

State of Food
and Nutrition
in NSW Series



Overview of recent reviews of interventions to promote and support breastfeeding



The University of Sydney

NSW HEALTH

*The NSW Centre for Public Health Nutrition is funded by the NSW Department of Health
and supported by the Sydney Nutrition Research Foundation*

State of Food and Nutrition in NSW Series

Overview of recent reviews of interventions to promote and support breastfeeding

**A NSW Centre for Public Health Nutrition project for NSW Health
prepared by Debra Hector, Lesley King and Karen Webb.**

This work is copyright. It may be reproduced in whole or in part for
study training purposes subject to the inclusion of an acknowledgment
of the source and no commercial usage or sale.

© NSW Centre for Public Health Nutrition
© NSW Department of Health 2004

SHPN (HP) 040110
ISBN 0 7347 3676 2

For more information and further copies contact:
NSW Centre for Public Health Nutrition
Tel. (61 2) 9036 3005 Fax. (61 2) 9036 3184

Download copies of this report from the NSW Centre
for Public Health Nutrition's website:

www.cphn.biochem.usyd.edu.au

or NSW Health website:

www.health.nsw.gov.au

September 2004

Contents

<i>Acknowledgements</i>	<i>ii</i>	<i>5. Evidence of effectiveness of interventions</i>	<i>15</i>
<i>List of abbreviations</i>	<i>iii</i>	5.1 Sources of information	15
<i>List of tables and figures</i>	<i>iv</i>	5.2 Gaps in systematic reviews	19
<i>Preface</i>	<i>v</i>	5.3 Summary of findings from reviews: Evidence of effectiveness	20
<i>Executive summary</i>	<i>vi</i>	<i>Developing personal skills</i>	22
<i>1. Introduction</i>	<i>1</i>	<i>Reorienting health services</i>	25
1.1 The context of this report	1	<i>Multifaceted interventions</i>	27
1.2 The purpose of this report	2	<i>Conclusions from systematic reviews</i>	29
1.3 Target audience	2	5.4 Discussion of findings in relation to recommended NSW objectives	30
<i>2. Relevant objectives for promoting breastfeeding in NSW</i>	<i>3</i>	<i>6. Conclusions and recommendations</i>	<i>33</i>
<i>3. Determinants of breastfeeding</i>	<i>5</i>	6.1 Implications for practice in NSW	33
<i>4. Intervention options</i>	<i>7</i>	6.2 Implications for applied research	33
4.1 Points of intervention	7	<i>References</i>	<i>35</i>
4.2 Intervention options	7	<i>Appendices</i>	<i>39</i>
4.3 Rationale for action areas and description of strategies:	7	Appendix A: Summaries of systematic reviews	39
<i>Developing personal skills</i>	<i>8</i>	Appendix B: List of intervention studies included in systematic reviews	61
<i>Reorienting health services</i>	<i>9</i>	Appendix C: Summaries of non-systematic reviews	67
<i>Supportive environments</i>	<i>11</i>		
<i>Healthy public policy</i>	<i>12</i>		
<i>Community action</i>	<i>13</i>		

Acknowledgements

Authors: Dr Debra Hector, Lesley King, Dr Karen Webb

The NSW Centre for Public Health Nutrition is funded by the NSW Department of Health and supported by the Sydney University Nutrition Research Foundation.

The Centre would like to thank the following people for their contribution to this report:

Beth Stickney

Joy Heads

Jan Lewis

The significant contribution made by the previous work of Ms Beth Stickney and Dr Karen Webb – *Strategies to Promote Breastfeeding: An Overview* (1995) is also acknowledged.

NSW Centre of Public Health Nutrition Advisory Committee

Ian Caterson	Sydney University Nutrition Research Foundation
Bill Bellew	Centre for Health Promotion, NSW Department of Health
Elizabeth Develin	Nutrition and Physical Activity Branch, NSW Department of Health
Jo Mitchell	NSW Health Promotion Directors' Forum
Mandy Williams	NSW Health Promotion Directors' Forum
Louisa Jorm	Centre for Epidemiology and Research, NSW Department of Health
Dian Tranter	NSW Nutrition Network
Jeanie McKenzie	National Heart Foundation
Adrian Bauman	NSW Centre for Physical Activity and Health
Tim Gill	NSW Centre for Public Health Nutrition

List of abbreviations

APMAIF	Appropriate practices for marketing in Australia of infant formula	HSI	Health sector initiatives
ABA	Australian Breastfeeding Association	NHMRC	National Health and Medical Research Council
BFHI	Baby-friendly hospital initiative	NPHP	National Public Health Partnership
CDHFS	Commonwealth Department of Health and Family Services	NSW	New South Wales
CHDP	Commercial hospital discharge pack	MAIF	Marketing in Australia of Infant Formula
CPHN	Centre for Public Health Nutrition	RACGP	Royal Australian College of General Practitioners
DAA	Dietitians Association of Australia	RCT	randomised controlled trial
GP	General Practitioners	SSC	skin-to-skin contact
HDA	Health Development Agency	SIGNAL	Strategic Inter-governmental Nutrition Alliance
HEBS	Health Education Board Scotland	USPSTF	United States Preventive Services Task Force
		WHO	World Health Organisation

List of tables and figures

Table 1	Stages in planning public health interventions	2	Figure 1	Determinants of breastfeeding	5
Table 2	Schema of factors associated with suboptimal breastfeeding practices	6	Figure 2	Action areas and strategies covered by systematic reviews	20
Table 3	Action areas, examples of associated strategies and corresponding intervention points	7			
Table 4	Baby Friendly Hospital Initiative (WHO/UNICEF 1989)	10			
Table 5	Comparison of systematic reviews	17			
Table 6	Gaps in strategies covered in systematic reviews	19			
Table 7	Scope of evidence reported in systematic reviews, in relation to type of breastfeeding practices and action areas	20			
Table 8	Summary of the magnitude of effect (derived from meta-analyses) of different types of intervention on breastfeeding practices	21			

Preface

The Work of the NSW Centre for Public Health Nutrition

The NSW Centre for Public Health Nutrition (the Centre) was established in 2000 as an initiative of the NSW Department of Health in collaboration with the Sydney University Nutrition Research Foundation. It is located on campus at Sydney University. The Centre builds on previous work in planning a nutrition information system for NSW Health. The Centre is now also a partner organisation in the NSW Centre for Overweight and Obesity, established in 2003. The Centre for Public Health Nutrition contributes specialist expertise in nutrition epidemiology, evidence-based intervention planning and applied nutrition research to this collaboration.

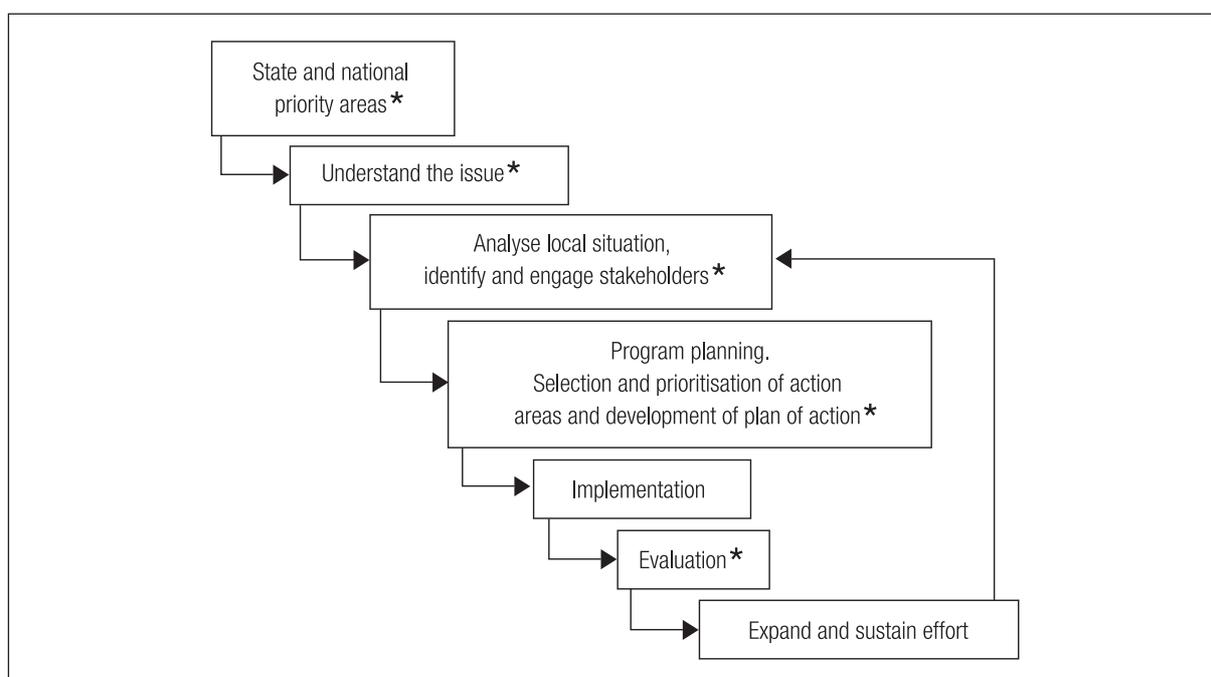
The Centre has a remit to review research findings regarding nutrition policy and programs and to produce authoritative documents and guidelines, which help steer nutrition interventions in NSW.

It undertakes work in four main streams of action:

- evidence-based planning
- food and nutrition monitoring and surveillance
- public health workforce development
- applied research and evaluation.

It is not intended that the work of the NSW Centre for Public Health Nutrition replace or supersede the usual health promotion planning processes of the public health nutrition workforce in NSW. Most health agencies and units work through a detailed process for the development, implementation, evaluation and expansion of nutrition actions within their community or target group, similar to the process set out in Figure A. The work program of the Centre is focused on producing reviews and analyses to assist nutrition professionals to work through this process more efficiently and with a greater level of understanding and confidence. As such the reports from the Centre are tools to help guide and facilitate, rather than dictate practice.

Figure A. The health promotion planning process with reference to actions supported by CPHN work



* Assistance from Centre for Public Health Nutrition

Executive summary

Breastfeeding is both a national and state public health priority. 'The encouragement and support of breastfeeding' is included in the most recent '*Dietary Guidelines for Children and Adolescents*' (NHMRC 2003), in acknowledgement of the nutritional, health, social and economic benefits it provides for the Australian community.

This report summarises systematic reviews of interventions to promote breastfeeding. The report has been produced by the NSW Centre for Public Health Nutrition as part of the specific reference material required to address the priority issues identified in *Eat Well NSW*, NSW Health's Strategic Directions for Public Health Nutrition 2003-2007 (NSW Health 2004a). It aims to assist health professionals in NSW in planning selected types of policies and programs to promote and support breastfeeding.

A previous report produced by the NSW Centre for Public Health Nutrition (*Report on breastfeeding in NSW 2004*) summarised available data concerning breastfeeding practices in NSW in relation to key indicators of breastfeeding, including initiation, duration and exclusivity of breastfeeding. The monitoring report made recommendations in relation to specific objectives for promoting breastfeeding in NSW. Groups that would particularly benefit from interventions were also identified. Evidence of effectiveness of interventions to support these points of intervention and target groups is examined in this report.

In 1995 the NSW Department of Health produced a report describing a range of public health interventions that could be used to promote breastfeeding (Stickney and Webb 1995). This report goes beyond a description of potential interventions, to provide a framework and describe a process for systematic intervention planning. Planning guidelines highlight the importance of linking interventions and determinants. A comprehensive set of determinants (including social, cultural and environmental factors) and a schema for classifying these factors were proposed in the previous monitoring report. This model of determinants serves as a basis in this report for identifying potential points of intervention. Further, this report illustrates how classic health promotion strategies, or action areas, address these determinants and intervention points. Descriptions are

given for potential interventions within each action area. These descriptions are based on a broad understanding of implementation contexts, strategies and processes used in health promotion and health services in Australia and NSW, as well as general health promotion theory.

The main body of the report synthesises findings from a number of recently published systematic reviews of evidence on the effectiveness of selected types of interventions to promote breastfeeding. The reviews cover a limited range of types of intervention that have been subjected to sufficient evaluation for review. These systematic reviews were appraised according to the approach recommended by the National Public Health Partnership's 'Schema for Evaluating Evidence on Public Health Interventions' (Rychetnik & Frommer 2002). A number of non-systematic reviews are also considered.

We applied the framework of potential interventions to identify gaps in the coverage of the reviews. Much of the available evidence relates to educational and support strategies designed to promote mothers' personal skills, and health service strategies (including training of health professionals) to implement hospital practices that are conducive to breastfeeding. There are significant gaps in the reviews. None provide evidence of effective strategies related to public policy, supportive environments or community action. The action areas and strategies covered by the systematic reviews are presented diagrammatically in Figure B. There are also gaps in breastfeeding outcomes evaluated by studies included in the systematic reviews: few have examined exclusive breastfeeding and longer duration (beyond 6 months) of breastfeeding.

