilities and their staff should not give feeding bottles and teats or other products within the scope of the [International Code of Marketing of Breast-milk Substitutes](#) and its [subsequent related WHA resolutions](#), to breastfeeding infants.
- Creating an enabling environment for breastfeeding includes having policies and guidelines that underpin the quality standards for promoting, protecting and supporting breastfeeding in facilities providing maternity and newborn services. These policies and guidelines include provisions of the [International Code of Marketing of Breast-milk Substitutes](#) and its [subsequent related WHA resolutions](#).
- Relevant training for health workers is essential to enable quality standards to be implemented effectively according to their roles.
- Parents should be offered antenatal breastfeeding education that is tailored to their individual needs and sensitively given and considers their social and cultural context. This will prepare them to address challenges they may face.
- Mothers should be prepared for discharge by ensuring that they can feed and care for their infants and have access to continuing breastfeeding support. The breastfeeding support in the succeeding days and weeks after discharge will be crucial in identifying and addressing early breastfeeding challenges that occur.
- Minimizing disruption to breastfeeding during the stay in the facilities providing maternity and newborn services will require health-care practices that enable a mother to breastfeed for as much, as frequently and for as long as she wishes.
- Coordination of clinical systems in facilities providing maternity and newborn services, so that standards of care for breastfeeding support are coordinated across the obstetric, midwifery and paediatric services, helps develop services that improve the outcomes for those using them.

## Research gaps

Discussions between the members of the WHO guideline development group and the external resource group highlighted the limited evidence available in some knowledge areas, meriting further research.

- More studies across different regions, countries, population groups (e.g. by income levels, educational levels, cultural and ethnic backgrounds) and contexts are required, in order to adequately and sensitively protect, promote and support breastfeeding.

- The available evidence about breastfeeding education and training of health workers in the knowledge, attitudes, skills and competence needed to work effectively with breastfeeding parents is limited and of poor quality. Further research is required to compare different durations, content (including clinical and practical skills) and modes of training delivery, in order to meet minimum competency to address common breastfeeding challenges.
- More research is needed on the advanced competencies required to address persistent or complex problems.
- The involvement of family in education, counselling and information efforts about the benefits and management of breastfeeding is also understudied.
- Research is needed on skin-to-skin contact among less healthy or unstable parent–infant pairs, taking into account the stability of the individuals and the pairs. More research is needed on the time of initiation of the intervention, the effects of the intervention on the microbiome and long-term neurodevelopmental and health outcomes.
- More research on methods of implementation for safe skin-to-skin contact and rooming-in practices would be valuable in operationalization, such as the timing and frequency of assessments and methods to decrease sentinel events (such as sudden infant collapse or falls).
- Implementation research on responsive feeding, cue-based demand feeding, or infant-led feeding would bring more clarity to the wider process of commencing breastfeeding, readiness to suckle, hunger and feeding cues, and the adequacy of information given to parents. Additional outcomes besides breastfeeding rates include maternal outcomes (for instance, exhaustion, stress, sleep adequacy, trauma, anaesthesia, breastfeeding satisfaction, self-confidence) and infant outcomes (for instance, attachment, sudden infant death, infection and other elements of security and safety).
- Medical requirements for and effects of additional feeds on infants and mothers need further research. Analysis of these effects by maternal condition, infant condition, mode of delivery, prematurity or birth weight, timing, types of food and fluids and other factors may be useful.
- More robust studies on non-nutritive sucking and oral stimulation among preterm infants is needed.
- More high-quality research is needed on the practices and implementation of the recommendations in facilities providing maternity and newborn services, as the basis for experience and observational studies, especially for recommendations for which the available evidence is of low or very low quality.

## Plans for updating the guideline

The WHO steering group will continue to follow research developments in the area of protection, promotion and support of breastfeeding in facilities providing maternity and newborn services, particularly for questions in which the quality of evidence was found to be low or very low. If the guideline merits an update, or if there are concerns about the validity of the guideline, the Department of Nutrition for Health and Development, in collaboration with other WHO departments or programmes, will coordinate the guideline update, following the formal procedures of the [WHO handbook for guideline development](#).<sup>1</sup>

As the guideline nears the 10-year review period, the Department of Nutrition for Health and Development at the WHO headquarters in Geneva, Switzerland, along with its internal partners, will be responsible for conducting a search for appropriate new evidence.

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1 WHO handbook for guideline development, 2nd ed. Geneva: World Health Organization; 2014 ([http://www.who.int/kms/handbook\\_2nd\\_ed.pdf?ua=1](http://www.who.int/kms/handbook_2nd_ed.pdf?ua=1)).

# Guideline: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services

## Introduction

Evidence on the importance of breastfeeding as the cornerstone of child survival, nutrition and development and maternal health continues to increase. A series of systematic reviews have shown the effect of breastfeeding in decreasing child infections and dental malocclusion and increasing intelligence. Mothers who breastfeed are at decreased risk of breast cancer. Improving breastfeeding rates globally can prevent over 800 000 deaths in children under 5 years of age and 20 000 deaths from breast cancer annually. Not breastfeeding is associated with annual economic losses of over US\$ 300 billion worldwide or 0.5% of the world's gross income (1–13).

The World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of life, followed by continued breastfeeding with appropriate complementary foods for up to 2 years or beyond (14–16). In 2012, the World Health Assembly Resolution 65.6 endorsed a *Comprehensive implementation plan on maternal, infant and young child nutrition* (15), specifying six global nutrition targets for 2025, one of which is to increase the rate of exclusive breastfeeding in the first 6 months up to at least 50% (17). Currently, only 37% of infants younger than 6 months of age are exclusively breastfed (2).

Women need support in order to optimize their chances of breastfeeding in line with WHO's recommendations. There is evidence showing that implementation of the Ten Steps to Successful Breastfeeding, as listed in the WHO and United Nations Children's Fund (UNICEF) joint statement *Protecting, promoting and supporting breastfeeding: the special role of maternity facilities* (18), emphasized in the *Innocenti Declarations* on infant feeding (19, 20) and incorporated in the Baby-friendly Hospital Initiative (21, 22) (see Box 1), have a positive impact on breastfeeding outcomes (12, 23–25), with a dose–response relationship between the number of interventions the mothers are exposed to and improved outcomes (23).

This guideline examines each of the practices of the Ten Steps to Successful Breastfeeding, in order to bring together evidence and considerations to inform practice. It provides global, evidence-informed

recommendations to support Member States in enabling protection, promotion and support of breastfeeding in facilities providing maternity and newborn services, as a public health intervention, in order to improve breastfeeding, health and nutrition outcomes.

### Box 1. Ten Steps to Successful Breastfeeding (18–22)

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health-care staff.
2. Train all health-care staff in the skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practise rooming-in – allow mothers and infants to remain together – 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

## Objectives

This guideline provides global, evidence-informed recommendations on protection, promotion and support of optimal breastfeeding in facilities providing maternity and newborn services, as a public health intervention, to protect, promote and support optimal breastfeeding practices and improve nutrition, health and development outcomes.

This guideline is intended to contribute to discussions among stakeholders when selecting or prioritizing interventions to be undertaken in their specific context. The guideline presents the key recommendations, a summary of the supporting evidence and a description of the considerations that contributed to the deliberations and consensus decision-making. It is not intended as a comprehensive operational manual or implementation tool for the Baby-friendly Hospital Initiative (21, 22), the *International Code of Marketing of Breast-milk Substitutes* (26) or other breastfeeding protection, promotion and support programmes.

This guideline aims to help WHO Member States and their partners to make evidence-informed decisions on the appropriate actions in their efforts to achieve the Sustainable Development Goals (27) and the global targets for 2025 as put forward in the *Comprehensive implementation plan on maternal, infant and young child nutrition* (15), endorsed by the Sixty-fifth World Health Assembly in 2012, in resolution WHA65.6, the *Global strategy for women's, children's, and adolescents' health (2016–2030)* (16), and the *Global strategy for infant and young child feeding* (14).

## Scope

This guideline, *Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services* is an update of, and supersedes, the Ten Steps to Successful Breastfeeding, as listed in the joint statement of WHO and UNICEF in 1989, *Protecting, promoting and supporting breastfeeding: the special role of maternity services* (18). This complements the operational guidance of the *Innocenti Declaration on the protection, promotion and support of breastfeeding* (19), adopted in Florence, Italy in 1990, and the *Innocenti Declaration on infant and young child feeding* (20) published in 2005. It also complements some of the operational guidance in the Baby-friendly Hospital Initiative published in 1991 (21) and updated in 2009 (22) (only inasmuch as aspects of the Ten Steps to Successful Breastfeeding remain unchanged).

The Baby-friendly Hospital Initiative provides guidance on the implementation, training, monitoring, assessment and re-assessment of the Ten Steps to Successful Breastfeeding and the *International Code of Marketing of Breast-milk Substitutes* (26), a set

of recommendations to regulate the marketing of breast-milk substitutes, feeding bottles and teats adopted by the 34th World Health Assembly (WHA) in 1981, and its subsequent related WHA resolutions (28). The Baby-friendly Hospital Initiative has since been shown to positively impact breastfeeding outcomes as a whole, and with a dose-response relationship between the number of interventions the mother is exposed to and the likelihood of improved breastfeeding outcomes (23).

This guideline examines each of the practices in the Ten Steps to Successful Breastfeeding, in order to bring together evidence and considerations to inform practice. The scope of the guideline is limited to specific practices that could be implemented in facilities providing maternity and newborn services to protect, promote and support breastfeeding.

This guideline does not aim to be a comprehensive guide on all potential interventions that can protect, promote and support breastfeeding. For instance, it will not discuss breastfeeding support beyond the stay at the facilities providing maternity and newborn services, such as community-based practices, peer support or support for breastfeeding in the workplace. Neither will it review the articles and provisions of the *International Code of Marketing of Breast-milk Substitutes* and its subsequent related WHA resolutions (26, 28).

This guideline complements interventions presented in the *Essential newborn care course* (29), *Kangaroo mother care: a practical guide* (30), *Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice* (31) and the *Standards for improving quality of maternal and newborn care in health facilities* (32) and does not supersede or replace them.

An implementation guide that will encompass the recommendations included in this guideline, the *International Code of Marketing of Breast-milk Substitutes* (26) and the Baby-friendly Hospital Initiative (22) has been developed by WHO and UNICEF and will be published separately in *Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services: the revised Baby-friendly Hospital Initiative 2017*.

## Target audience

The recommendations in this guideline are intended for a wide audience, including policy-makers, their expert advisers, and technical and programme staff at government institutions and organizations involved in the design, implementation and scaling-up of programmes for infant and young child feeding. The guideline may also be used by health-care professionals, clinicians, universities and training institutions, to disseminate information.



The end-users of this guideline are:

- national and local policy-makers;
- implementers and managers of national and local nutrition programmes;
- nongovernmental and other organizations and professional societies involved in the planning and management of nutrition actions;
- administrative and health workers involved in policy-making, information sharing, education and training in hospitals, facilities providing maternity and newborn services and other institutions that provide maternity services;
- health professionals, including managers of nutrition and health programmes and public health policy-makers in all settings;
- health workers in facilities providing maternity and newborn services.

## Population of interest

This guideline will affect women delivering in hospitals,<sup>1</sup> maternity facilities<sup>2</sup> or other facilities providing maternity and newborn services, and their infants.

These include mother–infant pairs with term infants, as well as those with preterm, low-birth-weight or sick infants and those admitted to neonatal intensive care units. There is further guidance for low-birth-weight infants from the WHO *Guidelines on optimal feeding of low birth-weight infants in low- and middle-income countries* (33). Infants who are, or who have mothers who are, living with HIV can, in addition, be referred to current guidelines on HIV and infant feeding (34–36).

Infants born at home or in the community setting and those with medical reasons not to breastfeed, temporarily or permanently (37), will not be considered in this guideline.

## Priority questions

The following key questions were posed, based on the policy and programme guidance needs of Member States and their partners. The population, intervention, comparator, outcomes (PICO) format was used. The key questions listed next give an example of one of

the critical outcomes considered. The questions, with population and intervention subgroups and a full list of critical outcomes, guiding the evidence review and synthesis for the recommendations in this guideline are listed in [Annex 1](#).

### Immediate support to initiate and establish breastfeeding

- Should mothers giving birth (P) practise early skin-to-skin contact (I), compared to not practising early skin-to-skin contact (C), in order to increase rates of early initiation of breastfeeding within 1 hour after birth (O)?
- Should mothers giving birth (P) practise early initiation of breastfeeding (I), compared to not practising early initiation of breastfeeding (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?
- Should mothers giving birth (P) be assisted with correct positioning and attachment, so that their infants achieve proper effective suckling (I), compared to not assisting mothers to position and attach (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?
- Should mothers giving birth (P) be shown how to practise expression of breast milk (I), compared to not being shown expression of breast milk (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?
- Should mothers giving birth in hospitals or facilities providing maternity and newborn services and their infants (P) remain together or practise rooming-in (I), compared to not rooming-in (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?
- Should mothers giving birth (P) practise feeding on demand or responsive feeding or infant-led breastfeeding (I), compared to not practising feeding on demand or feeding by schedule (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

### Feeding practices and additional needs of infants

- Should newborn infants (P) be given no foods or fluids other than breast milk unless medically indicated (I), compared to giving early additional food or fluids (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

1 A hospital is defined as any health facility with inpatient beds, supplies and expertise to treat a woman or newborn with complications (31).

2 A maternity facility is defined as any health centre with beds or a hospital where women and their newborns receive care during childbirth and delivery, and emergency first aid (31).

- Should infants (P) not be allowed to use pacifiers or dummies (I), compared to allowing use of pacifiers or dummies (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?
  - Should infants who are or will be breastfed (P) not be fed supplements with feeding bottles and teats but only by cup, dropper, gavage, finger, spoon or other methods not involving artificial teats (I), compared to using feeding bottles and teats (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?
- Exclusive breastfeeding at 3 months
  - Exclusive breastfeeding at 6 months
  - Duration of exclusive breastfeeding (in months)
  - Duration of any breastfeeding (in months)
  - Morbidity (respiratory infections, diarrhoea, others)
  - Neonatal, infant or child mortality (all-cause)

## Creating an enabling environment

- Should hospitals and facilities providing maternity and newborn services (P) have a written breastfeeding policy that is routinely communicated to staff (I), compared to those without a written breastfeeding policy (C), in order to increase rates of early initiation of breastfeeding (O)?
- Should health-facility staff (P) be trained on breastfeeding and supportive feeding practices (I), compared to not being trained (C), in order to increase rates of early initiation of breastfeeding (O)?
- Should mothers giving birth (P) be given antenatal breastfeeding education (I), compared to not having antenatal breastfeeding education (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?
- Should mothers giving birth in hospitals or facilities providing maternity and newborn services (P) be given linkage to continuing breastfeeding support after discharge from the facilities (I), compared to not providing any linkage to continuing breastfeeding support after discharge (C), in order to increase rates of exclusive breastfeeding at 1 month (O)?

## Outcomes of interest

The outcomes of interest considered critical for decision-making included the following:

### Infant outcomes

- Early skin-to-skin contact
- Early initiation of breastfeeding within 1 hour after birth
- Early initiation of breastfeeding within 1 day after birth
- Exclusive breastfeeding during the stay at the facility
- Exclusive breastfeeding at 1 month

### Maternal outcomes

- Onset of lactation
- Breast conditions (sore or cracked nipples, engorgement, mastitis, etc.)
- Effectiveness of breast-milk expression (volume of breast milk expressed)

### Facilities providing maternity and newborn services and staff outcomes

- Awareness of staff of the infant feeding policy of the hospital
- Knowledge of health-care workers on infant feeding
- Quality of skills of health-facility staff in improving practices of mothers in optimal infant feeding
- Attitudes of staff on infant feeding
- Adherence to the provisions of the *International Code of Marketing of Breast-milk Substitutes* (26)

For each of the PICO questions, potential harms of the interventions were also considered as important outcomes. The key questions and outcomes guiding the evidence review and synthesis for the recommendations in this guideline are listed in [Annex 1](#).

## Presentation of the recommendations

The recommendations on protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services were classified into three domains: (i) immediate support to initiate and establish breastfeeding; (ii) feeding practices and additional needs of infants; and (iii) creating an enabling environment.

Prior to presenting each domain and the considerations for each of the PICO questions, the summary of considerations for determining the direction of the recommendations that apply to all PICO questions was presented. These include:

- the feasibility of the intervention;
- equity and human rights considerations.

Each domain is presented in a separate section covering the following contents:

- summary of evidence from systematic reviews for each of the interventions;
- summary of considerations for determining the direction of the recommendations that apply to each individual PICO question, which includes:
  - quality of the evidence;
  - balance of benefits and harms;
  - values and preferences of mothers;
  - acceptability to health workers;
  - resource implications.

Three options for types of recommendations were agreed by the guideline development group, namely:

- recommended;
- recommended only in specific contexts;
- not recommended.

At the end of each section, a short summary brings together:

- the recommendations;
- the rationale;
- additional remarks for consideration in implementing the recommendations.
- In presenting the summary of evidence from systematic reviews for each of the interventions, standardized statements of effects were used for different combinations of the magnitude of effect and the quality of evidence (assessed using the Grading of Recommendations Assessment, Development and Evaluation [GRADE] (38)). Table 1, adapted from Cochrane Norway (39), was used as a guide.

## Description of the interventions

The following section describes the operational definitions used to gather and synthesize evidence that informed the recommendations.

### Immediate support to initiate and establish breastfeeding

Interventions relating to immediate support to initiate and establish breastfeeding focus on the critical first hours or days after delivery at the facilities providing maternity and newborn services. These include early skin-to-skin contact, early initiation of breastfeeding, rooming-in and demand feeding.

**Skin-to-skin contact** is when the infant is placed prone on the mother’s abdomen or chest in direct ventral-to-ventral skin-to-skin contact. Immediate skin-to-skin contact is done immediately after delivery, less than 10 minutes after birth. Early skin-to-skin contact was defined as beginning any time from delivery to 23 hours after birth. Skin-to-skin contact should be uninterrupted for at least 60 minutes. The infant is thoroughly dried and kept warm (for instance by being covered across the back with a warmed blanket). Among preterm and low-birth-weight infants, kangaroo mother care (30) involves similarly placing the infant in skin-to-skin contact, and firmly attached to the mother’s chest, often between the breasts, as soon as the infant is able. Kangaroo mother care can be shared with other providers of skin-to-skin contact, often with the mother’s partner, the other parent of the infant, close

**Table 1. Table of standardized statements about effect (39)**

	Important benefit or harm	Less important benefit or harm	No important benefit or harm
High quality of evidence	[Intervention] improves/reduces [outcome] (high quality of evidence)	[Intervention] slightly improves/reduces [outcome] (high quality of evidence)	[Intervention] makes little or no difference to [outcome] (high quality of evidence)
Moderate quality of evidence	[Intervention] probably improves/reduces [outcome] (moderate quality of evidence)	[Intervention] probably slightly improves/reduces [outcome] (moderate quality of evidence)	[Intervention] probably makes little or no difference to [outcome] (moderate quality of evidence)
Low quality of evidence	[Intervention] may improve/reduce [outcome] (low quality of evidence)	[Intervention] may slightly improve/reduce [outcome] (low quality of evidence)	[Intervention] may make little or no difference to [outcome] (low quality of evidence)
Very low quality of evidence	It is uncertain whether [intervention] improves/reduces [outcome], as the quality of the evidence has been assessed as very low		
No studies	None of the studies looked at [outcome]		

kin or an accompanying person. Comparators included dressed or swaddled infants held in the arms or placed in cribs or elsewhere.

**Early initiation of breastfeeding** involves a breastfeeding initiation time of within 1 hour after birth. Delayed breastfeeding initiation means initiating breastfeeding after the first hour after birth (2–23 hours after birth or a day or more after birth). Infants placed skin-to-skin usually find their own way to the breast and attach spontaneously, unless sedated by analgesics given to the mother.

**Showing mothers how to breastfeed** is a complex mix of supportive interventions (practical, emotional, motivational or informational) that enable mothers to breastfeed successfully. This support usually involves showing mothers how to hold and position their infant to attach to the breast, and presenting opportunities to discuss and assist with questions or problems with breastfeeding.

**Showing mothers how to express breast milk** can be useful to reassure mothers that milk is being produced by their breasts (particularly in the first few days after birth) and, eventually, to enable a mother to provide breast milk in the event that she will need to be separated from her infant. Expression of breast milk is primarily done or taught through hand expression, with the use of a mechanical pump only when necessary. The systematic review on expression of breast milk (40) included studies that provided instruction or a support protocol for hand expression or mechanical pumping (with provision of mechanical pumping equipment).

**Rooming-in** involves keeping mothers and infants together in the same room, immediately after leaving the labour or delivery room after a normal facility birth or from the time when the mother is able to respond to the infant, until discharge. This means that the mother and infant are together throughout the day and night, apart from short intervals when the mother has a specific need, for instance, to use the bathroom. The comparison intervention is that mothers and infants are roomed separately for all or part of the time, and the primary site of care for the infant is the facility nursery during the hospital stay.

**Demand feeding** (or responsive feeding or baby-led feeding) involves recognizing and responding to the infant's display of hunger and feeding cues and readiness to feed, as part of a nurturing relationship between the mother and infant. Demand, responsive or baby-led feeding puts no restrictions on the frequency or length of the infants' feeds, or the use of one or both breasts at a feed, and mothers are advised to breastfeed whenever the infant shows signs of hunger, or as often as the infant wants. The comparator, scheduled feeding, involves a predetermined, and usually time-restricted, frequency and schedule of feeds.

## Feeding practices and additional needs of infants

Interventions that relate to feeding practices and additional needs of infants include issues around early additional food or fluids, pacifiers or dummies, and feeding bottles and teats.

**Early additional foods or fluids** are any feeds given before 6 months of life, the recommended duration of exclusive breastfeeding. In the facilities providing maternity and newborn services, this can be in the form of pre-lacteal feeds given before the first breastfeed, of either colostrum, water, glucose water or artificial milk given outside of the WHO guidance on *Acceptable medical reasons for use of breast-milk substitutes* (37).

**Avoidance of pacifiers or dummies** involves advising mothers to avoid offering pacifiers or dummies and may, in addition, involve teaching mothers alternative methods to calm and soothe their infants. Unrestricted pacifier use means that pacifiers or dummies can be offered liberally to infants to suck on during their stay at the facility providing maternity and newborn services. Non-nutritive sucking or oral stimulation among preterm infants, which occurs in the absence of nutrient flow to facilitate sucking behaviour, often involves the use of pacifiers, a gloved finger or a breast that is not yet producing milk.

**Avoidance of feeding bottles and teats** involves offering oral feeds (of expressed breast milk or, when medically indicated, a combination of expressed breast milk and other fluids) without using feeding bottles and teats, but instead feeding by cup, dropper, gavage, finger or spoon when the infant is not on the breast.

## Creating an enabling environment

Effective and sustained improvement in practices often requires appropriate policies and a supportive environment. At the facilities providing maternity and newborn services, interventions considered under the domain of creating an environment to enable mothers to breastfeed include having a written breastfeeding policy, training of health workers, antenatal breastfeeding education and preparation for mothers, and discharge planning and linkage to continuing breastfeeding support.

**Breastfeeding policies in facilities** providing maternity and newborn services need to cover all established standards of practice and be fully implemented and publicly and regularly communicated to staff. They help to focus on social, environmental and practical factors that affect a mother's ability to breastfeed her infant. The systematic review on breastfeeding policies in facilities (41) included all randomized

controlled trials, cluster randomized trials, quasi-randomized trials, non-randomized trials and observational studies evaluating facilities with a written breastfeeding policy.

**Training of health workers** enables them to build on existing knowledge and develop effective skills, give consistent messages and implement policy standards according to their roles. The systematic review on training of health workers (42) included all randomized controlled trials comparing breastfeeding education and training for health workers with no or usual training and education.

**Antenatal breastfeeding education for mothers** can encourage discussion, help prepare mothers practically and promote initiation of breastfeeding after delivery. It may include counselling and information given in a variety of ways. Antenatal breastfeeding education differs from breastfeeding support in that breastfeeding support is given postnatally to the individual mother according to her needs at that

time: psychological, physical, financial or targeted information. Two systematic reviews were reported, one on antenatal breastfeeding education (43) and a second on broader antenatal breastfeeding-promotion activities to encourage initiation of breastfeeding (44), which included studies with support from non-health-care professionals.

**Discharge planning and linkage to continuing support:** before discharge from the facility providing maternity and newborn services, it is necessary to plan for breastfeeding after discharge and to provide linkage to continuing and consistent support outside the facility, to help mothers to sustain breastfeeding. A systematic review was done to assess the evidence around providing linkage to further breastfeeding support (45). The review did not assess the effects of any actual breastfeeding support after discharge (such as peer support, clinical support or specialized lactation support), but rather the linkage to further support made by the facilities.

# Evidence and recommendations

## Summary of considerations common to all recommendations

A search of the published literature was performed to inform on feasibility and equity and human rights issues. The information on these two issues was common to all interventions and is presented next.

### Feasibility

Based on information from 70 countries in 2010–2011 and from 61 countries in 2006, for a total of 131 countries, the number of facilities providing maternity and newborn services worldwide that have ever been designated as “Baby-friendly” is 21 328. This number represents 27.5% of all facilities providing maternity and newborn services worldwide: 8.5% in high-income countries and 31% in low- and middle-income countries (46). More recent data from the 2016–2017 Global Nutrition Policy Review of 155 countries show that 71% of countries had operational Baby-friendly Hospital Initiative programmes (47). It is estimated that 10% of births in 2016 were made in facilities designated as “Baby-friendly” (47). Thus, over 25 years from the initial inception of the Ten Steps to Successful Breastfeeding and the Baby-friendly Hospital Initiative, the percentage of births occurring in designated “Baby-friendly” facilities providing maternity and newborn services remains low. Challenges include sustainability, resources and competing priorities (47, 48). Embedding the interventions that promote, protect and support breastfeeding into quality standards for facilities providing maternity and newborn services may be a way to ensure sustained integration of optimal lactation management into standard care.

### Equity and human rights

As for any other area of human activity and social interaction, breastfeeding has also been subject to debate from a human rights perspective, raising fundamental questions pertaining to women’s rights and infants’ rights in the broader perspective of interrelatedness and indivisibility of all human rights.

In 2016, the United Nations Special Rapporteurs on the Right to Food and the Right to Health, the Working Group on Discrimination against Women in law and in practice, and the Committee on the Rights of the Child produced a joint statement in support of increased efforts to protect, promote and support breastfeeding (49). The statement outlines principles and provides human rights-based guidance for Member States, which are

called to support and protect breastfeeding:

- Breastfeeding is a human rights issue for both the child and the mother.
- Children have the right to life, survival and development and to the highest attainable standard of health, of which breastfeeding must be considered an integral component, as well as safe and nutritious foods.
- Women have the right to accurate, unbiased information needed to make an informed choice about breastfeeding. They also have the right to good quality health services, including comprehensive sexual, reproductive and maternal health services. And they have the right to adequate maternity protection in the workplace and to a friendly environment and appropriate conditions in public spaces for breastfeeding, which are crucial to ensure successful breastfeeding practices.
- States are reminded of their obligations under relevant international human rights treaties to provide all necessary support and protection to mothers and their infants and young children to facilitate optimal feeding practices. States should take all necessary measures to protect, promote and support breastfeeding, and end the inappropriate promotion of breast-milk substitutes and other foods intended for infants and young children.
- States must recognize that providing the support and protection necessary for women to make informed decisions concerning the optimal nutrition for their infants and young children is a core human rights obligation.
- Restriction of women’s autonomy in making decisions about their own lives leads to violation of women’s rights to health, and infringes women’s dignity and bodily integrity. In helping women make informed choices about breastfeeding, states and others should be careful not to condemn or judge women who do not want to or who cannot breastfeed.

Civil society organizations have also advocated for breastfeeding as a human right of the infant and the mother (50). These organizations have also been key in the development of a human rights perspective to breastfeeding.

A number of reviews and primary studies among high-, middle- and low-income countries have found that early initiation of breastfeeding tends to be equitable across wealth quintiles (51, 52), and that counselling interventions promoting breastfeeding

are more likely to have a greater effect on low-income populations, thus making such counselling prone to bridging gaps with wealthier populations in terms of health outcomes linked to breastfeeding (53). With respect to duration of breastfeeding, the available evidence is mixed, but frequently shows that population subgroups whose children are most at risk for mortality and increased morbidity from not being breastfed are least likely to show improvements in the duration of breastfeeding (54), thus highlighting the need to introduce equity-oriented approaches in breastfeeding interventions, in order to progressively close unjust gaps between population groups. Other bodies of evidence suggest that women of different backgrounds and contexts exposed to public health programmes such as antenatal care are more likely to breastfeed and engage in breastfeeding for longer, which also contributes to reducing health inequities (55, 56).

## Immediate support to initiate and establish breastfeeding

The evidence that formed the recommendations on immediate support for breastfeeding women and their babies is based on nine systematic reviews from the Cochrane Pregnancy and Childbirth Group, Cochrane Neonatal Review Group and independent authors (40, 57–64). The PICO questions and critical outcomes guiding the evidence review and synthesis for the recommendations in this guideline are listed in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#) and the summary of findings tables can be found in [Annex 3](#).

The WHO Secretariat further performed a qualitative evidence synthesis of published literature, to identify and summarize qualitative research findings on the values and preferences of mothers (see [Annex 4](#) for the summary of qualitative findings tables) and factors that influence acceptability among health workers and stakeholders (see [Annex 5](#) for the summary of qualitative findings tables).

A search of the published literature was performed to inform on resource implications, feasibility and equity and human rights issues for each of the interventions. The information on feasibility and equity and human rights issues was common to all interventions and is presented above.

Though the issues around resource implications were similar for many of the interventions, some of the resource implications were more specific and are presented for each of the interventions. It should be noted throughout, though, that breastfeeding

has short- and long-term health, economic and environmental advantages for children, women and society. The economic loss of not breastfeeding has been estimated to be US\$ 302 billion annually worldwide (1). Investments towards protecting, promoting and supporting breastfeeding are necessary to realize these gains.

## Early skin-to-skin contact

### Summary of evidence

The systematic review comparing immediate (within 10 minutes after birth) or early (between 10 minutes and 23 hours after birth) skin-to-skin contact between mothers and healthy term newborn infants to standard care included 46 trials with 3850 mother–infant pairs (62). The review showed that immediate or early skin-to-skin contact probably improves exclusive breastfeeding at hospital discharge to 1 month of age (risk ratio [RR]: 1.30; 95% confidence interval [CI]: 1.12 to 1.49; 6 studies,  $n = 711$ ; moderate quality of evidence), and may improve exclusive breastfeeding at 6 weeks to 6 months of age (RR: 1.50; 59% CI: 1.18 to 1.90; 7 studies,  $n = 640$ ; low quality of evidence). Immediate or early skin-to-skin contact probably improves any breastfeeding at 1–4 months of age (RR: 1.24; 95% CI: 1.07 to 1.43; 14 studies,  $n = 887$ ; moderate quality of evidence), compared to standard care. There was no statistically significant difference in the effect of skin-to-skin contact compared to standard care on the likelihood of breastfeeding at 1–4 months by time of initiation of skin-to-skin contact (immediate [within 10 minutes after birth] and early [between 10 minutes and 23 hours after birth]; test for subgroup difference  $\chi^2 = 1.13$ ;  $P = 0.29$ ).

Only one study reported on suckling during the first 2 hours after birth and it showed that immediate or early skin-to-skin contact may make little or no difference to suckling in the first 2 hours, compared to standard care (RR: 1.06; 95% CI: 0.83 to 1.35; 1 study,  $n = 88$ ; low quality of evidence).

Among low-birth-weight infants born in hospitals, a systematic review of kangaroo mother care (the main component of which is skin-to-skin contact between the mother and infant as far as the mother–infant pair can tolerate it (30)), compared to conventional neonatal care, was done (57). The review included 21 studies with 3042 infants. Exclusive and any breastfeeding among low-birth-weight infants with kangaroo mother care are probably improved at discharge or at 40–41 weeks' postmenstrual age (exclusive breastfeeding: RR: 1.16; 95% CI: 1.07 to 1.25; 6 studies,  $n = 1453$ ; moderate quality of evidence; any breastfeeding: RR: 1.20; 59% CI: 1.07 to 1.34; 10 studies,  $n = 1696$ ; moderate quality of evidence), compared to conventional neonatal care. Kangaroo mother care may improve exclusive or any breastfeeding at 1–3 months' follow-up (exclusive breastfeeding:

RR: 1.20; 95% CI: 1.01 to 1.43; 5 studies,  $n = 600$ ; low quality of evidence; any breastfeeding: RR: 1.17; 95% CI: 1.05 to 1.31; 9 studies,  $n = 1394$ ; low quality of evidence). Kangaroo mother care probably makes little or no difference to any breastfeeding at 6–12 months' follow-up (RR: 1.12; 95% CI: 0.98 to 1.29; 5 studies,  $n = 952$ ; moderate quality of evidence) and may make little or no difference to exclusive breastfeeding at 6–12 months' follow-up (RR: 1.29; 95% CI: 0.95 to 1.76; 3 studies,  $n = 810$ ; low quality of evidence).

Only one study compared early (within 23 hours after birth) versus late (starting 24 hours or more after birth) kangaroo mother care among relatively stable low-birth-weight infants and found there is probably little or no difference in the rate of exclusive breastfeeding at 24 hours of age (RR: 1.02; 95% CI: 0.67 to 1.57; 1 study,  $n = 73$ ; low quality of evidence), at 2 weeks of age (RR: 1.00; 95% CI: 0.89 to 1.04; 1 study,  $n = 71$ ; moderate quality of evidence), at 4 weeks of age (RR: 0.94; 95% CI: 0.85 to 1.04; 1 study,  $n = 67$ ; moderate quality of evidence) and at 6 months of age (RR: 2.69; 95% CI: 0.99 to 7.31; 1 study,  $n = 55$ ; low quality of evidence).