The findings of the systematic reviews are reported in detail, with particular reference to the type of breastfeeding outcome and the degree of effectiveness, where possible. Findings are synthesised across reviews and differences in findings noted, where relevant.

The evidence indicates that education of mothers before and immediately after birth is effective in improving rates of initiation of breastfeeding. Education is also effective at increasing duration of breastfeeding, although the isolated use of written materials is consistently shown to be ineffective. Both peer and professional support

strategies have been found to have a significant impact on short-term (1 to 3 months) duration and exclusivity of breastfeeding. Peer support may be particularly effective in reaching and influencing low income and more disadvantaged groups. A mix of prenatal and postnatal contacts is probably most effective in influencing initiation and duration; there may be increased effectiveness with postnatal home visits. Combined educational and support interventions that were long-term and intensive were found to be effective, and generally comprised face-to-face information, guidance, and support. Overall, meta-analyses indicate that well conducted educational and support interventions have substantial and significant effects on breastfeeding initiation and duration up to 3 months.

In addition, the research shows that hospital practices can improve breastfeeding initiation and short-term duration, with early skin-to-skin contact (Anderson et al 2003), rooming-in (HDA 2003; WHO 1998), and the non-use of commercial hospital discharge packs (Donnelly et al 2000) shown to be particularly effective.

Evidence also indicates that health service policy and professional training can be important in enabling the consistent and integrated implementation of such practices; some evidence suggests that these indirect strategies are essential components of the overall strategy mix. These features are captured well in the 'Ten Steps to Successful Breastfeeding' and the *Baby Friendly Hospital Initiative* (WHO 1998).

The evidence related to interventions that promote duration of breastfeeding to between 4 and 6 months points to the effectiveness of postnatal support by a health professional and/or trained peer counsellors.

Postnatal support may include one or more of the following: early intervention services, parenting groups, face-to-face contacts, and home visiting.

Thus, there is a substantial body of consistent evidence that provides a sound basis to proceed with evidence-based programs and practices in a number of areas, particularly those areas addressed by mainstream health services. These action areas comprise the organisation of hospital services, and prenatal and postnatal community-based education and support services for women. In particular, there is evidence to support action to address the breastfeeding objectives of *Eat Well NSW*.

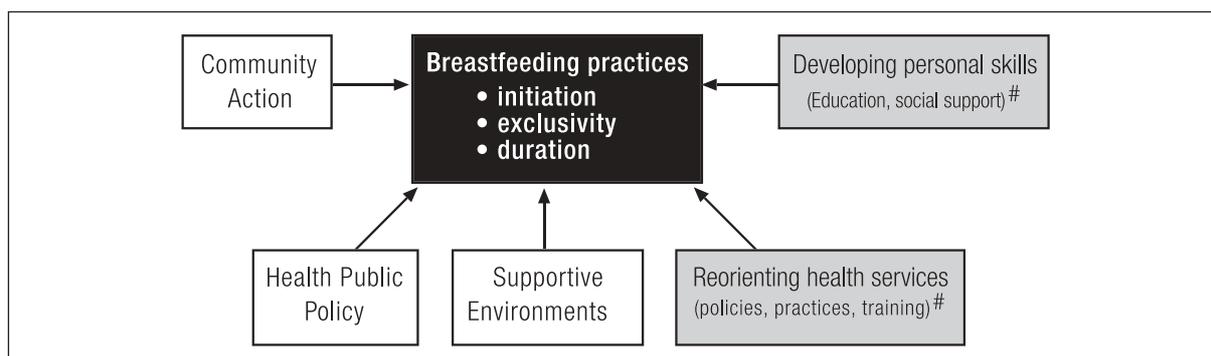
On this basis, the report recommends that NSW Health develop a specific policy on breastfeeding. This is timely, given new information on breastfeeding practices in NSW and the recent change in the recommended period of exclusive breastfeeding in the *Dietary Guidelines for Children and Adolescents* (NHMRC 2003).

The report specifically recommends that health services, health professional groups and advocacy bodies develop and extend their services and programs in promoting breastfeeding.

The body of evidence from the currently available systematic reviews does not provide a complete basis for achieving the priority objectives related to breastfeeding in NSW. The next logical step is to identify the scope and quality of primary intervention research studies that address these gaps and questions. Further local intervention research is also required to investigate the effectiveness of innovative strategies and enhanced interventions in promoting breastfeeding practices in NSW population groups.

Figure B. Action areas and strategies covered by systematic reviews

Evidence from systematic reviews



1 Introduction

1.1 The context of this report

Breastfeeding is both a national and state public health priority

Promoting, encouraging and supporting breastfeeding is a primary aim of nutrition and public health programs across Australia (NHMRC 2003). 'The encouragement and support of breastfeeding' is included in the most recent 'Dietary Guidelines for Children and Adolescents' (NHMRC 2003) in acknowledgement of the nutritional, health, social and economic benefits it provides for the Australian community.

'Promoting breastfeeding' is one of five public health nutrition priority areas identified for action in *Eat Well NSW*, NSW Health's Strategic Directions for Public Health Nutrition 2003-2007 (NSW Health 2004a). *Eat Well NSW* is directed towards 'Better health for all people in NSW through effective and focused public health action to promote healthy eating and good nutrition'. It provides a clear statement of health sector priorities for public health nutrition in NSW, in the context of broader government health policies and national nutrition priorities. The *Eat Well NSW* priorities are directly relevant to the main issues of a number of important NSW public health policies and strategies, particularly *Healthy People 2005* and the *NSW Health and Equity Statement*, (*In All Fairness NSW Health 2004b*).

This report on interventions to promote breastfeeding has been produced by the NSW Centre for Public Health Nutrition as part of the specific reference material required to address the priority issues identified in *Eat Well NSW*. The relevant goal stated in *Eat Well NSW* is: 'to increase the initiation and duration of breastfeeding'. The objectives are to:

- increase the proportion of mothers who breastfeed infants exclusively to 6 months
- increase the proportion of mothers who breastfeed infants to at least 12 months
- decrease the proportion of mothers who introduce solids to infants before 6 months
- increase support for breastfeeding at all levels of the NSW health system
- increase support for breastfeeding in the wider community in NSW.

Breastfeeding has also been highlighted as one of the key areas for intervention to address healthy weight, in the *Prevention of Obesity in Children and Young People: NSW Government Action Plan 2003-2007*.

The national focus on breastfeeding has centred on the \$2 million 'National Breastfeeding Strategy' which was announced in 1996-97 as part of the Commonwealth 'Health Throughout Life' policy statement (Department of Health and Family Services 1996). Since then many resources and initiatives have been produced under this policy initiative (www.health.gov.au/pubhlth/strateg/brfeed/). These have included initiatives in community education, professional education, health monitoring and the development of *Infant Feeding Guidelines for Health Workers*. The strategy supports projects that address indigenous health services, accreditation standards for maternal and child health services, employer support, health professional education, antenatal education and combining breastfeeding with paid employment. The national strategy also continues to promote the Baby Friendly Hospital Initiative, through working with the Australian College of Midwives Incorporated.

Importantly, the NHMRC has recently updated its policy guidelines on infant feeding, and has emphasised the need for infants to be exclusively breastfed for about the first six months of life (NHMRC 2003).

This report follows the monitoring report *State of Food and Nutrition in NSW series: Report on breastfeeding in NSW 2004* (Hector, Webb & Lymer 2004). The monitoring report provides a statewide overview of current breastfeeding practices, identifies the extent to which current breastfeeding practices do or do not meet recommended policy guidelines, and provides data that underpin the objectives and areas for action in *Eat Well NSW*.

An overview report on '*Strategies to Promote Breastfeeding*' was prepared in 1995 for NSW Health by Stickney and Webb (NSW Department of Health, 1995). The aim of this report was to outline a range of interventions including public health approaches, that could be used to promote breastfeeding. Where available, evidence of effectiveness was included as a basis for considering interventions. The intention of this earlier report was not to provide a comprehensive review, but to provide comparative information on a range of strategy options for use in NSW.

Since that time, there have been a number of published reviews of interventions to promote breastfeeding initiation and/or duration. This has occurred in the context of a greater emphasis on evidence-based practice and the use of systematic reviews as a source of evidence. Drawing upon the National Public Health Partnership's Planning Framework for Public Health Practice (National Public Health Partnership Secretariat 2000) and other planning guidelines (Hawe et al 1990; Green 1999b; Central Sydney AHS 1994), Table 1 presents the basic stages in planning public health interventions that have been used to guide the development of this report.

Table 1. Stages in planning public health interventions

1. Identify the determinants of the problem
2. Identify potential intervention points based on analysis of determinants
3. Identify and assess the intervention options
4. Decide on the best mix of interventions (a portfolio) using explicit criteria
5. Implement the portfolio
6. Review the portfolio

This report addresses these stages through presenting a model of the determinants of breastfeeding (step 1), identifying potential interventions to promote breastfeeding (step 2), and synthesising findings from published reviews of evidence on the effectiveness of different interventions (step 3).

1.2 The purpose of this report

The report aims to:

- present a framework of the key determinants of breastfeeding, as a basis for identifying potential points of intervention
- describe interventions and strategies with the potential to address intervention points
- critically appraise and synthesise recent reviews of evidence of the effectiveness of interventions to promote breastfeeding
- organise and present this information in a format that supports those involved in planning to promote breastfeeding
- identify gaps in the evidence of effectiveness in relation to the potential points of intervention and NSW objectives to promote breastfeeding.

1.3 Target audience

This report is intended for those currently and potentially working to improve breastfeeding practices of the NSW population. This includes maternal and child health staff and trainers, lactation consultants, General Practitioners, public health nutritionists, health professional organisations such as the Dietitians Association of Australia and Royal Australian College of General Practitioners, health service decision-makers and workers in non-government organisations, such as the ABA. The information may also be of value to other sectors, including employers, trade unions, and family support services.

2 Relevant objectives for promoting breastfeeding in NSW 2004

Key outcome indicators of breastfeeding practice have been defined and described in the report on monitoring breastfeeding (Hector, Webb & Lymer 2004). The three key outcomes are:

- Initiation
- Duration
- Exclusivity

The breastfeeding monitoring report provides information on the patterns of breastfeeding in NSW in relation to these outcomes and provides direction for formulating the objectives of promotional efforts. Based on information on current practices, interventions in NSW should address the following outcomes and objectives¹.

Initiation

- At least maintain the current proportion of infants who are 'ever breastfed'
- Increase the proportion of infants of younger, less educated, and more disadvantaged women, who are 'ever breastfed'

Duration

- Reduce the proportion of infants who stop receiving breastmilk in the early months (months 0-3)
- Increase the proportion of infants who continue to receive breastmilk for at least 12 months
- Reduce the incidence of short duration of breastfeeding in infants of young mothers (less than 25 years), mothers who are not tertiary educated, and Aboriginal and Torres Strait Islander mothers.

Exclusivity

- Increase the proportion of infants being exclusively breastfed to 6 months.

The full rationale and data (from the NSW Child Health Survey 2001) to support these objectives are described in the monitoring report (Hector, Webb & Lymer 2004). The data show that breastfeeding initiation rates are relatively high (about 90% of infants received some breastmilk) in NSW, although rates differ according to the characteristics of the mother. There is a rapid decline to about 78% of infants receiving any breastmilk by the end of the first month postpartum, and reductions in rates occur for each subsequent month. Only 18% of infants in NSW were breastfed until 12 months and the median duration of any breastfeeding (for those ever breastfed) is 6 months.

The health benefits to infants and mothers of exclusive breastfeeding to 6 months are now established, as discussed in the monitoring report (Hector, Webb & Lymer 2004), and this is a feature of the new NHMRC guidelines (2003) for infant feeding. These guidelines recommend exclusive breastfeeding to about 6 months, followed by gradual introduction of solids. Previously the recommendation was for the introduction of solids between 4 and 6 months.

The data from the NSW Child Health Survey showed that, while 50% of infants who were ever breastfed continued to be breastfed for at least six months, there was a substantial fall in the rate of full breastfeeding of infants between three and four months of age, from 58.2% to 24.6% respectively and only a very small proportion of infants (4.9%) were fully breastfed to six months. Also, it appears that there has been a substantial decline in rates of full breastfeeding in NSW between 1995 and 2001 (data from the National Health Survey 1995; Hector, Webb & Lymer 2004).

¹ In the monitoring report, recommended objectives were directed to actions by health services. In this report specific breastfeeding outcomes and objectives for interventions are proposed. Although these are presented as infant-focused outcomes, it should be remembered that breastfeeding interventions are mostly aimed towards mothers.

3 Determinants of breastfeeding

Step 1 of the planning process involves identifying the determinants of breastfeeding, including the range of variables influencing poor breastfeeding practices. A number of factors affecting breastfeeding are described in the *Dietary Guidelines for Children and Adolescents in Australia* (NHMRC 2003) but these are limited to the findings of three Australian studies. In these and many studies in this area, the determinants considered are limited to a number of demographic, social and attitudinal factors, and other common descriptors of subjects participating in studies (Hector, Webb & Lymer 2004). Theories on determinants of health and qualitative research (much of it unpublished) indicate the significance of a much larger range of social, cultural and environmental factors affecting mothers' decision to breastfeed and for how long. Contributing to the problem in identifying the plethora of factors affecting breastfeeding is the observation that 'no two studies investigate the same factors using comparable methods, thus making it impossible to identify common factors across studies that may be worthy of more inquiry' (Scott & Binns 1999).

A lack of theoretical structure surrounding the study of the determinants of breastfeeding has contributed to a complete range of potential factors being poorly defined and neglected in studies. A schema of determinants was presented in the breastfeeding monitoring report (Hector, Webb & Lymer 2004). Developed by Karen Webb, this schema is based on a synthesis of international research and theory on factors and variables affecting mothers' choice to breastfeed, breastfeeding duration and breastfeeding exclusivity. This schema of determinants

differs from that presented in the *Dietary Guidelines for Children and Adolescents* in Australia (NHMRC 2003) as it adopts a framework for classifying determinants and includes a more comprehensive set of determinants comprising social, cultural and environmental factors.

The schema is represented diagrammatically in Figure 1. This figure illustrates seven main categories of factors contributing to breastfeeding practices:

- sociodemographic characteristics of the mother and family
- structural and social support
- health status of mothers and infants (including birth and neonatal experiences of mothers and infants and health behaviours of mothers)
- mothers' knowledge, attitudes, skills
- aspects of the feeding regime/practices
- health services organisation, policies and practices (including hospital and health facilities)
- socio-cultural, economic and environmental factors.

Examples of variables within each of these sets of factors are given in Table 2.

Planning guidelines highlight the importance of linking interventions to determinants (National Public Health Partnership Secretariat 2000; Green 1999ab; Central Sydney AHS 1994; Hawe et al 1990) and indicate that substantial and sustainable changes in outcomes requires that interventions address one or more of the contributing factors.

Figure 1. Determinants of Breastfeeding

Amenable to intervention

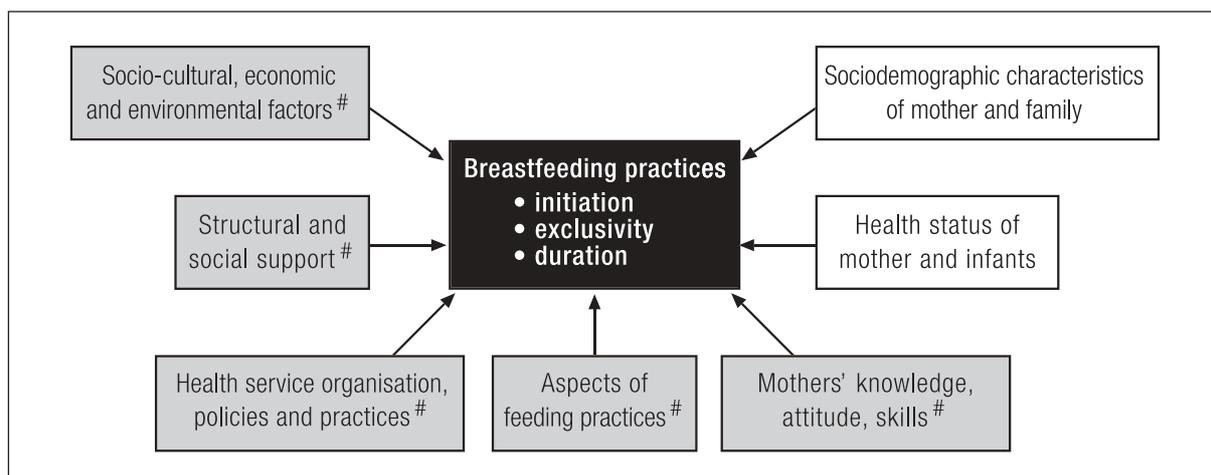


Table 2. Schema of factors associated with suboptimal breastfeeding practices

Amenable to intervention #

Sociodemographic characteristics of the mother and family	
• Young age of mother	• Country of birth/background (varies)
• Mother not married	• Indigenous status
• Low level of maternal education	• Rural residence
• Early return to employment (particularly full-time)	• Greater parity (number of children born to mother)
• Socioeconomically disadvantaged	• Male infant
Structural and social support #	
• Negative attitude and poor support by father/grandmother	• Lack of peer support
• Lack of family and community support	• Lack of time
• Lack of maternity leave	• Lack of workplace policies and facilities
Health and risk status of mothers and infants #	
• Maternal obesity	• Experiencing mastitis
• Postnatal depression	• Sore nipples
<i>(Birth and neonatal experiences)</i>	
• Obstetric experience, eg caesarean delivery	
• Complications of delivery and perinatal period, eg. admission of baby to ICU or special care nursery	
<i>(Health behaviours of mothers)</i>	
• Maternal smoking	• Alcohol use/abuse
Mothers' knowledge, attitudes, skills #	
Aspects of the feeding regime/practices #	
• Incorrect positioning and attachment technique	• Use of a bottle
• Daily dummy use	• Uncertainty regarding the quantity of breastmilk, and demand feeding
• Use of formula in the first month	• Not sharing the mother's bedroom
Health services organisation, policies and practices (including hospital and health facilities) #	
• Not rooming-in	• Infant not put to breast within one hour of birth
• Supplementary and complementary feeds in the maternity ward	• Commercial discharge packs provided by hospitals
• Use of pacifiers in the neonatal period	• Lack of positive staff practices and breastfeeding guidance
• Short length of stay in hospital post-partum	• Family support services (for feeding and parenting)
Socio-cultural, economic and environmental factors #	
• Cultural norm to not breastfeed	• Lack of public facilities for breastfeeding
• Changing role of women in society	• Loss of knowledge and experience of breastfeeding in the community
• Desire to re-establish identity as separate individual and as non-mother	• Lack of intention to breastfeed at all
• Portrayal of women's breasts as symbols of sexuality	• Inaccurate information from the mass media
• Men's attitudes towards breasts	• Marketing of breastmilk substitutes
• Embarrassment relating to breastfeeding in public	• Lack of maternity leave

Source: CPHN report on Breastfeeding in NSW 2003

4 Intervention options

4.1 Points of intervention

Step 2 of the planning framework used for structuring this report and described in the Introduction, involves identifying potential intervention points based on the analysis of contributing factors, or determinants.

Those factors that are amenable to change are of most interest in planning interventions.

Those contributing factors that are potentially amenable to change are:

- Individual factors related to mothers, including motivation, knowledge, skills and specific aspects of breastfeeding practices
- Social support for breastfeeding, including peer and partner support
- Health services organisation, policies and practices
- Health and risk status of mothers and infants
- Physical and social aspects of the environment that enable and facilitate breastfeeding
- Facets of socio-cultural factors related to the acceptability and expectations about breastfeeding. For example, industry and retail codes and practices form part of the modifiable social environment influencing breastfeeding.

4.2 Intervention options

Step 3 of the planning framework is identifying ways of addressing the intervention points and formulating intervention options.

Health promotion policy-makers and practitioners frequently describe and classify interventions in terms of the action areas identified in the Ottawa Charter for Health Promotion. This framework encompasses both individual and structural/ environmental factors and supports a comprehensive, multi-strategy approach. Table 3 shows the correspondence between health promotion action areas as identified in the Ottawa Charter, associated strategies and intervention points identified in the analysis of determinants of breastfeeding.

4.3 Rationale for action areas and description of strategies

This section provides a rationale for each action area in terms of capability for improving breastfeeding practices. It also provides a description of relevant strategies within each action area. The descriptions are based on a broad understanding of implementation contexts, strategies and processes used in health promotion and health services in Australia and NSW, and general health promotion theory. The descriptions also draw from descriptions provided

Table 3. Action areas, examples of associated strategies and corresponding intervention points

Areas of health promotion action	Examples of strategies	Intervention point addressed
Developing personal skills	Education	Mother's knowledge, attitude, skills
	Social support	Specific aspects of feeding practices
Reorienting health services	Health service policies and practices	Health services practices
	Health professional training	Health status of mothers and infants
		Specific aspects of feeding practices
Supportive environments	Mass media	Mothers' knowledge, attitude, skills
	Environmental changes (eg facilities)	Socio-cultural, economic, environmental factors
Healthy public policy		Social support
	Policy development and review (eg marketing of infant formula)	Socio-cultural, economic, environmental factors
Community action	Advocacy	Socio-cultural, economic, environmental factors
	Social support	Social support

in the 1995 report (Stickney & Webb 1995) and review articles used as source documents for this report, where they provide information on actions and strategies.

Note that the evidence of effectiveness of strategies is discussed in Section 5. The aim of this section on rationale and strategies is to provide a broad background on potential strategies. The later section on evidence is limited to those action areas and strategies where there are reviews of evaluated studies.

4.3.1 Developing personal skills

Rationale

Breastfeeding does not come naturally to most mothers. It is a skill that needs to be learned and for which physical problems are often associated. Therefore, mothers, particularly first time mothers, need appropriate information, motivation and skills to help them to initiate breastfeeding and to meet recommendations regarding breastfeeding duration and exclusivity. Interventions aimed at changing mothers' knowledge and attitudes specifically aim to change women's perceptions about breastfeeding – so that they perceive breastfeeding as relevant, desirable and beneficial, and hence will initiate breastfeeding. Such interventions are usually prenatal. Interventions that enable mothers to breastfeed successfully by increasing knowledge and providing practical skills (particularly in response to physical problems arising from breastfeeding) are subsequently required. New mothers are known to be particularly vulnerable and often isolated, and are likely to benefit from assistance and social support after hospital discharge.

Description of strategies

A primary way of promoting knowledge and personal skills is through education and support strategies. Often education and support strategies are intertwined, and the distinction between them is unclear (Stickney & Webb 1995).

Educational strategies

Education refers to the provision of information through a variety of media, personal, written or electronic means. Fairbank et al. (2000) defines health education interventions as those that 'provide factual or technical information about breastfeeding to a specific target group

in a hospital or community setting'. Similarly, Higginson (2001) describes health education as 'initiatives seeking to improve mothers' knowledge, understanding and expectations about breastfeeding, providing factual information in the form of leaflets or educational sessions'.

Educational strategies vary according to content, format, timing (in relation to birth), setting and provider.

While education is often provided by professionals, such as lactation consultants or nurses, and usually via the health services, this is not necessarily the case; education can also be provided by trained volunteers. Education can be provided in groups (either formally, as structured presentations, or informally) or individually. Providing written information is one simple form of education, with written materials varying in their length and detail. Provision of written information can be used as a stand-alone strategy but it is more commonly used as an adjunct to other strategies.

The United States Preventive Services Task Force (USPSTF 2003a,b) describes the core content of breastfeeding education as: 'breastmilk as the ideal nutrition for babies', benefits of breastfeeding, physiology and anatomy. Education can also include skills training, such as breastfeeding positioning and latch-on techniques, equipment (clothing, pumps, storage) and common problems.

Settings include clinics, primary health care units, the community and the home.

Prenatal interventions usually involve education and information, and are provided by health services in written form, or face-to-face group or individual sessions. Prenatal education/information is not usually implemented as a single, stand-alone strategy but generally is part of a more comprehensive set of interventions, including education at the time of birth and postnatally. Around the time of birth is a point of contact where there is an opportunity for direct, practical education.

Social support strategies

Support, like education, can be formal or informal, can come from a variety of sources and be provided at different times.

It can be provided by health services, in the form of crisis intervention, or professional counselling and advice. Social support can also be provided by peers – formally as peer counselling or organised groups, or more informally through friendship or contact networks. Mothers' groups are one form of peer support, and are sometimes encouraged and assisted by health services. Alternatively, peer support programs may involve recruiting and training for mothers who have themselves successfully breastfed and who work with new mothers in a voluntary capacity, either through telephone or personal contact. Fairbank et al. (2000) define peer support interventions as 'those provided by people who have increased their knowledge as a result of dedicated training, outside a professional capacity'. Typically this is mothers who have themselves successfully breastfed, and have subsequently received training to work as a peer counsellor in a voluntary capacity within their resident community.

The content of social support is relatively poorly described, but can include instrumental actions, such as physical assistance with housework, referral advice and emotional support, by encouragement or sharing experiences, for example. Support is generally understood as including guidance and encouragement. Where provided on an individual basis, it can be personalised to individual needs.

Similar to education strategies, support strategies can be implemented in clinics, primary health care units, community settings or women's homes.