#### Quality of evidence

The overall quality of evidence for early skin-to-skin contact on the critical outcomes is moderate. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#). The summary of findings tables can be found in [Annex 3](#).

#### Balance of benefits and harms

The review by Conde-Agudelo and Díaz-Rossello (57) found a decreased risk of mortality (RR: 0.67; 95% CI: 0.48 to 0.95; 12 studies,  $n = 2293$ ) and severe infection or sepsis (RR: 0.5; 95% CI: 0.36 to 0.69; 8 studies,  $n = 1463$ ) at latest follow-up among infants who received kangaroo mother care. The review found no difference in the length of hospital stay (mean difference [MD]: -1.61 days; 95% CI: -3.41 to 0.18; 11 studies,  $n = 1057$ ).

The review by Moore et al. (62) found a clinically meaningful increase in blood glucose in infants who received immediate or early skin-to-skin contact (blood glucose mg/dL at 75–180 minutes after birth MD: 10.49; 95% CI: 8.39 to 12.59; 3 studies,  $n = 144$ ). There was also a slight increase in infant axillary temperature at 90–150 minutes after birth (MD: 0.30 °C; 95% CI: 0.13 to 0.47; 6 studies,  $n = 558$ ) though none of the study infants were hyper- or hypothermic.

There is a concern about cases of sudden infant collapse, most commonly reported among infants of primiparous mothers who are unobserved by health-care personnel during a period of skin-to-skin contact with the infant prone or on the side of the mother's chest. Sudden unexpected postnatal collapse of an

apparently healthy infant occurring within the first 2 hours after birth have been estimated to occur in between 1.6 and 5 cases per 100 000 live births, with death rates of 0–1.1 per 100 000 live births (65–71).

In light of the clear benefits on mortality rates and breastfeeding outcomes, the desirable effects outweigh the undesirable effects. However, during the implementation of immediate skin-to-skin contact and for at least the first 2 hours after delivery, health-care personnel in the delivery or recovery room should observe and assess for any signs of distress in all infants, whether full term, preterm or low birth weight.

#### Values and preferences

The review of literature on the values and preferences of mothers towards early skin-to-skin contact identified 13 studies from 9 countries (Australia, Colombia, Egypt, Italy, Palestine, Russia, Sweden, the United Kingdom of Great Britain and Northern Ireland [United Kingdom] and the United States of America [United States]). In general, most mothers valued immediate skin-to-skin contact and felt happy doing this. This finding was consistent among mothers who had normal deliveries and had normal-term infants, those who had caesarean deliveries and those whose infants were admitted to the neonatal intensive care unit or were preterm or low birth weight. There was moderate confidence in the evidence (see [Annex 4](#)).

#### Acceptability

The review of literature on the acceptability of early skin-to-skin contact among health-care personnel identified 15 studies conducted in 7 countries (Australia, Canada, China, France, India, New Zealand and the USA). Three themes were identified among the studies: (i) health workers valued and had favourable views towards early skin-to-skin contact (low confidence in the evidence); (ii) health workers had safety concerns during skin-to-skin contact after caesarean delivery or anaesthesia; health workers found that practising early skin-to-skin contact in the operating room was impractical, and unsafe and would interfere with their routines (moderate confidence in the evidence); and (iii) health workers had safety concerns about early skin-to-skin contact and breastfeeding when the infant was admitted to the neonatal intensive care unit; they felt that the risk of physiological instability among the fragile infants would be too great (moderate confidence in the evidence) (see [Annex 5](#)).

#### Resource implications

Several issues with resource implications for the early skin-to-skin contact were identified. These include: (i) the time spent with mothers; (ii) staff capacity; and (iii) staff knowledge of breastfeeding. There is often inadequate time for staff to observe and support mothers during early skin-to-skin contact (72). Limited staff capacity reduces the quality time that



staff can spend with mothers (73) and Lack of staff knowledge regarding breastfeeding and early skin-to-skin support reduces their self-efficacy and may lead to a need for more specialized training (72, 74–76).

#### Recommendation

1. Early and uninterrupted skin-to-skin contact between mothers and infants should be facilitated and encouraged as soon as possible after birth (*recommended, moderate-quality evidence*).

## Early initiation of breastfeeding

### Summary of evidence

The systematic review on early initiation of breastfeeding (less than 1 hour after birth) compared with delayed (2–23 hours or 24 hours or more after birth) included five studies with 136 047 infants (63). Compared to infants who initiate breastfeeding within 1 hour of birth, those who initiate breastfeeding at 2–23 hours after birth, or those who initiate breastfeeding after the first day after birth, are more likely to die in the first 28 days after birth (initiated breastfeeding 2–23 hours after birth: RR: 1.33; 95% CI: 1.13 to 1.56; 5 studies,  $n = 136\ 047$ ; initiated breastfeeding 24 hours or more after birth: RR: 2.19; 95% CI: 1.73 to 2.77; 5 studies,  $n = 136\ 047$ ; high quality of evidence). Breastfeeding within the first hour after birth may improve survival to 3 months and to 6 months, compared to those who initiate breastfeeding later (low quality of evidence).

Initiating breastfeeding after the first hour after delivery probably increases non-exclusively breastfeeding at 1 month (initiated breastfeeding 2–23 hours after birth: RR: 1.15; 95% CI: 1.13 to 1.17; 1 study,  $n = 87\ 576$ ; initiated breastfeeding 24 hours or more after birth: RR: 1.27; 95% CI: 1.24 to 1.31; 1 study,  $n = 87\ 576$ ; moderate quality of evidence) and at 3 months (initiated breastfeeding at 2–23 hours after birth: RR: 1.05; 95% CI: 1.04 to 1.06; 1 study,  $n = 86\ 692$ ; initiated breastfeeding 24 hours or more after birth: RR: 1.06; 95% CI: 1.04 to 1.08; 1 study,  $n = 86\ 692$ ; moderate quality of evidence), compared to initiating breastfeeding in the first hour after birth. Initiating breastfeeding later also probably increases the non-breastfeeding rates at 1 month (moderate quality of evidence) and may increase non-breastfeeding rates at 3 months (low quality of evidence), compared to initiating breastfeeding in the first hour after delivery.

### Quality of evidence

The overall quality of evidence for early initiation of breastfeeding on the critical outcomes is high. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic review can be found in [Annex 2](#). The summary of findings table can be found in [Annex 3](#).

### Balance of benefits and harms

The review by Smith et al. (63) showed that infants who initiated breastfeeding 24 hours or more after birth had an increased risk of neonatal mortality compared to when initiation was started under 24 hours after birth (RR: 1.70; 95% CI: 1.44 to 2.01; 6 studies,  $n = 142\ 729$ ). This association was consistent when limiting the population to infants who were exclusively breastfed (RR: 1.85; 95% CI: 1.29 to 2.67; 4 studies,  $n = 62\ 215$ ) or when limiting the population to low-birth-weight infants (RR: 1.73; 95% CI: 1.38 to 2.18; 4 studies,  $n = 21\ 258$ ).

### Values and preferences

No studies were found on the values and preferences of mothers specifically pertaining to early initiation of breastfeeding. However, the members of the guideline development group posited that they would probably be close to the values and preferences related to early skin-to-skin contact and that there was minor variability on how much mothers would value early initiation of breastfeeding.

### Acceptability

The review of literature on the acceptability to health workers of early initiation of breastfeeding identified the same studies as those describing acceptability of early skin-to-skin contact. The synthesis of qualitative evidence identified the same three themes where health workers generally value early initiation of breastfeeding but had safety concerns when the mother received anaesthesia or had a caesarean section, or when the infant was admitted to the neonatal intensive care unit for prematurity or low birth weight (see [Annex 5](#)).

### Resource implications

Issues identified that had resource implications included staff time, staff capacity and staff knowledge (72–76).

### Recommendation

2. All mothers should be supported to initiate breastfeeding as soon as possible after birth, within the first hour after delivery (*recommended, high-quality evidence*).

## Showing mothers how to breastfeed

### Summary of evidence

The systematic review on giving mothers practical, emotional, educational or social breastfeeding support in addition to standard care, compared to standard care alone, included 100 studies with 83 246 mother–infant pairs (61). Breastfeeding counselling and support at both the antenatal and postnatal period probably improved any breastfeeding before the last study assessment up to 6 months of age (RR: 0.89; 95% CI: 0.85 to 0.93; 51 studies,  $n = 21\ 708$ ; moderate

quality of evidence), may have improved exclusive breastfeeding before the last study assessment up to 6 months (RR: 0.89; 95% CI: 0.86 to 0.93; 46 studies,  $n = 18\ 303$ ; low quality of evidence), improved any breastfeeding up to 4–6 weeks (RR: 0.86; 95% CI: 0.79 to 0.93; 33 studies,  $n = 10\ 776$ ; high quality of evidence), and may have improved exclusive breastfeeding up to 4–6 weeks (RR: 0.79; 95% CI: 0.69 to 0.89; 32 studies,  $n = 10\ 271$ ; low quality of evidence), compared to standard care alone. Postnatal breastfeeding counselling and support (with no antenatal support provided) also probably improved any or exclusive breastfeeding before the last study assessment up to 6 months, and improved any or exclusive breastfeeding up to 4–6 weeks, compared to mothers who had standard care alone.

The systematic review to assess the effects of feeding-readiness instruments among preterm infants through randomized or quasi-randomized trials found no studies that met the inclusion criteria (58), though the authors mention several preterm oral-feeding-readiness scales.

The systematic review assessing different methods of milk expression included 41 studies with 2293 participants (40). Owing to heterogeneity in interventions and outcomes, most of the included results were derived from single studies. It was uncertain whether relaxation techniques, breast massage or warmed breasts increase the quantity of expressed milk, as the quality of the evidence has been assessed as very low. No technique for expression of breast milk (hand expression, manual or electric breast pump) was shown to consistently increase the volume of milk obtained.

#### **Quality of evidence**

The overall quality of evidence on the critical outcomes is moderate for showing mothers how to breastfeed healthy term infants and very low for providing instruction on expression of breast milk. No evidence was identified for assessing the readiness to breastfeed of a preterm infant. The PICO questions and critical outcomes can be found in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#). The summary of findings tables can be found in [Annex 3](#).

#### **Balance of benefits and harms**

No adverse events were reported in showing mothers how to breastfeed healthy term infants or in assessing a preterm infant's readiness to breastfeed.

Breastfeeding and the provision of human milk to the human baby is the biologically normal activity. Becker et al. (40) emphasize that breast-milk expression and pumping may be a complex and individual activity outside of the norm.

There was no evidence that a particular type of pump was associated with a higher level of milk contamination, infant sepsis or transfer to feeding at the breast. Adverse effects related to the mother, such as nipple or breast pain, were reported in three of the 41 studies included in the review (40) and showed no difference between methods of breast-milk expression, though the actual numbers reporting these adverse outcomes were small.

#### **Values and preferences**

The review of literature on the values and preferences of mothers towards being shown how to breastfeed and how to express breast milk identified eight studies from three countries (Canada, the United Kingdom and the United States). Mothers of normal-term infants found that being shown how to breastfeed was helpful but sometimes inadequately done, with inconsistent or infrequent support (low confidence in the evidence). They also found that being taught how to express breast milk (hand expression or mechanical pumping) was useful and allowed them the option of having someone else feed the child when they were unable to (low confidence in the evidence). The mothers of infants admitted to the neonatal intensive care unit found that breast-milk expression was a “paradoxical experience”, in which they felt intense dislike of breast-milk pumping but that providing their own breast-milk to their infants was a source of valuable connection (moderate confidence in the evidence) (see [Annex 4](#)).

#### **Acceptability**

The review of literature on the acceptability among health workers of showing mothers how to breastfeed identified 21 studies conducted in 8 countries (Australia, Canada, Iraq, Ireland, Pakistan, South Africa, the United Kingdom and the United States). The synthesis of qualitative evidence identified three themes: (i) barriers to showing mothers how to breastfeed; (ii) differing levels of confidence in showing mothers how to breastfeed; and (iii) negative attitudes among health workers towards showing mothers how to breastfeed. Health workers felt that there were too many barriers, primarily related to time and staff availability, to adequately show mothers how to breastfeed (moderate confidence in the evidence). Some of the health workers felt that they did not have the necessary skills to show mothers how to breastfeed, and thus felt that someone else, with more experience or more specialized in lactation support, would be more appropriate (moderate confidence in the evidence). A third theme revealed that there was a negative attitude among health workers towards showing mothers how to breastfeed. The reasons cited included lack of privacy, disempowering of women and making them less self-sufficient, making non-breastfeeding mothers who are staying in the same ward feel guilty, and fear of hurting the relationship

with the mothers (moderate confidence in the evidence) (see [Annex 5](#)).

No studies were found specifically on the acceptability among health workers of showing mothers how to express breast milk.

### Resource implications

Issues identified with resource implications for showing mothers how to breastfeed and how to express breast milk include staff time, staff capacity, staff knowledge and training, and costs of optional equipment (for instance, manual or electronic pumps) (62–66).

### Recommendations

3. Mothers should receive practical support to enable them to initiate and establish breastfeeding and manage common breastfeeding difficulties (*recommended, moderate-quality evidence*).
4. Mothers should be coached on how to express breast milk as a means of maintaining lactation in the event of their being separated temporarily from their infants (*recommended, very low-quality evidence*).

## Rooming-in

### Summary of evidence

The systematic review on keeping the mother and her infant together in the same room versus separating them after birth identified only one study, with 176 participants, that met the criteria for inclusion (60). Keeping mother–infant pairs together in the same room probably improves exclusive breastfeeding at 4 days postpartum (RR: 1.92; 95% CI: 1.34 to 2.76; 1 study,  $n = 153$ ; moderate quality of evidence) but probably makes little or no difference to any breastfeeding at 6 months (RR: 0.84; 95% CI: 0.51 to 1.39; 1 study,  $n = 153$ ; moderate quality of evidence). An additional analysis of prospective non-randomized controlled trials examining rooming-in, compared to separate care, identified three studies (77–79) that measured any breastfeeding at 3–4 months of age. It was uncertain whether rooming-in improves any breastfeeding at 3–4 months, as the quality of the evidence has been assessed as very low (RR: 1.18; 95% CI: 1.00 to 1.40; 3 studies,  $n = 553$ ; very low quality of evidence).

### Quality of evidence

The overall quality of evidence for rooming-in on the critical outcomes is moderate. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic review can be found in [Annex 2](#). The summary of findings table can be found in [Annex 3](#).

### Balance of benefits and harms

The review by Jaafar et al. (60) reported that the

overall median duration of any breastfeeding was 4 months, with no significant difference between groups (rooming-in versus separate care). The review also reported a mean frequency of breastfeeding of 8.3 times per day (standard deviation [SD]: 2.2) in the rooming-in group, compared to the fixed scheduled interval feeding of 7 times per day in the separate care group.

### Values and preferences

The review of literature on the values and preferences of mothers towards rooming-in identified seven studies from seven countries (Indonesia, Ireland, Norway, Russia, Sweden, the United Kingdom and the United States). The synthesis of qualitative evidence showed that most mothers preferred to room-in their infant, although there was also a significant proportion who would prefer not to room-in at night (moderate confidence in the evidence) (see [Annex 4](#)).

### Acceptability

The review of literature on the acceptability of rooming-in among health workers identified seven studies from four countries (Australia, Canada, India and the United States). Some health workers viewed rooming-in favourably and would encourage its practice but most felt that it was not necessary. Most health workers reported that they would often offer separate care to mothers, in order to allow the mothers to rest. Health workers working in neonatal intensive care units reported that limits to their resources would not allow mothers and infants to stay together for 24 hours a day (moderate confidence in the evidence) (see [Annex 5](#)).

### Resource implications

Issues identified with resource implications for the implementation of rooming-in include costs related to hospital infrastructure. Inadequate delivery resources and space could mean bed-sharing among multiple labour and delivery patients (73), which may potentially lead to unsafe sleeping environments. Neonatal intensive care units are often not equipped for mothers and infants to room-in or stay together the whole day (72).

### Recommendation

5. Mothers giving birth in facilities providing maternity and newborn services should enable mothers and their infants to remain together and to practise rooming-in throughout the day and night. This may not apply in circumstances when infants need to be moved for specialized medical care (*recommended, moderate-quality evidence*).

## Demand feeding

### Summary of evidence

The systematic reviews on demand feeding among

healthy term newborns (59) and on feeding of preterm infants in response to their hunger and satiation cues (64), compared to scheduled or timed feeding, did not find any studies that were eligible for inclusion into the reviews.

#### **Quality of evidence**

There was no evidence identified from randomized controlled trials to inform on optimum feeding patterns (baby-led or demand feeding versus scheduled or timed feeding) on the critical outcomes among term or preterm infants. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#).

#### **Balance of benefits and harms**

The review by Watson and McGuire (64) among preterm infants showed that infants fed in response to their hunger and satiation cues, compared to those fed on scheduled intervals, had a lower rate of weight gain (MD:  $-1.36$  g/kg/day; 95% CI:  $-2.44$  to  $-0.29$ ; 4 studies;  $n = 305$ ), based on four studies with moderate risk of bias (none of the participants or outcome assessors were blinded and two of the studies had unclear or high risk of selection bias). There were three other studies that reported no significant differences in the rate of weight gain between the two groups but the duration of intervention was for less than one week.

The infants from the two groups also did not statistically differ in the duration of hospital stay (MD:  $-1.03$ ; 95% CI:  $-9.41$  to  $7.34$ ; 2 studies;  $n = 145$ ), based on two studies, both with unclear selection bias and no blinding. Two other studies reported no significant difference in the duration of hospital stay between the two groups but did not report numerical data. One additional study reported a duration of hospital stay of 31 days among infants with responsive feeding and 33 days among infants with scheduled interval feeding but did not state whether this difference was statistically significant and did not report standard deviations.

The infants who were fed in response to their hunger and satiation cues had a slightly younger postmenstrual age at discharge (MD:  $-0.48$  weeks;

95% CI:  $-0.94$  to  $-0.01$ ; 2 studies;  $n = 138$ ), based on two studies with unclear or high risk of selection bias and no blinding. They also had a shorter time taken to achieve full oral feeding (MD:  $-5.53$  days; 95% CI:  $-6.80$  to  $-4.25$  days; 2 studies;  $n = 167$ ), based on two studies with no blinding.

#### **Values and preferences**

The review of literature on the values and preferences of mothers towards demand feeding identified four studies from four countries (Japan, Russia, Sweden and the United Kingdom). Mothers valued demand feeding but felt that they needed more support. Some felt uncertain and anxious about the hunger and feeding cues from their infants. Mothers with infants admitted to the neonatal intensive care unit felt that they needed more support in the transition to demand feeding as their infants showed signs of interest in sucking (low confidence in the evidence) (see [Annex 4](#)).

#### **Acceptability**

The review of literature on the acceptability of demand feeding among health workers identified seven studies conducted in six countries (Australia, Canada, China, India, Ireland and the United States). Health workers had differing views on demand feeding. Some were unaware of the concept of demand, responsive or infant-led feeding, or the normal infant feeding patterns in the first few days after birth. Some health workers were uncomfortable about promoting demand feeding (especially against persisting practice of more experienced staff to schedule feeds), while others saw demand feeding as standard care except in specialized units such as the neonatal intensive care unit where strict documentation of feeds is required (low confidence in the evidence) (see [Annex 5](#)).

#### **Resource implications**

Resource implications identified for demand feeding are closely related to those for rooming-in. They include costs related to hospital infrastructure and possible difficulties in space or equipment (72, 73).

#### **Recommendation**

6. Mothers should be supported to practise responsive feeding as part of nurturing care (*recommended, very low-quality evidence*).

## Box 2. Summary of recommendations on immediate support to initiate and establish breastfeeding

1. Early and uninterrupted skin-to-skin contact between mothers and infants should be facilitated and encouraged as soon as possible after birth (*recommended, moderate-quality evidence*).
2. All mothers should be supported to initiate breastfeeding as soon as possible after birth, after delivery (*recommended, high-quality evidence*).
3. Mothers should receive practical support to enable them to initiate and establish breastfeeding and manage common breastfeeding difficulties (*recommended, moderate-quality evidence*).
4. Mothers should be coached on how to express breast milk as a means of maintaining lactation in the event of their being separated temporarily from their infants (*recommended, very low-quality evidence*).
5. Facilities providing maternity and newborn services should enable mothers and their infants to remain together and to practise rooming-in throughout the day and night. This may not apply in circumstances when infants need to be moved for specialized medical care (*recommended, moderate-quality evidence*).
6. Mothers should be supported to practise responsive feeding as part of nurturing care (*recommended, very low-quality evidence*).

## Rationale for immediate support to initiate and establish breastfeeding

The following factors were taken into consideration during the deliberations.

- Interventions to support the establishment of breastfeeding in the immediate period after birth have the strongest evidence for mortality prevention and positive breastfeeding outcomes beyond the stay at the facilities providing maternity and newborn services. Early skin-to-skin contact and early initiation of breastfeeding can increase the likelihood of any or exclusive breastfeeding up to 3–6 months of life. Showing mothers how to breastfeed in the immediate postnatal period makes them more likely to continue any or exclusive breastfeeding to 6 months of age. Mothers and infants who room-in together are almost twice as likely to be exclusively breastfeeding during the stay at the facilities providing maternity and newborn services. Fostering sensitive, reciprocal and nurturing relationships between mothers and infants results in considerable benefit to both.
- Supporting mothers to form an early and close relationship and feeding with their infants is highly valued by mothers. Mothers who experience early skin-to-skin contact or who have had a positive experience with being supported in the initial breastfeeds appreciate and would like to repeat these experiences. Mothers who are given conflicting advice or are given information in a mechanistic manner feel undermined.
- Many health workers report little knowledge about breastfeeding and have poor confidence in their skills to support a mother to breastfeed. Guidance to health workers on the minimum support that all mothers need, and competence towards addressing common breastfeeding problems, may be appropriate. This will allow health workers to assess infants' health and feeding, as well as to provide support to breastfeeding mothers tailored to their individual needs, sensitively given and considering their social and cultural context, in order that they may overcome any challenges they may face. Collaboration or referral to address more complex breastfeeding challenges may be useful.

## Remarks

The remarks in this section are points to consider regarding implementation of the recommendations for immediate support to initiate and establish breastfeeding, based on the discussion of the guideline development group and the external experts.

- Focused and optimal immediate support to initiate and establish breastfeeding in the first hours and days of life have positive effects far beyond the stay at the facilities providing maternity and newborn services.
- Although there is evidence of benefit for immediate and uninterrupted skin-to-skin contact starting at less than 10 minutes after delivery, this practice can often be started much sooner, by the second or third minute after delivery, while continued assessment, drying and suctioning (if needed) are done while the infant is in skin-to-skin contact. Uninterrupted skin-to-skin contact ideally lasts for more than 1 hour, and longer periods, when well tolerated by both mother and infant, should be encouraged.

- During early skin-to-skin contact and for at least the first 2 hours after delivery, sensible vigilance and safety precautions should be taken, so that health-care personnel can observe for, assess and manage any signs of distress.
- Early initiation of breastfeeding has been shown to have positive effects when done within the first hour after delivery. Among healthy term infants, feeding cues from the infant may be apparent within the first 15–20 minutes after birth, or may not be apparent until later.
- Because there is a dose–response effect in that earlier initiation of breastfeeding results in greater benefits, mothers who are not able to initiate breastfeeding during the first hour after delivery should still be supported to breastfeed as soon as they are able. This may be relevant to mothers who deliver by caesarean section, after an anaesthetic, or those who have medical instability that precludes initiation of breastfeeding within the first hour after birth.
- Mothers should be enabled to achieve effective breastfeeding, including being able to position and attach their infants to the breast, respond to their infants’ hunger and feeding cues, and express breast milk when required.
- Expression of breast milk is often a technique used to stimulate attachment at the breast and effective suckling during the establishment of breastfeeding, not only when mothers and infants are separated.
- Mothers of infants admitted to the neonatal intensive care unit should be sensitively supported to enable them to have skin-to-skin contact with their infants, recognize their infants’ behaviour cues, and effectively express breast milk soon after birth.

## Feeding practices and additional needs of infants

The evidence that formed the recommendation on feeding practices and additional needs of infants is based on seven systematic reviews from the Cochrane Pregnancy and Childbirth Group, St Luke’s International University (as part of the Cochrane Pregnancy and Childbirth Group in Tokyo, Japan) and Cochrane Neonatal Review Group (80–86). The key questions and outcomes guiding the evidence review and synthesis for the recommendations in this guideline are listed in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#) and the summary of findings tables can be found in [Annex 3](#).

The WHO Secretariat further performed a qualitative evidence synthesis of published literature, to identify and summarize qualitative research on the values and preferences of mothers (see [Annex 4](#) for the summary of qualitative findings tables) and factors that influence acceptability among health workers and stakeholders (see [Annex 5](#) for the summary of qualitative findings tables).

A search of the published literature was performed to inform on resource use, feasibility and equity and human rights issues for each of the interventions. The information on feasibility and equity and human rights issues was common to all interventions and is presented earlier.

Though the issues around resource implications were similar for many of the interventions, some of the resource implications were more specific and are presented for each of the interventions.

### Early additional foods or fluids

#### Summary of evidence

The systematic review on giving additional foods (for instance, artificial milk) or fluids (for instance, water or glucose water) other than breast milk to full-term infants, in the first few days after birth, identified 11 studies with 2542 randomized mother–infant pairs (86). Three studies (with 270 mother–infant pairs) contributed to the evidence. Addition of artificial milk in the first few days after birth probably makes little or no difference to breastfeeding at discharge (RR: 1.02; 95% CI: 0.97 to 1.08; 1 study,  $n = 100$ ; moderate quality of evidence), compared to those not given additional artificial milk. It was uncertain whether giving artificial milk in the first few days after birth has an effect on breastfeeding at 3 months (RR: 1.21; 95% CI: 1.05 to 1.41; 2 studies,  $n = 137$ ; very low quality of evidence) or exclusively breastfeeding for the last 24 hours at 3 months of age (RR: 1.43; 95% CI: 1.15 to 1.77; 2 studies,  $n = 138$ ; very low quality of evidence), as the quality of the evidence has been assessed as very low.

Giving additional water in the first few days after birth probably reduces any breastfeeding at 4 weeks (RR: 0.83; 95% CI: 0.73 to 0.94; 1 study,  $n = 170$ ; moderate quality of evidence), at 12 weeks (RR: 0.68; 95% CI: 0.53 to 0.87; 1 study,  $n = 170$ ; moderate quality of evidence) and at 20 weeks (RR: 0.69; 95% CI: 0.50 to 0.95; 1 study,  $n = 170$ ; moderate quality of evidence), compared to not giving any additional water.

#### Quality of evidence

The overall quality of evidence for giving early additional foods or fluids other than breast milk on the critical outcomes is moderate. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic review can be found in [Annex 2](#).

The summary of findings table can be found in [Annex 3](#).

### Balance of benefits and harms

The review by Smith and Becker (86) showed no clinically significant difference in the incidence of fever, serum glucose levels by day 2, and weight change by day 3 between infants given glucose water and those who were exclusively breastfed.

The review also reports one study on term infants that showed decreased risk of allergy symptoms at 18 months of age among infants given infant formula every 4 hours until the “mother’s breast-milk production started”, compared to those not given infant formula (RR: 0.56; 95% CI: 0.35 to 0.91; 1 study;  $n = 207$ ). This study had a high risk of selection bias (quasi-randomized trial with alternating months for allocation of intervention), high risk of detection bias and unclear reporting bias. There was more family history of allergy among the breastfeeding group than in the infant formula group (58% versus 46%) (87).

The evidence on breastfeeding outcomes from the systematic review adds to the already substantial body of evidence of positive health benefits from exclusive breastfeeding in the first 6 months of life and optimal infant feeding practices thereafter, including introduction of complementary foods while continuing to breastfeed up to 2 years and beyond (3, 4, 6–11, 13).

### Values and preferences

The review of literature on the values and preferences of mothers towards giving early additional foods or fluids identified three studies from Ethiopia, Nigeria and Pakistan. Mothers living in cultural contexts where pre-lacteal feeds are acceptable valued pre-lacteal feeds. Mothers perceive them as beneficial to the infant (e.g. cleaning of the stomach, positive effect on health, prevention of afflictions) (moderate confidence in the evidence) (see [Annex 4](#)).

### Acceptability

The review of literature on the acceptability to health workers of giving early additional foods or fluids identified 12 studies from 6 countries (Australia, Canada, China, India, the United Kingdom and the United States). Health workers felt that breast milk is good, but that breast-milk substitutes were also fine. Several studies reported that health workers view infant formula as an acceptable option that will not harm an infant. Some studies describe health-care providers as saying that giving early additional foods or fluids is the mother’s choice and that formula should be an option if that is what she wants, or that protecting mothers from tiredness during the night by feeding the infant with breast-milk substitutes was an acceptable reason (moderate confidence in the evidence) (see [Annex 5](#)).

### Resource implications

Possible resource implications of implementing no giving of early additional foods or fluids include continued implementation of the *International Code of Marketing of Breast-milk Substitutes* (26) as adopted by the 34th session of the WHA (76, 88, 89).

### Recommendation

7. Mothers should be discouraged from giving any food or fluids other than breast milk, unless medically indicated (*recommended, moderate-quality evidence*).

## Avoidance of pacifiers or dummies

### Summary of evidence

The systematic review on the effect of restricted or unrestricted pacifier use on breastfeeding duration among term infants included three randomized controlled trials with 1915 infants (85). The three randomized controlled trials included two trials where the intervention was conducted during the stay at the facilities providing maternity and newborn services (90, 91) and one in which the intervention was started 2 weeks after the birth (92). The results were thus modified to exclude the study implemented outside of the stay in the facilities providing maternity and newborn services.

Restricted pacifier use by term infants during their stay at the facilities providing maternity and newborn services makes little or no difference to breastfeeding at discharge (RR: 1.01; 95% CI: 1.00 to 1.03; 1 study,  $n = 541$ ; high quality of evidence), at 3–4 months (RR: 1.02; 95% CI: 0.95 to 1.11; 2 studies,  $n = 799$ ; high quality of evidence) and at 6 months (RR: 1.06; 95% CI: 0.92 to 1.23; 1 study,  $n = 541$ ; high quality of evidence). Restricted pacifier use probably makes little or no difference to exclusive breastfeeding at 3–4 months (RR: 1.08; 95% CI: 0.77 to 1.51; 1 study,  $n = 258$ ; moderate quality of evidence). The overall quality of evidence for these critical outcomes from randomized controlled trials was high for avoidance of pacifier use among term infants.

Two systematic reviews on non-nutritive sucking and oral stimulation were done among preterm infants. The systematic review by Foster et al. on the effect of non-nutritive sucking on physiological stability and nutrition in preterm infants identified 12 studies with 746 preterm infants (82). Provision of non-nutritive sucking may make little or no difference to exclusive breastfeeding at discharge (RR: 1.08; 95% CI: 0.88 to 1.33; 1 study,  $n = 303$ ; low quality of evidence), and probably makes little or no difference to any breastfeeding at discharge (RR: 1.16; 95% CI: 0.88 to 1.17; 1 study,  $n = 303$ ; moderate quality of evidence). It was uncertain whether non-nutritive sucking had an effect on any breastfeeding 3 months after discharge (RR: 0.92; 95% CI: 0.69 to 1.23; 1 study,  $n = 283$ ;

very low quality of evidence), or any breastfeeding 6 months after discharge (RR: 0.80; 95% CI: 0.54 to 1.17; 1 study,  $n = 281$ ; very low quality of evidence), as the quality of the evidence has been assessed as very low.

The review by Greene et al. on preterm infants who were healthy enough to have oral feeding identified 19 studies with 823 participants (84). It was uncertain whether oral stimulation has an effect on exclusively direct breastfeeding at discharge (RR: 1.83; 95% CI: 0.96 to 3.48; 1 study,  $n = 59$ ; very low quality of evidence) or on any direct breastfeeding at discharge (RR: 1.24; 95% CI: 0.58 to 2.66; 2 studies,  $n = 110$ ; very low quality of evidence), as the quality of the evidence has been assessed as very low.

A further review of observational studies was done to assess the association between pacifier use during the stay at the facilities providing maternity and newborn services and breastfeeding outcomes. Two relevant observational studies were found. A study conducted in Poland in 1995 used a survey form completed by hospital staff on feeding practices and a number of other variables such as pregnancy duration, parity, delivery method, birth weight, hyperbilirubinaemia, time of first breastfeeding, skin-to-skin contact, rooming-in, separation from the infant, use of nipple shield and use of pacifier, on 11 973 mother–infant pairs (93). Among the subset of 11 422 (97.2%) who initiated breastfeeding, 7870 were exclusively breastfed on discharge. Those who were not exclusively breastfeeding on discharge were more likely to have been using a pacifier (unadjusted odds ratio [OR]: 4.97; 95% CI: 3.83 to 6.45;  $n = 11 422$ ).

In a study in Switzerland in 1999, midwives and nurses in 28 facilities providing maternity and newborn services collected information on infants and their feeding practices such as birth weight, gestational age, type of delivery, time of breastfeeding initiation, and use of artificial teats or pacifiers (94). Of the 5790 questionnaires filled in, 4351 were used after excluding the preterm or low-birth-weight neonates, those who medically needed breast-milk substitutes, those who were transferred to the neonatal intensive care unit, and those with missing or invalid information. Infants who were given supplementation with water-based liquids or infant formula during the hospital stay were not statistically significantly more likely to have used a pacifier (OR: 1.11; 95% CI: 0.93 to 1.31;  $n = 4351$ ). When the odds ratio was adjusted for maternal age, parity, education, nationality, birth weight, gestational age, rooming-in, time of initiation of breastfeeding and place of birth, those who were given supplementation were more likely to have used pacifiers or dummies during the stay at the facilities providing maternity and newborn services (adjusted odds ratio [aOR]: 1.85; 95% CI: 1.47 to 2.33;  $n = 4186$ ).

Combining the raw data (unadjusted) of the observational studies done in Poland and Switzerland shows that infants who were not exclusively breastfeeding at discharge were more likely to have been introduced to a pacifier (OR: 1.78; 95% CI: 1.56 to 2.04; 2 studies,  $n = 15 770$ ).

Observational studies that show an association are generally unable to clearly show whether the association is causal or due to confounding, reverse causality or self-selection. An epidemiologic and prospective ethnographic study was done in Brazil in 1993, in order to investigate the association between pacifier use and breastfeeding practice (95). From a cohort of 650 mothers, 450 were not excluded for stopping breastfeeding by 1 month of age, for reporting breastfeeding problems, or having incomplete follow-up. Among these 450 mothers, the association of pacifier use and stopping breastfeeding by 6 months of age (adjusted for use of cow's milk or formula, use of feeding bottle, maternal age, skin colour, low birth weight, sex, type of delivery, breastfeeding at hospital discharge, breastfeeding on demand at 1 month of age, and maternal opinion that pacifiers affect breastfeeding) was aOR: 2.5 (95% CI: 1.40 to 4.01;  $n = 439$ ). The ethnographic analysis among a cohort of 80 mothers who had repeated in-depth interviews and participant observations showed that pacifier use was widely accepted, that mothers stimulated their infants to accept the pacifier, and that they used pacifiers to increase the intervals between breastfeeds or to wean the infant completely off the breast. The mothers who offered pacifiers to their infants tended to have more breastfeeding difficulties, and be more anxious and less self-confident about breastfeeding and their infants' development.

#### **Quality of evidence**

The overall quality of evidence for pacifier use among term infants on the critical outcomes is high. The overall quality of evidence for non-nutritive sucking or oral stimulation among preterm infants on the critical outcomes is low. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#). The summary of findings tables can be found in [Annex 3](#).

#### **Balance of benefits and harms**

The review by Foster et al. (82) showed that non-nutritive sucking versus no provision of non-nutritive sucking did not significantly affect the number of days from birth to full breastfeeding (MD: -1.0 days; 95% CI: -6.7 to 4.7; 1 study;  $n = 303$ ) or weight gain (MD: -1.6 g/day; 95% CI: -3.5 to 0.4; 3 studies;  $n = 103$ ). The preterm infants who were given non-nutritive sucking had a statistically significant shorter length of hospital stay, compared to those not provided with non-nutritive sucking (MD: -4.6 days; 95% CI: -8.1 to -1.1; 6 studies;  $n = 501$ ). The authors of



the review concluded that there do not appear to be any short-term negative effects and that no long-term data are presently available (82).

The review by Greene et al. (84) among preterm infants showed that infants with oral stimulation did not significantly differ from those without oral stimulation in absolute weight gain (MD: 0.73 g; 95% CI: -1.05 to 2.51; 2 studies;  $n = 81$ ). The preterm infants who had oral stimulation, compared to those who had no oral stimulation, were significantly more likely to take fewer days to full oral feeding (MD: -5.2 days; 95% CI: -6.9 to -3.6; 8 studies;  $n = 376$ ) and to have a shorter length of hospital stay (MD: -5.3 days; 95% CI: -7.3 to -3.2; 7 studies;  $n = 301$ ).

No adverse events were reported by the review on the provision or avoidance of pacifiers or dummies among term infants (85).

#### Values and preferences

The review of literature on the values and preferences of mothers towards pacifier use identified five studies conducted in five countries (Australia, Brazil, Egypt, New Zealand and Sweden). Mothers valued the use of pacifiers or dummies. Mothers use pacifiers or dummies because they believe that these soothe or settle their infants, to teach them to suck, to rest between breastfeeds, and to help in the weaning of the baby. Pacifier use was seen as normal positive behaviour. Mothers of preterm and very preterm infants suggested including as a step: "Offer the infant a pacifier for relief of pain, stress and anxiety, and for stimulating the uptake of nutrients during tube feeding. Introduce bottle feeding when there is a reason!" (96). Only a minority of mothers would withhold the pacifier for fear that it would interfere with breastfeeding. Some avoided pacifier use for appearance, or concern for formation of a habit or said that it was not needed or said it was "unnatural" (and they would rather carry their baby as a better way to soothe them). There were also concerns about hygiene, problems with losing the pacifier, and the effect on teeth (moderate confidence in the evidence) (see Annex 4).

Among randomized controlled trials in term infants included in the review by Jaafar et al. (85), the rates of noncompliance among the groups advised to avoid pacifier use (that is, the percentages of mothers who introduced pacifiers despite having been told not to) were 24% (70/294) (91), 40% (188/471) (92) and 61% (78/127) (90). From the review by Foster et al. (92), the study that reported on breastfeeding outcomes in preterm infants noted that non-compliance among the group assigned to the no pacifier group was 31% (47/152) (97). The reasons for noncompliance given by the mothers were because the baby was unsettled and to teach the baby to suck.

#### Acceptability

The review of literature on the acceptability of pacifier avoidance among health-care personnel identified nine studies conducted in six countries (Australia, Canada, Germany, India, the United Kingdom and the United States). There were mixed findings on health-care providers' perceptions of pacifier use. Studies varied on whether maternity staff found advising women on pacifier use easy or an obstacle. Some studies found an "almost universal ambivalence by staff towards the use of teats and dummies". Some felt that the practice of using or avoiding teats in the hospital was inconsistent but that this was not open for discussion. Some health-care personnel were reported as not being aware of the effect of pacifiers or dummies on breastfeeding, or having personal experiences that led them to advise women against banning pacifiers or dummies (moderate confidence in the evidence) (see Annex 5).

#### Resource implications

Possible resource issues in the implementation of avoidance of pacifier use include time spent by health workers on teaching and supporting mothers, and staff capacity and training (72-76).

#### Recommendations

8. Mothers should be supported to recognize their infants' cues for feeding, closeness and comfort, and enabled to respond accordingly to these cues with a variety of options, during their stay at the facility providing maternity and newborn services (*recommended, high-quality evidence*).
9. For preterm infants who are unable to breastfeed directly, non-nutritive sucking and oral stimulation may be beneficial until breastfeeding is established (*recommended, low-quality evidence*).

### Avoidance of feeding bottles and teats

#### Summary of evidence

The systematic review on the use of feeding bottles and teats as alternative methods of feeding healthy term infants whose mothers intend to exclusively breastfeed identified two trials with 1241 participants (83). Giving breast milk using bottles and teats when not on the breast, during the stay at the facilities providing maternity and newborn services, probably makes little or no difference to breastfeeding at discharge (RR: 1.01; 95% CI: 1.00 to 1.02; 1 study,  $n = 541$ ; moderate quality of evidence) or any breastfeeding at 2 months (RR: 1.00; 95% CI: 0.94 to 1.07 1 study,  $n = 541$ ; moderate quality of evidence). Giving breast milk using bottles and teats may make little or no difference to any breastfeeding at 6 months (RR: 1.07; 95% CI: 0.92 to 1.24; 1 study,  $n = 505$ ; low quality of evidence) or to the duration of any

breastfeeding (hazards ratio [HR]: 1.06; 95% CI: 0.88 to 1.27; 1 study,  $n = 481$ ; low quality of evidence) or the duration of exclusive breastfeeding (HR: 0.92; 95% CI: 0.76 to 1.12; 1 study,  $n = 481$ ; low quality of evidence).

The systematic review on the use of cup feeding (instead of bottle feeding) among infants who were unable to breastfeed identified five studies with 971 participants (81). All the studies in the review were conducted on preterm infants. Feeding preterm infants who were unable to breastfeed by cup rather than bottle probably improved exclusive breastfeeding at discharge (RR: 0.61; 95% CI: 0.52 to 0.71; 4 studies,  $n = 893$ ; moderate quality of evidence), may improve any breastfeeding at discharge (RR: 0.64; 95% CI: 0.49 to 0.85; 4 studies,  $n = 957$ ; low quality of evidence), probably improves any breastfeeding at 3 months (RR: 0.83; 95% CI: 0.71 to 0.97; 3 studies,  $n = 883$ ; moderate quality of evidence) and probably improves any breastfeeding at 6 months (RR: 0.83; 0.71 to 0.95; 2 studies,  $n = 803$ ; moderate quality of evidence).

The systematic review on complete avoidance of bottles (instead using alternative feeding devices such as gavage tube, cup, spoon, dropper or finger feeding) during the transition to breast feeds among preterm infants identified seven studies with 1152 participants (80). Feeding preterm infants using alternative feeding devices rather than bottles and teats probably improves exclusive breastfeeding at discharge (RR: 1.47; 95% CI: 1.19 to 1.80; 6 studies,  $n = 1074$ ; moderate quality of evidence), at 3 months (RR: 1.56; 95% CI: 1.37 to 1.78; 4 studies,  $n = 986$ ; moderate quality of evidence) and at 6 months (RR: 1.64; 95% CI: 1.14 to 2.36; 3 studies,  $n = 887$ ; moderate quality of evidence), compared to giving feeds by bottles and teats. Alternative feeding devices (compared to use of bottles and teats) also probably improves any breastfeeding at discharge, at 3 months and at 6 months (moderate quality of evidence).

#### **Quality of evidence**

The overall quality of evidence for avoidance of feeding bottles and teats on the critical outcomes is moderate for term and preterm infants. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#). The summary of findings tables can be found in [Annex 3](#).

#### **Balance of benefits and harms**

The review by Flint et al. (81) noted that none of the studies reported on the numbers experiencing choking, aspiration, infection or deaths. Collins et al. (97) reported no adverse events; Yilmaz et al. (98) and Rocha et al. (99) reported no cases of aspiration or apnoea, and no difference in mean oxygen saturations between cup-fed and bottle-fed infants during feeds.

The review by Collins et al. (70) showed no difference between preterm infants fed by bottle and those not fed by bottle, in terms of: days to reach full breastfeeding (MD: 2.56 days; 95% CI: -7.17 to 12.28; 3 studies;  $n = 429$ ); length of hospital stay (MD: 2.25 days; 95% CI: -3.36 to 7.86; 4 studies;  $n = 1004$ ); and episodes of infection (RR: 0.70; 95% CI: 0.35 to 1.42; 3 studies;  $n = 500$ ). The number of incidents of infection noted were 12/250 (4.8%) among infants who were not bottle fed and 17/250 (6.8%) among infants who were bottle fed. The review also noted that three studies reported on milk aspiration assessed radiologically and that no episodes were identified.

#### **Values and preferences**

The review of literature on the values and preferences of mothers towards avoidance of feeding bottles and teats identified three studies conducted in three countries (Australia, Sweden and the United Kingdom). Two of these studies discussed mothers' values and preferences on the use of cup feeding (carried out in Australia and the United Kingdom).

Mothers found using a bottle easy and convenient. They felt that there was no need for training. Among mothers of very preterm and very low-birth-weight infants, mothers held the opinion that breastfeeding is the best choice, but bottle feeding can also be a good choice (low confidence in the evidence). The mothers also found using a cup difficult, messy and time-consuming, and that the infant would not seem satisfied (low confidence in the evidence) (see [Annex 4](#)).

Among the reviews, included studies had high non-compliance rates among the cup-feeding or bottle-avoidance groups. In the study by Collins et al. (97), 56% (85/151) of the infants in the cup-feeding group were fed using a bottle. According to the mothers, this was because the infants had problems with the cup feeding, such as not managing the cup feeds, spilling a lot, not being satisfied, or taking too long to feed. Among those assigned to bottle feeding, 0.7% (1/152) were given cup feeds. In the study by Yilmaz et al. (98), 10% (26/254) of the infants in the cup-feeding group and 8% (21/268) in the bottle-feeding group were excluded for non-compliance. In the study by Schubiger et al. (91), 11% (28/250) of the infants in the cup- or spoon-feeding group violated protocol: 19 mothers requested a bottle and 9 infants were reported to fail spoon or cup feeding.

#### **Acceptability**

The review of literature on the acceptability of avoidance of feeding bottles and teats among health-care personnel identified 10 studies conducted in 5 countries (Canada, Germany, India, the United

Kingdom and the United States). Health workers disliked cup feeding and were ambivalent about bottle feeding. In several of the studies, providers expressed the belief that it makes no difference how a baby is fed and sometimes it might be better if the baby has a bottle. Bottles were described by some health-care providers as being essential or even beneficial when a mother is struggling. In the neonatal intensive care unit, bottles were reported as being necessary, with the perception that this was due to prioritization of medical care over breastfeeding.

Many studies reported that bottles were preferred by health-care providers to other methods of feeding, such as cup feeding (moderate confidence in the evidence) (see [Annex 5](#)).

#### Resource implications

Possible resource issues in the implementation of avoidance of feeding bottles and teats include time spent by health workers on teaching and supporting mothers to use cups and other feeding methods, and staff capacity and training (72–76).

#### Recommendations

10. If expressed breast milk or other feeds are medically indicated for term infants, use of feeding methods such as cups, spoons or feeding bottles and teats may be used, during their stay at the facility (*recommended, moderate-quality evidence*).
11. If expressed breast milk or other feeds are medically indicated for preterm infants, feeding methods such as cups or spoons are preferable to feeding bottles and teats (*recommended, moderate-quality evidence*).

### Box 3. Summary of recommendations on feeding practices and additional needs of infants

7. Mothers should be discouraged from giving any food or fluids other than breast milk, unless medically indicated (*recommended, moderate-quality evidence*).
8. Mothers should be supported to recognize their infants' cues for feeding, closeness and comfort, and enabled to respond accordingly to these cues with a variety of options, during their stay at the facility providing maternity and newborn services (*recommended, high-quality evidence*).
9. For preterm infants who are unable to breastfeed directly, non-nutritive sucking and oral stimulation may be beneficial until breastfeeding is established (*recommended, low-quality evidence*).
10. If expressed breast milk or other feeds are medically indicated for term infants, use of feeding methods such as cups, spoons or feeding bottles and teats may be used during their stay at the facility (*recommended, moderate-quality evidence*).
11. If expressed breast milk or other feeds are medically indicated for preterm infants, feeding methods such as cups or spoons are preferable to feeding bottles and teats (*recommended, moderate-quality evidence*).

## Rationale for feeding practices and additional needs of infants

The following factors were taken into consideration during the deliberations.

- Early additional feeds other than breast milk have been shown to decrease rates of breastfeeding up to 20 weeks after birth.
- Avoidance of pacifiers or feeding bottles and teats during the stay in the facilities providing maternity and newborn services (in the first 5 days of life) make little or no difference to the rates of any breastfeeding among term infants at discharge, and any or exclusive breastfeeding outcomes at 3 or 6 months.
- Among preterm infants, use of non-nutritive sucking or oral stimulation did not have a significant effect on breastfeeding outcomes but was associated with a shorter length of hospital stay.
- When additional feeds are medically indicated, or when direct breastfeeding is not feasible, avoiding the use of feeding bottles and teats among preterm infants increases the likelihood of any or exclusive breastfeeding up to 6 months after discharge.
- Many mothers value pacifiers and a considerable number would introduce pacifiers even when discouraged to do so. Many also value the convenience of using feeding bottles and teats to provide breast milk when their infants are not on the breast. Mothers can be supported to make informed decisions regarding the use of pacifiers and bottles and teats during their stay at the facilities providing maternity and newborn services, by ensuring that they are aware of the slight risk of interfering with breastfeeding during these early days.

## Remarks

The remarks in this section are points to consider regarding implementation of the recommendations on feeding practices and additional needs of infants, based on the discussions of the guideline development group and the external experts.

- Additional foods and fluids apart from breast milk should only be given when medically acceptable reasons exist. Lack of resources, staff time or knowledge are not justifications for the use of early additional foods or fluids.
- Proper guidance and counselling of mothers and other family members enables them to make informed decisions on the use or avoidance of pacifiers and/or feeding bottles and teats until the successful establishment of breastfeeding.

- Supporting mothers to respond in a variety of ways to behavioural cues for feeding, comfort or closeness enables them to build caring, nurturing relationships with their infants and increase their confidence in themselves, in breastfeeding and in their infants' growth and development. Ways to respond to infant cues include breastfeeding, skin-to-skin contact, cuddling, carrying, talking, singing and so forth.
- There should be no promotion of breast-milk substitutes, feeding bottles, teats, pacifiers or dummies in any part of facilities providing maternity and newborn services, or by any of the staff.
- Health facilities and their staff should not give feeding bottles, teats or other products within the scope of the *International Code of Marketing of Breast-milk Substitutes* and its subsequent related WHA resolutions (26, 28), to breastfeeding infants.

## Creating an enabling environment

The evidence that formed the recommendation on health promotion and fostering an enabling environment is based on six systematic reviews from the Cochrane Pregnancy and Childbirth Group, St Luke's International University (as part of the Cochrane Pregnancy and Childbirth Group in Tokyo, Japan) and independent authors (41–45, 100). The key question and outcomes guiding the evidence review and synthesis for the recommendations in this guideline are listed in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#). The summary of findings tables can be found in [Annex 3](#).

The WHO Secretariat further performed a qualitative evidence synthesis of published literature to identify and summarize qualitative research on the values and preferences of mothers (see [Annex 4](#) for the summary of qualitative findings tables) and factors that influence acceptability among health workers and stakeholders (see [Annex 5](#) for the summary of qualitative findings tables).

A search of the published literature was performed to inform on resource implications, feasibility and equity and human rights issues for each of the interventions. The information on feasibility and equity and human rights issues was common to all interventions and is presented earlier.

Though the issues around resource implications were similar for many of the interventions, some of the resource implications were more specific and are presented for each of the interventions.

## Breastfeeding policy at facilities providing maternity and newborn services

### Summary of evidence

The systematic review on the effect of having a written and regularly communicated policy on breastfeeding and other critical outcomes identified one study with 916 infants (41). It was uncertain whether infants born in facilities providing maternity and newborn services that have a written and regularly communicated policy on breastfeeding are more likely to be exclusively breastfeeding, as the quality of the evidence has been assessed as very low (RR: 1.05; 95% CI: 0.87 to 1.27; 1 study,  $n = 916$ ; very low quality of evidence).

### Quality of evidence

The overall quality of evidence for having a written breastfeeding policy that is routinely communicated to staff on the critical outcomes is very low. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic review can be found in [Annex 2](#). The summary of findings table can be found in [Annex 3](#).

### Balance of benefits and harms

No adverse effects were noted from literature and the discussions of the guideline development group.

### Values and preferences

No studies were found on the values and preferences of mothers towards a written breastfeeding policy of facilities providing maternity and newborn services.

### Acceptability

The review of literature on the acceptability of having a policy on breastfeeding at facilities providing maternity and newborn services among health workers identified six studies from six countries (Australia, China, New Zealand, South Africa, the United Kingdom and the United States). There were two themes identified: one on the content of the policy and the other on the implementation of the policy. One study (101) showed that midwives of a district general hospital in the United Kingdom felt that the infant feeding policy should be neutral (and not emphasize one feeding method over another), or there should not be one. They felt that this would allow them to support mothers in whichever feeding method they chose (very low confidence in the evidence). Most health workers felt that implementing a policy on breastfeeding was a daunting task and would require frequent communication. They identified the need for resources to create and implement such a policy, particularly if the administration had little experience in this (low confidence in the evidence) (see [Annex 5](#)).

### Resource implications

Resource implications identified for implementing a written breastfeeding policy that is routinely communicated include facility administrative support and, more generally, support from the national policy environment in order to sustain initiatives (89, 102).

### Recommendation

12. Facilities providing maternity and newborn services should have a clearly written breastfeeding policy that is routinely communicated to staff and parents (*recommended, very low-quality evidence*).

## Training of health workers

### Summary of evidence

Two systematic reviews examined the effect of training of health workers on breastfeeding, implementation and other critical outcomes (42, 100). Both reviews noted heterogeneity in the measurement of the outcomes with the use of non-validated instruments. The reviews showed that training of health workers tends to improve knowledge and tends to show increased compliance to the implementation of the Baby-friendly Hospital Initiative but has an inconsistent effect on attitude, though the quality of evidence was assessed as very low. None of the studies reported on breastfeeding outcomes.

### Quality of evidence

The overall quality of evidence for training of health-facility staff on breastfeeding on the critical outcomes is very low. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic reviews can be found in [Annex 2](#).

### Balance of benefits and harms

No adverse outcomes or events were reported by the reviews and in the discussions of the guideline development group.

### Values and preferences

No studies were found on the values and preferences of mothers towards training of facility staff on breastfeeding.

### Acceptability

The review of literature on the acceptability of training on breastfeeding by facility staff identified six studies from four countries (Canada, Ireland, New Zealand and the United States). Health workers felt that breastfeeding training would be helpful but that there was lack of time due to competing priorities. Many health workers noted that despite the interest, breastfeeding training would be given a lower priority by staff, compared to training on caring for mothers with complications (low confidence in the evidence) (see [Annex 5](#)).

### Resource implications

Resource implications identified for the implementation of training facility staff on breastfeeding include the cost of training staff (73, 74, 89, 102, 103), time for staff training (72, 76, 103), staff retention (73, 102, 103), staff capacity (72, 74–76) and communication (74, 88, 103).

### Recommendation

13. Health-facility staff who provide infant feeding services, including breastfeeding support, should have sufficient knowledge, competence and skills to support women to breastfeed (*recommended, very low-quality evidence*).

## Antenatal breastfeeding education for mothers

### Summary of evidence

The systematic review on the effect of formal antenatal breastfeeding education (or breastfeeding information being imparted during pregnancy) on the duration of breastfeeding identified 24 studies with 10 056 participants (43). Antenatal breastfeeding education probably makes little or no difference to initiation of breastfeeding (RR: 1.01; 95% CI: 0.94 to 1.90; 8 studies,  $n = 3503$ ; moderate quality of evidence), makes little or no difference to exclusive breastfeeding at 3 months (RR: 1.06; 95% CI: 0.90 to 1.25; 3 studies,  $n = 822$ ; high quality of evidence) and probably makes little or no difference to exclusive breastfeeding at 6 months (RR: 1.07; 95% CI: 0.87 to 1.30; 4 studies,  $n = 2161$ ; moderate quality of evidence), compared to not having antenatal breastfeeding education. There are also probably no differences in rates of any breastfeeding at 3 and 6 months among mothers who have had antenatal breastfeeding education and those who have not (moderate quality of evidence).

The systematic review on interventions that promote initiation of breastfeeding given before the first feed included 28 studies with 107 362 women (44). Interventions that promote breastfeeding may improve initiation of breastfeeding when the support is provided by either health-care professionals (RR: 1.43; 95% CI: 1.07 to 1.93; 5 studies,  $n = 564$ ; low quality of evidence) or non-health-care professionals (RR: 1.22; 95% CI: 1.06 to 1.40; 8 studies,  $n = 5188$ ; low quality of evidence). It was uncertain whether antenatal promotion of breastfeeding has an effect on early initiation of breastfeeding, as the quality of the evidence has been assessed as very low (RR: 1.64; 95% CI: 0.86 to 3.13; 3 studies,  $n = 5560$ ; very low quality of evidence).

### Quality of evidence

The overall quality of evidence for antenatal breastfeeding education on breastfeeding on the critical outcomes is moderate. The PICO question and critical outcomes can be found in [Annex 1](#). The details

of the systematic reviews can be found in [Annex 2](#). The summary of findings tables can be found in [Annex 3](#).

### Balance of benefits and harms

The review by Lumbiganon et al. (43) noted that two studies reported on breastfeeding complications. Duffy et al. (104) reported less nipple pain and less nipple trauma, and more mothers still breastfeeding at 6 weeks among women who had been taught how to position and attach their baby at the breast by a lactation consultant. Kronborg et al. (105) reported no group differences as to whether women responded “yes” when asked about breastfeeding problems.

### Values and preferences

The review of literature on the values and preferences of mothers towards antenatal education on breastfeeding identified 18 studies from 10 countries (Australia, Brazil, Canada, Ireland, Mexico, Russia, Sweden, Uganda, the United Kingdom and the United States). The synthesis of qualitative data identified two themes, the first on the content and the second on the delivery. Mothers felt that infant feeding was not discussed enough in the antenatal period and that antenatal education on feeding was insufficient or too infrequent. Some mothers commented that the contents of antenatal education were too breastfeeding biased with not enough discussion on other options. Some also said that there was not enough discussion on what to expect (for instance, how hard or painful breastfeeding could be) and thus there was a mismatch between women’s expectations and experiences (moderate confidence in the evidence).

The synthesis of evidence also showed that mothers felt that the antenatal education on breastfeeding was not optimally done. Many mothers complained about the antenatal breastfeeding education in terms of negative attitude or miscommunication with the health-care worker. Some mothers cited experiences with providers who appeared to mention breastfeeding simply because it was required by the job, with little sincerity or positive feelings conveyed. Many mothers cited that female health workers with personal experience in breastfeeding were found to be the most sincere and effective counsellors (moderate confidence in the evidence) (see [Annex 4](#)).

### Acceptability

The review of literature on the acceptability of antenatal education on breastfeeding among health workers identified 17 studies conducted in 7 countries (Australia, Canada, Iraq, South Africa, Sweden, the United Kingdom and the United States). There were two themes identified among the studies: one on their perception of the role of the health workers in providing antenatal breastfeeding counselling, and the second on their confidence in providing this counselling.

Health workers had differing views of their role in promoting breastfeeding in antenatal education. While many health-care providers viewed promoting and supporting breastfeeding as being a part of their role, many struggled with trying to promote breastfeeding without creating feelings of animosity with patients. Some studies found that health workers felt uncertain about addressing the issue of bottle feeding. In several studies, health-care providers felt apathetic towards breastfeeding counselling and many preferred a neutral approach to promotion of breastfeeding, in order to maintain better patient rapport (moderate confidence in the evidence).

Health workers had differing confidence and perceived effectiveness in antenatal breastfeeding counselling. While some studies reported that health workers felt confident in counselling women on breastfeeding and breastfeeding problems, others reported that health workers felt uncertain and ineffective in their counselling. Many felt that they lacked feedback and stated that they were unable to know whether they are adequately supporting mothers with breastfeeding (moderate confidence in the evidence) (see [Annex 5](#)).

#### Resource implications

Resource implications identified for the implementation of antenatal education on breastfeeding include the resources needed to increase or augment health-care staff knowledge, confidence and self-efficacy related to breastfeeding counselling (72, 74–76) and communications on expectations and barriers (74, 88, 103).

#### Recommendation

14. Where facilities provide antenatal care, pregnant women and their families should be counselled about the benefits and management of breastfeeding (*recommended, moderate-quality evidence*).

## Discharge planning and linkage to continuing support

#### Summary of evidence

The systematic review that searched for evidence of the effects of discharge planning and linkage to continuing support found two randomized controlled trials (45). The first trial done in the Democratic Republic of the Congo included 965 mother–infant pairs (106). Both the control group (called “Steps 1–9”) and the intervention group (called “Steps 1–10”) had 2-day intensive training for antenatal care clinic staff, delivery-room staff and postpartum ward staff. The intervention group also included the well-baby clinic staff in the intensive training. In addition, flyers containing messages on breastfeeding were distributed by the postpartum ward and well-baby clinic staff in the intervention group. There was no referral for any breastfeeding support after discharge from the postpartum ward.

It was uncertain whether inclusion of the well-baby clinic staff in the intensive training and distribution of flyers on breastfeeding had an effect on exclusive breastfeeding at 14 weeks (RR: 0.64; 95% CI: 0.42 to 0.98; 1 study,  $n = 671$ ; very low quality of evidence) or at 24 weeks (RR: 0.39; 95% CI: 0.20 to 0.79; 1 study,  $n = 617$ ; very low quality of evidence), compared to intensive training for only the antenatal care clinic staff, delivery-room staff and postpartum ward staff, as the quality of the evidence has been assessed as very low. The quality of evidence was also assessed as very low for incidence of diarrhoea or fever.

The second included trial done in Australia included 4625 mother–infant pairs (107). Both the control group (called “HV”) and the interventions group (called “HV+drop-in”) had a hospital midwife home visit at 1–2 days after discharge, a nurse visit at 10–14 days after birth, a telephone call to assign a nurse visit earlier than the 10th day after birth if required, and access to the state-wide 24-hour maternal and child health service helpline. The intervention group also had written information about a local community breastfeeding drop-in centre. Having information and access to a drop-in centre for further support after discharge may make little or no difference to any breastfeeding at 4 months of age (RR: 0.87; 95% CI: 0.67 to 1.14; 1 study,  $n = 4625$ ) (very low quality of evidence).

#### Quality of evidence

The overall quality of evidence for linkage to continuing support at discharge on the critical outcomes is very low. The PICO question and critical outcomes can be found in [Annex 1](#). The details of the systematic review can be found in [Annex 2](#). The summary of findings table can be found in [Annex 3](#).

#### Balance of benefits and harms

No adverse effects were noted from the literature and in the discussions of the guideline development group.

#### Values and preferences

The review of literature on the values and preferences of mothers towards linkage to continuing care at discharge identified 22 studies from 11 countries (Australia, Canada, Denmark, France, Ireland, Russia, Spain, Sweden, Switzerland, the United Kingdom and the United States). In general, most mothers valued linkage to breastfeeding support after discharge, regardless of the type of linkage, and this gave them a greater sense of security in caring for their infants (moderate confidence in the evidence) (see [Annex 4](#)).

#### Acceptability

The review of literature on the acceptability of linkage to continuing care after discharge among health-care personnel identified six studies conducted in three countries (Canada, New Zealand and the United States). Health workers felt that linkage to continuing

support for breastfeeding was challenging. The studies cited that health workers described gaps and lack of communication between health-care providers in the continuum of care after women leave the hospital (moderate confidence in the evidence) (see [Annex 5](#)).

#### **Resource implications**

Resource implications identified for the implementation of linkage to continuing care after discharge include the resources required for communications between health-care providers (21, 57, 58).

#### **Recommendation**

15. As part of protecting, promoting and supporting breastfeeding, discharge from facilities providing maternity and newborn services should be planned for and coordinated, so that parents and their infants have access to ongoing support and appropriate care (*recommended, low-quality evidence*).

#### **Box 4. Summary of recommendations on creating an enabling environment**

12. Facilities providing maternity and newborn services should have a clearly written breastfeeding policy that is routinely communicated to staff and parents (*recommended, very low-quality evidence*).
13. Health-facility staff who provide infant feeding services, including breastfeeding support, should have sufficient knowledge, competence and skills to support women to breastfeed (*recommended, very low-quality evidence*).
14. Where facilities provide antenatal care, pregnant women and their families should be counselled about the benefits and management of breastfeeding (*recommended, moderate-quality evidence*).
15. As part of protecting, promoting and supporting breastfeeding, discharge from facilities providing maternity and newborn services should be planned for and coordinated, so that parents and their infants have access to ongoing support and receive appropriate care (*recommended, low-quality evidence*).

## **Rationale for creating an enabling environment**

The following factors were taken into consideration during the deliberations.

- Few of the interventions on creating an enabling environment show a positive effect on short- or long-term breastfeeding outcomes.
- Providing antenatal education (without providing other forms of breastfeeding support) has not been shown to have a significant effect on breastfeeding rates, though there is evidence that support aimed specifically at promoting the initiation of breastfeeding given before the first feed may have positive results.
- Having a written policy, training of health workers and discharge planning with linkage to continuing support may not, by themselves, change breastfeeding practice. However, they help create an effective health-delivery system within the facilities providing maternity and newborn services that can respond to the needs of mothers and infants.

#### **Remarks**

The remarks in this section are points to consider regarding implementation of the recommendations for creating an enabling environment, based on the discussions of the guideline development group and the external experts.

- Creating an enabling environment for breastfeeding includes having policies and guidelines that underpin the quality standards for promoting, protecting and supporting breastfeeding in facilities providing maternity and newborn services. These policies and guidelines include provisions of the *International Code of Marketing of Breast-milk Substitutes* and its subsequent related WHA resolutions (26, 28).
- Relevant training for health workers is essential to enable quality standards to be implemented effectively according to their roles.
- Parents should be offered antenatal breastfeeding education that is tailored to their individual needs and sensitively given and considers their social and cultural context. This will prepare them to address challenges they may face.



- Mothers should be prepared for discharge by ensuring that they can feed and care for their infants and have access to continuing breastfeeding support. The breastfeeding support in the succeeding days and weeks after discharge will be crucial in identifying and addressing early breastfeeding challenges that occur.
- Minimizing disruption to breastfeeding during the stay in the facilities providing maternity and newborn services will require health-care practices that enable a mother to breastfeed for as much, as frequently and for as long as she wishes.
- Coordination of clinical systems in facilities providing maternity and newborn services, so that standards of care for breastfeeding support are coordinated across the obstetric, midwifery and paediatric services, helps develop services that improve the outcomes for those using them.

## Implementation of the guideline

An implementation guide that will encompass the recommendations included in this guideline, the *International Code of Marketing of Breast-milk Substitutes* (26) and the *Baby-friendly Hospital Initiative* (22) has been developed by WHO and UNICEF and will be published separately in *Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services: the revised Baby-friendly Hospital Initiative 2017*.

The implementation of this guideline complements the interventions and guidance presented in the *Essential newborn care course* (29), *Kangaroo mother care: a practical guide* (30), *Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice* (31) and the *Standards for improving quality of maternal and newborn care in health facilities* (32).

### Implementation considerations

As this is a global guideline, Member States are expected to adapt the recommendation according to their settings and contexts. Public health nutrition and child health programmes that include breastfeeding protection, promotion and support require supportive policies, and health-care services that enable the proper availability of and access to quality services, which should also be culturally acceptable. WHO regional and country offices assist Member States with these processes.