4.3.2 Reorienting health services

Rationale

In Australia, health services are the key sector involved in providing breastfeeding education and support to pregnant women and mothers. Most breastfeeding promotion strategies and interventions that are the subject of reviews and evaluation research have been initiated or implemented through health services.

Reorienting health services generally involves modification of health service policies and practices. Health service policies are an important way of introducing, establishing, promulgating and sustaining best practice and consistency amongst services and professionals.

Thus potential strategies in this action area include policy development and implementation, health professional training, and the organisation and resourcing of health services in ways that promote and support breastfeeding. Many of these strategies work indirectly, by addressing enabling factors related to health service practices and health professional approaches. The approach of staff to the provision of guidance on breastfeeding and relating to mothers is a critical factor associated with breastfeeding, and amenable to change through intervention.

Description of strategies

Health services policies and practices

Health service policies and practices can be designed to ensure that the health service provides an array of appropriate services. Fairbank et al. (2000) refer to 'health service initiatives' as 'those that aim to change the institutional or organisational nature of health services in favour of promoting breastfeeding'. In her definition, Higginson (2001) explicitly includes initiatives that aim to develop and improve the professional practice of those working in health services, as well as organisational changes.

In particular, health service policies and practices may be concerned with ensuring that the hospital environment is conducive to breastfeeding, and that health professionals implement positive and supportive practices. The organisation of health services can also promote or discourage access to and utilisation of professional guidance and assistance with breastfeeding.

Policies can influence practice through the official sanction and endorsement they provide, through promoting consistency and sustainability and through using advocacy to increase practitioners' awareness of relevant policies. Overall, it is essential to recognise that active dissemination and implementation systems are required if policy is to affect practice. Policy itself is essentially an enabling action – it provides a framework, endorsement or impetus for more direct action.

Specific in-hospital practices that influence breastfeeding include: early skin-to-skin contact, rooming-in arrangements, use of supplementary and complementary feeds in the maternity ward, length of stay in hospital post-partum, and the contents of discharge packs provided by hospitals.

Early skin-to-skin contact involves placing the naked body prone on the mother's bare chest at birth or soon afterwards (within 24 hours of birth). This action is usually linked with suckling, as babies will generally suckle during the skin-to-skin contact, approximately one hour after birth. Thus effective suckling may be a critical component of this intervention (Anderson et al. 2003). An associated variable is the amount of assistance mothers receive for the first breastfeed.

Rooming-in refers to care of the newborn infant in a crib near the mother's bed, instead of in a nursery, during the hospital stay. This practice facilitates demand feeding and it is not known whether it is rooming-in as such or the demand feeding which is related to breastfeeding success.

Commercial hospital discharge packs typically contain samples of formula, items for use in bottle-feeding such as bottles, teats or pacifier, and promotional material related to infant formula. By comparison, a non-commercial discharge pack may provide an aid to breastfeeding, such as a breast pump or breastpad or promotional material on breastfeeding.

The 'Baby Friendly Hospital Initiative (BFHI)' is an example of a comprehensive framework or number of policy steps for health services to adopt, in order to effectively promote and support breastfeeding. Devised and promoted by the World Health Organisation (1992), the BFHI is based on the '*Ten Steps to Successful Breastfeeding*' (WHO/UNICEF 1989), listed in Table 4. It has been endorsed for implementation in Australia.

Community health services, particularly Early Childhood Health Services, play an important role in postnatal care, especially for first time mothers. Services include home visiting, clinics, education and support and in some cases, convening or assisting with mothers' groups. These services provide an important link between the hospital and home environments, particularly in the current climate of early discharge.

Table 4. Baby Friendly Hospital Initiative (WHO/UNICEF 1989) and the Ten Steps to Successful Breastfeeding

The Ten Steps to Successful Breastfeeding
The ten steps to successful breastfeeding underlying the Baby-Friendly Hospital Initiative:
1 Have a written breastfeeding policy that is routinely communicated to all health care staff.
2 Train all health care staff in skills necessary to implement the policy.
3 Inform all pregnant women about the benefits and management of breastfeeding.
4 Help mothers initiate breastfeeding within half an hour of birth.
5 Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6 Give newborn infants no food or drink other than breastmilk, 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.

Health professional training

Dennis (2002) highlighted the fact that 'health care professionals can be a negative source of support if their lack of knowledge results in inaccurate or inconsistent advice'.

Health professional training is a standard method for developing professionals' skills, knowledge and attitudes and for ensuring that endorsed policies and practices are adopted and implemented. Health professional education and training in relation to breastfeeding can occur through on-the-job training sessions and written manuals, as well as at earlier career stages, through qualifying courses. Health professional training is relevant for general and specialist nurses, obstetricians, paediatricians, and general practitioners. Advanced training is also provided for specialist nurses, through further qualifications.

4.3.3 Supportive environments

Rationale

Most studies that report on determinants of breastfeeding or factors associated with breastfeeding practices focus on individual factors associated with the mother, and do not explore larger cultural or environmental factors. Thus we do not have a clear picture of which environments are important or the specific environmental factors that are most influential; or of the influence of social factors on mothers' attitudes and approaches to breastfeeding. Nevertheless, public health theories and models support the relevance of environmental and socio-cultural factors as contributing factors to individual health behaviours generally.

The review of practices to promote and support breastfeeding used by community-based Aboriginal and Torres Strait Islander health services (Commonwealth Department of Health and Family Services 1998) emphasises the importance of taking account of cultural context and local environments in understanding breastfeeding practices and efforts to improve them.

Qualitative research with mothers, as well as logical analysis of potential contributing factors, indicate that lack of breastfeeding facilities in workplaces and public and commercial settings are barriers to breastfeeding. Women perceived lack of public acceptance and community support as critical barriers to breastfeeding in two Australian studies (Central Coast Area Health Service 1997; Health Department of Western Australia 1998). Scott & Binns (1999) indicate inconsistent findings on the relationship between employment and breastfeeding, considered to result from inconsistent study methodologies.

Description of strategies

Interventions may seek to influence physical facilities for breastfeeding, or social factors such as the acceptability of breastfeeding in public places.

Physical facilities

Mothers require access to suitable facilities away from home so that they can breastfeed their infants whenever required. Essentially, physical facilities for breastfeeding need to be accessible, private and comfortable. Relevant public locations include shopping centres, restaurants and businesses. This approach has been developed and promulgated through guidelines produced by the ABA and accreditation schemes, such as 'breastfeeding-friendly businesses'.

Workplaces

Given the high proportion of women in the workforce and who seek to return to the workforce after birth, workplaces are an important setting for interventions to encourage and assist the initiation, continuation and exclusivity of breastfeeding. Workplace strategies tend to involve a mix of organisational policy (related to maternity leave provisions, flexible employment practices and, once back at work, breaks for breastfeeding) and physical facilities (such as private rooms, access to refrigeration).

Communication and marketing strategies, such as promotional brochures and direct mail, have been used to encourage workplaces to adopt policies and practices that support breastfeeding.

Mass media

There has been considerable attention drawn to the potential of mass media campaigns as a strategy to develop public knowledge and positive cultural norms and expectations regarding breastfeeding (Chapman & Lupton 1994; Henderson et al. 2000). Higginson (2001) identifies media campaigns as 'strategies seeking to challenge or influence social norms, promote positive images of breastfeeding and provide motivational messages using television, press and posters'. A particular advantage of mass media is the potential to reach a wide audience (Stickney & Webb 1995; Fairbank et al. 2000; Stockley 2000).

Media campaigns are unlikely to impact directly on the key outcome areas. Nevertheless they address the critical intermediary outcomes of change towards positive attitudes and perceptions towards breastfeeding that will affect the overall acceptance of breastfeeding by all sections of the community, including mothers.

Media campaigns vary greatly, with some involving one or more of the following elements: radio, billboards, t-shirts, slide shows, press and TV. Media campaigns are often implemented in combination with other strategies (Fairbank et al. 2000).

The potential for mass media promotional strategies has been contrasted to routine representations of breastfeeding in mass media. For example, in the UK, Higginson (2001) notes that the mass media (in particular television) rarely present positive information on breastfeeding, generally associate bottle-feeding with 'ordinary families', and rarely mention health risks of formula milk and the benefits of breastfeeding.

Other supportive environment strategies

Other strategies that have the potential to create supportive environments include school education and advocacy. School education has also been considered to have potential in the development of social norms surrounding the acceptability of breastfeeding (Stockley 2000). Advocacy is a potential strategy to influence social and physical environments in ways that support breastfeeding (see below).

4.3.4 Healthy public policy

Rationale

The importance of policy in terms of effecting practices supportive of breastfeeding has been indicated above in relation to health services. A key issue in relation to public policy concerns the mechanisms by which policies influence practices, and the strategies required to ensure that policies do impact on practices. As indicated in section 4.3.2, it is essential to recognise that active dissemination and implementation systems are required if policy is to affect practice. Policy itself is essentially an enabling action – it provides a framework, endorsement or impetus for more direct action.

Description of strategies

Public policy that may improve breastfeeding practices can be identified for professional organisations, workplaces, local government and non-government and advocacy organisations. The content of policy, processes for developing policy and policy implementation issues are very variable and contextually dependent. Relevant social policies relate to women's employment arrangements, childcare, paid maternity leave and workplace facilities for breastfeeding. Local government policy may be most relevant to creating supportive environments and providing physical facilities.

A significant area that has been developed through public policy and influenced by advocacy is policy to limit the undermining effects of the promotion and marketing of infant formula. There has been considerable effort in the last few decades to ensure that there are appropriate industry and retail codes and practices that do not undermine breastfeeding. In Australia this has involved endorsement of the WHO Code "International Code of Marketing of Breast Milk Substitutes" (1981); followed by voluntary agreement signed by infant formula manufacturers in Australia setting out responsibilities of manufacturers and importers in relation to the WHO Code (1983, 1986), and now authorised under the Trade Practices Act 1974. An Advisory Panel on the Marketing in Australia of Infant Formula (APMAIF) including industry, health and consumer representatives was established to report annually to the public and government on compliance with the 'Marketing in Australia of Infant Formula Manufacturers and Importers (MAIF)' Agreement.

A potential area for public policy specifically related to the changed recommendations concerning the period of exclusive breastfeeding, hence later introduction of solids, is the labelling of commercial baby foods (Rudi Bartl, personal communication). Many commercially prepared baby foods are labelled as suitable for babies from four months of age, thus indicating to the consumer that this is the appropriate time to introduce solids. However, this is not a straightforward issue, as the recommendation of introduction of solids at around six months is population-based and is not applicable to all infants.

4.3.5 Community action

Rationale

Community action refers to a range of initiatives arising from community groups and members, and usually involves advocacy. Community action and advocacy can be used to overcome major structural barriers to public health goals, and can be directed to address government policies and regulations, government health priorities and industry marketing practices. Specific interest groups, such as the Australian Breastfeeding Association, can often be key agents of community action and advocacy.

Description of strategies

Advocacy is generally used to support or complement other strategies, and often linked with promotion of healthy public policy. Thus advocacy is a relevant strategy to support policy in local government, health service policy and program implementation, the development of workplace policies and facilities, to inform the development of mass media and promotional messages, or as part of social commentary, linked to media analysis.

There are few descriptions of advocacy strategies to promote the acceptability and image of breastfeeding. Of interest is the report by Mannien et al. (2002) that reviewed breastfeeding articles in the Australian press between 1996 and 1999. The conclusion was that breastfeeding is an emotive issue and could be more actively supported and promoted by publishing more newspaper articles that present a positive message of breastfeeding, more positive headlines, and more breastfeeding photos (only 1.3% of 334 articles were accompanied by photos of a baby being breastfed).

Community action and advocacy strategies can use public relations and media promotion, local events, political lobbying, and local research and investigation of specific issues. Community action and advocacy generally seek to influence policy or policy decisions.

Peer-based social support is a specific strategy that can be initiated and organised through community action. This has already been discussed in the section on 'Developing personal skills'.

5 Evidence of effectiveness of interventions

5.1 Sources of information

The NSW Centre for Public Health Nutrition has identified a number of systematic reviews published since 1995 by major review groups. These include three relevant Cochrane reviews, a review by the US Preventive Services Task Force and a review by the World Health Organisation. Systematic reviews provide information about the effectiveness of interventions by identifying, appraising and summarising the results of otherwise unmanageable quantities of research. The process involves applying consistent criteria related to study type and aims, to select those studies likely to yield high quality, valid and generalisable findings.

In preparing this report, these systematic reviews were appraised according to the approach recommended by the National Public Health Partnership's Schema for Evaluating Evidence on Public Health Interventions (Rychetnik & Frommer 2002).

In addition, recent and current overviews and policy reports, including non-systematic reviews, were used as source documents for this report.