Scaling up breastfeeding programmes entails several components working synchronously. Evidence-based advocacy generates political will to enact legislation and policies to protect, promote and support breastfeeding. Policies and strategies help channel the resources towards development of human resources and programme delivery. Evaluation and monitoring, in turn, are needed to provide feedback and drive adaptation or improvement. Implementing the interventions to protect, promote and support breastfeeding in facilities providing maternity and newborn services will require endorsements of both local administrators and governmental policy-makers; effective leadership to transform processes; training of health-care workers; and alignment of hospital-wide health services related to breastfeeding, so that they are people centred, i.e. with the infants, mothers and their families at the centre of care (108, 109).

Guiding principles to expand implementation of the interventions that protect, promote and support breastfeeding to neonatal intensive care units and the care of vulnerable infants have also been described (96, 110, 111).

Engaging with multiple stakeholders and partners is critical for strengthening implementation and sustaining gains in breastfeeding. Working in collaboration with programmes involved in child and adolescent well-being (e.g. sexual and reproductive health; water, sanitation and hygiene; early childhood development and education; social marketing; and others) can help ensure a comprehensive, cross-sectoral and more sustainable approach to protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services.

Implementation of this guideline should be a planned and monitored process, including collection of data on how the recommendations are accepted, contested or easily implemented. Adequate collection and recording of data, difficulties, decisions and results can inform implementation research questions that may arise during monitoring and evaluation, and hence provide robust evidence for scaling up and sustainability.

### Regulatory considerations

Implementing interventions that protect, promote and support breastfeeding in facilities providing maternity and newborn services entails improving the quality and standards of care for mothers and their infants during and immediately after the time of childbirth. WHO has produced a technical reference document with eight standards of care and 31 quality statements for improving maternal and newborn care in health facilities (32). Implementation of interventions to protect, promote and support breastfeeding in facilities providing maternity and newborn services should be aligned to the overall quality standards for the care of mothers and newborns.

### Ethical and equity considerations

Ethical principles lead to consideration of whether an intervention is producing benefits to individuals and communities; preventing harms at the individual and societal levels; and distributing health benefits across social groups, that is, how much an intervention is contributing to health equity; and respecting and promoting the exercise of human rights.

Breastfeeding is a complex social act that encompasses behaviours, values, beliefs and social roles and interplays with the implementation of policies, strategies and actions to protect, promote and support breastfeeding. Achieving equity in breastfeeding entails political leadership to create an enabling environment that supports the availability of

and access to quality breastfeeding support. Policy-makers need to have a holistic view of what is needed for breastfeeding and how to address the needs of diverse, vulnerable populations (112, 113).

## Monitoring and evaluation of guideline implementation

Monitoring and evaluation should be built into the implementation process, in order to provide important lessons for uptake and further implementation. WHA Resolution 65.6 endorsed a *Comprehensive implementation plan on maternal, infant and young child*

*nutrition* (15), which specified six global nutrition targets for 2025 (17). One of the targets is to increase the rate of exclusive breastfeeding in the first 6 months up to at least 50%.

For evaluation at the global level, the WHO Department of Nutrition for Health and Development has developed a centralized platform for sharing information on nutrition actions in public health practice implemented around the world. By sharing programmatic details, specific country adaptations and lessons learnt, this platform provides examples of how guidelines are being translated into actions. The Global database on the Implementation of Nutrition Action (GINA) (114) provides valuable information on the implementation of numerous nutrition policies and interventions.

## Research gaps

Discussions between the members of the WHO guideline development group and the external resource group highlighted the limited evidence available in some knowledge areas, meriting further research.

- More studies across different regions, countries and population groups (e.g. by income levels, educational levels, cultural and ethnic backgrounds) and contexts are required, in order to adequately and sensitively protect, promote and support breastfeeding.
- The available evidence about breastfeeding education and training of health workers in the knowledge, attitudes, skills and competence needed to work effectively with breastfeeding parents is limited and of poor quality. Further research is required to compare different durations, content (including clinical and practical skills) and modes of training delivery, in order to meet minimum competency to address common breastfeeding challenges.
- More research is needed on the advanced competencies required to address persistent or complex problems.
- The involvement of family in education, counselling and information efforts about the benefits and management of breastfeeding is also understudied.
- Research is needed on skin-to-skin contact among less healthy or unstable parent–infant pairs, taking into account the stability of the individuals and the pairs. More research is needed on the time of initiation of the intervention, the effects of the intervention on the microbiome and long-term neurodevelopmental and health outcomes.
- More research on methods of implementation for safe skin-to-skin contact and rooming-in practices would be valuable in operationalization, such as the timing and frequency of assessments and methods to decrease sentinel events (such as sudden infant collapse or falls).
- Implementation research on responsive feeding, cue-based, demand feeding or infant-led feeding would bring more clarity to the wider process of commencing breastfeeding, readiness to suckle, hunger and feeding cues and the adequacy of information given to parents. Additional outcomes besides breastfeeding rates include maternal outcomes (for instance, exhaustion, stress, sleep adequacy, trauma, anaesthesia, breastfeeding satisfaction, self-confidence), and infant outcomes (for instance, attachment, sudden infant death, infection and other elements of security and safety).
- Medical requirements for and effects of additional feeds on infants and mothers need further research. Analysis of these effects by maternal condition, infant condition, mode of delivery, prematurity or birth weight, timing, types of food and fluids and other factors may be useful.
- More robust studies on non-nutritive sucking and oral stimulation among preterm infants is needed.
- More high-quality research is needed on the practices and implementation of the recommendations in facilities providing maternity and newborn services, as the basis for experience and observational studies, especially for recommendations for which the available evidence is of low or very low quality.

## Guideline development process

This guideline was developed in accordance with the WHO evidence-informed guideline-development procedures, as outlined in the *WHO handbook for guideline development* (115).

### WHO steering group

A WHO steering group (see [Annex 6](#)), led by the WHO Department of Nutrition for Health and Development, was established with representatives of the WHO Departments of Gender, Equity and Human Rights; Maternal, Newborn, Child and Adolescent Health; Service Delivery and Safety and Reproductive Health and Research, and UNICEF. The steering group guided the overall guideline development process, as well as the retrieval, assessment and summary of the evidence.

The steering group drafted the scope of the guideline and key questions in PICO format; identified the systematic review teams and guideline methodologist; developed and finalized the planning proposal; helped with the selection of the guideline development group and the external resource persons; oversaw the evidence retrieval, assessment and synthesis; collected and assessed disclosures of interest; and managed conflicts in consultation with the WHO Office of Compliance, Risk Management and Ethics. The steering group drafted the recommendation, based on the decisions of the guideline development group; drafted the final guideline, including management of the peer-review process; and oversaw the dissemination of the guideline. Regional advisers from the WHO regions also participated in the meetings of the guideline development group.

### Guideline development group

The steering group identified candidates for the guideline development group from the roster of WHO advisers and experts, a call for expressions of interest issued in October 2015, recommendations from other WHO departments, and literature reviews. Twenty-two persons were informally asked whether they were interested in becoming part of the guideline development group – nutrition actions 2016–2018. Of those 22 persons, 15 gave a positive response. Those interested were then asked to submit their latest curriculum vitae and filled in declaration-of-interest forms.

A guideline development group – nutrition actions 2016–2018 was established with 15 members, in order to advise WHO in the areas of epidemiology, nutrition, infant and maternal health care, paediatrics, and

systematic reviews. There were nine women and seven men, representing the six WHO regions.

The guideline development group scoped the guideline, drafted the key questions in PICO format and prioritized the outcomes during a meeting on 11–13 April 2016. In a second meeting of the guideline development group on 7–11 November 2016, they examined the evidence used to inform the recommendation and appraised them using the Grading of Recommendation Assessment, Development and Evaluation (GRADE) evidence profiles (38, 116, 117). They interpreted the evidence, taking into consideration the Developing and Evaluating Communication Strategies to support Informed Decisions and Practice based on Evidence (DECIDE) framework (118), an evidence-to-decision tool that includes intervention effects, values, resources, equity, acceptability and feasibility criteria, to guide the formulation of the recommendations (119, 120). The list of the guideline development group members and their areas of expertise appears in [Annex 7](#).

### External resource persons

The external resource persons for this guideline were composed of three persons identified by the steering group who could provide valuable insights to the guideline development group on issues relevant to the topic. Their expertise included infant feeding, implementation of the Ten Steps to Successful Breastfeeding, and certification and monitoring of the Baby-friendly Hospital Initiative.

The external resource persons provided valuable insights during the open sessions of the group discussions. They were not present in closed-session deliberations of the guideline development group. That is, they participated in general discussions on the evidence and factors to consider for the crafting of the recommendations but did not contribute to the decision on the recommendation wording or direction. The external review persons are listed in [Annex 8](#).

### Systematic review teams

The following groups were commissioned to conduct systematic reviews relevant to the key questions identified during the guideline development group scoping meeting:

- Cochrane Pregnancy and Childbirth Group;
- St Luke's International University (as part of the Cochrane Pregnancy and Childbirth Group in Tokyo, Japan);

- Cochrane Neonatal Research Group;
- independent authors for specific systematic reviews.

The systematic review teams provided comprehensive, objective syntheses of the evidence for each of the key questions, to inform the recommendations. The responsible technical officer assessed the quality of the body of evidence and developed the GRADE evidence profiles. These systematic reviews were presented at the guideline development group meeting in Florence, Italy in November 2016. The list of systematic reviews and authors is provided in [Annex 9](#).

## Management of conflicts of interests

The steering group, in compliance with the WHO *Guidelines for declaration of interests for WHO experts (121)* and in collaboration with the Office of Compliance and Risk Management and Ethics, managed the potential conflicts of interests. All potential guideline development group members were asked to fill in and sign the standard WHO declaration-of-interests and confidentiality undertaking forms. Updated curriculum vitae were also required from the prospective members of the guideline development group, as they engage in their individual capacity and not as institutional representatives.

The steering group reviewed the declaration-of-interests statements in conjunction with the curriculum vitae for all guideline development group members. Information from the internet or media were gathered, in order to identify any public statements made or positions held by the prospective guideline development group members and experts on the issue of protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. These were assessed for intellectual bias that may be perceived to, or actually, affect impartiality. All concerns or potential issues were discussed with the WHO Office of Compliance, Risk Management and Ethics. All potential conflicts of interest were managed on a case-by-case basis.

The following members of the guideline development group were assessed to have no perceived or real conflicts of interests on the topic. They were asked to verbally declare their research and programme experiences and sources of funding: Dr Paluku Bahwere, Dr Mary Christine R Castro, Dr Hoosen Coovadia, Dr Luz Maria De-Regil, Ms Solange Durão, Dr Shams El Arifeen,<sup>1</sup> Dr Jalila Hassani Ep El Ati,

Ms Anne-Dominique Israel-de Monval, Dr Susan Jack, Dr Maria Elena del Socorro Jefferds, Dr Alexis Nzila, Dr Indi Trehan, Dr Tran Khanh Van, Ms Terrie Wefwafwa, Dr Maged Younes<sup>2</sup> and Dr Khalid Yunis.<sup>1</sup>

One member declared interests that were further discussed with the Office of Compliance, Risk Management and Ethics. She was assessed to merit conditional participation with involvement in the meeting after publicly disclosing her interests at the start of the meeting to all meeting participants, and in the guideline document. Dr Haider chaired the scoping meeting for these recommendations and participated in discussions during the final guideline meeting but was excluded from participating in the decision-making process. Aside from her research and programme experiences and sources of funding, she was asked to specifically declare the following:

Dr Rukhsana Haider declared that when the Baby-friendly Hospital Initiative was first launched, she was hired by WHO and UNICEF as a technical consultant, international trainer and assessor to work with national hospitals on breastfeeding promotion. Soon after, she was delegated to the UNICEF Bangladesh Country Office to set up the Baby-friendly Hospital Initiative in the country. In this capacity, and as an associate scientist at the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) conducting hospital-based research and training workshops to promote and support exclusive breastfeeding, her work was able to contribute substantially to the Baby-friendly Hospital Initiative modules. She is the chairperson and founder of the Training and Assistance for Health and Nutrition (TAHN) Foundation. The TAHN Foundation has no regular funders; their peer counselling programme is mostly funded by Dr Haider, her family and friends. However, the foundation does receive funds from local and international organizations for specific projects or trainings. These funding organizations include ICDDR,B, the World Alliance for Breastfeeding Action (WABA) and WABA board members, and “a steel company and an insurance company”. A recent publication authored by Dr Haider discussed the effect of intensive antenatal and postpartum breastfeeding counselling on breastfeeding rates and growth outcomes.

Names and brief biographies of the guideline development group, along with a description of the objectives of the meeting, were published on the WHO website, for public notice and comment. No additional information on any interests or biases relating to the individuals being considered for membership of the guideline development group were brought to light from the public notice.

1 Unable to attend the second meeting.

2 Unable to attend the guideline development group meetings.

## Identification of priority questions and outcomes

An initial set of questions to be addressed in the guidelines was the starting point for formulating the recommendation. The questions were drafted by technical staff at the Evidence and Programme Guidance Unit of the Department of Nutrition for Health and Development, based on the policy and programme guidance needs of Member States and their partners. The questions were discussed and reviewed by the steering group.

A meeting of the guideline development group on 11–13 April 2016 in Geneva, Switzerland, was held to finalize the scope of the questions and to rank the outcomes and populations of interest for the recommendations on protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. The guideline development group discussed the relevance of the questions and modified them as needed. The group scored the relative importance of each outcome from 1 to 9 (where 7–9 indicated that the outcome was critical for a decision, 4–6 indicated that it was important and 1–3 indicated that it was not important). The final key questions on this intervention, along with the outcomes that were identified as critical for decision-making, are listed in PICO format in [Annex 1](#).

## Evidence identification and retrieval

A search for previous reviews that address each of the key questions was done in the Campbell Collaboration, Cochrane Library, EMBASE, Epistemonikos, Health Systems Evidence, MEDLINE and the WHO Global Index Medicus up to December 2015. Fifty-two ( $n = 52$ ) systematic reviews were found and assessed for relevance, quality and timeliness. Of these reviews, nine were previous reviews from the Cochrane Pregnancy and Childbirth Group, seven were from the Cochrane Neonatal Review Group and two were from independent (non-Cochrane) publications. Updates of these systematic reviews were contracted to the original authors. There were four PICO questions that the steering group decided to commission to the St Luke's International University (as part of the Cochrane Pregnancy and Childbirth Group in Tokyo, Japan). In all, 22 systematic reviews were updated or developed to inform the recommendations. The details of the systematic reviews can be found in [Annex 2](#).

The WHO Secretariat further performed a qualitative evidence synthesis of published literature, to identify and summarize qualitative research for the

values and preferences of mothers and factors that influence acceptability among health workers and stakeholders. A search of the published literature was also performed, to inform on resource use, feasibility and equity and human rights issues for each of the interventions.

## Quality assessment and grading of evidence

Systematic reviews based on the PICO questions were used to summarize and appraise the evidence. These reviews followed the procedures of the *Cochrane handbook for systematic reviews of interventions* (122). Each study included in the systematic reviews was assessed for risk of bias. This was recorded and contributed towards the assessment of the overall quality of the evidence. During the discussion and deliberations, the steering group and the guideline development group carefully reviewed the quality, scope and study inclusion criteria for the systematic reviews. The relative weight given to the trials and non-randomized studies was taken into account when evaluating the quality assessment for each study. When possible, the findings were synthesized with a pooled estimate of effect. The results of the systematic reviews were presented to the guideline development group, along with an assessment of the confidence in the estimates of effect for the critical outcomes.

Evidence profiles were prepared according to the GRADE approach, to assess the overall quality of the evidence (38, 116, 117). The quality of evidence for each outcome was rated as “high”, “moderate”, “low” or “very low”, based on a set of criteria including risk of bias, inconsistency, imprecision, indirectness and publication bias. The summary of findings tables can be found in [Annex 3](#).

The findings of the qualitative reviews on maternal values and preferences and acceptability to health workers of interventions that promote, protect and support breastfeeding were appraised using the GRADE Confidence in the Evidence from Reviews of Qualitative Research (GRADE-CERQual) approach (123, 124). Overall confidence in the evidence from reviews of qualitative research was based on methodological limitations of the individual studies; adequacy of the data; coherence of the evidence; and relevance of the individual studies to the review findings. The summary of qualitative findings tables on maternal values and preferences can be found in [Annex 4](#) and the summary of qualitative findings tables on the factors that influence acceptability among health workers and stakeholders can be found in [Annex 5](#).

## Formulation of recommendations

The draft recommendations were discussed by the steering group, in consultation with the guideline development group, in a meeting held on 7–11 November 2016 in Florence, Italy.

Three options for types of recommendations were agreed, namely:

- recommended;
- recommended only in specific contexts;
- not recommended.

A recommendation that is “recommended” is one for which the guideline development group is confident that the desirable consequences clearly outweigh the undesirable consequences. Most mothers, patients or end-beneficiaries would want the recommended course of action; only a small proportion would not. The implication for health-care workers is that most individuals should receive the intervention. The implication for policy-makers is that the recommendation can be adopted as a policy, quality standard or performance indicator in most situations.

A recommendation that is “recommended only in specific contexts” is one in which the balance between the benefits and harms of implementing the recommendation may be different for certain situations. Recommendations in this category will specify the contexts in which these recommendations may be applied.

The systematic review and the GRADE evidence profiles for each of the critical outcomes were used for drafting recommendations. An evidence-to-decision framework (based on the *DECIDE* framework (118)) was used to lead discussion and decision-making (119, 120).

The domains listed next were prepared by the steering group and discussed during the guideline development group meeting for each of the key PICO questions.

### Quality of evidence

The overall degree of confidence in the estimates of effect as presented in the GRADE profile was considered in the drafting of the recommendation. The higher the quality of evidence across critical outcomes that are relevant to decision-making, the higher the likelihood is of a clear positive recommendation. A context-specific recommendation is likely to be warranted when the overall quality is rated “low” or “very low”.

### Balance of benefits and harms

The guideline development group evaluated the balance between desirable and undesirable consequences, including the magnitude of the effects and relative importance of these consequences. Where benefits clearly outweigh harms or vice versa, the greater the likelihood is of a recommendation in favour of or against the intervention, respectively. Uncertainty about the net benefits or harms often leads to a context-specific recommendation.

### Values and preferences

The relative importance of the outcome to the individuals or populations directly affected by the recommendation describes the values and preferences. The steering group performed a review of qualitative information on how end-users (mothers) perceived interventions to protect, promote and support breastfeeding in facilities providing maternity and newborn services. These were presented during the guideline development group meeting. When there is uncertainty or wide variability on the values and preferences of the target beneficiaries, a context-specific recommendation may be warranted.

### Acceptability

A review of qualitative information on how health-care workers and service providers perceive interventions to protect, promote and support breastfeeding and their effects was done and presented during the guideline development group meeting. The higher the acceptability of the intervention among stakeholders, the more likely it is that an intervention will be clearly recommended. When it was deemed necessary to recommend an intervention that is associated with low acceptability, strategies to address concerns about acceptability during implementation were discussed.

### Resource implications

This relates to evaluation of how resource intensive and cost effective the intervention is to service users and health systems in different settings. A recommendation in favour of or against the intervention is likely where the resource implications are clearly advantageous or disadvantageous, whereas a context-specific recommendation may be justified if the resource implications are uncertain.

### Feasibility

The steering group presented instances when interventions to protect, promote and support



breastfeeding in facilities providing maternity and newborn services were implemented in different settings, to highlight the feasibility of implementation and whether barriers exist. The greater the feasibility, the more likely it is that the intervention will be recommended.

### Equity and human rights

An intervention is likely to be recommended if it is more prone to reduce health inequities across different groups of infants, mothers and their families, especially those groups that are more vulnerable or worst-off.

Based on the discussions during the meeting, each recommendation was supported by a rationale, implementation considerations and research priorities.

## Consensus decision-making rules and procedures

The chairpersons, Dr Maria Elena del Socorro Jefferds and Dr Rukhsana Haider (April 2016) and Ms Solange Durão and Dr Susan Jack (November 2016), were nominated by the WHO Secretariat at the opening of the consultation. The nominations were approved by the guideline development group.

The procedures for consensus decision-making were established at the beginning of the meetings, including a minimal set of rules for agreement and documentation of decision-making. At least two thirds of the guideline development group was required to be present for an initial discussion of the evidence and proposed recommendation and remarks. By secret ballot, each member of the guideline development group noted the direction of each of the recommendations, using an online form specifically

designed for this purpose. Abstentions were not allowed.

Once voting was complete, subsequent deliberations among the members of the guideline development group could take place. If there was no unanimous consensus (primary decision rule), more time was given for deliberations and a second round of online voting took place. If no unanimous agreement was reached, a two-thirds vote of the guideline development group was required for approval of the proposed recommendation (secondary decision rule). The results from voting forms will be kept on file by WHO for up to 5 years.

## Document preparation and peer-review

The responsible technical officer wrote the first draft of the guideline, with comments from the steering group. Technical editing and proofreading was done by a contracted party.

The final draft guideline was peer-reviewed by content experts, to provide technical feedback; identify errors of fact; ensure that there were no important omissions, contradictions or inconsistencies with scientific evidence or programmatic feasibility; and assist with clarifying the language, especially in relation to implementation, adaptation and contextual issues. The independent peer-reviewers were selected by the steering group. Twenty-one potential peer-reviewers were approached after assessment of the declarations of interests, and 16 agreed. The list of peer-reviewers appears in [Annex 10](#).

The steering group reviewed all comments and revised the document, in order to ensure clarity of the recommendation while maintaining consistency with the original meaning.

# Dissemination and plans for updating

## Dissemination

The current guideline will be posted on the WHO website, including the *WHO Nutrition website* (125) and the WHO e-Library of Evidence for Nutrition Actions (*eLENA*) (126). In addition, it will be disseminated through a broad network of international partners, including WHO country and regional offices, ministries of health, WHO collaborating centres, universities, other United Nations agencies and nongovernmental organizations.

An implementation guide that will encompass the recommendations included in this guideline, the *International Code of Marketing of Breast-milk Substitutes* (26) and the Baby-friendly Hospital Initiative has been developed by WHO and UNICEF and will be published separately in *Protecting, promoting, and supporting breastfeeding in facilities providing maternity and newborn services: the revised Baby-friendly Hospital Initiative 2017*.

## Plans for updating the guideline

The WHO steering group will continue to follow research developments in protection, promotion and support of breastfeeding in facilities providing maternity and newborn services, particularly for questions in which the quality of evidence was found to be low or very low. If the guideline merits an update, or if there are concerns about the validity of the guideline, the Department of Nutrition for Health and Development will coordinate the guideline update, following the formal procedures of the *WHO handbook for guideline development* (115).

As the guideline nears the 10-year review period, the Department of Nutrition for Health and Development at the WHO headquarters in Geneva, Switzerland, along with its internal partners, will be responsible for conducting a search for new evidence.

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# Annex 1. Question in population, intervention, comparator, outcomes (PICO) format

## A. Immediate support to initiate and establish breastfeeding

### Early skin-to-skin contact

Should mothers giving birth (P) practise early skin-to-skin contact (I), compared to not practising early skin-to-skin contact (C), in order to increase rates of early initiation of breastfeeding within 1 hour after birth (O)?

Population	
Any mother giving birth	
Intervention	Comparator
Early skin-to-skin contact (immediate and continued direct contact between the mother and infant)  <b>Subgroups:</b> By timing: within <5 minutes, 5–60 minutes, 1–4 hours, >4 hours	No early skin-to-skin contact (standard skin contact or use of infant wrap)
Outcomes	
Infant outcomes	
Early skin-to-skin contact Early initiation of breastfeeding within 1 hour after birth Early initiation of breastfeeding within 1 day after birth Exclusive breastfeeding during the stay at the facility Exclusive breastfeeding at 1 month Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding (in months)	

### Early initiation of breastfeeding

Should mothers giving birth (P) practise early initiation of breastfeeding (I), compared to not practising early initiation of breastfeeding (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any mother giving birth	
Intervention	Comparator
Early initiation of breastfeeding (latching and suckling)	No early initiation of breastfeeding (late latching and suckling)
Outcomes	
Exclusive breastfeeding during the stay at the facility Exclusive breastfeeding at 1 month Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding (in months) Neonatal, infant or child mortality (all-cause) Onset of lactation	

## Showing mothers how to breastfeed

Should mothers giving birth (P) be assisted with correct positioning and attachment, so that their infants achieve effective suckling (I), compared to not assisting mothers to position and attach (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any mother giving birth	
Intervention	Comparator
Assisting mothers in correct positioning and attachment, so that their infant achieves effective suckling  <b>Subgroups:</b> By type of support: face-to-face counselling, distribution of printed or video material (no direct contact), group sessions  By frequency: 1×, 2×, at least 3×	Not assisting mothers in positioning, attachment and suckling of their infants
Outcomes	
Exclusive breastfeeding during the stay at the facility Exclusive breastfeeding at 1 month Exclusive breastfeeding at 3 months Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding (in months) Duration of any breastfeeding (in months) Neonatal, infant or child mortality (all-cause) Breast conditions (sore or cracked nipples, engorgement, mastitis etc.)	

Should mothers giving birth (P) be shown how to practise expression of breast milk (I), compared to not being shown expression of breast milk (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any mother giving birth	
Intervention	Comparator
Showing mothers how to, and helping them to practise expression of breast milk  <b>Subgroups:</b> By method: hand expression, manual pump expression, electric pump expression	Not showing or teaching hand expression of breast milk; not showing or teaching other methods of breast-milk expression
Outcomes	
Exclusive breastfeeding during the stay at the facility Exclusive breastfeeding at 1 month Exclusive breastfeeding at 3 months Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding in (months) Effectiveness of breast-milk expression (volume of breast milk expressed)	

## Rooming-in

Should mothers giving birth in hospitals or facilities providing maternity and newborn services and their infants (P) remain together or practise rooming-in (I), compared to not rooming-in (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any mother giving birth in a hospital or facility providing maternity and newborn services and their newborn infant	
Intervention	Comparator
Rooming-in of infants with mothers	No rooming-in of infants with mothers (separate care for mothers and infants)
Outcomes	
Exclusive breastfeeding during the stay at the facility Exclusive breastfeeding at 1 month Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding (in months) Neonatal, infant or child mortality (all-cause) Onset of lactation	

## Demand feeding

Should mothers giving birth (P) practise feeding on demand or infant-led breastfeeding (I), compared to not practising feeding on demand or feeding by schedule (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any mother giving birth	
Intervention	Comparator
Feeding on demand throughout the hospital stay	Not feeding on demand (scheduled breastfeeding) throughout the hospital stay
Outcomes	
Exclusive breastfeeding during the stay at the facility Exclusive breastfeeding at 3 months Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding (in months) Duration of any breastfeeding (in months) Neonatal, infant or child mortality (all-cause)	

## B. Feeding practices and additional needs of infants

### Early additional foods or fluids

Should newborn infants (P) be given no foods or fluids other than breast milk unless medically indicated (I), compared to giving early additional food or fluids (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any newborn infant born with no medical indication for not breastfeeding	
Intervention	Comparator
No foods or fluids other than breast milk given to infants	Giving early additional foods or fluids <b>Subgroups:</b> By timing of additional food/fluid: before first milk feed, within 1 day after birth, within 3 days after birth, throughout the stay in the facility
Outcomes	
Early initiation of breastfeeding within 1 hour after birth	
Early initiation of breastfeeding within 1 day after birth	
Exclusive breastfeeding during the stay at the facility	
Exclusive breastfeeding at 1 month	
Exclusive breastfeeding at 6 months	
Duration of exclusive breastfeeding (in months)	
Morbidity (respiratory infections, diarrhoea, others)	
Onset of lactation	

### Avoidance of pacifiers or dummies

Should infants (P) not be allowed to use pacifiers or dummies (I), compared to allowing use of pacifiers or dummies (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any infant	
Intervention	Comparator
Not allowing pacifier use	Allowing pacifier use
Outcomes	
Exclusive breastfeeding during the stay at the facility	
Exclusive breastfeeding at 1 month	
Exclusive breastfeeding at 6 months	
Duration of exclusive breastfeeding (in months)	
Duration of any breastfeeding (in months)	
Morbidity (respiratory infections, diarrhoea, others)	

**Avoidance of feeding bottles and teats**

Should infants who are or will be breastfed (P) not be fed supplements with bottles and teats but only by cup, dropper, gavage, finger, spoon or other methods not involving artificial teats (I), compared to using feeding bottles and teats (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any infant born who is or will be breastfed or given breast milk other than from the breast	
Intervention	Comparator
Artificial teats are not used (instead use a cup, dropper, gavage, finger, spoon, other methods not involving artificial teats) when not on the breast	Use of artificial teats (bottle feeding) when not on the breast
Outcomes	
Exclusive breastfeeding during the stay at the facility Exclusive breastfeeding at 1 month Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding (in months) Neonatal, infant or child mortality (all-cause) Onset of lactation	

## C. Creating an enabling environment

### Breastfeeding policy of facilities providing maternity and newborn services

Should hospitals and facilities providing maternity and newborn services (P) have a written breastfeeding policy that is routinely communicated to staff (I), compared to those without a written breastfeeding policy (C), in order to increase rates of early initiation of breastfeeding (O)?

Population	
Hospitals or facilities providing maternity and newborn services	
Subgroups	
By type of hospital or facilities providing maternity and newborn services: tertiary hospital, referral hospital, primary care hospital, teaching hospital	
Intervention	Comparator
Having a written infant feeding policy  <b>Subgroups:</b> By content of the policy: with all the nine other steps of the Ten Steps to Successful Breastfeeding specified, with some (not all) of the nine other steps specified, with none of the nine other steps specified  By inclusion of the <i>International Code of Marketing of Breast-milk Substitutes</i> (26): yes/no  By frequency of communication to old and new staff: annual, every 2 years, less often	Having no written infant feeding policy
Outcomes	
Early initiation of breastfeeding Exclusive breastfeeding during the stay in the facility Duration of exclusive breastfeeding (in months) Awareness of staff of the infant feeding policy of the hospital Implementation of the provisions of the <i>International Code of Marketing of Breast-milk Substitutes</i> (26)	

## Training of health workers

Should health-facility staff (P) be trained on breastfeeding and supportive feeding practices (I), compared to not being trained (C), in order to increase rates of early initiation of breastfeeding (O)?

Population	
Health-facility staff	
Subgroups	
By kind of staff: clinical role, come in contact with mother and infant but have limited role in infant feeding support, specialist role in infant feeding support	
Intervention	Comparator
Training of health workers on breastfeeding and supportive feeding practices  <b>Subgroups:</b> By frequency of training: 1×, 2×, at least 3×	No training of health workers on breastfeeding and supportive feeding practices
Outcomes	
Early initiation of breastfeeding Exclusive breastfeeding during the stay in the facility Duration of exclusive breastfeeding (in months) Knowledge of health-care workers on infant feeding Quality of skills of health-facility staff in improving practices of mothers in optimal infant feeding Attitudes on infant feeding Adherence to the provisions of the <i>International Code of Marketing of Breast-milk Substitutes</i> (26)	



## Antenatal breastfeeding education for mothers

Should mothers giving birth (P) be given antenatal breastfeeding education (I), compared to not having antenatal breastfeeding education (C), in order to increase rates of exclusive breastfeeding during the stay at the facility (O)?

Population	
Any mother giving birth with antenatal care	
Intervention	Comparator
Antenatal breastfeeding education to mothers <b>Subgroups:</b> By type of promotion: face-to-face counselling, distribution of printed material, group sessions By frequency: 1×, 2×, 3×, at least 4×	No antenatal breastfeeding education to mothers
Outcomes	
Exclusive breastfeeding during the stay at the facility Early initiation of breastfeeding within 1 hour after birth Exclusive breastfeeding at 1 month Exclusive breastfeeding at 3 months Exclusive breastfeeding at 6 months Duration of exclusive breastfeeding (in months) Onset of lactation	

## Discharge planning and linkage to continuing support

Should mothers giving birth in hospitals or facilities providing maternity and newborn services (P) be given linkage to continuing breastfeeding support after discharge from the facilities providing maternity and newborn services (I), compared to not providing an linkage to continuing breastfeeding support after facility discharge (C), in order to increase rates of exclusive breastfeeding at 1 month (O)?