Systematic reviews

The framework used by each systematic review is noted in the descriptions below. Table 5 presents comparative information about each review in terms of the interventions and outcomes investigated. Further details about the systematic review documents are included in Appendix A. Also, a list of the individual studies included in each of the 9 systematic reviews is included in Appendix B. This list indicates the range of studies in terms of number (167), year of publication and country of study. Seventy-one of the studies were included in two or more of the following systematic reviews.

- Anderson GC, Moore E, Hepworth J, Bergman N. (2003). *Early skin-to-skin contact for mothers and their healthy newborn infants (Cochrane Review)*.

A meta-analysis of 8 trials examining the effect of early skin-to-skin contact on breastfeeding at 1 to 3 months postpartum and 6 trials on breastfeeding duration. The trials were performed in diverse countries and among women of low and high socioeconomic class. Source period was 1976-Dec 2002.

- US Preventive Services Task Force (2003). *Behavioural interventions to promote breastfeeding: evidence reviews and meta-analysis, and recommendations and rationale*.

This systematic review sought to evaluate the effectiveness of counselling, behavioural and environmental interventions (primarily education and/or support) to improve breastfeeding initiation and/or duration. A meta-analysis was conducted of 14 studies that were identified as good or fair quality. Source period was 1966-Dec 2001.

- De Oliveira MI, Camacho LA, Tedstone AE. (2001). *Extending breastfeeding duration through primary care: a systematic review of prenatal and postnatal interventions*.

This is the only review that focused specifically on duration as an outcome variable. This systematic review considered 37 studies with experimental and quasi-experimental designs that were deemed to be internally valid. Measures of effectiveness (attributable fractions) were determined for individual studies where possible. Interventions were grouped according to timing (prenatal, hospital, postnatal). Source period was 1980-1999.

- Sikorski J, Renfrew MJ, Pindoria S, Wade A. (2001). *Support for breastfeeding mothers (Cochrane Review)*.

This is a review and meta-analysis of 20 randomised control trials (RCTs) or quasi-randomised trials from 10 countries, on the effect of professional (medical, nursing and allied eg nutritionists) and lay support (either voluntary or remunerated) on breastfeeding duration. Interventions were included in the meta-analysis if they occurred in the postnatal period alone or also included an antenatal component.

- Donnelly A, Snowden HM, Renfrew MJ, Woolridge MW. (2000). *Commercial hospital discharge packs for breastfeeding women (Cochrane Review)*.

Nine randomised-controlled trials, of women from North America only, were identified. Women must already have initiated breastfeeding and the outcomes related to breastfeeding duration and exclusivity.

- Fairbank L, O'Meara S, Renfrew MJ, Woolridge M, Sowden AJ, Lister-Sharp D. (2000). *A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding.*

This systematic review was published in the Health Technology Assessment series. Interventions aimed primarily at breastfeeding initiation were reviewed (59 studies – 14 RCTs, 16 non-RCTs and 29 before-after studies). Results from the individual RCTs were displayed on a common scale allowing visual comparison of trial results and examination of the degree of heterogeneity between studies but no meta-analyses were performed. A narrative synthesis of the other studies was presented according to intervention type (9 categories, see Table 4).

- Green CP (1999). *Improving breastfeeding behaviours: evidence from two decades of intervention research.*

This report is a meticulous examination of 51 studies (spanning Latin America, the Caribbean, Asia, Africa, Asia, Europe and the USA – 10 studies in Europe and USA) that provide information on the effectiveness of specific interventions with at least 1 of 4 outcome variables. These outcome variables were: early initiation of breastfeeding (ideally within the first hour after birth); feeding of colostrum to the newborn; exclusive breastfeeding for the first six months; and, continued breastfeeding through the second year and beyond.

The author considers the methodological quality of the studies, and provides a synthesis of findings where there is sufficient evidence from a few rigorous studies or where there are a number of methodologically weaker studies that, when taken as a whole, suggest the weight of evidence favours certain approaches. Findings are reviewed according to the four breastfeeding outcomes and intervention type.

- Tedstone AE, Duncie NA, Aviles M, Shetty PS, Daniels LA. (1998). *Effectiveness of interventions to promote healthy feeding in infants under one year of age: a review.*

This is a systematic review conducted for the Health Education Authority (UK). It identified 20 studies from 'Western, industrialised' countries (11 USA, 5 UK, 3 Australia, 1 Canada) aimed at promoting breastfeeding. Review findings were divided by target group (women at prenatal and/or postnatal stages), and by intervention setting (hospitals, clinics and/or homes).

- WHO (1998). *Evidence for the Ten Steps to Successful Breastfeeding.* (WHO, Division of Child Health and Development).

Based on an international literature search of experimental and quasi-experimental studies related to one or more of the ten steps.

Another systematic review – on infant feeding policies in maternity wards (commercial discharge packs, early mother-infant contact, rooming-in, breastfeeding on demand, in-hospital formula supplementation) – was identified (Perez-Escamilla et al. 1994), but this has been superseded by the other reviews, and hence was not included in this review.

Table 5. Comparison of Systematic Reviews
 – categorisation of intervention types and outcome measures considered in reviews

Review	Intervention type	Outcome measures considered
Anderson (2003)	Early skin-to-skin contact	Still breastfeeding 1-3 months Duration
USPSTF (2003)	Education (12) Support (8) Education and support Peer counselling Written materials Rooming-in Early maternal contact Commercial discharge packs	Initiation Duration (1-3 months) Duration (4-6 months)
de Oliveira (2001)	Primary care interventions sorted by timing of implementation ie pre- and/or postnatal care Strategy types: <ul style="list-style-type: none"> • Home visits • Individual consultations • Group sessions • Phone calls • Printed matter • 2 or more strategies Settings: <ul style="list-style-type: none"> • Primary health care units (29%) • Women's homes (34%) • Community settings (8%) • Hospital clinics (29%) 	Duration (outcome of most of the individual studies was: exclusive, full or any breastfeeding at points in time varying from 4 weeks to 6 months)
Sikorski et al (2001)	Support (all types) Professional support Lay support Face-to-face interventions Only postnatal support Training (WHO/UNICEF)	Duration (up to 6 months) Exclusive breastfeeding
Donnelly et al ¹ (2000)	Commercial hospital discharge packs	Exclusive breastfeeding (up to 10 weeks)
Fairbank et al (2000)	Health education Health sector initiatives (HSI) – general HSI – Baby Friendly Hospital Initiative HSI – Training of Health Professionals HSI – USDA special Program WIC HSI – social support from health professionals Peer support Media campaigns Multifaceted interventions	Initiation mainly (and duration and exclusivity)
Green (1999)	Prenatal education Hospital policies/actions Health worker training Peer counselling Mass media Women's groups Home visits Community education Post-partum clinics	Early initiation of breastfeeding Feeding of colostrum Exclusive breastfeeding for the first six months Continued breastfeeding beyond 12 months
Tedstone et al ² (1998)	Target group/timing: Women at prenatal and/or postnatal stages Intervention setting: <ul style="list-style-type: none"> • Hospital • Clinics • Home 	General: Initiation and/or Duration
WHO (1998)	The Ten Steps to Successful Breastfeeding	General: Initiation (mainly) and duration

¹ Studies included women from North America only

² Western, industrialised (developed) countries only

Overviews and policy reports

Further details about some of the non-systematic reviews (overviews and policy documents) are included in Appendix C.

- Health Development Agency– Protheroe L, Dyson L, Renfrew MJ, Bull, J, Mulvihill C. (2003) *The effectiveness of public health interventions to promote the initiation of breastfeeding.*

This briefing document aims to provide a synthesis of high quality evidence – an overview of the findings and recommendations from a review of selected systematic reviews and meta-analyses published since 1996. Note that, as for Fairbank et al (2000), the review only examined studies/summaries of interventions aimed at the initiation of breastfeeding. The only two reviews that met their selection criteria were those by Tedstone et al. (1998) and Fairbank et al. (2000) and thus the report is essentially a merging of the evidence on interventions to increase the initiation of breastfeeding from these two systematic reviews. It also reports on monitoring and trend data from Scandinavia.

- Dennis CL. (2002). *Breastfeeding initiation and duration: a 1990-2000 literature review.*

This publication reviews literature on many aspects of breastfeeding – not only breastfeeding interventions. It focuses on studies of relevance to North America, and primarily draws from the Cochrane review by Sikorski et al. (2001) for evidence on the effectiveness of professional support. It also identifies 10 studies about lay/peer support (mother-to-mother) and refers to the review of peer support by Fairbank et al (2000). There is also discussion (and a review of the literature) of hospital policies and intrapartum experience, as well as other sources of support – informal and formal.

- Higginson C. (2001). *Evidence into Action: Nutrition in the Under Fives.*

This is a literature review that presents policy conclusions for the Health Education Board for Scotland (HEBS). It is not a systematic review but draws on the findings of systematic reviews undertaken by others, from official reports and evidence from individual papers drawn from reputable

sources. Initiatives were divided into five types: health education initiatives, health service initiatives, peer support programmes, media campaigns, community-based initiatives. No evaluated interventions were identified for the fifth category. There were seven studies reviewed in this report that were not reviewed in any of the systematic reviews. However, no systematic treatment of these studies means that it is difficult to ascertain their relative importance.

- Stockley L. (2000, unpublished). *Consolidation and updating the evidence base for the promotion of breastfeeding.*

This review was commissioned to inform the Welsh breastfeeding strategy. It is a literature-based review, sourcing systematic reviews by Tedstone et al. (1998) and Fairbank et al. (2000), Cochrane reviews, non-systematic reviews, and two more recent RCTs considered of high quality. The main types of evidence are presented under settings (schools, health care, workplace); population groups (low income, adolescents); and approaches (information giving, professional development, peer support).

Limitations in drawing conclusions from reviews

Despite the substantial number of reviews, there are limitations in the source studies and thus the reviews themselves. Fairbank et al. (2000) highlight two particular points:

- The reviews rely heavily on controlled evaluation studies and statistically measurable outcome variables. In contrast, public health interventions to promote breastfeeding are highly complex and relational, and almost impossible to capture in terms of quantitative outcomes alone.
- They tend not to examine the appropriateness or quality of an intervention itself, and certainly not in any robust or systematic manner. There is a risk then that inappropriate or ill-designed interventions can be given more weight than more suitable (and often more complex or long-term) interventions, because they may be simpler and quicker to evaluate, or because they can prove some effect relatively easily.

Thus, while the process of drawing on systematic reviews offers a robust and consistent approach for identifying effective interventions, it does exclude a number of studies from consideration.

While the systematic reviews set rigorous methodological criteria for the inclusion of studies, there are nevertheless common methodological limitations in the evaluation studies that are included. These include: flawed designs; inadequate controls; failure to account for confounding variables; participant self-selection, and small sample sizes (Green 1999).

With regard to the limitations of the reviews in examining the interventions, it is the case that many published studies themselves do not provide information on what was done, to whom, by whom, how often and in what setting (Tedstone et al. 1998, Wilmouth & Elder 1995). Further, process evaluation (checking that the program was implemented as planned) is often not performed and/or not included in the published results. This poses a number of difficulties. In particular, it means that reviews have difficulty in grouping interventions by particular types and that reviews may combine weak and strong examples of an intervention type in an analysis. Also, studies that are poorly described offer limited guidance for future program planning. This is also true when studies refer to 'routine care'. While it is the most common control group, it is not generally defined (USPSTF 2003). Given that health services have sought to promote breastfeeding for a considerable length of time, and the current moderately high initiation rates for breastfeeding, it is highly likely that 'routine care' includes some components that are reasonably effective.

While most of the studies included in reviews involve multiple strategies, and health promotion theory points to the synergistic value of using multiple strategies, it is difficult to identify the optimal comprehensive strategy or strategies from the reviews. Those intervention studies that evaluate single strategies do not provide direct evidence of the impact of a strategy when linked to other strategies, and those studies with a mix of strategies often use different combinations of strategies.

Review findings indicate that the effects of interventions vary according to the specific procedures used, the timing of the interventions, and the contexts in which they were

developed and implemented. There is large heterogeneity of interventions, settings, participants, outcome measures and comparison groups (de Oliveira et al. 2001) – and consequently, of findings. Whilst some studies can distinguish how strategies differentially affect initiation and duration, it is also the case that a number of interventions that increase initiation also have a positive impact on duration (Stockley 2000).

5.2 Gaps in systematic reviews

While the process of drawing on systematic reviews offers a robust and consistent approach for identifying effective interventions, it does exclude a number of studies from consideration. Some gaps in information result from the exclusion criteria applied in the reviews. In other cases, gaps in coverage of systematic reviews arise from a lack of evaluated studies in some areas.