Population	
Any mother giving birth in a hospital or facility providing maternity and newborn services	
Intervention	Comparator
Provision of linkage to breastfeeding support after discharge from facility  <b>Subgroups:</b> By type of support: active reaching out to mothers (e.g. home visits or phone calls), passive (e.g. scheduling of visits, referral to peer support, sharing of information, providing a phone number)  By quality of support based on background or training of support provider: no training, with lactation support training	No linkage to breastfeeding support after discharge from facility
Outcomes	
Exclusive breastfeeding at 1 month Exclusive breastfeeding at 6 months Exclusive breastfeeding at 3 months Duration of exclusive breastfeeding (in months) Duration of any breastfeeding (in months) Morbidity (respiratory infections, diarrhoea, others)	

## Annex 2. Systematic review details

### A. Immediate support to initiate and establish breastfeeding

#### Early skin-to-skin contact

Moore ER, Bergman N, Anderson GC, Medley N. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev.* 2016;(11):CD003519. doi:10.1002/14651858.CD003519.pub4. (62)

Study details	
<b>Author and year</b>	Moore et al., 2016
<b>Focus of the review</b>	To assess the effects of immediate or early skin-to-skin contact for healthy newborn infants, compared to standard contact, on establishment and maintenance of breastfeeding and infant physiology
<b>Study selection criteria</b>	Randomized controlled trials that compared immediate or early skin-to-skin contact with usual hospital care
<b>Search sources</b>	Cochrane Pregnancy and Childbirth Group's Trials Register
<b>Number of studies and participants</b>	46 trials with 3850 women and their healthy newborn term infants
<b>Countries of origin</b>	Canada, Chile, China, Germany, Guatemala, India, Italy, Japan, Nepal, Poland, South Africa, Spain, Sweden, the United Kingdom of Great Britain and Northern Ireland (United Kingdom), the United States of America (United States), Viet Nam

Conde-Agudelo A, Díaz-Rossello JL. Kangaroo mother care to reduce morbidity and mortality in low birth weight infants. *Cochrane Database Syst Rev.* 2016;(8):CD002771. doi:10.1002/14651858.CD002771.pub4. (57)

Study details	
<b>Author and year</b>	Conde-Agudelo et al., 2016
<b>Focus of the review</b>	To determine whether evidence is available to support the use of kangaroo mother care in low-birth-weight infants as an alternative to conventional neonatal care before or after the initial period of stabilization with conventional care, and to assess beneficial and adverse effects
<b>Study selection criteria</b>	Randomized controlled trials comparing kangaroo mother care versus conventional neonatal care, or early-onset kangaroo mother care versus late-onset kangaroo mother care, in low-birth-weight infants
<b>Search sources</b>	Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Latin American and Caribbean Health Science Information database (LILACS), Population Information Online (POPLINE), the WHO (World Health Organization) Trial Registration Data Set
<b>Number of studies and participants</b>	21 studies with 3042 infants
<b>Countries of origin</b>	Australia, Colombia, Ecuador, Ethiopia, India, Indonesia, Madagascar, Malaysia, Mexico, Nepal, the United Kingdom, the United States

## Early initiation of breastfeeding

Smith E, Hurt L, Chowdhury R, Sihna B, Fawzi W, Edmond K. Delayed breastfeeding initiation and infant survival: a systematic review and meta-analysis. *PLoS One*. 2017 (<https://doi.org/10.1371/journal.pone.0180722>). (63)

Study details	
<b>Author and year</b>	Smith et al., 2017 [submitted]
<b>Focus of the review</b>	To assess the relationship between very early initiation of breastfeeding (<1 hour after birth), compared to delayed initiation (2–23 hours and ≥24 hours after birth) of breastfeeding, on infant morbidity and mortality
<b>Study selection criteria</b>	Observational studies (e.g. cross-sectional studies, cohort studies and case-control studies) and randomized control trials that examined the association between breastfeeding initiation time and mortality, morbidity, or nutrition outcomes from birth to 12 months of age, in a population of infants who all initiated breastfeeding
<b>Search sources</b>	PubMed, Embase, Web of Science, CINAHL, POPLINE, LILACS, Abridged Index Medicus (AIM), Index Medicus for the Eastern Mediterranean Region.
<b>Number of studies and participants</b>	5 studies with 136 047 infants
<b>Countries of origin</b>	Ghana, India, United Republic of Tanzania

## Showing mothers how to breastfeed

McFadden A, Gavine A, Renfrew MJ, Wade A, Buchanan P, Taylor JL, Veitch E, Rennie AM, Crowther SA, Neiman S, MacGillivray S. Support for healthy breastfeeding mothers with healthy term babies. *Cochrane Database Syst Rev*. 2017;(2):CD001141. doi:10.1002/14651858.CD001141.pub5. (61)

Study details	
<b>Author and year</b>	McFadden et al., 2017
<b>Focus of the review</b>	To describe forms of breastfeeding support that have been evaluated in controlled studies, the timing of the interventions and the settings in which they have been used
<b>Study selection criteria</b>	Randomized or quasi-randomized controlled trials comparing extra support for healthy breastfeeding mothers of healthy term babies with usual maternity care
<b>Search sources</b>	Cochrane Pregnancy and Childbirth's Trials Register
<b>Number of studies and participants</b>	100 trials with 83 246 mother–infant pairs
<b>Countries of origin</b>	Australia, Bangladesh, Belarus, Brazil, Burkina Faso, Canada, China, Croatia, Democratic Republic of the Congo, Denmark, France, India, Iran, Italy, Kenya, Malaysia, Mexico, Netherlands, Pakistan, Singapore, South Africa, Sweden, Syria, Turkey, Uganda, the United Kingdom, the United States

Crowe L, Chang A, Wallace K. Instruments for assessing readiness to commence suck feeds in preterm infants: effects on time to establish full oral feeding and duration of hospitalisation. *Cochrane Database Syst Rev.* 2016;(8):CD005586. doi:10.1002/14651858.CD005586.pub3. (58)

Study details	
<b>Author and year</b>	Crowe et al., 2016
<b>Focus of the review</b>	To determine the effects of using a feeding-readiness instrument, compared to no instrument or another instrument, on the outcomes of time to establish full oral feeding and duration of hospitalizations among preterm infants
<b>Study selection criteria</b>	Randomized and quasi-randomized trials comparing a formal instrument to assess a preterm infant's readiness to commence suck feeds with either no instrument (usual practice) or another feeding-readiness instrument
<b>Search sources</b>	CENTRAL, MEDLINE via PubMed, CINAHL
<b>Number of studies and participants</b>	No studies met the inclusion criteria
<b>Countries of origin</b>	—

Becker GE, Smith HA, Cooney F. Methods of milk expression for lactating women. *Cochrane Database Syst Rev.* 2016;(9):CD006170. doi:10.1002/14651858.CD006170.pub5. (40)

Study details	
<b>Author and year</b>	Becker et al., 2016
<b>Focus of the review</b>	To assess the acceptability, effectiveness, safety, effect on milk composition, contamination and costs of methods of milk expression
<b>Study selection criteria</b>	Randomized and quasi-randomized trials comparing methods at any time after birth
<b>Search sources</b>	Cochrane Pregnancy and Childbirth Group's Trials Register
<b>Number of studies and participants</b>	41 trials with 2293 participants
<b>Countries of origin</b>	Australia, Brazil, Canada, Ecuador, Egypt, India, Israel, Kenya, Malaysia, Mexico, Nigeria, Turkey, the United Kingdom, the United States

## Rooming-in

Jaafar SH, Ho JJ, Lee KS. Rooming-in for new mother and infant versus separate care for increasing the duration of breastfeeding. *Cochrane Database Syst Rev.* 2016;(8):CD006641. doi:10.1002/14651858.CD006641.pub3. (60)

Study details	
<b>Author and year</b>	Jaafar et al., 2016
<b>Focus of the review</b>	To assess the effect of mother–infant rooming-in versus separation, on the duration of breastfeeding (exclusive and total duration of breastfeeding)
<b>Study selection criteria</b>	Randomized or quasi-randomized controlled trials investigating the effect of mother–infant rooming-in versus separate care after hospital birth or at home, on the duration of breastfeeding, proportion of breastfeeding at 6 months and adverse neonatal and maternal outcomes
	Search sources
<b>Number of studies and participants</b>	1 trial with 176 women
<b>Countries of origin</b>	Russia

## Demand feeding

Fallon A, Van der Putten D, Dring C, Moylett EH, Fealy G, Devane D. Baby-led compared with scheduled (or mixed) breastfeeding for successful breastfeeding. *Cochrane Database Syst Rev.* 2016;(9):CD009067. doi:10.1002/14651858.CD009067.pub3. (59)

Study details	
<b>Author and year</b>	Fallon et al., 2016
<b>Focus of the review</b>	To evaluate the effects of baby-led compared with scheduled (or mixed) breastfeeding, for successful breastfeeding, for healthy newborns
<b>Study selection criteria</b>	Randomized and quasi-randomized trials
<b>Search sources</b>	Cochrane Pregnancy and Childbirth Group’s Trials Register, EThOS (E-Theses Online Service), Index to Theses, ProQuest database, World Health Organization’s 1998 evidence to support the Ten Steps to Successful Breastfeeding
<b>Number of studies and participants</b>	No studies met the inclusion criteria
<b>Countries of origin</b>	—

Watson J, McGuire W. Responsive versus scheduled feeding for preterm infants. *Cochrane Database Syst Rev.* 2016;(8):CD005255. doi:10.1002/14651858.CD005255.pub5. (64)

Study details	
<b>Author and year</b>	Watson and McGuire, 2016
<b>Focus of the review</b>	To assess the effect of a policy of feeding preterm infants on a responsive basis, versus feeding prescribed volumes at scheduled intervals, on growth rates, levels of parent satisfaction and time to hospital discharge
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials that compared a policy of feeding preterm infants on a responsive basis, versus feeding at scheduled intervals
<b>Search sources</b>	CENTRAL, MEDLINE via PubMed, Embase, CINAHL
<b>Number of studies and participants</b>	Nine randomized control trials with 593 infants (none of the studies reported on any of the critical outcomes)
<b>Countries of origin</b>	Canada, the United States

## B. Feeding practices and additional needs of infants

### Early additional foods or fluids

Smith HA, Becker GE. Early additional food and fluids for healthy breastfed full-term infants. *Cochrane Database Syst Rev.* 2016;(8):CD006462. doi:10.1002/14651858.CD006462.pub4. (86)

Study details	
<b>Author and year</b>	Smith and Becker, 2016
<b>Focus of the review</b>	To assess the benefits and harms of additional food or fluid for full-term healthy breastfeeding infants and to examine the timing and type of additional food or fluid
<b>Study selection criteria</b>	Randomized or quasi-randomized controlled trials in infants under 6 months of age, comparing exclusive breastfeeding versus breastfeeding with any additional food or fluids
<b>Search sources</b>	Cochrane Pregnancy and Childbirth Group's Trials Register
<b>Number of studies and participants</b>	11 trials with 2542 randomized mother-infant pairs
<b>Countries of origin</b>	Czech Republic, Sweden, the United States

## Avoidance of pacifiers or dummies

Jaafar SH, Ho JJ, Jahanfar S, Angolkar M. Effect of restricted pacifier use in breastfeeding term infants for increasing duration of breastfeeding. *Cochrane Database Syst Rev.* 2016;(8):CD007202. doi:10.1002/14651858.CD007202.pub4. (85)

Study details	
<b>Author and year</b>	Jaafar et al., 2016
<b>Focus of the review</b>	To assess the effect of restricted versus unrestricted pacifier use in healthy full-term newborns whose mothers have initiated breastfeeding and intend to exclusively breastfeed, on the duration of breastfeeding, other breastfeeding outcomes and infant health
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials comparing restricted versus unrestricted pacifier use in healthy full-term newborns who have initiated breastfeeding
<b>Search sources</b>	Cochrane Pregnancy and Childbirth Group's Trials Register
<b>Number of studies and participants</b>	3 trials involving 1915 babies
<b>Countries of origin</b>	Argentina, Canada, Switzerland

Foster JP, Psaila K, Patterson T. Non-nutritive sucking for increasing physiologic stability and nutrition in preterm infants. *Cochrane Database Syst Rev.* 2016;(10):CD001071. doi:10.1002/14651858.CD001071.pub3. (82)

Study details	
<b>Author and year</b>	Foster et al., 2016
<b>Focus of the review</b>	To assess the effects of non-nutritive sucking on physiological stability and nutrition in preterm infants
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials that compared non-nutritive sucking versus no provision of non-nutritive sucking in preterm infants
<b>Search sources</b>	CENTRAL, MEDLINE via PubMed, Embase, CINAHL
<b>Number of studies and participants</b>	12 trials with 746 preterm infants
<b>Countries of origin</b>	Australia, Brazil, China, the United Kingdom, the United States



Greene Z, O'Donnell CPF, Walshe M. Oral stimulation for promoting oral feeding in preterm infants. *Cochrane Database Syst Rev.* 2016;(9):CD009720. doi:10.1002/14651858.CD009720.pub2. (84)

Study details	
<b>Author and year</b>	Greene et al., 2016
<b>Focus of the review</b>	To determine the effectiveness of oral stimulation interventions for attainment of oral feeding in preterm infants born before 37 weeks' postmenstrual age
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials comparing a defined oral stimulation intervention with no intervention, standard care, sham treatment or non-oral intervention in preterm infants, and reporting at least one of the specified outcomes
<b>Search sources</b>	CENTRAL, MEDLINE via PubMed, Embase, CINAHL
<b>Number of studies and participants</b>	19 trials with 823 participants
<b>Countries of origin</b>	Brazil, China, France, India, Iran, the United Kingdom, the United States

### Avoidance of feeding bottles and teats

Ganchimeg T, Sugimoto K, Fukazawa KR, Rayco-Solon P, Ota E. Avoidance of bottles and artificial teats during the establishment of breastfeeds in healthy term infants: a systematic review of randomized controlled trials [protocol]. *PROSPERO.* 2016:CRD42016041370 ([http://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016041370](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016041370)). (83)

Study details	
<b>Author and year</b>	Ganchimeg et al., 2016 [protocol]
<b>Focus of the review</b>	To identify the effects of avoidance of bottle feeds during establishment of breastfeeding, on successful breastfeeding healthy term newborn infants
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials
<b>Search sources</b>	CENTRAL, Embase and MEDLINE via Ovid SP, CINAHL via EBSCO, British Nursing Index via HDAS (Healthcare Databases Advanced Search) and Web of Science
<b>Number of studies and participants</b>	2 trials with 1241 participants
<b>Countries of origin</b>	Switzerland, the United States

Flint A, New K, Davies MW. Cup feeding versus other forms of supplemental enteral feeding for newborn infants unable to fully breastfeed. *Cochrane Database Syst Rev.* 2016;(8):CD005092. Doi:10.1002/14651858.CD005092.pub3. (81)

Study details	
<b>Author and year</b>	Flint et al., 2016
<b>Focus of the review</b>	To determine the effects of cup feeding versus other forms of enteral feeding on weight gain and achievement of successful breastfeeding, in term and preterm infants who are unable to fully breastfeed
<b>Study selection criteria</b>	Randomized or quasi-randomized controlled trials comparing cup feeding to other forms of enteral feeding for the supplementation of term and preterm infants
<b>Search sources</b>	CENTRAL, MEDLINE via PubMed, Embase, CINAHL
<b>Number of studies and participants</b>	5 trials with 971 participants
<b>Countries of origin</b>	Australia, Brazil, Turkey, the United Kingdom

Collins CT, Gillis J, McPhee AJ, Suganuma H, Makrides M. Avoidance of bottles during the establishment of breast feeds in preterm infants. *Cochrane Database Syst Rev.* 2016;(10):CD005252. doi:10.1002/14651858.CD005252.pub4. (80)

Study details	
<b>Author and year</b>	Collins et al., 2016
<b>Focus of the review</b>	To identify the effects of avoidance of bottle feeds during establishment of breast feeding, on the likelihood of successful breast feeding, and to assess the safety of alternatives to bottle feeds
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials comparing avoidance of bottles with use of bottles in women who have chosen to breastfeed their preterm infant
<b>Search sources</b>	CENTRAL, MEDLINE via PubMed, Embase, CINAHL
<b>Number of studies and participants</b>	7 trials with 1152 participants
<b>Countries of origin</b>	Australia, Brazil, Turkey, the United Kingdom, the United States

## C. Creating an enabling environment

### Breastfeeding policy of facilities providing maternity and newborn services

Abe SK, Jung J, Rahman M, Haruyama R, Kita M, Koyama M et al. Hospitals with a written breastfeeding policy statement and implementation of the steps of breastfeeding: a systematic review [protocol]. PROSPERO. 2016:CRD42016038143 ([https://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016038143](https://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016038143)). (41)

Study details	
<b>Author and year</b>	Abe et al., 2016 [protocol]
<b>Focus of the review</b>	To assess whether hospitals and facilities providing maternity and newborn services with a written breastfeeding policy that is routinely communicated are more likely to implement one or all of the other nine Steps to Successful Breastfeeding and improve breastfeeding rates and duration, compared to facilities without a written policy
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials, non-randomized trials (controlled clinical trials, interrupted time series, controlled before-and-after studies), observational studies (cross-sectional, case-control and cohort study)
<b>Search sources</b>	CENTRAL, Embase and MEDLINE via Ovid SP, CINAHL via EBSCO, British Nursing Index via HDAS, Web of Science
<b>Number of studies and participants</b>	1 study with 916 infants
<b>Countries of origin</b>	Brazil

### Training of health workers

Gavine A, MacGillivray S, Renfrew MJ, Siebelt L, Haggi H, McFadden A. Education and training of healthcare staff in the knowledge, attitudes and skills needed to work effectively with breastfeeding women: a systematic review. *Int Breastfeed J.* 2016;12:6. doi 10.1186/s13006-016-0097-2. (100)

Study details	
<b>Author and year</b>	Gavine et al., 2017
<b>Focus of the review</b>	To determine whether education and training programmes for health-care staff have an effect on their knowledge and attitudes about supporting breastfeeding women
<b>Study selection criteria</b>	Randomized controlled trials comparing breastfeeding education and training for health workers with no or usual training and education
<b>Search sources</b>	Cochrane Pregnancy and Childbirth Group's Trials Register
<b>Number of studies and participants</b>	3 trials with 250 participants
<b>Countries of origin</b>	Brazil, Denmark, Sweden

Balogun OO, Dagvadorj A, Yourkavitch J, da Silva Lopez K, Suto M, Takemoto Y, *et al.* Health facility staff training for improving breastfeeding outcome: a systematic review for step 2 of the Baby-friendly Hospital Initiative. *Breastfeed Med.* 2017;20 September [epub ahead of print] PubMed PMID: 28930480. (42)

Study details	
<b>Author and year</b>	Balogun et al., 2017
<b>Focus of the review</b>	To assess the effect of training facility-based health workers on breastfeeding outcomes
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials and controlled before-and-after studies
<b>Search sources</b>	CENTRAL, PubMed, Embase, CINAHL, Web of Science and the British Nursing Index
<b>Number of studies and participants</b>	6 studies with 390 health workers
<b>Countries of origin</b>	Australia, Brazil, Canada, Sweden, the United States

### Antenatal breastfeeding education for mothers

Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. *Cochrane Database Syst Rev.* 2016;(12):CD006425. DOI: 10.1002/14651858.CD006425.pub4. (43)

Study details	
<b>Author and year</b>	Lumbiganon et al., 2016
<b>Focus of the review</b>	To assess the effectiveness of antenatal breastfeeding education for increasing the initiation and duration of breastfeeding
<b>Study selection criteria</b>	Randomized controlled trials assessing the effect of formal antenatal breastfeeding education or comparing two different methods of formal antenatal breastfeeding education, on the duration of breastfeeding
<b>Search sources</b>	Cochrane Pregnancy and Childbirth's Trials Register, CENTRAL, MEDLINE
<b>Number of studies and participants</b>	24 trials with 10 056 women
<b>Countries of origin</b>	Australia, Canada, China, Denmark, Singapore, the United Kingdom, the United States

Balogun OO, O’Sullivan EJ, McFadden A, Ota E, Gavine A, Garner CD, Renfrew MJ, MacGillivray S. Interventions for promoting the initiation of breastfeeding. *Cochrane Database Syst Rev.* 2016;(11):CD001688. doi:10.1002/14651858.CD001688.pub3. (44)

Study details	
<b>Author and year</b>	Balogun et al., 2016
<b>Focus of the review</b>	To evaluate the effectiveness of different types of breastfeeding-promotion activities, in terms of changing the number of women who initiate breastfeeding
<b>Study selection criteria</b>	Randomized controlled trials of any breastfeeding-promotion intervention in any population group
<b>Search sources</b>	Cochrane Pregnancy and Childbirth’s Trials Register
<b>Number of studies and participants</b>	28 trials with 107 362 women
<b>Countries of origin</b>	Ghana, Malawi, Nicaragua, Nigeria, the United Kingdom, the United States

### Discharge planning and linkage to continuing support

da Silva Lopez K, Ohde S, Suto M, Rayco-Solon P, Miyazaki C, Balogun OO et al. Providing linkage to breastfeeding support to mothers on discharge to improve breastfeeding outcomes: a systematic review [protocol]. PROSPERO. 2016:CRD42016041273 [https://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016041273](https://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016041273). (45)

Study details	
<b>Author and year</b>	da Silva Lopez et al., 2016 [protocol]
<b>Focus of the review</b>	To examine the evidence on the importance of providing linkage to breastfeeding support groups after discharge, to improve breastfeeding outcomes
<b>Study selection criteria</b>	Randomized and quasi-randomized controlled trials that reported on providing information on linkage to breastfeeding support for women at discharge, compared with no linkage to breastfeeding support after discharge from the facility
<b>Search sources</b>	CENTRAL, MEDLINE, CINAHL, Embase, the British Nursing Index, the Web of Science
<b>Number of studies and participants</b>	2 cluster randomized controlled trial with 5590 mother–infant pairs
<b>Countries of origin</b>	Australia, Democratic Republic of Congo

## Annex 3. GRADE summary of findings tables

### A. Immediate support to initiate and establish breastfeeding

#### Early skin-to-skin contact

##### Immediate or early skin-to-skin contact compared to standard contact in protecting, promoting and supporting breastfeeding

**Patient or population:** mothers and their healthy full-term infants or late-preterm newborn infants (34 to less than 37 completed weeks' gestation)

**Setting:** hospital births

**Intervention:** immediate (within 10 minutes post birth) or early (between 10 minutes and 24 hours after birth) skin-to-skin contact for healthy infants

**Comparison:** standard contact for healthy infants (infants held swaddled or dressed, placed in open cribs or under radiant warmers)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with standard contact	Risk with immediate or early skin-to-skin contact				
Exclusive breastfeeding at hospital discharge to 1 month after birth	642 per 1000	835 per 1000 (719 to 957 per 1000)	RR 1.30 (1.12 to 1.49)	711 (6 studies)	⊕⊕⊕⊖ <sup>1</sup> Moderate	
Exclusive breastfeeding at 6 weeks to 6 months after birth	519 per 1000	778 per 1000 (612 to 985 per 1000)	RR 1.50 (1.18 to 1.90)	640 (7 studies)	⊕⊕⊖⊖ <sup>2</sup> Low	
Suckled during first 2 hours after birth	727 per 1000	771 per 1000 (604 to 982 per 1000)	RR 1.06 (0.83 to 1.35)	88 (1 study)	⊕⊕⊖⊖ <sup>3</sup> Low	
Breastfeeding at 1 month to 4 months after birth	541 per 1000	670 per 1000 (579 to 773 per 1000)	RR 1.24 (1.07 to 1.43)	887 (14 studies)	⊕⊕⊕⊖ <sup>4</sup> Moderate	
By time of initiation:						Test for subgroup difference $\chi^2 = 1.13$ ; $P = 0.29$
Immediate (within 10 minutes after birth)	564 per 1000	677 per 1000 (603 to 755 per 1000)	RR 1.20 (1.07 to 1.34)	597 (6 studies)		
Early (between 10 minutes and 24 hours after birth)	545 per 1000	763 per 1000 (589 to 997 per 1000)	RR 1.40 (1.08 to 1.83)	425 (9 studies)		
Early (within 1 day after birth)						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

#### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

- Several trials had unclear risk of bias for sequence generation and allocation concealment (downgraded: -1).  $I^2 = 44\%$  with random-effects model (not downgraded).
- Several trials had unclear risk of bias for sequence generation and allocation concealment (downgraded: -1).  $I^2 = 62\%$  with random-effects model (downgraded: -1).
- Results are based on one trial with very small sample size and wide confidence interval (downgraded: -2 for imprecision).
- Most trials contributing data had unclear risk of bias for allocation concealment. Half had unclear sequence generation. In one trial, the authors were unclear of the time point of data collection (downgraded: -1).  $I^2 = 41\%$  with random-effects model (not downgraded). Two very small trials had the most dramatic effects, and could not rule out publication bias. Removal of these trials did not change the overall effect or conclusion (not downgraded).

## Kangaroo mother care (skin-to-skin contact) compared to conventional neonatal care in protecting, promoting and supporting breastfeeding

**Patient or population:** low-birth-weight infants (birth weight <2500 g), regardless of gestational age

**Setting:** hospital births

**Intervention:** kangaroo mother care (skin-to-skin contact in which infants are placed vertically between the mother's breasts firmly attached to the chest and below her clothes)

**Comparison:** conventional neonatal care

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with conventional neonatal care	Risk with kangaroo mother care				
Exclusive breastfeeding						
At discharge or at 40 to 41 weeks' postmenstrual age	563 per 1000	653 per 1000 (602 to 704, per 1000)	RR 1.16 (1.07 to 1.25)	1453 (6 studies)	⊕⊕⊕⊖ <sup>1</sup> Moderate	
At 1 to 3 months' follow-up	765 per 1000	918 per 1000 (773 to 1000 per 1000)	RR 1.20 (1.01 to 1.43)	600 (5 studies)	⊕⊕⊖⊖ <sup>2</sup> Low	
At 6 to 12 months' follow-up	114 per 1000	147 per 1000 (108 to 201 per 1000)	RR 1.29 (0.95 to 1.76)	810 (3 studies)	⊕⊕⊖⊖ <sup>3</sup> Low	
Any breastfeeding						
At discharge or at 40 to 41 weeks' postmenstrual age	762 per 1000	914 per 1000 (815 to 1000 per 1000)	RR 1.20 (1.07 to 1.34)	1696 (10 studies)	⊕⊕⊕⊖ <sup>4</sup> Moderate	
At 1 to 3 months' follow-up	711 per 1000	832 per 1000 (747 to 932 per 1000)	RR 1.17 (1.05 to 1.31)	1394 (9 studies)	⊕⊕⊖⊖ <sup>5</sup> Low	
At 6 months' follow-up	402 per 1000	450 per 1000 (394 to 518 per 1000)	RR 1.12 (0.98 to 1.29)	952 (5 studies)	⊕⊕⊕⊖ <sup>6</sup> Moderate	
At 12 months' follow-up	222 per 1000	198 per 1000 (144 to 269 per 1000)	RR 0.89 (0.65 to 1.21)	589 (1 study)	⊕⊕⊖⊖ <sup>7</sup> Low	
Onset of breastfeeding (days)			MD 0.03 (-1.64 to 1.70)	295 (2 studies)	⊕⊕⊖⊖ <sup>8</sup> Low	
Exclusive breastfeeding						
	Risk with late (starting after 24 hours) kangaroo mother care	Risk with early (within 24 hours) kangaroo mother care				
At 24 hours of age	528 per 1000	538 per 1000 (354 to 829 per 1000)	RR 1.02 (0.67 to 1.57)	73 (1 study)	⊕⊕⊖⊖ <sup>9</sup> Low	
At 2 weeks of age	944 per 1000	944 per 1000 (841 to 1000 per 1000)	RR 1.00 (0.89 to 1.12)	71 (1 study)	⊕⊕⊕⊖ <sup>10</sup> Moderate	
At 4 weeks of age	1000 per 1000	940 per 1000 (895 to 1000 per 1000)	RR 0.94 (0.85 to 1.04)	67 (1 study)	⊕⊕⊕⊖ <sup>11</sup> Moderate	
At 6 months of age	154 per 1000	414 per 1000 (152 to 1000 per 1000)	RR 2.69 (0.99 to 7.31)	55 (1 study)	⊕⊕⊖⊖ <sup>12</sup> Low	
Duration of exclusive breastfeeding						
This outcome was not reported.						

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).  
CI: confidence interval; RR: rate ratio.

**GRADE Working Group grades of evidence**

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (57).

- 1 Several trials with unclear risk of bias for allocation concealment and attrition bias (downgraded: -1).
- 2 Several trials with unclear risk of bias for allocation concealment and attrition bias (downgraded: -1). Heterogeneity;  $I^2 = 76\%$  with random-effects model (downgraded: -1).
- 3 Several trials with unclear risk of bias for allocation concealment and attrition bias (downgraded: -1). Imprecision; CI (downgraded: -1).
- 4 Substantial heterogeneity;  $I^2 = 80\%$  with random-effects model (downgraded: -1).
- 5 Several trials with unclear risk of bias for allocation concealment and attrition bias (downgraded: -1).  $I^2 = 62\%$  with random-effects model (downgraded: -1).
- 6 Several trials with unclear risk of bias for allocation concealment and reporting bias (downgraded: -1).
- 7 Effect provided by one study with moderate risk of bias (downgraded: -1). Imprecision; wide CI (downgraded: -1).
- 8 Substantial heterogeneity;  $I^2 = 68\%$  (downgraded: -1). Imprecision; wide CI (downgraded: -1).
- 9 Imprecision; wide confidence interval and small sample size (downgraded: -2).
- 10 Imprecision; small sample size (downgraded: -1).
- 11 Imprecision; small sample size (downgraded: -1).
- 12 Imprecision; wide CI and few events (downgraded: -2).



## Early initiation of breastfeeding

### Very early (within 1 hour after birth) breastfeeding initiation time compared to delayed (2–23 hours and 24 hours or more after birth) breastfeeding initiation in mortality

**Patient or population:** infants who ever initiated breastfeeding and surviving for 2–4 days

**Setting:** Hospital and community

**Intervention:** very early breastfeeding initiation (within 1 hour after birth)

**Comparison:** delayed breastfeeding initiation (2–23 hours and 24 hours or more after birth)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with very early initiation of breastfeeding	Risk with delayed initiation of breastfeeding				
Neonatal mortality (<28 days)	5.2 per 1000	Initiation at 2–23 hours 6.9 per 1000 (5.8 to 8.1 per 1000)	RR 1.33 (1.13 to 1.56)	136 047 (5 studies)	⊕⊕⊕⊕ <sup>1</sup> High	
		Initiation at ≥24 hours 11.4 per 1000 (9.0 to 14.4 per 1000)	RR 2.19 (1.73 to 2.77)			
Infant mortality from 1 to <3 months (29 to 90 days)	6 per 1000	Initiation at 2–23 hours 8 per 1000 (7 to 9 per 1000)	RR 1.34 (1.13 to 1.59)	97 707 (1 study)	⊕⊕⊕⊖ <sup>2</sup> Low	
		Initiation at ≥24 hours 9 per 1000 (6 to 12 per 1000)	RR 1.48 (1.07 to 2.06)			
Infant mortality from 3 to <6 months (91 to 180 days)	5 per 1000	Initiation at 2–23 hours 7 per 1000 (6 to 9 per 1000)	RR 1.42 (1.18 to 1.72)	96 606 (1 study)	⊕⊕⊕⊖ <sup>3</sup> Low	
		Initiation at 2–23 hours 7 per 1000 (5 to 10 per 1000)	RR 1.35 (0.93 to 1.97)			
Non-exclusive breastfeeding at 1 month	284 per 1000	Initiation at 2–23 hours 327 per 1000 (321 to 333 per 1000)	RR 1.15 (1.13 to 1.17)	87 576 (1 study)	⊕⊕⊕⊕ <sup>4</sup> Moderate	
		Initiation at ≥24 hours 361 per 1000 (353 to 372 per 1000)	RR 1.27 (1.24 to 1.31)			
Not breastfeeding at 1 month	11 per 1000	Initiation at 2–23 hours 13 per 1000 (11 to 16 per 1000)	RR 1.26 (1.07 to 1.48)	87 576 (1 study)	⊕⊕⊕⊕ <sup>5</sup> Moderate	
		Initiation at ≥24 hours 26 per 1000 (20 to 32 per 1000)	RR 2.48 (1.92 to 3.21)			
Non-exclusive breastfeeding at 3 months	505 per 1000	Initiation at 2–23 hours 530 per 1000 (525 to 536 per 1000)	RR 1.05 (1.04 to 1.06)	86 692 (1 study)	⊕⊕⊕⊖ <sup>6</sup> Low	
		Initiation at ≥24 hours 536 per 1000 (525 to 546 per 1000)	RR 1.06 (1.04 to 1.08)			

**Very early (within 1 hour after birth) breastfeeding initiation time compared to delayed (2–23 hours or more after birth) breastfeeding initiation in mortality (continued)**

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with very early initiation of breastfeeding	Risk with delayed initiation of breastfeeding				
Not breastfeeding at 3 months	14 per 1000	Initiation at 2–23 hours 17 per 1000 (15 to 19 per 1000)  Initiation at ≥24 hours 27 per 1000 (22 to 32 per 1000)	RR 1.20 (1.07 to 1.35)  RR 1.88 (1.56 to 2.26)	86 692 (1 study)	⊕⊕⊕ <sup>7</sup> Moderate	
Exclusive breastfeeding during stay at the facility						This outcome was not reported.
Onset of lactation						This outcome was not reported.
Duration of exclusive breastfeeding (in months)						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

**GRADE Working Group grades of evidence**

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (63).

- 1 All five studies are categorized as having moderate risk of bias, but the overall quality of the evidence is upgraded to “high” because the studies are consistent, there is a large effect size (RR>2), and there is evidence of a dose–response effect.
- 2 Results are based on one observational study.
- 3 Results are based on one observational study.
- 4 Results are based on one observational study; upgraded for dose–response effect.
- 5 Results are based on one observational study; upgraded for dose–response effect.
- 6 Results are based on one observational study.
- 7 Results are based on one observational study; upgraded for dose–response effect.

## Showing mothers how to breastfeed

### Any form of support compared to no support in protecting, promoting and supporting breastfeeding

Patient or population: breastfeeding mothers with healthy term infants

Setting: outpatient setting

Intervention: all forms of support

Comparison: usual care

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with usual care	Risk with any form of support				
Stopping any breastfeeding before last study assessment up to 6 months	573 per 1000	510 per 1000 (487 to 532 per 1000)	RR 0.89 (0.85 to 0.93)	21 708 (51 studies)	⊕⊕⊕ <sup>1</sup> Moderate	
Stopping exclusive breastfeeding before last study assessment up to 6 months	823 per 1000	732 per 1000 (707 to 765 per 1000)	RR 0.89 (0.86 to 0.93)	18 303 (46 studies)	⊕⊕⊕ <sup>2</sup> Low	
Stopping any breastfeeding at up to 4 to 6 weeks	353 per 1000	304 per 1000 (279 to 329 per 1000)	RR 0.86 (0.79 to 0.93)	10 776 (33 studies)	⊕⊕⊕ <sup>3</sup> High	
Stopping exclusive breastfeeding at up to 4 to 6 weeks	642 per 1000	507 per 1000 (443 to 571 per 1000)	RR 0.79 (0.69 to 0.89)	10 271 (32 studies)	⊕⊕⊕ <sup>4</sup> Low	
Postnatal support alone (no antenatal support provided) <sup>5</sup>						
Stopping any breastfeeding before last study assessment up to 6 months	542 per 1000	471 per 1000 (439 to 509 per 1000)	RR 0.87 (0.81 to 0.94)	15 860 (35 studies)	⊕⊕⊕ <sup>6</sup> Moderate	
Stopping exclusive breastfeeding before last study assessment up to 6 months	802 per 1000	714 per 1000 (681 to 754 per 1000)	RR 0.89 (0.85 to 0.94)	11 438 (29 studies)	⊕⊕⊕ <sup>7</sup> Low	
Stopping any breastfeeding at up to 4 to 6 weeks	288 per 1000	239 per 1000 (213 to 268 per 1000)	RR 0.83 (0.74 to 0.93)	7389 (22 studies)	⊕⊕⊕ <sup>8</sup> High	
Stopping exclusive breastfeeding at up to 4 to 6 weeks	588 per 1000	435 per 1000 (335 to 558 per 1000)	RR 0.74 (0.57 to 0.95)	7075 (23 studies)	⊕⊕⊕ <sup>9</sup> Low	
Exclusive breastfeeding during stay at the facility						This outcome was not reported.
Exclusive breastfeeding at 1 and 3 months						This outcome was not reported.
Breast conditions						This outcome was not reported.
Neonatal, infant or child mortality rates						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

## Any form of support compared to no support in protecting, promoting and supporting breastfeeding (continued)

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (61).

- 1 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 76\%$ ; downgraded: -1).
- 2 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 95\%$ ; downgraded: -1). Possible publication bias (funnel plot asymmetry due to small studies with large effect sizes; downgraded: -1).
- 3 None of the studies had adequate blinding for the mother and staff (not downgraded).
- 4 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 97\%$ ; downgraded: -1). Possible publication bias (funnel plot asymmetry due to small studies with large effect sizes; downgraded: -1).
- 5 Subgroup analysis by timing of support (postnatal only or including antenatal component) showed no statistically significant subgroup differences in the four subgroups comparisons. Only the postnatal subgroup is shown in the subsequent rows.
- 6 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 81\%$ ; downgraded: -1).
- 7 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 93\%$ ; downgraded: -1). Possible publication bias (funnel plot asymmetry due to small studies with large effect sizes; downgraded: -1).
- 8 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 51\%$ ; not downgraded).
- 9 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 99\%$ ; downgraded: -1). Possible publication bias (funnel plot asymmetry due to small studies with large effect sizes; downgraded: -1).

## Use of a formalized instrument to assess a preterm infant's readiness to feed by breast or bottle compared to not using a formalized instrument for readiness to feed in protecting, promoting and supporting breastfeeding

**Patient or population:** preterm infants (<37 weeks' gestation)

**Setting:** hospital deliveries

**Intervention:** assessment for readiness to feed using an instrument

**Comparison:** assessment for readiness to feed not using a formal instrument

No studies met the inclusion criteria.

Some instruments or methods to assess feeding readiness include:

- Dynamic-Early Feeding Scale (D-EFS)
- Early Feeding Skills (EFS)
- Neonatal Oral Motor Assessment Scale (NOMAS)
- Non-Nutritive Sucking (NNS) scoring system
- Preterm Oral Feeding Readiness Scale
- Infant-driven feeding scales.

None of these instruments were tested in experimental studies. According to the authors, the lack of randomized or quasi-randomized trials may "be a reflection of the practical difficulties in ensuring that the comparison group is not exposed to the intervention, particularly in the situation where the use of an instrument is compared to normal clinical practice with direct caregivers collecting data".

For details of studies included in the review, see reference (58).

## Provision of instructions, support protocols or equipment for breast-milk expression or pumping compared to no instructions, support protocols or equipment in quantity of milk expressed

**Patient or population:** women expressing or pumping milk (for any reason and by any method) with infants up to 28 days after birth

**Setting:** hospitalized or non-hospitalized mother–infant pairs

**Intervention:** provision of instructions, support protocols or equipment for breast-milk expression or pumping

**Comparator:** no instructions, support protocols or equipment for breast-milk expression or pumping provided

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with no instructions, support protocols or equipment provided	Risk with provision of instructions, support protocols or equipment				
Manual pump versus hand expression	Hand expression	<b>Any manual pump</b>				
Volume of milk expressed (mL) on day 4–5		MD 74 mL more (6 mL less to 212 mL more)		28 (1 study)	⊖⊖⊖⊖ <sup>1</sup> Very low	
Volume over 6 days of pumping (mL)		MD 212 mL more (9 mL to 414 mL more)		48 (1 study)	⊖⊖⊖⊖ <sup>2</sup> Very low	
Electric pump versus hand expression	Hand expression	<b>Any large electric pump</b>				
Volume over 6 days of pumping (mL)		MD 373 mL more (161 mL to 585 mL more)		43 (1 study)	⊖⊖⊖⊖ <sup>3</sup> Very low	
Volume for one expression at 6 to 12 hours after birth		MD 2 mL more (1 mL less to 5 mL more)		68 (1 study)	⊕⊖⊖⊖ <sup>4</sup> Low	
Volume of milk on day 1 (mL)		MD 14 mL more (2 mL less to 30 mL more)		26 (1 study)	⊕⊖⊖⊖ <sup>5</sup> Low	
Electric pump versus manual pump	Manual pump	<b>Any large electric pump</b>				
Volume over 6 days of pumping (mL)		MD 161 mL more (67 mL less to 389 mL more)		53 (1 study)	⊖⊖⊖⊖ <sup>6</sup> Very low	
Mean volume per day pumped (mL)		MD 5 mL more (57 mL less to 67 mL more)		145 (1 study)	⊖⊖⊖⊖ <sup>7</sup> Very low	
Volume of milk on day 5 (mL)		MD 151 mL more (138 mL less to 439 mL more)		27 (1 study)	⊖⊖⊖⊖ <sup>8</sup> Very low	
Relaxation technique	No relaxation technique	<b>Relaxation technique</b>				
Volume at one expression (mL)		MD 35 mL more (6 mL to 63 mL more)		55 (1 study)	⊖⊖⊖⊖ <sup>9</sup> Very low	
Volume on day 1 (mL)		MD 17 mL more (9 to 25 more)		160 (1 study)	⊕⊖⊖⊖ <sup>10</sup> Low	
Volume on day 5 (mL)		MD 85 mL more (63 mL to 107 mL more)		160 (1 study)	⊕⊖⊖⊖ <sup>11</sup> Low	
Breast massage	No breast massage	<b>Breast massage</b>				

## Provision of instructions, support protocols or equipment for breast-milk expression or pumping compared to no instructions, support protocols or equipment in quantity of milk expressed (continued)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with no instructions, support protocols or equipment provided	Risk with provision of instructions, support protocols or equipment				
Volume of milk from two expressions (mL)		MD 5 mL more (1 mL to 8 mL more)		72 (1 study)	⊖⊖⊖⊖ <sup>12</sup> Very low	
Warming of the breasts	Control breast	Warmed breast				
Volume of milk on expression 1 of 6 expressions over 3 days (mL)		MD 10 mL more (0.5 mL less to 20 mL more)		78 (1 study)	⊕⊖⊖⊖ <sup>13</sup> Low	
Volume of milk on expression 2 of 6 expressions over 3 days (mL)		MD 12 mL more (3 mL to 20 mL more)		78 (1 study)	⊕⊖⊖⊖ <sup>14</sup> Low	
Volume of milk on expression 3 of 6 expressions over 3 days (mL)		MD 11 mL more (2 mL less to 25 mL more)		78 (1 study)	⊕⊖⊖⊖ <sup>15</sup> Low	
Volume of milk on expression 4 of 6 expressions over 3 days (mL)		MD 12 mL more (2 mL to 23 mL more)		78 (1 study)	⊕⊖⊖⊖ <sup>16</sup> Low	
Volume of milk on expression 5 of 6 expressions over 3 days (mL)		MD 14 mL more (4 mL to 23 mL more)		78 (1 study)	⊕⊖⊖⊖ <sup>17</sup> Low	
Volume of milk on expression 6 of 6 expressions over 3 days (mL)		MD 13 mL more (4 mL to 22 mL more)		78 (1 study)	⊕⊖⊖⊖ <sup>18</sup> Low	
Exclusive breastfeeding during stay at the facility						This outcome was not reported.
Exclusive breastfeeding at 1, 3 or 6 months						This outcome was not reported.
Duration of exclusive breastfeeding (in months)						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (40).

- Results are based on one randomized controlled trial among infants with birth weight <1250 g with moderate risk of bias (unclear random sequence generation, selective reporting and attrition bias) and imprecision (wide CI and small sample size) (downgraded: -4).
- Results are based on one randomized controlled trial among mothers whose infants were unable to breastfeed directly due to prematurity or illness with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -4).
- Results are based on one randomized controlled trial among mothers whose infants were unable to breastfeed directly due to prematurity or illness with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -4).
- Results are based on one randomized controlled trial among mothers with healthy newborns (term with >2000 g birth weight) with moderate risk of bias (unclear detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).
- Results are based on one randomized controlled trial among mothers with infants with gestational age <32 weeks and birth weight <1500 g with moderate risk of bias (unclear attrition bias and detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).

## Provision of instructions, support protocols or equipment for breast-milk expression or pumping compared to no instructions, support protocols or equipment in quantity of milk expressed (continued)

- 6 Results are based on one randomized controlled trial among mothers whose infants were unable to breastfeed directly due to prematurity or illness with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -4).
- 7 Results are based on one randomized controlled trial among 1 mothers of term infants at approximately 6 weeks of age with moderate risk of bias (unclear reporting bias and detection bias), imprecision (wide CI and small sample size) and indirectness (downgraded: -4).
- 8 Results are based on one randomized controlled trial among infants with birth weight <1250 g with moderate risk of bias (unclear random sequence generation, selective reporting and attrition bias) and imprecision (wide CI and small sample size) (downgraded: -4).
- 9 Results are based on one randomized controlled trial among mothers with preterm infants with moderate risk of bias (unclear random sequence generation, allocation concealment, and detection bias) and imprecision (wide CI and small sample size) (downgraded: -4).
- 10 Results are based on one randomized controlled trial among mothers with preterm or critically ill infants with moderate risk of bias (unclear allocation concealment) and imprecision (wide CI and small sample size) (downgraded: -3).
- 11 Results are based on one randomized controlled trial among mothers with preterm or critically ill infants with moderate risk of bias (unclear allocation concealment) and imprecision (wide CI and small sample size) (downgraded: -3).
- 12 Results are based on one randomized controlled trial among lactating women who routinely nursed their infants (mean age of 2 months) on both breasts with moderate risk of bias (unclear allocation concealment), imprecision (wide CI and small sample size) and indirectness (downgraded: -4).
- 13 Results are based on one randomized controlled trial among mothers with infants less than 21 days old in the neonatal intensive care unit with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).
- 14 Results are based on one randomized controlled trial among mothers with infants less than 21 days old in the neonatal intensive care unit with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).
- 15 Results are based on one randomized controlled trial among mothers with infants less than 21 days old in the neonatal intensive care unit with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).
- 16 Results are based on one randomized controlled trial among mothers with infants less than 21 days old in the neonatal intensive care unit with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).
- 17 Results are based on one randomized controlled trial among mothers with infants less than 21 days old in the neonatal intensive care unit with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).
- 18 Results are based on one randomized controlled trial among mothers with infants less than 21 days old in the neonatal intensive care unit with moderate risk of bias (unclear allocation concealment and detection bias) and imprecision (wide CI and small sample size) (downgraded: -3).

## Rooming-in

### Rooming-in compared to separate care in protecting, promoting and supporting breastfeeding

**Patient or population:** mothers who have given birth and are able to care for their normal newborn infants

**Setting:** hospital or community

**Intervention:** rooming-in (mother and infant are placed in the same room immediately after birth)

**Comparison:** separate care (mother and infant are placed separately, e.g. in the hospital nursery or in a separate room)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with separate care	Risk with rooming-in				
Exclusive breastfeeding at 4 days postpartum	447 per 1000	859 per 1000 (599 to 1000 per 1000)	RR 1.92 (1.34 to 2.76)	153 (1 study)	⊕⊕⊕ <sup>1</sup> Moderate	
Any breastfeeding at 6 months	406 per 1000	341 per 1000 (207 to 565 per 1000)	RR 0.84 (0.51 to 1.39)	153 (1 study)	⊕⊕⊕ <sup>2</sup> Moderate	
Onset of lactation						This outcome was not reported.
Exclusive breastfeeding at 1 month						This outcome was not reported.
Duration of exclusive breastfeeding (in months)						This outcome was not reported.
Neonatal, infant and child mortality						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

#### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (60).

1 Results are based on one randomized controlled trial with a 2x2 factorial design (three of the four groups were combined to form the rooming-in group and the fourth group comprised the separate care group) with moderate risk of bias (unclear blinding and high risk of attrition bias). The rooming-in group were told to breastfeed their infant on demand while the separate care group were fed on a fixed 7\*/day schedule (downgraded: -1).

2 Results are based on one randomized controlled trial with a 2x2 factorial design (three of the four groups were combined to form the rooming-in group and the fourth group comprised the separate care group) with moderate risk of bias (unclear blinding and high risk of attrition bias). The rooming-in group were told to breastfeed their infant on demand while the separate care group were fed on a fixed 7\*/day schedule (downgraded: -1).

## Demand feeding

### Breastfeeding on demand (baby-led) compared to not breastfeeding on demand (scheduled, restricted or timed) in protecting, promoting and supporting breastfeeding

**Patient or population:** breastfeeding mothers with healthy term newborn infants

**Setting:** hospital deliveries

**Intervention:** breastfeeding on demand (baby-led breastfeeding)

**Comparison:** scheduled, timed or restricted frequency and duration of breastfeeds; or a mixed pattern of breastfeeding with a combination of or alternates between baby-led and scheduled breastfeeding

No studies were eligible for inclusion into the review.

There is no evidence from randomized trials of inform decisions about optimum feeding patterns.

For details of studies included in the review, see reference (59).



## **Responsive feeding compared to not responsive feeding in protecting, promoting and supporting breastfeeding**

**Patient or population:** preterm infants (less than 37 weeks' gestation) at least partially enterally fed

**Setting:** hospital deliveries

**Intervention:** feeding preterm infants in response to their hunger and satiation cues (responsive, cue-based, infant-led or demand feeding)

**Comparator:** feeding preterm infants based on scheduled intervals

Duration of breastfeeding, breastfeeding prevalence (any and exclusive) and mortality rates were not reported in any of the included trials.

For details of studies included in the review, see references (64).

## **B. Feeding practices and additional needs of infants**

### **Early additional foods or fluids**

#### **Exclusive breastfeeding compared to early additional foods or fluids in protecting, promoting and supporting breastfeeding**

**Patient or population:** breastfeeding full term (37 to 42 completed weeks' gestation)

**Setting:** hospital

**Intervention:** exclusive breastfeeding in the first few days of life

**Comparator:** additional foods (artificial milk) or fluids (water or glucose water)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with exclusive breastfeeding	Risk with early additional foods or fluids				
Additional artificial milk versus exclusive breastfeeding in the first few days of life						
Any breastfeeding at discharge	980 per 1000	1000 per 1000 (951 to 1000 per 1000)	RR 1.02 (0.97 to 1.08)	100 (1 study)	⊕⊕⊕ <sup>1</sup> Moderate	
Any breastfeeding at 3 months	765 per 1000	925 per 1000 (803 to 1000 per 1000)	RR 1.21 (1.05 to 1.41)	137 (2 studies)	⊕⊕⊕ <sup>2</sup> Very low	
Exclusive breastfeeding (in the previous 24 hours) at 3 months	609 per 1000	870 per 1000 (700 to 1000 per 1000)	RR 1.43 (1.15 to 1.77)	138 (2 studies)	⊕⊕⊕ <sup>3</sup> Very low	
Additional water versus exclusive breastfeeding in the first few days of life						
Any breastfeeding at 4 weeks	931 per 1000	773 per 1000 (680 to 875 per 1000)	RR 0.83 (0.73 to 0.94)	170 (1 study)	⊕⊕⊕ <sup>4</sup> Moderate	
Any breastfeeding at 12 weeks	805 per 1000	547 per 1000 (426 to 700 per 1000)	RR 0.68 (0.53 to 0.87)	170 (1 study)	⊕⊕⊕ <sup>5</sup> Moderate	
Any breastfeeding at 20 weeks	575 per 1000	397 per 1000 (287 to 546 per 1000)	RR 0.69 (0.50 to 0.95)	170 (1 study)	⊕⊕⊕ <sup>6</sup> Moderate	
Onset of lactation						This outcome was not reported.
Early initiation within one hour or one day after birth						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).  
CI: confidence interval; RR: rate ratio.

**Exclusive breastfeeding compared to early additional foods or fluids in protecting, promoting and supporting breastfeeding (continued)****GRADE Working Group grades of evidence**

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (86).

- 1 Results are based on one randomized controlled trial of healthy singleton term infants whose mothers were planning to breastfeed with uncertain selection, attrition and reporting bias (downgraded: -1).
- 2 Results are based on two randomized controlled trials of healthy term infants. Both had unclear selection, attrition and reporting bias. One of the studies had unclear other bias (possible conflict of interests with one of the trialists having served as a paid consultant to the formula company used in the intervention (downgraded: -3)).
- 3 Results are based on two randomized controlled trials of healthy term infants. Both had unclear selection, attrition and reporting bias. One of the studies had unclear other bias (possible conflict of interests with one of the trialists having served as a paid consultant to the formula company used in the intervention (downgraded: -3)).
- 4 Results are based on one randomized controlled trial of healthy term infants with no risk factors for hypo- or hyperglycaemia with uncertain random sequence generation, allocation concealment and reporting bias (downgraded: -1).
- 5 Results are based on one randomized controlled trial of healthy term infants with no risk factors for hypo- or hyperglycaemia with uncertain random sequence generation, allocation concealment and reporting bias (downgraded: -1).
- 6 Results are based on one randomized controlled trial of healthy term infants with no risk factors for hypo- or hyperglycaemia with uncertain random sequence generation, allocation concealment and reporting bias (downgraded: -1).

## Avoidance of pacifiers or dummies

### Restricted pacifier use compared to unrestricted pacifier use in protecting, promoting and supporting breastfeeding

**Patient or population:** healthy full term newborns whose mothers have initiated breastfeeding and intend to exclusively breastfeed

**Setting:** hospital or home deliveries

**Intervention:** advice against pacifier use (restricted)

**Comparison:** unrestricted or actively encouraged use of a pacifier

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with unrestricted pacifier use	Risk with restricted pacifier use				
Any breastfeeding at discharge	986 per 1000	996 per 1000 (986 to 1000 per 1000)	RR 1.01 (1.00 to 1.02)	541 (1 study)	⊕⊕⊕⊕ High	
Exclusive breastfeeding at 3–4 months	336 per 1000	363 per 1000 (259 to 507 per 1000)	RR 1.08 (0.77 to 1.51)	258 (1 study)	⊕⊕⊕⊖ <sup>1</sup> Moderate	
Any breastfeeding at 3–4 months	739 per 1000	754 per 1000 (702 to 821 per 1000)	RR 1.02 (0.95 to 1.11)	799 (2 studies)	⊕⊕⊕⊕ High	
Any breastfeeding at 6 months	553 per 1000	586 per 1000 (509 to 681 per 1000)	RR 1.06 (0.92 to 1.23)	541 (1 study)	⊕⊕⊕⊕ High	
Exclusive breastfeeding during stay at the facility						This outcome was not reported.
Exclusive breastfeeding at 1 or 6 months						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.
Duration of any breastfeeding						This outcome was not reported.
Morbidity (respiratory infections, diarrhoea, others)						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).  
CI: confidence interval; RR: rate ratio.

#### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (85).

1 Results are based on one randomized controlled trial with low risk of bias (no blinding of participants but blinded assessors) (not downgraded). Imprecision with wide CI (downgraded: -1).

## No provision of non-nutritive sucking compared to non-nutritive sucking in protecting, promoting and supporting breastfeeding

**Patient or population:** infants born less than 37 weeks' postconceptional age

**Setting:** hospital births

**Intervention:** no provision of non-nutritive sucking

**Comparison:** non-nutritive sucking involving the use of a pacifier or other method (e.g. gloved finger)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with non-nutritive sucking	Risk with no provision of non-nutritive sucking				
Full breastfeeding at discharge	563 per 1000	608 per 1000 (495 to 749 per 1000)	RR 1.08 (0.88 to 1.33)	303 (1 study)	⊕⊕⊕⊖ <sup>1</sup> Low	
Any breastfeeding at discharge	715 per 1000	830 per 1000 (629 to 951 per 1000)	RR 1.16 (0.88 to 1.17)	303 (1 study)	⊕⊕⊕⊖ <sup>2</sup> Moderate	This outcome was not reported.
Any breastfeeding at 3 months after discharge	376 per 1000	346 per 1000 (259 to 462 per 1000)	RR 0.92 (0.69 to 1.23)	283 (1 study)	⊕⊖⊖⊖ <sup>3</sup> Very low	This outcome was not reported.
Any breastfeeding at 6 months after discharge	243 per 1000	194 per 1000 (131 to 284 per 1000)	RR 0.80 (0.54 to 1.17)	281 (1 study)	⊕⊖⊖⊖ <sup>4</sup> Very low	This outcome was not reported.
Exclusive breastfeeding at 1 or 6 months						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.
Duration of any breastfeeding						This outcome was not reported.
Morbidity (respiratory infections, diarrhoea, others)						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (82).

- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and outcome assessors) and imprecision (wide CI) (downgraded: -2).
- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and outcome assessors) (downgraded: -1).
- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and outcome assessors; unclear attrition bias) and imprecision (wide CI) (downgraded: -3).
- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and outcome assessors; unclear attrition bias) and imprecision (wide CI) (downgraded: -3).

## No oral stimulation compared to oral stimulation in protecting, promoting and supporting breastfeeding

**Patient or population:** healthy preterm infants (with no comorbid conditions that would preclude the introduction of oral feeds)

**Setting:** hospital

**Intervention:** no intervention or standard care

**Comparison:** oral stimulation intervention

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with oral stimulation intervention	Risk with no oral stimulation				
Exclusive direct breastfeeding at discharge	641 per 1000	1000 per 1000 (615 to 1000)	RR 1.83 (0.96 to 3.48)	59 (1 study)	⊕⊕⊕⊖ <sup>1</sup> Very low	
Any direct breastfeeding at discharge	692 per 1000	858 per 1000 (402 to 1000)	RR 1.24 (0.58 to 2.66)	110 (2 studies)	⊕⊕⊕⊖⊖ <sup>2</sup> Very low	
Exclusive breastfeeding at 1 or 6 months						This outcome was not reported.
Duration of exclusive or any breastfeeding						This outcome was not reported.
Morbidity (respiratory infections, diarrhoea, others)						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).  
CI: confidence interval; RR: rate ratio.

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (84).

1 Results are based on one randomized controlled trial with risk of bias (unclear allocation concealment, no blinding of participants and outcome assessors, and unclear attrition bias) and imprecision (wide CI) (downgraded: -3).

2 Results are based on two randomized controlled trials with risk of bias (unclear allocation concealment, no blinding of participants and outcome assessors) and imprecision (wide CI) (downgraded: -3).

## Avoidance of feeding bottles and teats

### Supplements administered by cup or spoon compared to supplements administered by bottle in protecting, promoting and supporting breastfeeding

**Patient or population:** healthy full-term infants whose mothers intended to breastfeed

**Setting:** hospital deliveries

**Intervention:** supplements administered by cup or spoon

**Comparison:** supplements administered by bottle

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with supplements administered by bottle	Risk with supplements administered by cup or spoon				
Any breastfeeding at discharge (day 5)	993 per 1000	1000 per 1000 (993 to 1000 per 1000)	RR 1.01 (1.00 to 1.02)	541 (1 study)	⊕⊕⊕ <sup>1</sup> Moderate	<ul style="list-style-type: none"> <li>All fluid supplements consisted of 10% dextrin-maltose solution and were given when considered medically indicated (babies agitated or screaming after breastfeeding, signs of dehydration [no urine output over 4 hours], symptoms of hypoglycaemia with blood glucose &lt;2mmol/L).</li> <li>Intervention was limited to the first 5 days of life.</li> <li>28/250 (11.2%) of infants assigned to cup or spoon administration of supplements violated protocol.</li> </ul>
Any breastfeeding at 2 months of life	876 per 1000	876 per 1000 (824 to 938 per 1000)	RR 1.00 (0.94 to 1.07)	541 (1 study)	⊕⊕⊕ <sup>2</sup> Moderate	
Any breastfeeding at 6 months of life	554 per 1000	593 per 1000 (510 to 687 per 1000)	RR 1.07 (0.92 to 1.24)	505 (1 study)	⊕⊕ <sup>3</sup> Low	<ul style="list-style-type: none"> <li>23/250 (9.2%) of infants assigned to cup or spoon administration were lost to follow-up; 13/291 (4.5%) of infants assigned to bottle administration were lost to follow-up.</li> </ul>
Duration of exclusive breastfeeding	Median duration: 14 days (11 to 21 days)	Median duration: 21 days (14 to 25 per 1000)	Hazards Ratio Cox model [HR] 1.06 (0.88 to 1.27)	481 (1 study)	⊕⊕ <sup>4</sup> Low	<ul style="list-style-type: none"> <li>Follow-up was done at 2, 5, 10, 16, 24, 38, and 52 weeks after birth.</li> <li>Fluid supplements consisted of either pumped breast milk or formula.</li> </ul>
Duration of any breastfeeding	Median duration: 140 days (112 to 157 days)	Median duration: 105 days (90 days to 150 days)	RR 0.92 (0.76 to 1.12)	481 (1 study)	⊕⊕ <sup>5</sup> Low	<ul style="list-style-type: none"> <li>Indications for supplementation included: medical reasons such as hypoglycaemia or &gt;10% weight loss (33%), maternal request (51%) and not documented (16%).</li> </ul>
Onset of lactation						This outcome was not reported.
Neonatal, infant or child mortality						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

#### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (83).

- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and assessors; high rate of non-compliance in one group) (downgraded: -1).
- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and assessors; high rate of non-compliance in one group) (downgraded: -1).
- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and assessors; high risk of attrition bias) (downgraded: -2).
- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and unclear blinding of assessors; high risk of selection bias and unclear risk of attrition bias) (downgraded: -2).
- Results are based on one randomized controlled trial with risk of bias (no blinding of participants and unclear blinding of assessors; high risk of selection bias and unclear risk of attrition bias) (downgraded: -2).

## Cup feeding compared to bottle feeding in protecting, promoting and supporting breastfeeding

**Patient or population:** term or preterm infants, up to 44 weeks' postmenstrual age or 28 days' postnatal age who were unable to breastfeed<sup>1</sup>

**Setting:** hospital

**Intervention:** cup feeding

**Comparison:** other forms of enteral feeding (bottle feeding)<sup>2</sup>

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with bottle feeding	Risk with cup feeding				
Not fully breastfeeding at hospital discharge	549 per 1000	335 per 1000 (296 to 390 per 1000)	RR 0.61 (0.52 to 0.71)	893 (4 studies)	⊕⊕⊕⊖ <sup>3</sup> Moderate	
Not breastfeeding at hospital discharge	198 per 1000	126 per 1000 (97 to 168 per 1000)	RR 0.64 (0.49 to 0.85)	957 (4 studies)	⊕⊕⊖⊖ <sup>4</sup> Low	
Not breastfeeding at 3 months	374 per 1000	311 per 1000 (266 to 363 per 1000)	RR 0.83 (0.71 to 0.97)	883 (3 studies)	⊕⊕⊕⊖ <sup>5</sup> Moderate	
Not breastfeeding at 6 months	531 per 1000	440 per 1000 (382 to 504 per 1000)	RR 0.83 (0.72 to 0.95)	803 (2 studies)	⊕⊕⊕⊖ <sup>6</sup> Moderate	
Not fully breastfeeding at 3 months					—	Not estimable because of high heterogeneity ( $I^2 = 96\%$ )
Not fully breastfeeding at 6 months					—	Not estimable because of high heterogeneity ( $I^2 = 86\%$ )
Onset of lactation						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.
Neonatal, infant or child mortality						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (81).

- 1 All the studies in this review were conducted on preterm infants.
- 2 The comparison intervention was bottle feeding in all the studies included in the review.
- 3 Some of the trials had risk of bias (unclear sequence generation and allocation concealment) (downgraded: -1). Heterogeneity ( $I^2 = 57\%$ ) (not downgraded).
- 4 Some of the trials had risk of bias (unclear sequence generation and allocation concealment; selective reporting). Heterogeneity ( $I^2 = 72\%$ ) (downgraded: -2).
- 5 Some of the trials had risk of bias (unclear sequence generation and allocation concealment; attrition bias) (downgraded: -1).
- 6 Some of the trials had risk of bias (no trial was blinded; attrition bias; and there was high non-compliance rate) (downgraded: -1).

## Feeding by other than bottle compared to feeding by bottle in protecting, promoting and supporting breastfeeding

**Patient or population:** preterm infants

**Setting:** hospital deliveries

**Intervention:** breastfeeding with feeds by other than bottle

**Comparison:** breastfeeding with feeds by bottle

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with feeds by bottle	Risk with feeds with other than bottle				
Full breastfeeding at discharge	44 per 1000	66 per 1000 (52 to 79 per 1000)	RR 1.47 (1.19 to 1.80)	1074 (6 studies)	⊕⊕⊕ <sup>1</sup> Moderate	
Full breastfeeding at 3 months after discharge	36 per 1000	57 per 1000 (50 to 65 per 1000)	RR 1.56 (1.37 to 1.78)	986 (4 studies)	⊕⊕⊕ <sup>2</sup> Moderate	
Full breastfeeding at 6 months after discharge	31 per 1000	51 per 1000 (35 to 73 per 1000)	RR 1.64 (1.14 to 2.36)	887 (3 studies)	⊕⊕⊕ <sup>3</sup> Moderate	
Any breastfeeding at discharge	79 per 1000	88 per 1000 (84 to 92 per 1000)	RR 1.11 (1.06 to 1.16)	1138 (6 studies)	⊕⊕⊕⊕ <sup>4</sup> Moderate	
Any breastfeeding at 3 months after discharge	60 per 1000	78 per 1000 (60 to 100 per 1000)	RR 1.31 (1.01 to 1.71)	1063 (5 studies)	⊕⊕⊕ <sup>5</sup> Low	This outcome was not reported.
Any breastfeeding at 6 months after discharge	45 per 1000	56 per 1000 (49 to 63 per 1000)	RR 1.25 (1.10 to 1.41)	886 (3 studies)	⊕⊕⊕ <sup>6</sup> Moderate	
Onset of lactation						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.
Neonatal, infant or child mortality						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (80).

- 1 Several trials with risk of bias (high risk of attrition bias; unclear selection bias; unclear selective reporting) (downgraded: -1).
- 2 Several trials with risk of bias (high risk of attrition bias; unclear selection bias; unclear selective reporting) (downgraded: -1).
- 3 Several trials with risk of bias (high risk of attrition bias; unclear selection bias; unclear selective reporting) (downgraded: -1).
- 4 Several trials with risk of bias (high risk of attrition bias; unclear selection bias; unclear selective reporting) (downgraded: -1).
- 5 Several trials with risk of bias (high risk of attrition bias; unclear selection bias; unclear selective reporting). Heterogeneity ( $P = 73\%$ ) (downgraded: -2).
- 6 Several trials with risk of bias (high risk of attrition bias; unclear selection bias; unclear selective reporting) (downgraded: -1).



## C. Creating an enabling environment

### Breastfeeding policy of facilities providing maternity and newborn services

#### Having a written breastfeeding policy that is routinely communicated compared to not having a breastfeeding policy in protecting, promoting and supporting breastfeeding

**Patient or population:** children under 6 months of age who had been born in a facilities providing maternity and newborn services

**Setting:** community with at least one Baby-friendly hospital

**Intervention:** having a written breastfeeding policy that is routinely communicated

**Comparison:** not having a written breastfeeding policy

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with not having a breastfeeding policy	Risk with having a breastfeeding policy that is routinely communicated				
Exclusive breastfeeding	327 per 1000	343 per 1000 (284 to 415 per 1000)	RR 1.05 (0.87 to 1.27)	916 (1 study)	⊕⊕⊕⊕ <sup>1</sup> Very low	Results are based on a Poisson regression (crude analysis) of two cross-sectional surveys 6 months apart.
Exclusive breastfeeding	327 per 1000	360 per 1000 (297 to 438 per 1000)	RR 1.10 (0.91 to 1.34)	916 (1 study)	⊕⊕⊕⊕ <sup>2</sup> Very low	Results are based on a Poisson regression (controlling for age of the child, maternal age group and maternal education level) of two cross-sectional surveys 6 months apart.
Early initiation of breastfeeding						This outcome was not reported.
Awareness of staff of the infant feeding policy of the hospital						This outcome was not reported.
Implementation of the provision of the <i>International Code of Marketing of Breast-milk Substitutes</i>						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

#### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (41).

1 Results are based on one observational study which collected information on the explanatory variables (fulfilment of the Ten Steps to Successful Breastfeeding) on February 2011, and collected information on outcome (breastfeeding rates) and indicator (age of child, maternal age, maternal education) variables on August 2011, 6 months afterwards. Imprecision (small sample size) (downgraded: -1).

2 Results are based on one observational study which collected information on the explanatory variables (fulfilment of the Ten Steps to Successful Breastfeeding) on February 2011, and collected information on outcome (breastfeeding rates) and indicator (age of child, maternal age, maternal education) variables on August 2011, 6 months afterwards. Imprecision (small sample size) (downgraded: -1).