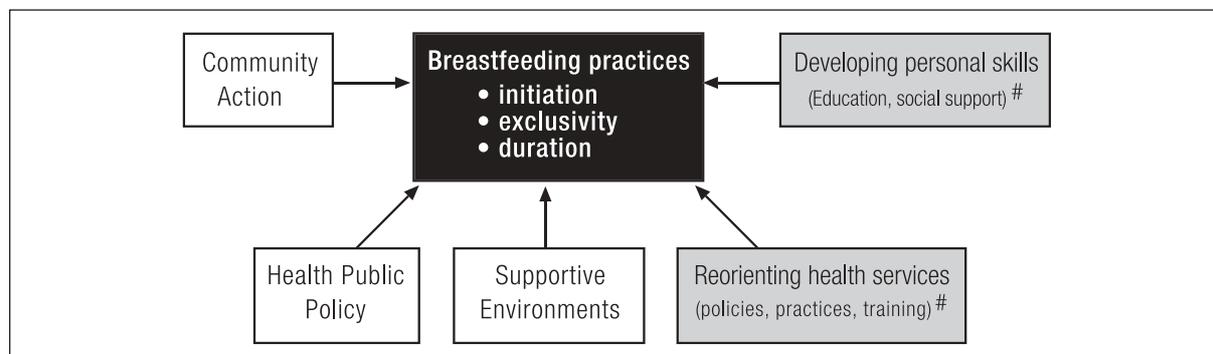
By using the framework of potential interventions, we adopted a systematic approach to identifying gaps in the evidence arising from reviews. Much of the evidence that is available from reviews examines educational and support strategies designed to promote mothers' personal skills, and health service strategies designed to implement hospital practices that are conducive to breastfeeding and train health professionals. Table 6 matches the strategies covered by systematic reviews to the action areas described previously (Table 3). There are significant gaps, in that the reviews do not encompass strategies related to public policy, supportive environments or community action. This is also shown in Figure 2.

Table 6. Gaps in strategies covered in systematic reviews

Areas of health promotion action	Strategies covered in systematic reviews
Public policy	Not covered
Supportive environments	Not covered
Community action	Not covered
Development of personal skills	Education of mothers Support for mothers
Reorientation of health services	Hospital practices – early skin-to-skin contact, commercial discharge packs Health professional training

Figure 2. Action areas and strategies covered by systematic reviews

Covered by systematic reviews



Gaps also exist in relation to evidence for all breastfeeding practices or outcomes. Table 7 shows that even within the action areas covered by reviews, there are gaps in studies that examine longer duration of breastfeeding.

It is pertinent to note the terminology used in most reviews to date concerning breastfeeding duration. Most reviews consider short-term duration to relate to between 1 and 3 months – and the term ‘long-term duration’ is often used for breastfeeding duration of between 4 and 6 months. If we aim to encourage exclusive breastfeeding to about 6 months and breastfeeding to at least 12 months, then it seems inappropriate (and a misnomer) to call a 4 or 6 month duration of breastfeeding ‘long-term’.

The major gap in the evidence is for the particular breastfeeding practice of extended breastfeeding beyond 6 months. Only a very small number of single studies aimed to promote extended breastfeeding beyond 6 months have been identified in the reviews (both systematic and non-systematic) of breastfeeding interventions; hence no conclusions have been reported concerning the effectiveness of interventions related to this aim.

Table 7. Scope of evidence reported in systematic reviews, in relation to type of breastfeeding practices and action areas

	Develop personal skills	Reorient health services
Initiation	✓	✓
Short term duration (1-3 months)	✓	✓
4–6 months duration	✓	✗
Extended breastfeeding, beyond 6 months	✗	✗
Exclusivity	✓	✓

5.3 Summary of findings from reviews: evidence of effectiveness

To provide guidance to practitioners, this section provides a summary of evidence of effectiveness in each action area drawn from the source documents identified above. While section 4 identifies a range of potential strategies within each action area, this section reports only on those strategies and variables that are the subject of evaluated studies and included in reviews. Thus, there are a number of potential strategies within each action area that are not covered in this section.

The findings of the systematic reviews are reported in detail, with particular reference to breastfeeding outcome (initiation, duration, exclusivity) and size of effect, where possible. The evidence is amalgamated across reviews and differences in findings noted where these occur.

Table 8 summarises the quantitative measures of effect of particular interventions on breastfeeding outcomes, where these have been determined by meta-analysis.

Table 8. Summary of the magnitude of effect (derived from meta-analyses) of different types of intervention on breastfeeding practices

Review	Intervention	Breastfeeding outcome (95% confidence intervals)	Measure of effect
Anderson et al. (2003)	Early skin-to-skin contact	Still breastfeeding (any) at 1-3 months post-birth	OR ¹ 2.15 (1.10, 4.22)
		Duration	WMD ² 41.99 days (13.97, 70.00)
USPSTF (2003)	Breastfeeding education	Initiation Short-term duration (< 3 months)	difference ³ 0.23 (0.12, 0.34) difference 0.39 (0.27, 0.50)
	Support alone	Short-term duration (1-3 months) Long-term duration (4-6 months)	difference 0.11 (0.03, 0.19) difference 0.08 (0.02, 0.16)
	Education plus Support	Initiation Short-term duration	difference 0.21 (0.07, 0.35) difference 0.37 (0.17, 0.58)
Sikorski et al. (2001)	Support (all types)	Duration	RR (for stopping breastfeeding before last stu assessment up to six months) 0.88 ⁴ (0.81, 0.95)
		Exclusive breastfeeding	RR (for stopping exclusive breastfeeding before last study assessment) 0.78 (0.60, 0.89)
	Professional support	Duration	RR (for stopping breastfeeding before last study assessment up to 6 months) 0.89 (0.81, 0.97)
		Exclusive breastfeeding	RR (for stopping exclusive breastfeeding before 4-6 wks) 0.50 (0.27, 0.90) RR (for stopping exclusive breastfeeding before 2 months) 0.76 (0.61, 0.94)
	Lay support	Duration	RR (for stopping breastfeeding before last study assessment) 0.84 (0.69, 1.02) non significant trend
		Exclusive breastfeeding	RR (for stopping exclusive breastfeeding before last study assessment) 0.66 (0.49, 0.89)
	Face-to-face interventions	Duration	RR for giving up breastfeeding 0.86 (0.78, 0.94)
	Only Postnatal support	Duration	RR for giving up breastfeeding 0.88 (0.80, 0.96)
	WHO/UNICEF Training	Prolonged exclusive breastfeeding	RR for giving up exclusive breastfeeding 0.70 (0.53, 0.93)
	Donnelly et al (2000)	Commercial hospital discharge packs: With promotional material but no formula sample <i>versus</i> no intervention	Exclusive breastfeeding 0-2 weeks
3-6 weeks			1.23 (1.05, 1.43)
8-10 weeks			1.73 (1.13, 2.64)
With formula + leaflets <i>versus</i> no intervention or non-commercial packs	0-2 weeks	1.99 (1.04, 3.79)	
	3-6 weeks	1.25 (1.06, 1.47)	
Packs with formula promotional material, no formula sample <i>versus</i> no intervention	3-6 weeks	1.27 (1.01, 1.62)	

¹ OR = Odds ratio. Mothers that experienced early skin-to-skin contact with their babies were over two times (2.15 times) more likely to be still breastfeeding at 1-3 months than mothers who did not experience early skin-to-skin contact with their babies.

² WMD = Weighted mean difference. A statistical measure of difference used in meta-analysis. In this instance it means that mothers experiencing early skin-to-skin contact breastfed on average 42 days longer than mothers who didn't experience early skin-to-skin contact.

³ 'difference' refers to the difference in proportion of mothers breastfeeding in the intervention group compared to the control group, ie 0.23 indicates that 23% more mothers were breastfeeding as indicated as a result of the intervention

⁴ Sikorski et al present the measure of effect (relative risk) in terms of the risk to the breastfeeding practice, hence it is less than 1. A smaller number indicates a larger, positive effect of the intervention in terms of improved breastfeeding practice.

⁵ The peto odds ratio is used in Cochrane meta-analyses as an approximation to the odds ratio (see footnote 1 above)

5.3.1 Developing personal skills

Educational strategies

The meta-analysis by USPSTF (2003) indicated a tangible effect of education in increasing the initiation and, especially, the short-term (1-3 month) duration of breastfeeding (Table 7).

Education alone increased breastfeeding initiation rates by 23% and short-term duration by 39%.

Written information

There is clear evidence from the reviews that the isolated use of written materials (eg booklets) is ineffective in improving breastfeeding practices (USPSTF 2003; HDA 2003; Fairbank et al. 2000; Green 1999). Indeed, the use of written materials may actually decrease the effectiveness of other interventions. For example, the USPSTF (2003) indicated that the addition of written materials to education did not increase, and may have decreased, the effects of education on initiation and short-term duration of breastfeeding.

Educational content

Educational sessions that review the benefits of breastfeeding, principles of lactation, myths, common problems, solutions, and skills training appear to have the greatest single effect on breastfeeding initiation and short-term duration (USPSTF 2003; Fairbank et al. 2000; Green 1999).

The USPSTF (2003) indicate that sessions usually begin during the prenatal period and cover the benefits of breastfeeding for infant and mother, basic physiology, equipment, technical training in positioning and latch-on techniques; also, behavioural training in skills required to overcome common situational barriers to breastfeeding and to garner needed social support.

The most effective interventions used brief, directive health education combined with behaviourally-oriented skills training and problem-solving counselling.

Similarly, De Oliveira et al. (2001) conclude that increased duration resulted from interventions where the information given to pregnant women and mothers (and sometimes

also to family members) was related to the benefits of breastfeeding for mother and baby; early initiation; how breastmilk is produced; hazards of bottle-feeding or providing teats to babies; breastfeeding on demand; exclusive breastfeeding up to 4, 5, or 6 months; prolonged breastfeeding for at least 2 years; and family planning and the lactational amenorrhea method. Effective strategies also involved guidance for mothers on positioning and attachment; expression and storage of breast milk; combining breastfeeding and work; and overcoming problems such as engorgement, colic and crying.

A recent study in New Zealand (McLeod et al. 2002) also supports these findings, indicating that prenatal education about breastfeeding and management of breastfeeding problems are likely to increase breastfeeding duration.

The report for the Health Development Agency (HDA 2003) refers to qualitative research that found that some women on low incomes do not want to breastfeed because they do not have the practical skills; and concludes that the confidence and commitment to breastfeed successfully are best achieved by exposure to breastfeeding, rather than talking or reading about it.

Formats for education

Face-to-face education contributed to breastfeeding initiation and short-term duration (USPSTF 2003), and there was no apparent association between length of session and effectiveness (although the authors do conclude that effective programs generally involved at least one extended session), and whether education sessions were conducted with individuals or in groups.

Other reviews report differential effects according to education formats. From studies on low income black Americans, it was found that while one-to-one educational programs were more effective in increasing initiation for women who planned to bottle feed, group programmes had more effect on initiation for women who planned to breastfeed (HDA 2003). Similarly, Fairbank et al. (2000) indicate that the most successful health education interventions to promote breastfeeding tend to involve small groups of women in an informal environment. Stockley (2000) notes that one-to-one counselling appears to be most effective in encouraging those who are thinking of bottle-feeding to change and initiate breastfeeding.

Timing of education interventions – prenatal and/or postnatal

Tedstone et al. (1998) and Fairbank et al. (2000) indicated that, for prenatal education sessions, individual sessions (for women who had initially decided to feed formula and for low-income women in the USA, respectively) were most effective at increasing both the initiation and duration of breastfeeding. In contrast, de Oliveira et al. (2001) indicated that prenatal group sessions are more effective.

De Oliveira et al. (2001) also indicated that home visits or individual sessions either postnatally or spanning both periods, or a combination of group sessions, home visits and individual sessions spanning both periods, are most effective in increasing the duration of breastfeeding.

Green (1999) indicated three studies that looked at prenatal education alone, and all showed substantial increases in the prevalence of exclusive breastfeeding at different months (1, 3 and 6 months) postpartum.

Social support strategies

While education has been found to be effective in increasing initiation and short-term duration of breastfeeding, there is evidence that 'support' can increase the longer-term duration of breastfeeding (up to 6 months).

The USPSTF (2003) conclude that there is fair evidence that supplementing successful education programs by providing ongoing support for patients, through personal or telephone contacts with service providers or counsellors, increases the proportion of women continuing breastfeeding for up to 6 months.

These authors indicate, however, that providing ongoing support as a stand-alone strategy for increasing rates of breastfeeding is not effective (see section on combining education and support below).

Sikorski et al. (2001) found that support in general (meta-analysis of studies involving any kind of support) reduced the risk (by 12%) of mothers stopping any breastfeeding up to 6 months and reduced the risk of stopping exclusive breastfeeding (at any particular point in time). Indeed, the effect of support was greater on exclusive breastfeeding than on any breastfeeding – but there was marked heterogeneity in the trials. It is pertinent to note that this Cochrane review found that clear

evidence of benefit of support was confined to settings where there were high rates of breastfeeding initiation.