## Training of health workers

### Education or training of health-care staff compared to no education or other forms of training in protecting, promoting and supporting breastfeeding

**Patient or population:** health-care staff who come in contact with mothers and infants  
**Setting:** facilities providing maternity and newborn services  
**Intervention:** education or training of health-care staff on breastfeeding and supportive feeding practices  
**Comparison:** no education or other forms of training

- There was heterogeneity in the outcomes measured and also the data-collection tools, with none of the included studies using a validated instrument.
- Only two studies examined the impact of the intervention on knowledge. However, as one study (127) utilized a direct measure of knowledge and the other (128) used an indirect measure of knowledge, it was not possible to combine the studies in a meta-analysis. The results of the individual studies suggested a **small but significant improvement in measures of breastfeeding knowledge** in health-care staff receiving the intervention.
- Attitudes towards breastfeeding was only included as an outcome in two studies and again it was not possible to combine the data in a meta-analysis. One of these two studies (120) used a direct measure of attitudes which comprised four subscales, and the other study (127) used three indirect measures of attitudes (subjective norms, behavioural evaluation and self-efficacy). There was **no consistent intervention effect on attitudes** with two of the four subscales, which directly measured attitudes (120) and two of the three indirect measures (127), suggesting a small but significant positive effect on attitudes. There was no significant effect on the other three subscales measuring attitudes.
- Only one study measuring compliance with the Baby-friendly Hospital Initiative contributed data to this review (128), which reported a **small but significant positive effect on performance of step five of the Ten Steps to Successful Breastfeeding (demonstration of breastfeeding)**.
- The following outcomes were not reported in the trials: early initiation of breastfeeding, exclusive breastfeeding during stay in the facility, duration of exclusive breastfeeding or adherence to the provisions of the *International Code of Marketing of Breast-milk Substitutes* (26).

For details of studies included in the review, see reference (100).

### Training on breastfeeding or supportive feeding practices compared to no training in protecting, promoting and supporting breastfeeding

**Patient or population:** health-facility-based staff  
**Setting:** facilities providing maternity and newborn services  
**Intervention:** training of health staff on breastfeeding or supportive feeding practices  
**Comparison:** no training of health staff on breastfeeding or supportive feeding practices

- The review identified five included studies: three non-randomized controlled before-and-after observational studies and two cluster randomized studies. None of the studies used a validated instrument.
- The two cluster randomized studies showed an **improvement in the attitude of antenatal midwives and postnatal nurses** after a process-oriented breastfeeding training (129) and an **improved Baby-friendly Hospital compliance score** among facilities providing maternity and newborn services whose health staff attended an 18-day breastfeeding training course (130).
- The three non-randomized controlled before-and-after studies showed **increases in knowledge scores** in the trained health professionals (131, 132) and increase in Baby-friendly hospital compliance (129). **Effects of the training on attitudes were inconsistent**, with an improvement in one study (132) and no change in two others (131, 133).
- One non-randomized observational study at one hospital with a 1.5-hour mandated breastfeeding education session for all nursing staff, with an optional self-paced tutorial compared to another hospital with no education session showed an increase in exclusive breastfeeding rates in the intervention hospital (from 31% to 54%;  $n = 15$  before and 15 after) and a decrease in the control hospital (from 43% to 0%;  $n = 16$  before and 16 after). The two hospitals were different in other potential confounding variables such as proportion of First Nations clients and proportion of multiparous mothers (both variables have a higher proportion in the intervention hospital).
- The following outcomes were not reported in the trials: early initiation of breastfeeding, exclusive breastfeeding during stay in the facility, duration of exclusive breastfeeding or adherence to the provisions of the *International Code of Marketing of Breast-milk Substitutes* (26).

For details of studies included in the review, see reference (42).

## Antenatal breastfeeding education for mothers

### Antenatal education with breastfeeding components compared to no antenatal education with breastfeeding components in protecting, promoting and supporting breastfeeding

Patient or population: pregnant women and/or their partners

Setting: antenatal care

Intervention: antenatal breastfeeding education

Comparison: routine or standard care (antenatal education without breastfeeding components)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with routine or standard care	Risk with antenatal breastfeeding education				
Initiation of breastfeeding	750 per 1000	758 per 1000 (705 to 818 per 1000)	RR 1.01 (0.94 to 1.10)	3505 (8 studies)	⊕⊕⊕⊖ <sup>1</sup> Moderate	
Exclusive breastfeeding at 3 months	376 per 1000	398 per 1000 (338 to 470 per 1000)	RR 1.06 (0.90 to 1.25)	822 (3 studies)	⊕⊕⊕⊕ <sup>2</sup> High	
Exclusive breastfeeding at 6 months	154 per 1000	165 per 1000 (134 to 201 per 1000)	RR 1.07 (0.87 to 1.30)	2161 (4 studies)	⊕⊕⊕⊖ <sup>3</sup> Moderate	
Any breastfeeding at 3 months	609 per 1000	597 per 1000 (500 to 719 per 1000)	RR 0.98 (0.82 to 1.18)	654 (2 studies)	⊕⊕⊕⊖ <sup>4</sup> Moderate	
Any breastfeeding at 6 months	505 per 1000	505 per 1000 (460 to 556 per 1000)	RR 1.00 (0.91 to 1.10)	1636 (4 studies)	⊕⊕⊕⊖ <sup>5</sup> Moderate	
Exclusive breastfeeding during stay at the facility						This outcome was not reported.
Early initiation of breastfeeding within 1 hour after birth						This outcome was not reported.
Onset of lactation						This outcome was not reported.
Exclusive breastfeeding at 1 month						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

#### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (43).

- 1 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 61\%$ ); downgraded: -1).
- 2 None of the studies had adequate blinding for the mother and staff (not downgraded).
- 3 None of the studies had adequate blinding for the mother and staff (not downgraded). Imprecision (wide CI; downgraded: -1).
- 4 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 60\%$ ; downgraded: -1).
- 5 None of the studies had adequate blinding for the mother and staff (not downgraded). Heterogeneity ( $I^2 = 61\%$ ; downgraded: -1).

## Education and support on breastfeeding compared to not providing education and support in protecting, promoting and supporting breastfeeding

**Patient or population:** women exposed to interventions intended to promote breastfeeding

**Setting:** all

**Intervention:** any intervention aiming to promote the initiation of breastfeeding (education and support on breastfeeding provided before the first breastfeed)

**Comparison:** standard care (no intervention to promote breastfeeding)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with standard care	Risk with breastfeeding education and support				
Initiation of breastfeeding (when breastfeeding education and support is provided by health-care professionals)	418 per 1000	598 per 1000 (448 to 808 per 1000)	RR 1.43 (1.07 to 1.93)	564 (5 studies)	⊕⊕⊕⊖ <sup>1</sup> Low	
Initiation of breastfeeding (when breastfeeding education and support are provided by non-health-care professionals)	120 per 1000	147 per 1000 (127 to 168 per 1000)	RR 1.22 (1.06 to 1.40)	5188 (8 studies)	⊕⊕⊕⊖ <sup>2</sup> Low	
Early initiation of breastfeeding (when breastfeeding education and support are provided by non-health-care professionals)	5 per 1000	9 per 1000 (4 to 10 per 1000)	RR 1.64 (0.86 to 3.13)	5560 (3 studies)	⊕⊖⊖⊖ <sup>3</sup> Very low	
Exclusive breastfeeding during stay at the facility						This outcome was not reported.
Exclusive breastfeeding at 1, 3 and 6 months						This outcome was not reported.
Onset of lactation						This outcome was not reported.
Duration of breastfeeding (in months)						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).  
CI: confidence interval; RR: rate ratio.

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (44).

- 1 Most studies had with risk of bias (unclear allocation concealment and high risk of attrition bias). Heterogeneity ( $I^2 = 61\%$ ) (downgraded: -2).
- 2 Most studies had with risk of bias (unclear allocation concealment and high risk of attrition bias). Heterogeneity ( $I^2 = 86\%$ ) (downgraded: -2).
- 3 Most studies had with risk of bias (unclear allocation concealment and high risk of attrition bias). Heterogeneity ( $I^2 = 78\%$ ). Imprecision (wide CI) (downgraded: -3).

## Discharge planning and linkage to continuing care

### Provision of linkage to breastfeeding support after discharge from facility compared to no provision of linkage to breastfeeding support in protecting, promoting and supporting breastfeeding

**Patient or population:** mothers giving birth in maternity facilities

**Setting:** facilities providing maternity and newborn services

**Intervention:** provision of linkage to breastfeeding support after discharge from facilities providing maternity and newborn services

**Comparison:** no provision of linkage to breastfeeding support after discharge

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with usual care (steps 1–9)	Risk with provision of linkage to breastfeeding support (steps 1–10) <sup>†</sup>				
Exclusive breastfeeding at 14 weeks	14.2 per 1000	97 per 1000 (6.4 to 14.8 per 1000)	RR 0.64 (0.42 to 0.98)	671 (1 study)	⊕⊕⊕⊖ <sup>2</sup> Very low	
Exclusive breastfeeding at 24 weeks	8.3 per 1000	3.2 per 1000 (1.7 to 6.5 per 1000)	RR 0.39 (0.20 to 0.79)	617 (1 study)	⊕⊕⊕⊖ <sup>3</sup> Very low	
Diarrhoea episode in the last 4 weeks, at 14 weeks of age	11 per 1000	2.0 per 1000 (6 to 6.8 per 1000)	RR 1.77 (0.50 to 6.21)	617 (1 study)	⊕⊕⊕⊖ <sup>4</sup> Very low	
Fever with cough in the last 4 weeks, at 14 weeks of age	1.4 per 1000	1.6 per 1000 (5 to 5.6 per 1000)	RR 1.24 (0.34 to 4.03)	617 (1 study)	⊕⊕⊕⊖ <sup>5</sup> Very low	
Diarrhoea episode in the last 6 weeks, at 24 weeks of age	1.7 per 1000	4.2 per 1000 (1.6 to 11.0 per 1000)	RR 2.25 (0.98 to 6.64)	617 (1 study)	⊕⊕⊕⊖ <sup>6</sup> Very low	
Fever and cough in the last 6 weeks, at 24 weeks of age	3.0 per 1000	4.9 per 1000 (2.3 to 10.5)	RR 1.61 (0.75 to 3.45)	617 (1 study)	⊕⊕⊕⊖ <sup>7</sup> Very low	
Exclusive breastfeeding at 1 and 3 months						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.
Duration of any breastfeeding						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

#### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (45).

- Both the control group (steps 1–9) and the intervention group (steps 1–10) had 2-day intensive training for staff in the antenatal care clinic, delivery room and postpartum ward. The intervention group also included the staff of the well-baby clinic in the intensive training. In addition, flyers containing culturally appropriate messages on breastfeeding were distributed by staff in the postpartum ward and well-baby clinic in the intervention group. There was no referral for any breastfeeding support after discharge from the postpartum ward.
- Results are from one cluster randomized controlled trial with study with risk of bias (unclear detection bias, unclear selection bias, high attrition bias). Indirectness (no referral for any breastfeeding support after discharge) (downgraded: –3).
- Results are from one cluster randomized controlled trial with study with risk of bias (unclear detection bias, unclear selection bias, high attrition bias). Indirectness (no referral for any breastfeeding support after discharge) (downgraded: –3).
- Results are from one cluster randomized controlled trial with study with risk of bias (unclear detection bias, unclear selection bias, high attrition bias). Indirectness (no referral for any breastfeeding support after discharge) (downgraded: –3).
- Results are from one cluster randomized controlled trial with study with risk of bias (unclear detection bias, unclear selection bias, high attrition bias). Indirectness (no referral for any breastfeeding support after discharge) (downgraded: –3).
- Results are from one cluster randomized controlled trial with study with risk of bias (unclear detection bias, unclear selection bias, high attrition bias). Indirectness (no referral for any breastfeeding support after discharge) (downgraded: –3).
- Results are from one cluster randomized controlled trial with study with risk of bias (unclear detection bias, unclear selection bias, high attrition bias). Indirectness (no referral for any breastfeeding support after discharge) (downgraded: –3).

## Provision of linkage to breastfeeding support after discharge from facility compared to no provision of linkage to breastfeeding support in protecting, promoting and supporting breastfeeding (continued)

**Patient or population:** mothers giving birth in maternity facilities

**Setting:** facilities providing maternity and newborn services

**Intervention:** provision of linkage to breastfeeding support after discharge from facilities providing maternity and newborn services

**Comparison:** no provision of linkage to breastfeeding support after discharge

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with usual care	Risk with provision of information on local breastfeeding drop-in centre <sup>1</sup>				
Any breastfeeding at 4 months	625 per 1000	544 per 1000 (419 to 713)	RR 0.87 (0.67 to 1.14)	4625 (1 study)	⊕⊕⊖⊖ <sup>2</sup> Low	
Exclusive breastfeeding at 1, 3 and 6 months						This outcome was not reported.
Duration of exclusive breastfeeding						This outcome was not reported.
Duration of any breastfeeding						This outcome was not reported.
Morbidity						This outcome was not reported.

\*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; RR: rate ratio.

### GRADE Working Group grades of evidence

**High quality:** We were very confident that the true effect lies close to that of the estimate of the effect.

**Moderate quality:** We were moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

**Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

For details of studies included in the review, see reference (45).

- Both the control group (usual care) and the intervention group (information to access the breastfeeding drop-in centre) had a hospital midwife visit at 1 to 2 days after discharge, a nurse home visit at 10 to 14 days after birth, a telephone call as early as possible after birth to assign a visit before the 10th day of life if necessary, and access to a state-wide maternal and child health helpline. The intervention group had, in addition, written information on local community breastfeeding drop-in centres.
- Results are from one cluster randomized controlled trial with study with risk of bias (unclear detection bias, unclear selection bias, high attrition bias) and imprecision (wide CI) (downgraded: –2).

## **Annex 4. GRADE-CERQual summary of qualitative findings tables on values and preferences of mothers**

Ten systematic reviews of the values and preferences of mothers on various aspects of breastfeeding support as related to the Ten Steps to Successful Breastfeeding and the Baby-friendly Hospital Initiative were done. A search of Embase and MEDLINE databases was done in May 2016. In total, the search identified 2297 article titles and abstracts for screening; of these, 326 articles were assessed for inclusion from full text screening, and 81 were included in at least one of the reviews. Data were extracted onto standardized data sheets. Screening, assessments and data extraction were independently done by two reviewers and discrepancies were resolved by a third reviewer.

The quality of each individual study was appraised using the Critical Appraisal Skills Programme (CASP) quality-assessment tool for qualitative studies (123). The quality of each article was double-reviewed. For each of the breastfeeding interventions, thematic analysis of the relevant data was performed. The GRADE-Confidence in the Evidence from Reviews of Qualitative Research (CERQual) approach was used to provide a systematic and transparent way of assessing and describing how much confidence can be placed in the findings (124, 134). This approach is based on an assessment of the methodological limitations, relevance, coherence and adequacy of data for each theme. Each individual theme was graded using the GRADE-CERQual approach.

### **A. Immediate support to initiate and establish breastfeeding**

#### **Early skin-to-skin contact and initiation of breastfeeding**

Two hundred and eighty-six studies were assessed for inclusion. Thirteen studies were identified as eligible for inclusion in this review (135–147). The 13 studies were carried out in Australia, Colombia, Egypt, Italy, Palestine, Russia, Sweden, the United Kingdom of Great Britain and Northern Ireland (United Kingdom) and the United State of America (United States).

**Theme: Most mothers valued immediate skin-to-skin contact and felt happy doing this**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal deliveries:</p> <ul style="list-style-type: none"> <li>A majority of the mothers would prefer to have immediate skin-to-skin contact again in the future.</li> <li>Some mothers felt that without immediate skin-to-skin contact, the delivery would feel too clinical and too pristine rather than natural.</li> <li>"Most of the mothers looked happy, although about a fifth felt tired."</li> <li>In Palestine, more young mothers were interested in skin-to-skin contact after being given information about it.</li> <li>In Egypt, roughly half of the mothers had knowledge about benefits of skin-to-skin contact.</li> <li>In Sweden, those who had short immediate skin-to-skin contact (&lt;15 minutes) were dissatisfied and felt that the skin-to-skin contact time was too short.</li> </ul> <p>Among mothers with caesarean deliveries:</p> <ul style="list-style-type: none"> <li>Mothers were very satisfied and convinced that immediate skin-to-skin contact contributed to the feeling of closeness to the child.</li> <li>Many would prefer to have immediate skin-to-skin contact again in the future.</li> <li>A mother reported that she "forgot about the pain" when put on skin-to-skin contact with her infant and it "helped her recover".</li> <li>Mothers who had previous caesarean sections without immediate skin-to-skin contact had a very high satisfaction of immediate skin-to-skin contact after they had experienced it.</li> <li>In Italy, only 2 (of 17) mother with immediate skin-to-skin contact did not perceive any benefit of immediate skin-to-skin contact.</li> </ul> <p>Among mothers whose infants were admitted to the neonatal intensive care unit (for preterm births or low birth weight):</p> <ul style="list-style-type: none"> <li>Mothers believed that early, continuous, and prolonged mother-infant skin-to-skin care without unwarranted restrictions should be offered as soon as possible. Many believe that this was the most important "step".</li> </ul>	(135–147)	Moderate confidence	<p><b>Methodological limitations:</b> there were 13 studies with moderate concerns on methodological limitations. Most studies had data from questionnaires with close-ended questions though a few had in-depth interviews.</p> <p><b>Coherence:</b> there were no concerns on coherence. Data from the primary studies were all consistent among mothers with normal births, caesarean births or births with admission to the neonatal intensive care unit, usually for very low-birth-weight or very preterm infants.</p> <p><b>Relevance:</b> there were minor concerns on relevance. None of the studies were from Asia or Africa, or from low-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. Almost 8000 mothers were interviewed or answered questionnaires on their values and preferences regarding immediate skin-to-skin contact. There were thick data and high coherence.</p>

**Showing mothers how to breastfeed**

Eighty studies were assessed for inclusion. Eight studies were identified as eligible for inclusion in this review (148–155). The eight studies were carried out in Canada, the United Kingdom and the United States. Two studies were on showing mothers how to breastfeed, and six were on expression of breast milk.

**Theme: Most mothers found that being taught how to breastfeed was helpful but sometimes inadequately done**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers (those with normal-term infants and those with preterm infants) who were shown how to breastfeed:</p> <ul style="list-style-type: none"> <li>Mothers found it helpful when they were shown how to hold and position the baby at the breast and how to get the baby to latch on.</li> <li>Mothers recognized that they needed help to start breastfeeding but most felt that they did not receive adequate or sufficient help. For instance, some were supported to latch only once or had inconsistent advice from different health-care workers.</li> </ul>	(148, 149)	Low confidence	<p><b>Methodological limitations:</b> there were two studies with minor concerns on methodological limitations. One study interviewed 16 mothers of preterm infants and one used a questionnaire with open-ended questions on 253 African-American mothers.</p> <p><b>Coherence:</b> there were minor concerns on coherence. Mothers appreciated the support but found it insufficient.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. The two studies were from high-income countries with good health-care systems.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. There were thick data but from only two studies.</p>



**Theme: Most mothers of normal infants found that being taught how to express breast milk was useful**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants who were taught how to express breast milk:</p> <ul style="list-style-type: none"> <li>Mothers who were taught how to pump breast milk agreed that this skill was useful and enabled them to breastfeed for longer.</li> <li>The most frequent reasons for pumping breast milk are to have someone else feed the child, to have an "emergency" stock of breast milk and to add to complementary food (for children who are old enough).</li> </ul>	(150)	Low confidence	<p><b>Methodological limitations:</b> there was one study with moderate concerns on methodological limitations. The study used a questionnaire with mostly close-ended questions on 3606 mothers of term or near-term infants.</p> <p><b>Coherence:</b> there were moderate concerns on coherence. The qualitative information was not very detailed.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. The study included mothers of young and older infants from the United States.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. The information was from a questionnaire.</p>

**Theme: Mothers of infants who were admitted to the neonatal intensive care unit found that expression of breast milk was a "paradoxical experience", in which they felt intense dislike, but that it gave a feeling of connection**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with infants who were admitted to the neonatal intensive care unit, low birth weight or preterm or had poor latch:</p> <ul style="list-style-type: none"> <li>Mothers usually felt "intense dislike" for breast pumping ("felt like a cow", did not feel the same as having a baby to hold, were embarrassed to be seen by others pumping). They reported pain and discomfort during expression of breast milk and sought more support.</li> <li>Most continued to pump for the sake of their baby (especially among mothers of infants in the neonatal intensive care unit) and it has been described as "giving life" to the infant.</li> <li>This has been described as a "paradoxical experience" of separation and connection.</li> </ul>	(151-155)	Moderate confidence	<p><b>Methodological limitations:</b> there were five studies with no concerns on methodological limitations. The studies interviewed mothers with good qualitative methods.</p> <p><b>Coherence:</b> there were no concerns on coherence. The information was consistent among mothers and between studies.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. The studies were from the United States (4 studies) and Canada (1 study), both high-income countries.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. There were thick data from a narrow context.</p>

## Rooming-in

Thirty-seven studies were assessed for inclusion. Seven studies were identified as eligible for inclusion in this review (135, 156–161). The seven studies were carried out in Indonesia, Ireland, Norway, Russia, Sweden, the United Kingdom and the United States.

**Theme: Most mothers preferred to room-in their infant, although there was a significant proportion who would prefer not to room-in at night**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants:</p> <ul style="list-style-type: none"> <li>Rooming-in was not universally preferred by mothers. Those who want to room-in their children stated that they wished to be with their infant and were anxious to receive early training and practice in infant care. They wanted the baby close in case something happens.</li> <li>In Indonesia (80%), Norway (95%) and Sweden (93%) most of the mothers would choose to have their babies with them at night.</li> <li>Those who did not want to room-in their children wanted to rest while in the hospital, were confident that their infants would receive professional care in the nursery and felt that their children would be able sleep better in the nursery where it was more peaceful. For instance, in Indonesia, there was concern that there was not enough space between beds (more noise and disturbance during the nights).</li> <li>Travellers (Northern Ireland) greatly appreciated midwives taking the baby away from them at night.</li> </ul>	(135, 156–161)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. Most of the studies combined in-depth interviews with questionnaires.</p> <p><b>Coherence:</b> there were no concerns on coherence.</p> <p><b>Relevance:</b> there were minor concerns on relevance. The studies were from high- and middle-income countries. No studies were from regions in the Middle East or Africa.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were thick data available.</p>

## Demand feeding

Two hundred and thirty-one studies were assessed for inclusion. Four studies were identified as eligible for inclusion in this review (135, 144, 162, 163). The four studies were carried out in Japan, Russia, Sweden and the United Kingdom.

**Theme: Mothers valued demand feeding but felt that they needed more support**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants and those with infants admitted to the neonatal intensive care unit:</p> <ul style="list-style-type: none"> <li>Mothers thought that demand feeding was important. However, mothers were uncertain and confused about interpreting hunger and feeding cues from their babies. This made the mothers frustrated, stressed, anxious and tired.</li> <li>Mothers of babies from the neonatal intensive care unit felt that breastfeeding on demand should be done as early as possible. However, these mothers also felt they needed guidance on recognizing feeding cues and shifts in their infant's behavioural states. They felt that they needed support when the infants transition to demand feeding as the infants start to show signs of interest in sucking.</li> </ul>	(135, 144, 162, 163)	Low confidence	<p><b>Methodological limitations:</b> there were moderate concerns on methodological limitations. Most of the studies were done with questionnaires, observations or midwife-led interviews.</p> <p><b>Coherence:</b> there were no concerns on coherence. The findings were consistent even in different contexts among mothers of infants admitted to the neonatal intensive care unit, very preterm infants, very low-birth-weight infants and normal-weight term infants.</p> <p><b>Relevance:</b> there were minor concerns on relevance. All four studies directly addressed mothers' perceptions towards demand feeding, though there were no studies from low- or middle-income countries outside of Europe and Asia.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. Most of the studies had thin data from close-ended questionnaires.</p>

## B. Feeding practices and additional needs of infants

### Early additional foods or fluids

Ninety-nine studies were assessed for inclusion. Three studies were identified as eligible for inclusion in this review (164–166). The three studies were carried out in Ethiopia, Nigeria and Pakistan.

#### Theme: Mothers living in cultural contexts where pre-lacteal feeds are acceptable valued pre-lacteal feeds

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants and those with preterm infants:</p> <ul style="list-style-type: none"> <li>Mothers perceived pre-lacteal feeding as beneficial to the child (e.g., cleaning of the stomach, positive effect on health, prevention of affections).</li> <li>Societal norms and cultural beliefs perceived pre-lacteal feeds in a positive and socially acceptable way.</li> </ul>	(164–166)	Moderate confidence	<p><b>Methodological limitations:</b> there were no concerns on methodological limitations.</p> <p><b>Coherence:</b> there were no concerns on coherence. The findings were consistent among the three findings from different cultural backgrounds.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. All studies were from low- and middle-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were thick data from the studies in Ethiopia and Nigeria, and moderate thickness of data from the study in Pakistan.</p>

### Avoidance of pacifiers or dummies

Six hundred and thirty studies were assessed for inclusion. Five studies were identified as eligible for inclusion in this review (95–97, 167, 168). They were carried out in Australia, Brazil, Egypt, New Zealand and Sweden.

#### Theme: Mothers valued the use of pacifiers or dummies

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants and those with infants admitted to the neonatal intensive care unit:</p> <ul style="list-style-type: none"> <li>Mothers used pacifiers or dummies because they believed that these soothe/settle their babies, to teach them to suck, to rest between breastfeeds, and to help in the weaning of the baby. Pacifier use was seen as normal positive behaviour.</li> <li>In trials assigning mothers to avoid pacifiers or dummies, 24–61% of mothers had introduced a pacifier.</li> <li>Mothers of preterm and very preterm infants suggested including as a step: "Offer the infant a pacifier for relief of pain, stress and anxiety, and for stimulating the uptake of nutrients during tube feeding. Introduce bottle feeding when there is a reason!".</li> <li>In Egypt, around 40% give pacifiers or dummies.</li> <li>A minority of mothers (6% in one study) would withhold the pacifier for fear that it would interfere with breastfeeding. Another 20–30% avoided pacifier use for appearance, concern for formation of a habit or said that it was not needed or said it was "unnatural" (and they would rather carry their baby as a better way to soothe them). There was also concern about hygiene, problems with losing the pacifier, and concerns about the effect on teeth.</li> </ul>	(95–97, 167, 168)	Moderate confidence	<p><b>Methodological limitations:</b> there were no concerns on methodological limitations.</p> <p><b>Coherence:</b> there were no concerns on coherence.</p> <p><b>Relevance:</b> there were minor concerns on relevance. There were no primary studies from regions in Africa and Asia and no primary studies from low-income countries.</p> <p><b>Adequacy of data:</b> there were no concerns on adequacy of the data. There were thick data from these studies.</p>

## Avoidance of feeding bottles and teats

Six hundred and thirty studies were assessed for inclusion. Three studies were identified as eligible for inclusion in this review (96, 97, 169). Of these studies, three discussed mothers' values and preferences on avoidance of artificial teats and bottles (carried out in Australia, Sweden and the United Kingdom) and two discussed mothers' values and preferences on use of cup feeding (carried out in Australia and the United Kingdom).

### Theme: Mothers valued the use of bottles

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants and those with infants admitted to the neonatal intensive care unit:</p> <ul style="list-style-type: none"> <li>Mothers found using a bottle easy and convenient. They felt that there was no need for training and it appeared that this skill came naturally. It was the natural option when there were difficulties with breastfeeding.</li> <li>Among mothers of very preterm and very low-birth-weight infants, mothers held the opinion that breastfeeding is the best choice, but bottle feeding can also be a good choice, when the mother is so emotionally drained after spending a lot of time with the infant in the hospital for several months that she cannot cope with the "job" of breastfeeding, and when coming home with a baby with medical problems.</li> </ul>	(96, 97, 169)	Low confidence	<p><b>Methodological limitations:</b> there were no concerns on methodological limitations.</p> <p><b>Coherence:</b> there were no concerns on coherence. Findings were consistent between mothers of normal-term infants and mothers with preterm, very low-birth-weight infants or infants admitted to the neonatal intensive care unit.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. All studies were from high-income countries; none were from Africa, the Americas or regions in the Middle East.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were fairly thick data from the studies.</p>

### Theme: Mothers found cup feeding difficult

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants:</p> <ul style="list-style-type: none"> <li>Mothers found using a cup difficult: messy, time consuming, lots of spills (wastes), infant not satisfied.</li> <li>In addition, in trials of mothers assigned to cup feed, the majority introduced the bottle.</li> <li>Those that continued cup feeding were afraid of nipple confusion (from one of the 30 mothers from the study conducted in the United Kingdom).</li> </ul>	(97, 169)	Low confidence	<p><b>Methodological limitations:</b> there were no concerns on methodological limitations.</p> <p><b>Coherence:</b> there were no concerns on coherence. The findings were consistent among mothers of normal-term infants and those with preterm infants.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. There were only two studies, both from high-income countries.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. There were fairly thick data from these studies.</p>

## C. Creating an enabling environment

### Breastfeeding policy of facilities providing maternity and newborn services

No studies were found on maternal values and preferences pertaining to policy on breastfeeding of facilities providing maternity and newborn services.

### Training of health workers

No studies were found on maternal values and preferences pertaining to training of health workers.

### Antenatal breastfeeding education for mothers

Two hundred and eighty-six studies were assessed for inclusion. Eighteen studies were identified as eligible for inclusion in this review (170–187). The 18 studies were carried out in Australia, Brazil, Canada, Ireland, Mexico, Russia, Sweden, Uganda, the United Kingdom and the United States. The findings are divided into two themes: the content and the method of antenatal breastfeeding education.

#### Theme: Mothers felt that infant feeding was not discussed enough in the antenatal period

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants and those with infants admitted to the neonatal intensive care unit:</p> <ul style="list-style-type: none"> <li>Some of the mothers felt that feeding was not discussed enough in the antenatal period. Mothers wanted more information from prenatal classes. Mothers wished to have more formal institutional support for infant feeding in the antenatal period.</li> <li>Many mothers (about half of the mothers in most studies; all of the mothers interviewed in Uganda; most of the mothers who had previous breast-reduction mammoplasty; most of the adolescent mothers) felt that antenatal education on feeding was insufficient or too infrequent.</li> <li>Some mothers commented that the contents of antenatal education were too breastfeeding biased with not enough discussion on other options; that there is not enough discussion on what to expect (for instance, how hard or painful breastfeeding could be) and thus there was a mismatch between women's expectations and experiences.</li> <li>Mothers preferred practical information. If the mothers received sufficient and practical information (e.g. not bending down when holding the baby) then they were satisfied with the antenatal information.</li> </ul>	(170–187)	Moderate confidence	<p><b>Methodological limitations:</b> there were no concerns on methodological limitations. Most studies were good quality qualitative studies.</p> <p><b>Coherence:</b> there were no concerns on coherence.</p> <p><b>Relevance:</b> there were minor concerns on relevance, with only one study from a low-income country and none from Asia or regions in the Middle East.</p> <p><b>Adequacy of data:</b> there were no concerns on adequacy of the data. There were thick data from the studies.</p>

#### Theme: Mothers felt that antenatal education on breastfeeding was not optimally done

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants and those with infants admitted to the neonatal intensive care unit:</p> <ul style="list-style-type: none"> <li>Many mothers complained about the antenatal breastfeeding education in terms of negative attitude or miscommunication with the health-care worker.</li> <li>Others cited experiences with providers who appeared to mention breastfeeding simply because it was required by the job, with little sincerity or positive feelings conveyed (in some studies, these were identified as the physicians).</li> <li>Mothers experienced frustration, confusion, and finally mistrust in what health-service providers told them.</li> <li>Many respondents viewed health-care professionals as highly motivated advocates of breastfeeding. Female health-care professionals with personal experience in breastfeeding were thought to be the most sincere and effective counsellors. Continuity of care to postnatal support was highly valued.</li> </ul>	(170–187)	Moderate confidence	<p><b>Methodological limitations:</b> there were no concerns on methodological limitations. Most studies were good quality qualitative studies.</p> <p><b>Coherence:</b> there were no concerns on coherence.</p> <p><b>Relevance:</b> there were minor concerns on relevance with only one study from a low-income country and none from Asia or regions in the Middle East.</p> <p><b>Adequacy of data:</b> there were no concerns on adequacy of the data. There were thick data from the studies.</p>

## Discharge planning and linkage to continuing support

Six hundred and forty-eight studies were assessed for inclusion. Twenty-two studies were identified as eligible for inclusion in this review (127, 135, 187–206). The 22 studies were carried out in Australia, Canada, Denmark, France, Ireland, Russia, Sweden, Switzerland, the United Kingdom and the United States.

### Theme: Most mothers valued linkage to breastfeeding support after discharge

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among mothers with normal-term infants and those with infants admitted to the neonatal intensive care unit:</p> <ul style="list-style-type: none"> <li>• Most mothers appreciated having support for breastfeeding continued after discharge.</li> <li>• Regardless of the type of support (telephone, baby café, hospital visit, home visit, videoconferencing, combination of support mechanisms), the mothers seemed to value having access to support after discharge.</li> <li>• The mothers experienced a greater sense of security from the support received, especially within the first postnatal week.</li> </ul>	(127, 135, 187–206)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. Most studies were comparing two different strategies or methods of support for breastfeeding after discharge.</p> <p><b>Coherence:</b> there were no concerns on coherence.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. There were no primary studies from Africa or regions in the Middle East.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. Most of the studies had scoring of maternal satisfaction, with thin data.</p>

## Annex 5. GRADE-CERQual summary of qualitative findings tables on acceptability among health workers and stakeholders

A systematic review of the values and preferences of health-care workers on various aspects of breastfeeding support as related to the Ten Steps to Successful Breastfeeding and the Baby-friendly Hospital Initiative was done. A search of Embase and Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases was done in June 2016. In total, the search identified 1037 article titles and abstracts for further screening; of these, 145 articles were assessed for inclusion from full-text screening. A total of 62 articles were eligible for inclusion. Data were extracted onto a standardized data sheet and organized by which of the breastfeeding interventions they pertained to. Screening, assessments and date extraction were independently done by two reviewers and discrepancies were resolved by a third reviewer.