Formats for support

Telephone support

De Oliveira et al. (2001) indicated that studies mainly using telephone support were not effective in increasing duration of breastfeeding, whereas those reporting predominately face-to-face contact did reduce breastfeeding cessation. This finding is supported by the Cochrane review (Sikorski et al. 2001).

Home visiting

There is some evidence that home visiting can enhance the effectiveness of contact by support persons. Green (1999) reported that, once women are discharged from hospital, home visits appear to play a critical role in supporting women's breastfeeding behaviours and are influential in extending the period of exclusive breastfeeding.

Early intervention services

While not covered in the source review reports, it is noteworthy that a report on a small follow-up evaluation of an early intervention breastfeeding service in Queensland found that the duration of breastfeeding by those mothers experiencing problems and using the clinic (n=50) was extended by a mean of 20 weeks (Hughes et al. 2001).

Professional support

The Cochrane review by Sikorski et al. (2001) indicates clear evidence for the effectiveness of professional support on the duration of any breastfeeding, although the strength of its effect on the rate of exclusive breastfeeding is uncertain (although there is evidence of benefit up to 2 months postpartum).

One UK-based randomised controlled trial, reported by Sikorski et al. (2001), evaluated the effect of social support for socially disadvantaged women. Support was provided in the form of home visits and telephone calls by a midwife on hospital discharge. No significant difference was reported in initiation rates between the intervention and control groups. However, the lack of observed difference may be due to differences in 'standard care' between control groups in different studies.

Feedback given by women regarding the intervention was very positive and suggested that a midwife listening to them was important.

Green (1999) found that the evidence for the effectiveness of postpartum counselling and guidance by health workers was mixed.

Peer support

The USPSTF (2003) considered that there is insufficient data to determine the effectiveness of peer counsellors alone in promoting breastfeeding practices. However, many of the other reviews (although much of the evidence is provided in the non-systematic reviews) provide a contrary view.

The HDA (2003) notes that three out of five interventions that were effective in increasing initiation in USA women on low incomes included a peer support programme, and that four out of six multi-faceted interventions included a peer support programme (see below).

Dennis (2002) identifies ten studies involving peer support, four of which use experimental designs, and concludes that peer support is a promising means to increase breastfeeding initiation and duration. However this author concludes that peer support is only effective as a complementary strategy – as concluded by the USPSTF (2003) for all forms of support and for peer support. Dennis' overall conclusion, however, is that 'a promising intervention is the complementation of professional services with peer support from a mother experienced in breastfeeding. This lay support appears to be an effective intervention with socially-disadvantaged women'.

The meta-analysis of interventions involving lay support in the Cochrane review by Sikorski et al. (2001) showed that lay support is effective in extending the period of exclusive breastfeeding, while the strength of its effect on the duration of any breastfeeding is uncertain.

De Oliveira et al. (2001) concluded that the effectiveness of interventions to increase duration of any breastfeeding did not depend on whether they were carried out by health professionals or by peer counsellors, but found that peer support had a stronger effect on increasing the duration of exclusive breastfeeding.

Peer support programmes, delivered in the ante- and postnatal periods, have also been shown to be effective at increasing both initiation and duration rates of breastfeeding among women on low incomes, and particularly among women who have expressed a wish to breastfeed (Fairbank et al. 2000) but not for women who have decided to bottle feed (HDA 2003). Stockley (2000) also reports that peer support in the antenatal period is more effective in enabling women who want to breastfeed to initiate this successfully, than in influencing those who are thinking of bottle feeding to change to breastfeeding. She also concludes that 'peer support is probably the most promising intervention in terms of supporting mothers to increase the duration of breastfeeding'.

Higginson (2001) concludes that evaluations of peer support programmes generally show positive impacts on initiation. She highlights the study by McInnes et al. (2000) as the only individual peer support programme in the UK to be fully evaluated. This non-randomised, controlled study of peer support in two deprived areas of Glasgow found that when differences in socio-economic status were controlled for, significantly more women in the support group initiated breastfeeding at delivery. This difference was not maintained at six weeks. The study also showed that despite a low prevalence of breastfeeding, initiating and maintaining peer support was possible and acceptable to mothers and professionals. Study mothers spoke enthusiastically of the intervention and felt it had increased their confidence (McInnes & Stone 2001).

Green (1999) indicated that a majority of studies lend credence to peer counselling and social support in general as having a positive impact. Factors leading to peer counsellors' success appear to be their similarity to mothers, which helps to establish good rapport and trust, their proximity and availability to advise on problems and answer questions, and frequent contact (Green 1999).

Most evaluated studies on peer support are on specific individual projects, and not on the effects of participation in ongoing peer support organisations, such as La Leche League, the National Childbirth Trust and the Breastfeeding Network (Higginson 2001). There is no published research demonstrating the effectiveness of organisations such as La Leche League in increasing breastfeeding initiation/duration. Practitioners in these groups argue that they

are effective on the basis that breastfeeding rates in the communities they serve tend to increase.

The WHO note the need for further information about the effectiveness of community groups as well as peer counsellors in improving breastfeeding practices (WHO 1998).

Timing of support interventions – prenatal and/or postnatal

Studies of interventions providing postnatal support only, were effective in increasing breastfeeding duration, and the provision of antenatal support did not produce any additional benefits (de Oliveira et al. 2001; Sikorski et al. 2001).

Similarly, the WHO (1998) report that a number of different kinds of postnatal support are effective in sustaining breastfeeding up to 3-4 months, although they note that a greater effect is achieved when postnatal support is linked with prenatal and in-hospital support.

Combining support and education

The components of education and support are not always defined adequately or consistently across studies, and the extent to which educational strategies incorporate support or counselling components can be unclear (Stickney & Webb 1995). For example de Oliveira et al. (2001), in their description of effective education strategies, also note that emotional support, encouragement, and reassurance were provided to promote maternal confidence, and mothers were encouraged to share experiences.

The USPSTF (2003) review gives some insight into the key components by using different meta-analysis methods to tease out the separate and combined effects of education and support. This report indicated that support interventions alone had a much smaller effect than educational programs alone on the initiation of breastfeeding and its continuation for up to three months. However, they showed that the combination of support and education produced larger differences in initiation and short-term duration than support alone, although were not more effective than education alone

As referred to previously, the USPSTF (2003) indicate a number of studies that show that peer support can

enhance structured education programmes by encouraging women after they begin to breastfeed to continue the practice longer than they otherwise might.

The combination of face-to-face information, guidance and support has been shown to be particularly effective in increasing breastfeeding duration (de Oliveira et al. 2001).

Fairbank et al. (2000) concluded that the combination of one-to-one health education and peer counselling spanning both periods is effective in increasing initiation and duration of breastfeeding among women of low income groups in the USA.

Similarly, Tedstone et al. (1998) indicated that the effectiveness of education strategies was enhanced by contact with peer counsellors. Peer counselling has been shown by a number of reviews to be an effective complementary strategy (see above).

5.3.2 Reorienting health services

Health services policies and practices

Policy

The WHO review of the 'Ten Steps to Successful Breastfeeding' (WHO 1998) highlights the problems of using an experimental design to show that policies effect improved breastfeeding patterns. However, the WHO report does describe studies showing the benefits of strong policies that outline appropriate practices and the importance of staff compliance. This report also indicates the undermining effects of inappropriate or weak policies. Earlier, the overview produced by NSW Health (Stickney & Webb 1995) identified the relevance and positive impact of policies, and endorsed the implementation of the Baby Friendly Hospital Initiative.

Hospital practices

The review by Fairbank et al. (2000), drawing on 2 RCTs, 3 quasi-experimental designs and 4 before-after studies, found that changes in hospital practices, either as part of, or independent to the BFHI, can increase initiation and duration of breastfeeding. There are three hospital practices that have been shown to be particularly effective in increasing both initiation and duration of breastfeeding:

early skin-to-skin contact (Anderson et al. 2003 – Cochrane review), rooming-in (HDA 2003; WHO 1998); and non-use of commercial hospital discharge packs (Donnelly et al. 2000 – Cochrane review).

Early skin-to-skin contact

Early skin-to-skin contact (SSC) benefits breastfeeding initiation and short-term duration, as well as reduces infant crying (Anderson et al. 2003; WHO 1998). As indicated in Table 7, large, statistically significant effects of early skin-to-skin contact were identified on breastfeeding at 1-3 months post-birth and on breastfeeding duration (Anderson et al. 2003). Mothers of SSC infants were twice as likely to be breastfeeding one to three months post-birth than mothers in the control groups. Infants in the SSC group breastfed an average of 42 days longer than those in the control group. As noted previously (section 4.3.2) in the description of early skin-to-skin contact, it is not clear whether the critical factor is the skin contact or the suckling. The WHO (1998) indicate that, providing the infant is in close contact with its mother and can suckle when it shows signs of readiness, there is no justification for forcing it to take the breast. Doing so may have an adverse effect on breastfeeding subsequently.

In contrast to these reviews, the USPSTF (2003) acknowledged the Cochrane review by Anderson et al. (2003), but performed their own meta-analysis of four studies conducted in developed countries only, and they found no significant benefit from early maternal contact.

Rooming-in

Rooming-in has been shown to be an effective stand-alone approach to increasing initiation, although most studies are based on a before-after design and have been conducted in developing countries (HDA 2003; Fairbank et al. 2000; Green 1999). The WHO report notes that the effects of rooming-in on breastfeeding may be in part because it facilitates demand feeding (WHO 1998). Higginson (2001) concludes that rooming-in babies with their mothers has been shown to be effective in improving rates of breastfeeding initiation in a number of studies and should be provided wherever possible.

Non-use of commercial hospital discharge packs

The giving of commercial hospital discharge packs (CHDPs) (with or without formula) reduces the number of women (by half, Table 7) exclusively breastfeeding at 2 weeks and at 10 weeks but not at 6 months (Donnelly et al. 2003). Green (1999) had earlier indicated that CHDPs that are supportive of breastfeeding can have a dramatic and positive effect on exclusive breastfeeding rates. However, CHDPs have no apparent effect upon the earlier termination of non-exclusive breastfeeding (HDA 2003; Green 1999).

The earlier review by (Tedstone et al. 1998) indicated that weak evidence from a single study suggests that changing the contents of the commercial hospital discharge packs may increase breastfeeding duration.

Not giving supplements in hospital

The WHO report (1998) concludes that while it is difficult to have randomised studies on use of formula and supplements, it is apparent that the use of supplements without medical indication is associated with earlier cessation of breastfeeding. The WHO identified the restrictive use of prelacteal feeds and supplements as one of the most cost-effective interventions identified in their review.

Non-use of artificial teats or pacifiers

The WHO (1998) suggests that there is growing evidence that the early cessation of breastfeeding (as well as other problems) is associated with the use of artificial teats and/or pacifiers. However, there was no indication in any of the other reviews that there is enough evidence to support this view.

Health professional training

Higginson (2001) indicated that 'skilled, knowledgeable health care professionals working in an environment conducive to and supportive of breastfeeding play an important part in enhancing new mothers' knowledge about and expectations of breastfeeding, and make it easier for them to feed effectively'. Higginson also suggested that there was a need to encourage hospital-wide breastfeeding promotion, including staff training in clinical skills/breastfeeding support.

Similarly, Stockley (2000) notes that although it is important to ensure staff have accurate knowledge, it is equally important to encourage them to assess their own fundamental attitudes and personal beliefs and to address these. There may also be time constraints, and other practical considerations in terms of hospital practices, which need to be tackled at the same time as providing training. None of the reviews reported training to health professionals outside the hospital environment (for example, there was no indication of the possible effectiveness of the education and training of GPs in improving breastfeeding practices).

Drawing on international studies, Green (1999) reports that training of hospital staff in lactation management can have a dramatic, positive effect on rates of exclusive breastfeeding.

However, these findings have not been consistently identified in other reviews. Fairbank et al. (2000) indicated that there was limited evidence on the effects of training health professionals. They suggested that, while the interventions may change midwives' and nurses' knowledge, they often did not change the attitudes of health professionals' nor were the follow-through effects on mothers' breastfeeding practices necessarily evident. Similarly, the HDA summary report (HDA 2003) indicated that there is limited evidence to show that intensive lactation training courses for health professionals alone can have an effect on breastfeeding initiation rates.

The WHO report (WHO 1998) comments that, while the need for professional training is clear, there is not clear-cut evidence regarding what constitutes effective training – in terms of content, methods, and length of training. They note studies suggesting that including a practical training component may be important in addressing professionals' attitudes and skills, and that these are essential to produce an effect on mothers' breastfeeding practices. They also draw on experience with the BFHI to report that 18 hours is an appropriate length of training for health workers, although longer courses are considered desirable. However, care should be taken in interpreting these data and adapting to the Australian context.