The quality of each individual study was appraised using the Critical Appraisal Skills Programme (CASP) quality-assessment tool for qualitative studies (123). The quality of each article was double-reviewed. For each of the breastfeeding interventions, a thematic analysis of the relevant data was performed. The GRADE-Confidence in the Evidence from Reviews of Qualitative Research (CERQual) approach was used to provide a systematic and transparent way of assessing and describing how much confidence can be placed in the findings (124, 134). This approach is based on an assessment of the methodological limitations, relevance, coherence and adequacy of data for each theme. Each individual theme was graded using the GRADE-CERQual approach.

### A. Immediate support to initiate and establish breastfeeding

#### Early skin-to-skin contact and initiation of breastfeeding

Fifteen studies were identified as eligible for inclusion in this review (72, 131, 207–219). The 15 studies were carried out in Australia, Canada, China, France, India, New Zealand and the United States. Of these studies, seven were relevant to the first theme (health workers valued and had favourable views towards early skin-to-skin contact), nine were relevant to the second theme (health workers had safety concerns during skin-to-skin contact after caesarean delivery or anaesthesia) and two were relevant for the third theme (health workers had concerns about breastfeeding and skin-to-skin contact when the infant was admitted to the neonatal intensive care unit).

#### Theme: Health workers valued and had favourable views towards early skin-to-skin contact

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services:</p> <ul style="list-style-type: none"> <li>Maternity staff had favourable views towards skin-to-skin care after delivery. The benefits of skin-to-skin care seem to be fairly well known and accepted among health-care personnel.</li> <li>Some providers considered skin-to-skin contact as a way to improve efficiency while also improving patient outcomes; for example: “it’s [skin-to-skin contact] a time saver in the delivery suite as well because if you have your mother and baby skin-to-skin, that baby is safe with the mother, and more likely to latch on itself. You can just leave your mother and baby there quite happily. So it’s not a time-consuming thing for us because we can just leave them together quite safely and happily”.</li> </ul>	(131, 207–213)	Low confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. The studies used questionnaires, face-to-face interviews and focus group discussions.</p> <p><b>Coherence:</b> there were minor concerns on coherence. The findings were similar across the studies.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. The studies were from Australia, India and the United States.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. There were fairly thin data from each of the studies.</p>

**Theme: Health workers had safety concerns during early breastfeeding and skin-to-skin contact after caesarean delivery or anaesthesia**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services:</p> <ul style="list-style-type: none"> <li>Health personnel had concerns about early skin-to-skin contact and breastfeeding, especially during deliveries with anaesthesia, such as during caesarean section or epidural anaesthesia.</li> <li>Though maternity staff had positive feelings towards early skin-to-skin contact, for the actual implementation of this step, maternity staff believed initiating breastfeeding within a half an hour after birth was not always reasonable.</li> <li>A study conducted in India interviewing nurses found that only half of the nursing staff felt that breastfeeding should happen shortly after delivery. Another study found that maternity staff believed that the timing of the first feed needs to be relaxed to allow mothers and babies to initiate feeding when it works best for their individual situation. This was especially true if mothers received anaesthesia during labour, which was thought to influence a baby's ability to suck.</li> <li>Several studies reported that maternity staff found skin-to-skin contact and breastfeeding as soon as possible was impractical and unsafe in the operating room. The operating room routines and staffing would interfere with these practices, particularly in the case of complicated or caesarean deliveries.</li> <li>Studies identified barriers in terms of the hospital culture and staff members desiring to get the mother and baby out of the delivery room as soon as possible after delivery. The division between labour and postpartum staff contributed to the feelings that skin-to-skin and early initiation of breastfeeding is not for the delivery room. In one study conducted in the United States, many nurses stated that initiation of breastfeeding in the operating room was impractical, if not impossible, owing to the physical position of the mother, risk of contamination to the incision site, and potential disapproval of physicians.</li> </ul>	<p>(131, 210, 212–218)</p>	<p>Moderate confidence</p>	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations.</p> <p><b>Coherence:</b> there were minor concerns on coherence. The information reflects similar values with few conflicting data.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. The studies were from Australia, China, France, India, New Zealand and the United States. There were no studies conducted from low-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. Most of the nine studies had thick data from interviews and focus group discussions.</p>

**Theme: Health workers had safety concerns about early breastfeeding and skin-to-skin contact when the infant was admitted to the neonatal intensive care unit**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Among infants admitted to the neonatal intensive care units, health personnel reported safety concerns during the implementation of early skin-to-skin contact and breastfeeding.</li> <li>Staff feared implementing skin-to-skin contact and early initiation of breastfeeding in a medically fragile population. Common concerns were physiological instability and dislodging of intravenous and umbilical lines.</li> <li>Staff believed infants in the neonatal intensive care units are different, owing to various complications, and believed that early skin-to-skin contact and early initiation of breastfeeding does not apply to this population.</li> <li>Although the neonatal intensive care unit staff were aware of the benefits of skin-to-skin contact, they also felt that the risk to patient safety was too great and that it was better to ignore this intervention than to risk harming the infant.</li> </ul>	<p>(72, 219)</p>	<p>Moderate confidence</p>	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. The two studies had in-depth face-to-face interviews and focus group discussions with good quality methodologies.</p> <p><b>Coherence:</b> there were minor concerns on coherence. The studies presented similar findings.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. The studies were from Australia and Canada, two high-income countries.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. The two studies had moderately thick data.</p>

**Showing mothers how to breastfeed**

Twenty-one studies were identified as eligible for inclusion in this review (72, 131, 209, 210, 215, 219–234). The 21 studies were carried out in Australia, Canada, Iraq, Ireland, Pakistan, South Africa, the United Kingdom and the United States. Of these studies, 13 were relevant to the first theme (health workers felt that there were too many barriers, especially lack of time, to adequately show mothers how to breastfeed), five were relevant for the second theme (there were differing levels of confidence among health workers when showing mothers how to breastfeed). They often felt that someone else, someone more experienced, would do a better job, and five were relevant to the third theme (negative attitudes among health workers towards showing mothers how to breastfeed. Health workers could themselves be obstacles to breastfeeding.)



**Theme: Health workers felt that there were too many barriers (especially lack of time) to adequately show mothers how to breastfeed**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Health personnel felt that there was not enough time and too many barriers to adequately teach mothers how to breastfeed.</li> <li>Most studies reported that maternity staff did not feel as if they had enough time to show mothers how to breastfeed, owing to short hospital stays and inadequate staffing.</li> <li>One provider explained: “We do not have the time to sit with all these women for 20 minutes or half-an-hour. You just don’t have the time. You’re not a one-on-one and what happens is that people forget that you’re not looking, if you’ve got four or five women that you’re looking after”.</li> <li>Several studies reported that maternity staff felt that they were too busy with other higher priorities than to show mothers how to breastfeed. One provider stated, “Breast is best... but not when we’re busy”.</li> <li>Breastfeeding was viewed as a complex skill that was very time consuming to teach to mothers. Nurses and midwives described feeling like they were overwhelming already-tired mothers with advice and education.</li> <li>Neonatal intensive care staff also mentioned challenges with getting the necessary equipment, such as breast pumps for mothers to maintain lactation during separation.</li> </ul>	<p>(72, 131 209, 210, 215, 219–226)</p>	<p>Moderate confidence</p>	<p><b>Methodological limitations:</b> there were moderate concerns on methodological limitations.</p> <p><b>Coherence:</b> there were moderate concerns on coherence. The primary barrier was the time that the staff had to provide the support to mothers, though other barriers such as equipment or privacy were also mentioned.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. Studies were conducted from Australia, Canada, Pakistan, South Africa, the United Kingdom and the United States.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. The studies had thick data.</p>

**Theme: There were differing levels of confidence among health workers when showing mothers how to breastfeed; they often felt that someone else, someone more experienced, would do a better job**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Health personnel felt that there were differing levels of confidence when supporting mothers to breastfeed.</li> <li>Some health-care personnel stated they lacked the necessary skills to show women how to breastfeed and maintain lactation.</li> <li>One study that interviewed physicians found, “The participants admitted they were not able to manage all breastfeeding problems and questioned whether it was necessary for them to do so”.</li> <li>Several studies noted that the health providers’ confidence in teaching breastfeeding skills and navigating problems were influenced by personal breastfeeding experience rather than previous training or work-related experience.</li> <li>Most health-care personnel needed easily accessible breastfeeding experts to call or refer patients to if they lacked the confidence or skills to help mothers maintain lactation.</li> <li>Some studies described how providers reported not having any breastfeeding information or advice to address breastfeeding among specific population groups like obese or adolescent mothers.</li> </ul>	<p>(227–231)</p>	<p>Moderate confidence</p>	<p><b>Methodological limitations:</b> there were moderate concerns on methodological limitations. Although some studies used in-depth interviews and semi-structured questionnaires, some used close-ended questionnaires.</p> <p><b>Coherence:</b> there were minor concerns on coherence. The studies had consistent information on this theme.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. The studies were from Australia, Canada, Iraq, Ireland and the United States.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. There were fairly thick data.</p>

## Theme: There was a negative attitude among health workers towards showing mothers how to breastfeed; health workers could themselves be obstacles to breastfeeding

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery and labour services:</p> <ul style="list-style-type: none"> <li>Some health personnel had negative feelings and prevailing resistance towards showing mothers how to breastfeed.</li> <li>Lack of “buy-in” and negative attitudes described in some “older staff” were observed, despite breastfeeding education and availability of expert resources.</li> <li>An underlying resistance was described in some health workers. Prevailing beliefs and attitudes towards breastfeeding resulted in staff undermining breastfeeding because they did not wish to change practices. Some studies reported a “why fix it if it isn’t broken?” attitude among some health workers, who wished to rely on advice that worked for them in the past, despite being made aware of newer practices.</li> <li>In some studies, new midwives described feelings of “intimidation” and “being made fun of” by colleagues when they spent extra time teaching mothers how to breastfeed.</li> <li>Health-care providers also expressed being concerned about hurting their relationship with the patient. For example, one midwife felt concerned about making patients who chose not to breastfeed feel neglected and undermined as a result of inadequate privacy arrangements in the postpartum area: “I don’t want to make a bottle-feeding mum feel that she’s doing something wrong by the fact that I’m encouraging the breast-feeding mum in the next bed. I do find that difficult”.</li> <li>One study identified that staff had negative feelings because some providers believed that showing women how to breastfeed was disempowering women. Showing mothers how to breastfeed was described as creating a reliance on the health-care providers. A midwife explained during an interview: “By taking over, I think it’s a medical-type thing, we come in ‘Right, I’m here!’, but I think we give the impression that ‘I’m here now, and I will do this’ rather than ‘It’s your baby you can do it, you show us”.</li> <li>Obstacles to breastfeeding related to health workers included lack of support for the mother, inappropriate lactation management, lack of knowledge and negative attitudes.</li> </ul>	(215, 212, 232–234)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. Most of the studies used in-depth and semi-structured interviews based on a predefined analytical framework.</p> <p><b>Coherence:</b> there were moderate concerns on coherence. Although the studies consistently identified negative attitudes among health workers, the source or reason for this attitude differed among studies.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. The studies were from Australia, South Africa, the United Kingdom and the United States.</p> <p><b>Adequacy of data:</b> There were minor concerns on adequacy of the data. There were thick data.</p>

## Rooming-in

Seven studies were identified as eligible for inclusion in this review (72, 131, 207, 211, 215, 218, 219). The seven studies were carried out in Australia, Canada, India and the United States.

## Theme: Though some health workers valued rooming-in, most felt that it was not necessary

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Rooming-in was reported to be viewed favourably and encouraged by some of the health workers. However, several studies reported that most health workers believed that babies should be allowed to go to the nursery to let mothers rest from their baby.</li> <li>The most frequent reason for taking the baby to the nursery was to “give mom a break” or “allow mom to get some sleep”. One nurse commented that “I would say that the majority of our babies actually stay in the nursery at night, and that the majority of women don’t want it [rooming-in]”.</li> <li>In a study in India, only a quarter of nurses viewed rooming-in as a beneficial practice. Many were uncertain as to when to deny a request to send the baby to the nursery.</li> <li>In settings such as the neonatal intensive care unit, rooming-in was also seen as an “insurmountable” barrier when trying to achieve Baby-friendly hospital status. For instance, neonatal intensive care units have limits in their resources to allow mothers and infants to stay together for 24 hours.</li> </ul>	(72, 131, 207, 211, 215, 218, 219)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. Most of the studies used good qualitative methodologies.</p> <p><b>Coherence:</b> there were minor concerns on coherence. The studies were consistent in the information.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. There were no studies from low-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. The studies had thick data.</p>

## Demand feeding

Seven studies were identified as eligible for inclusion in this review (72, 211, 215, 234–237). The seven studies were carried out in Australia, Canada, China, India, Ireland and the United States.

### Theme: There were differing views among providers about demand feeding

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Studies reported health workers feeling insecure about promoting semi-demand or demand feeding. Demand feeding was fairly widely accepted by health workers, but some studies described persisting “older beliefs” in which providers still taught mothers to limit the time the infant spends breastfeeding or to wake the infant up every 3 hours. Health-care providers demonstrated greater comfort relying on scheduled feeding than in following newer recommendations on demand feeding.</li> <li>A study in India cited that only half of the nurses that were interviewed were aware of the concept of demand feeding. In another study conducted in India, the majority of the doctors and nurses preferred scheduled feeding, while the majority of auxiliary nurses and auxiliary midwives preferred demand feeding.</li> <li>A study in Australia noted that demand feeding was found to be encouraged as standard practice and fitted well within the hospital routine, whereas scheduled feeding practices were restricted to specialized areas with special care nurses.</li> <li>In a study in Canada, most of the scheduled feeding practices have been limited to the neonatal intensive care units and specialized areas. In these areas, health-care providers felt that scheduled feedings and strict documentation of feedings are required and thus they were uncomfortable with demand feeding.</li> </ul>	(72, 211, 215, 234–237)	Low confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological quality.</p> <p><b>Coherence:</b> there were moderate concerns on coherence. There seemed to be a dichotomy of values with regard to demand feeding.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. There were no studies from low-income countries.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. There were fairly thick data.</p>

## B. Feeding practices and additional needs of infants

### Early additional foods or fluids

Twelve studies were identified as eligible for inclusion in this review (72, 131, 169, 207, 212, 215, 236–241). The 12 studies were carried out in Australia, Canada, China, India, the United Kingdom and the United States.

### Theme: Health workers felt that breast milk is good, but that breast-milk substitutes were also fine

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Health workers felt that breast milk is good, but that formula is fine, too.</li> <li>Several studies report that health workers view infant formula as an acceptable option that will not harm an infant.</li> <li>Some studies describe health-care providers as saying that giving early additional foods or fluids is the mother's choice and that formula should be an option if that is what she wants.</li> <li>One study reported that only a little more than half of health workers agreed when asked that infants should not be supplemented unless medically indicated. Another study found that almost all doctors will sometimes recommend formula to breastfeeding mothers. Supplementation was not universally believed to harm breast feeding.</li> <li>Some studies found that protecting mothers from tiredness during the night and offering short-term relief for mothers was viewed as being an acceptable reason for supplementing with formula.</li> <li>Health workers in neonatal intensive care units workers described infant formula and/or fortified expressed breast milk as necessary for the premature or ill infants.</li> </ul>	(72, 131, 169, 207, 212, 215, 236–241)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological quality.</p> <p><b>Coherence:</b> there were minor concerns on coherence. There was little inconsistency among the studies.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. The countries were from four regions, although none were low-income countries.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. There were fairly thick data.</p>

## Avoidance of pacifiers or dummies

Nine studies were identified as eligible for inclusion in this review (72, 131, 207, 209, 212, 215, 242–244). The nine studies were carried out in Australia, Canada, Germany, India, the United Kingdom and the United States.

### Theme: Health workers had differing values with regard to pacifier use

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Health personnel had differing values with regard to pacifier use.</li> <li>There were mixed findings on health-care providers' perceptions of pacifier use. Studies varied on whether maternity staff found advising women on pacifier use easy or an obstacle.</li> <li>Some studies found the health-care providers had an "almost universal ambivalence by staff towards the use of teats and dummies".</li> <li>One felt that the practice of using or avoiding teats in the hospital was inconsistent but that this was not open for discussion.</li> <li>Some health-care personnel were reported as not being aware of the effect of pacifiers or dummies on breastfeeding, or having personal experiences that led them to advise women against banning pacifiers or dummies.</li> </ul>	(72, 131, 207, 209, 212, 215, 242–244)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. Most of the studies had good quality.</p> <p><b>Coherence:</b> there were minor concerns on coherence. There was some inconsistency among the studies.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. The studies were from four regions, although there were no studies from low-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were thick data from the studies.</p>

## Avoidance of feeding bottles and teats

Ten studies were identified as eligible for inclusion in this review (72, 131, 207, 212, 221, 233, 242–245). The 10 studies were carried out in Canada, Germany, India, the United Kingdom and the United States.

### Theme: Health workers disliked cup feeding and were ambivalent about bottle feeding

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Most health professionals disliked cup feeding and were ambivalent about bottle feeding.</li> <li>In several of the studies, providers expressed the belief that it makes no difference how a baby is fed and sometimes it might be better if the baby has a bottle.</li> <li>Bottles were described by some health-care providers as being essential or even beneficial when a mother is struggling.</li> <li>A study in India found that half of the nurses thought that introducing a bottle in the first month of life was beneficial to the baby.</li> <li>One study described perceptions of midwives who said that women who bottle fed were "closeted away" because bottle feeding was a "no, no" in their facility.</li> <li>In the neonatal intensive care unit, bottles were reported as being necessary, with the perception that this was due to prioritization of medical care over breastfeeding.</li> <li>Many studies reported that bottles were preferred by health-care providers to other methods of feeding, such as cup feeding.</li> </ul>	(72, 131, 207, 212, 221, 233, 242–245)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. Most of the studies had good quality.</p> <p><b>Coherence:</b> there were minor concerns on coherence. There was little inconsistency in the information.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. The studies were from three regions, although none were from low-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were thick data from the studies.</p>

## C. Creating an enabling environment

### Breastfeeding policy of facilities providing maternity and newborn services

Six studies were identified as eligible for inclusion in this review (101, 207, 213, 218, 220, 246). The six studies were carried out in Australia, China, New Zealand, South Africa, the United Kingdom and the United States. One study contributed to the first theme on the content of the policy and all six contributed to the theme on the difficulty of implementing such a policy.

**Theme: Health workers felt that a clearly stated infant feeding policy should be neutral or there should not be one**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among maternity unit midwifery staff of a district general hospital:</p> <ul style="list-style-type: none"> <li>The midwives of the maternity unit valued having a neutral breastfeeding policy.</li> <li>A majority of maternity staff believed that hospitals should have a clearly stated policy on infant feeding, though one third felt that there should not be such a policy. Among those who felt that there should be a policy, the majority favoured a neutral policy that does not emphasize the promotion of one method of feeding over another.</li> <li>The main reason cited for not wanting a policy is the fear that it would engender guilt among mothers that chose not to breastfeed or were unable to.</li> <li>Creating a neutral breastfeeding policy allowed staff to feel that they could support mothers in whichever feeding method they chose, without feeling as if they had to promote one feeding method over another.</li> </ul>	(101)	Very low confidence	<p><b>Methodological limitations:</b> there were substantial concerns on methodological limitations. The study used a questionnaire to collect data among 48 maternity unit midwifery staff.</p> <p><b>Coherence:</b> there were moderate concerns on coherence. No triangulation was done among other staff in the district general hospital.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. There was one study from Australia. No other studies reported on concerns on the content of the infant feeding policy.</p> <p><b>Adequacy of data:</b> there were substantial concerns on adequacy of the data.</p>

**Theme: Health workers felt that implementing a policy on breastfeeding was a daunting task and would require frequent communication.**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery and labour services:</p> <ul style="list-style-type: none"> <li>Staff members viewed writing an infant feeding policy as a “daunting task”, partly because many administrators had no prior experience with this. Not having enough resources to create and implement a policy was seen as a barrier for hospital administration.</li> <li>Success at changing maternity facility policy was particularly challenging if there was no buy-in from administration or other intra-organizational players such as the medical team.</li> <li>Administrators found that having specific protocols to support policy implementation helped make new breastfeeding policies clearer for staff. Clear and frequent communication with staff was a common theme that was viewed as being an important opportunity to establish consistent breastfeeding messages.</li> <li>The communication aspect of breastfeeding policies was considered particularly difficult to achieve with less stable workforces.</li> </ul>	(101, 207, 213, 218, 220, 246)	Low confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. Multiple methods were used for data collection.</p> <p><b>Coherence:</b> there were minor concerns on coherence. There were no conflicting findings.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. The studies were conducted from three regions. There were no studies conducted in low-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were thick data from the face-to-face and in-depth interviews.</p>

## Training of health workers

Six studies were identified as eligible for inclusion in this review (72, 207, 235, 246, 251, 252). The six studies were carried out in Canada, Ireland, New Zealand and the United States.

### Theme: Health workers felt that more breastfeeding training would be helpful, yet there was lack of time for breastfeeding training due to competing priorities

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from delivery, labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Health personnel felt that more breastfeeding training is helpful, yet there is a lack of time for breastfeeding training due to competing priorities.</li> <li>Maternity staff welcomed the idea of breastfeeding training and felt that training was an important aspect that allowed people to overcome feelings of negativity towards the Baby-friendly Hospital Initiative.</li> <li>However, the majority of the resident doctors found their breastfeeding education and training to be inadequate.</li> <li>Staff felt that though they value training in breastfeeding, they did not feel like they had enough time to complete training. Other educational priorities seemed to be a key issue with finding time for breastfeeding training.</li> <li>Despite the interest, breastfeeding education was assigned a lower priority when compared to educating health workers on necessary skills to safely care for mothers with complications. Though staff members felt that more training could increase breastfeeding rates, such as in the neonatal intensive care units, breastfeeding education did not seem to be as “front and centre”.</li> <li>The residents who felt their training was adequate were more likely to counsel women about breastfeeding.</li> </ul>	(72, 207, 235, 246, 251, 252)	Low confidence	<p><b>Methodological limitations:</b> there were moderate concerns on methodological limitations. Most of the studies had surveys and questionnaires with close-ended questions.</p> <p><b>Coherence:</b> there were moderate concerns on coherence. There was some inconsistency in the information from the studies.</p> <p><b>Relevance:</b> there were moderate concerns on relevance. The studies were all conducted in high-income countries.</p> <p><b>Adequacy of data:</b> there were moderate concerns on adequacy of the data. Most of the studies did not have much thickness in the findings.</p>

## Antenatal breastfeeding education for mothers

Seventeen studies were identified as eligible for inclusion in this review (219, 224, 226–228, 245, 247–251, 253–258). The 17 studies were carried out in Australia, Canada, Iraq, South Africa, Sweden, the United Kingdom and the United States. Thirteen studies contributed to the first theme on the roles of health workers in promoting breastfeeding in antenatal breastfeeding education and five contributed to the theme on the health workers’ confidence in providing counselling on breastfeeding.

### Theme: Health workers had differing views on provider roles in promoting breastfeeding in antenatal breastfeeding education

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from antenatal and general clinics, delivery and labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>Health-care workers had differing views on what their role as providers should be when informing women about breastfeeding.</li> <li>Many providers viewed promoting and supporting breastfeeding as being a part of their role. Five studies reported that providers felt that counselling women on breastfeeding was an important use of their time during prenatal visits.</li> <li>Nine studies also showed that health-care providers struggled with trying to promote breastfeeding without creating feelings of animosity with patients. The decision to breastfeed or bottle feed was viewed as a mother’s individual choice. The studies explaining this phenomenon used phrases such as, “breastfeeding bullies”, “overstepping boundaries”, “mother unfriendly”, and “breastfeeding Nazis”.</li> <li>Some studies identified that providers felt uncertain about addressing education on bottle feeding. In one study, the authors found that only 54% of providers would recommend breastfeeding to a mother who had decided to bottle feed.</li> <li>In several studies, health-care providers felt apathetic towards breastfeeding counselling and many preferred a neutral approach to breastfeeding promotion to better maintain patient rapport. Providers believed that breastfeeding promotion is a delicate balance, and that when that balance is not achieved it can be detrimental to the provider–patient relationship.</li> </ul>	(219, 224, 226, 227, 245, 247–251, 255)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. There were good quality qualitative studies.</p> <p><b>Coherence:</b> there were moderate concerns on coherence. There were some inconsistencies in the information.</p> <p><b>Relevance:</b> there were minor concerns on relevance. The studies were conducted in four regions, though all of them were in high-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were fairly thick data.</p>

**Theme: Health workers had differing confidence and perceived effectiveness in breastfeeding counselling**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from antenatal and general clinics, delivery and labour service:</p> <ul style="list-style-type: none"> <li>• There was differing confidence and perceived effectiveness in counselling from health workers.</li> <li>• Three studies (from Iran, the United Kingdom and the United States) reported that physicians felt confident in counselling women on breastfeeding and breastfeeding problems. However, this was not the case for the two other studies (from the United Kingdom and the United States), which identified that many providers felt uncertain and ineffective in their counselling.</li> <li>• Providers lacked feedback and stated that they were unable to know whether they were adequately supporting mothers with breastfeeding. This was exemplified by one physician explaining: “I think I’m pretty effective, but I don’t, um, you know, I always wonder, you know. We [can] help moms in the hospital, but that doesn’t mean that they’re still breastfeeding a month from now, or 3 months from now.”</li> </ul>	(227, 254 –258)	Low confidence	<p><b>Methodological limitations:</b> there were moderate concerns on methodological limitations. Most of the studies used questionnaires and only one used an interview.</p> <p><b>Coherence:</b> there were minor concerns on coherence.</p> <p><b>There was consistent information from the studies.</b></p> <p><b>Relevance:</b> there were moderate concerns on relevance. The studies were from three countries: Iraq, the United Kingdom and the United States.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There was a fair amount of information from the studies.</p>

**Discharge planning and linkage to continuing support**

Six studies were identified as eligible for inclusion in this review (207, 215, 217, 231, 243, 255). The six studies were carried out in Canada, New Zealand and the United States.

**Theme: Health workers felt that linkage to continuing support for breastfeeding was challenging**

Review findings	Contributing studies	Confidence in the evidence	Explanation of the confidence in the evidence
<p>Among health workers from antenatal and general clinics, delivery and labour services and those working in neonatal intensive care units:</p> <ul style="list-style-type: none"> <li>• Health workers expressed many challenges and obstacles to providing follow-up care for breastfeeding after discharge.</li> <li>• Most studies describe the phenomenon of “gaps” in the continuum of care after women leave the hospital.</li> <li>• Studies described a lack of communication between providers in the hospital and outside of the hospital and having no health-care provider in charge of breastfeeding across the continuum of care, leading to fragmented support, inconsistent messaging and missed opportunities.</li> <li>• Cost and adequate training were perceived as barriers to follow-up. Some studies described perceptions of having adequate support groups and clinics for women to visit, yet this not being the norm.</li> <li>• Specialized services for the patient population of the neonatal intensive care unit were perceived as being underdeveloped.</li> </ul>	(207, 215, 217, 231, 243, 255)	Moderate confidence	<p><b>Methodological limitations:</b> there were minor concerns on methodological limitations. The studies were good quality qualitative studies.</p> <p><b>Coherence:</b> there were minor concerns on coherence. The information was consistent across studies.</p> <p><b>Relevance:</b> there were substantial concerns on relevance. The studies were from three high-income countries.</p> <p><b>Adequacy of data:</b> there were minor concerns on adequacy of the data. There were thick data from the studies.</p>

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*Note:* We report in this document a summary of the results from recent systematic reviews. A pre-publication summary of the systematic reviews that have been submitted for publication or are undergoing peer-review can be obtained from the Department of Nutrition for Health and Development, World Health Organization, Geneva, Switzerland (nutrition@who.int).

### Cochrane Pregnancy and Childbirth Group

Balogun OO, O'Sullivan EJ, McFadden A, Ota E, Gavine A, Garner CD, Renfrew MJ, MacGillivray S. Interventions for promoting the initiation of breastfeeding. *Cochrane Database Syst Rev.* 2016;(11):CD001688. doi:10.1002/14651858.CD001688.pub3. (44)

Becker GE, Smith HA, Cooney F. Methods of milk expression for lactating women. *Cochrane Database Syst Rev.* 2016;(9):CD006170. doi:10.1002/14651858.CD006170.pub5. (40)

Fallon A, Van der Putten D, Dring C, Moylett EH, Fealy G, Devane D. Baby-led compared with scheduled (or mixed) breastfeeding for successful breastfeeding. *Cochrane Database Syst Rev.* 2016;(9):CD009067. doi:10.1002/14651858.CD009067.pub3. (59)

Jaafar SH, Ho JJ, Jahanfar S, Angolkar M. Effect of restricted pacifier use in breastfeeding term infants for increasing duration of breastfeeding. *Cochrane Database Syst Rev.* 2016;(8):CD007202. doi:10.1002/14651858.cd007202.pub4. (85)

Jaafar SH, Ho JJ, Lee KS. Rooming-in for new mother and infant versus separate care for increasing the duration of breastfeeding. *Cochrane Database Syst Rev.* 2016;(8):43D006641. doi:10.1002/14651858.cd006641.pub3. (60)

Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. *Cochrane Database Syst Rev.* 2016;(12):CD006425. doi:10.1002/14651858.CD006425.pub4. (43)

McFadden A, Gavine A, Renfrew MJ, Wade A, Buchanan P, Taylor JL, Veitch E, Rennie AM, Crowther SA, Neiman S, MacGillivray S. Support for healthy breastfeeding mothers with healthy term babies. *Cochrane Database Syst Rev.* 2017;(2):CD001141. doi:10.1002/14651858.CD001141.pub5. (61)

Moore ER, Bergman N, Anderson GC, Medley N. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev.* 2016;(11):CD003519. doi:10.1002/14651858.CD003519.pub4. (62)

Smith HA, Becker GE. Early additional food and fluids for healthy breastfed full-term infants. *Cochrane Database Syst Rev.* 2016;(8):CD006462. doi:10.1002/14651858.CD006462.pub4. (86)

### St Luke's International University in Tokyo (Cochrane Pregnancy and Childbirth Group in Japan)

Abe SK, Jung J, Rahman M, Haruyama R, Kita M, Koyama M et al. Hospitals with a written breastfeeding policy statement and implementation of the steps of breastfeeding: a systematic review [protocol]. PROSPERO. 2016:CRD42016038143 ([https://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016038143](https://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016038143)). (41)

Balogun OO, Dagvadorj A, Yourkavitch J, da Silva Lopez K, Suto M, Takemoto Y, et al. Health facility staff training for improving breastfeeding outcome: a systematic review for step 2 of the Baby-friendly Hospital Initiative. *Breastfeed Med.* 2017;20 September [epub ahead of print] PubMed PMID: 28930480. (42)

da Silva Lopez K, Ohde S, Suto M, Rayco-Solon P, Miyazaki C, Balogun OO et al. Providing linkage to breastfeeding support to mothers on discharge to improve breastfeeding outcomes: a systematic review [protocol]. PROSPERO. 2016:CRD42016041273 ([https://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016041273](https://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016041273)). (45)

Ganchimeg T, Sugimoto K, Fukazawa KR, Rayco-Solon P, Ota E. Avoidance of bottles and artificial teats during the establishment of breastfeeds in healthy term infants: a systematic review of randomized controlled trials [protocol]. PROSPERO. 2016:CRD42016041370 ([http://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42016041370](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016041370)). (83)

## **Cochrane Neonatal Review Group**

Collins CT, Gillis J, McPhee AJ, Suganuma H, Makrides M. Avoidance of bottles during the establishment of breast feeds in preterm infants. *Cochrane Database Syst Rev.* 2016;(10):CD005252. doi:10.1002/14651858.CD005252.pub4. (80)

Conde-Agudelo A, Díaz-Rossello JL. Kangaroo mother care to reduce morbidity and mortality in low birth weight infants. *Cochrane Database Syst Rev.* 2016;(8):CD002771. doi:10.1002/14651858.CD002771.pub4. (57)

Crowe L, Chang A, Wallace K. Instruments for assessing readiness to commence suck feeds in preterm infants: effects on time to establish full oral feeding and duration of hospitalisation. *Cochrane Database Syst Rev.* 2016;(8):CD005586. doi:10.1002/14651858.CD005586.pub3. (58)

Flint A, New K, Davies MW. Cup feeding versus other forms of supplemental enteral feeding for newborn infants unable to fully breastfeed. *Cochrane Database Syst Rev.* 2016;(8):CD005092. doi:10.1002/14651858.CD005092.pub3. (81)

Foster JP, Psaila K, Patterson T. Non-nutritive sucking for increasing physiologic stability and nutrition in preterm infants. *Cochrane Database Syst Rev.* 2016;(10):CD001071. doi:10.1002/14651858.CD001071.pub3. (82)

Greene Z, O'Donnell CPF, Walshe M. Oral stimulation for promoting oral feeding in preterm infants. *Cochrane Database Syst Rev.* 2016;(9):CD009720. doi:10.1002/14651858.CD009720.pub2. (84)

Watson J, McGuire W. Responsive versus scheduled feeding for preterm infants. *Cochrane Database Syst Rev.* 2016;(8):CD005255. doi:10.1002/14651858.CD005255.pub5. (64)

## **Independent reviewers**

Gavine A, MacGillivray S, Renfrew MJ, Siebelt L, Haggi H, McFadden A. Education and training of healthcare staff in the knowledge, attitudes and skills needed to work effectively with breastfeeding women: a systematic review. *Int Breastfeed J.* 2017. 12:6. doi:10.1186/s13006-016-0097-2. (100)

Smith E, Hurt L, Chowdhury R, Sihna B, Fawzi W, Edmond K. Effect of delayed breastfeeding initiation on infant survival: a systematic review and meta-analysis. *Int J Epidemiol.* 2017 [submitted]. (63)

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