More recently Sikorski et al. (2001) indicated in their systematic review that WHO/UNICEF training courses appear to be an effective model for training health professionals, and that such training courses increased the likelihood of prolonged exclusive breastfeeding by 30%.

The reported variations in reviewers' findings may reflect differences in baseline levels of health workers' knowledge and training in the various studies.

Combined health service interventions with policies and health professional training

Green (1999) showed that, of 8 studies focused mainly on changes in hospital practices and training of hospital workers, 7 studies found that these interventions increased the prevalence or duration of exclusive breastfeeding.

More recently, since the reviews referred to in this document, Khoury et al. (2002) have shown that 'clinic environment projects which combine physical improvements and staff training, are effective in promoting support for breastfeeding among public health clinic staff. Similar interventions may contribute to the overall effectiveness of breastfeeding promotion programs.'

5.3.3 Multifaceted interventions, including health service practices and education and support strategies

Fairbank et al. (2000) describe multifaceted interventions as those involving more than one component, delivered to the same target group at the same time. While there are a number of studies of multifaceted interventions with health service practice and education and/or support components, different studies use different combinations. Thus the optimal mix of interventions is not clear, and is likely to vary according to social and organisational contexts and target group.

From the reviews it is clear that many strategies are conducted as part of a more comprehensive set of actions and often complement each other. For example, the indirect interventions such as staff training and health service policies are designed to produce changes in how health services provide education, support and structure in their environments, so that they are optimally conducive to breastfeeding.

It is also noteworthy that although the reviews do not examine the effects of a media campaign as a stand-alone intervention, they are frequently used as part of multifaceted interventions, many of which are effective (Fairbank et al. 2000).

Key findings from the HDA analysis (HDA 2003) regarding multifaceted interventions comprise:

Staff training + education of mothers

- In a coordinated three-step approach to health education for women in Sweden, advice, leaflets and routine health education plus intensive staff training had significant effects on initiation rates.

Staff training + education and support of mothers + rooming in

- There is suggestive evidence (based on the effectiveness of a poor quality trial) that combined training of staff, employment of a breastfeeding counsellor, written information and rooming-in were effective for both initiation and duration in the USA among low-income women.

Staff training + education + policies + media

- Five out of six multi-faceted interventions that increased initiation included a media campaign, in combination with health education programmes, training of health professionals and/or changes in government and hospital policies.

Education + peer support + policies + media

- Four out of six multi-faceted interventions that increased initiation included a peer support programme in combination with health education programmes, media programmes and/or legislative and structural changes to the healthcare sector.

Education + support + trained professionals + health service practices + paid maternity leave

- In Scandinavia, where breastfeeding initiation rates have remained at around 98%, multifaceted interventions have been implemented at a national level over the last 20 years. Four types of intervention (noted below) have contributed to the high level of breastfeeding in Scandinavia. However, no evaluation

has been undertaken to examine which of these aspects were more effective, or if the combined package was necessary. The interventions were:

- An increase in problem-based information about breastfeeding, written mostly for and often by mothers, but read also by health workers.
- Increased availability of mother-to-mother support groups, health workers with better management skills and, sometimes, personal experience, and the rise in collective breastfeeding experience as more women initiate breastfeeding.
- Increase in paid maternity leave with guaranteed return to previous employment.
- Maternity ward practices changed substantially towards mother-infant contact and autonomy.

Fairbank et al. (2000) had earlier indicated that institutional changes in hospital practices, such as rooming-in and early skin-to-skin contact, can be successfully combined with health education. Out of the multi-factorial studies examined in this review, the most effective ones were identified as comprising a media campaign and/or peer support programme, combined with structural changes to the health sector, or, in fewer cases, combined with health education alone.

Prenatal education combined with other interventions, such as training of health professionals, changes in hospital policies to allow early breastfeeding and contact with newborns and access to an outpatient breastfeeding support clinic, were identified by Green (1999) as leading to improved breastfeeding practices.

The Baby Friendly Hospital Initiative (WHO 1992) promotes an integrated, positive approach to health service policies and professional practice, based on the 'Ten Steps to Successful Breastfeeding' (see Figure 2 and Appendix A on page 61). The WHO report (WHO 1998) reviews each of these Ten Steps individually; however this approach has not been evaluated as an integrated package (Fairbank et al. 2000). It is also pertinent to note that Lutter et al. (1997), cited in WHO (1998), indicated that 'while removal of formula and rooming-in may be essential prerequisites in breastfeeding initiation, the activities related to direct support and information have the greatest impact in extending the duration of exclusive breastfeeding'.

5.3.4 Conclusions from systematic reviews

This section aims to crystallise the major findings from the systematic reviews.

Developing personal skills

Education

- Education alone is effective in increasing rates of breastfeeding initiation and short-term duration.
- The isolated use of written materials is ineffective in improving breastfeeding practices (and may actually be detrimental).
- Educational content should incorporate: benefits of breastfeeding, principles of lactation, myths, common problems and solutions, and skills training.
- While a variety of educational formats are effective, the optimal format varies across studies. It seems likely that one-to-one educational programs and/or small group programmes are most effective, the latter in an informal environment.
- While education at different times is effective, the optimal timing varies between studies. It seems likely that sessions spanning both periods (prenatal and postnatal) will be most effective – and that sessions covering either time periods alone are also effective.
- Postnatal home visits and/or individual sessions are probably necessary components of any breastfeeding education programme.

Support

- While education has been found to be effective in increasing initiation and short-term duration of breastfeeding, there is evidence that 'support' can also increase the longer-term duration and exclusivity of breastfeeding.
- Two meta-analyses showed that support in general increases the duration of breastfeeding and one of these meta-analyses showed that the effect of support was even greater on the duration of exclusive breastfeeding than any breastfeeding.

- Support appears to be particularly effective in settings where there are high rates of breastfeeding initiation.
- Telephone support alone has been shown to be ineffective. Support must include face-to-face contact.
- As is the case for education, the effectiveness of support is enhanced by home visits.
- Peer support is likely to increase rates of breastfeeding initiation (among women who intend to breastfeed) and to increase the duration of exclusive breastfeeding.
- Peer support is particularly effective at improving breastfeeding practices among socioeconomically disadvantaged women.
- Factors leading to peer counsellors' success appear to be their similarity to mothers, their proximity and availability to advise on problems and answer questions, and frequent contact.
- Postnatal support alone (ie without prenatal support) appears to be sufficient to increase breastfeeding duration.

Combining education and support

- Face-to-face education and peer counselling appear to be a particularly effective combination of strategies.

Reorienting Health Services

Health service policy and practices

- Explicit health service policies that outline appropriate health service practices are likely to be beneficial in promoting breastfeeding.
- Early skin-to-skin contact between the baby and mother, rooming-in and the non-use of commercial hospital discharge packs are effective in-hospital practices that increase both the initiation and duration of breastfeeding. The non-giving of supplemental feeds and non-use of artificial teats and pacifiers are likely to be effective practices also. As indicated in the previous point, the effectiveness of an intervention to change in-hospital practices will be increased if supported by policy.

Health professional training

- There is limited evidence of the effectiveness of training in-hospital health professionals on improved breastfeeding practices, although a Cochrane review indicated that WHO/UNICEF training courses increased the likelihood of prolonged exclusive breastfeeding by 30%.
- Training of hospital staff is likely to enhance the effectiveness of in-hospital practices.

Combining policy, practices and training

- The combination of policy, in-hospital practices and professional training is effective in improving breastfeeding practices

Multifaceted interventions

- Multifaceted interventions have been shown to be effective at increasing the initiation and, in most cases, duration of breastfeeding in developed countries.
- Although the optimal mix of strategies varies, packages including two or more of the following strategies have been shown to be effective in improving breastfeeding practices: education of mothers, peer support, changes to hospital practices such as rooming-in and early skin-to-skin contact, staff training, policy, paid maternity leave, media campaigns/programmes.

5.4 Discussion of findings in relation to recommended NSW objectives

The available reviews provide evidence that is strongest in relation to interventions to promote the initiation and short-term duration of breastfeeding, but somewhat less in relation to interventions to increase longer-term duration of breastfeeding and exclusive breastfeeding to 6 months.

In relation to interventions to promote the initiation of breastfeeding, hospital practices and education of mothers, before and immediately after birth, have been found to be particularly effective. Evidence also indicates that health service policy and professional training can be important in enabling the consistent and integrated implementation of such practices; some evidence suggests that these indirect strategies are essential components of the overall strategy mix. These features are encapsulated in the 'Ten Steps to Successful Breastfeeding' and the Baby Friendly Hospital Initiative. Information on breastfeeding in NSW indicates that initiation rates are generally high. Thus it is important, as part of a comprehensive portfolio of interventions, to sustain existing efforts that promote the initiation of breastfeeding, and wherever possible improve practices to achieve higher rates, particularly for vulnerable groups.

The evidence described also addresses interventions that influence the duration of breastfeeding. There is evidence of the effectiveness of postnatal support, either alone or with prenatal support, by a health professional and/or trained peer counsellors. Postnatal support may include one or more of the following: early intervention services, parenting groups, face-to-face contacts, and home visiting. The evidence indicates that a mix of professional and peer postnatal support strategies are significant components of a comprehensive portfolio of interventions, in order to increase duration of breastfeeding. However, the evidence on interventions to promote duration is not highly specific. There is considerable variability in the period of duration of breastfeeding measured in studies, and the distinction is often only between short (up to about 3 months) and longer-term duration (more than 3 months). The systematic reviews do not provide evidence of effective interventions that:

- encourage breastfeeding for 12 months or more
- specifically support breastfeeding continuation between 3 and 4 months
- foster exclusive breastfeeding to 6 months.

The substantial evidence arising from systematic reviews demonstrates that there is scope to improve breastfeeding practices in NSW, and consistent implementation of a comprehensive set of strategies is required. However, it is important to recognise that there may be additional strategies beyond the scope of these systematic reviews that can also contribute to improving breastfeeding practices. Thus, while the evidence reported provides a sound and convincing basis for policy and program development in NSW, it is incomplete.

Given the numerous and complex determinants of breastfeeding, and the range of potential strategies excluded from systematic reviews, it can be argued that a comprehensive policy and set of programs should comprise a broader range of interventions than those reviewed to date. Certainly, most current examples of health policies, such as the National Breastfeeding Strategy, the Breastfeeding Action Plan of the Health Department of Western Australia (1998-2003) and US HHS Blueprint (2000), adopt a broad set of recommended interventions, incorporating interventions where evidence of effectiveness is currently lacking. Similarly, the recent *Dietary Guidelines for Children and Adolescents in Australia* and the *Infant Feeding Guidelines for Health Workers* (NHMRC 2003) promote a comprehensive approach to breastfeeding promotion. They recommend a combination of media and provision of physical facilities in public places (for which the systematic reviews provide no evidence), as well as education and support for mothers and fathers, and health service practices and professional training.

6 Conclusions and recommendations

6.1 Implications for practice in NSW

While there are apparent gaps in evidence about some strategies (see section 6.2), there is nevertheless a substantial body of consistent evidence that provides a sound basis to proceed with evidence-based programs and practices, particularly in those areas addressed by mainstream health services. These action areas comprise the organisation of hospital services, and prenatal and postnatal community-based education and support services for women. In particular, there is evidence to support action to address some of the NSW objectives.

Recommendation 1: It is recommended that NSW Health develop a specific policy on breastfeeding. This is timely, given new information on breastfeeding practices in NSW and the recent changes in the recommendations regarding breastfeeding in the *Dietary Guidelines for Children and Adolescents*. Furthermore, there is substantial new evidence on the benefits of breastfeeding and the effectiveness of interventions to promote breastfeeding to warrant policy revision. Thus, it is recommended that the policy:

- promulgates current information to health professionals on the benefits of breastfeeding
- disseminates information on current breastfeeding practices in NSW
- acknowledges the broad range of factors influencing breastfeeding practices
- adopts the objectives recommended in this report as statewide objectives
- recognises the significant role of health services and health professionals in influencing breastfeeding practices
- endorses the systematic and widespread implementation across NSW of health service practices and programs that are known to support and promote breastfeeding
- encourages the expansion of existing evidence-based practices and programs by health services
- encourages further research on the impact of social and environmental interventions on breastfeeding practices.

Recommendation 2: On the basis of this review, it is specifically recommended that health services, health professional groups and advocacy bodies develop and extend their services and programs promoting breastfeeding through:

- increased focus on postnatal support services, such as ensuring the accessibility of postnatal professional services, and continuity of postnatal contacts; home visiting where possible; consistency of advice between service providers; coordination and links between professional and peer support services
- promoting consistent practices by health professionals in supporting breastfeeding
- adoption and implementation of the Ten Steps to Successful Breastfeeding
- ensuring that breastfeeding promotion efforts reach and influence more disadvantaged women, who currently have poorer breastfeeding practices in relation to recommended guidelines.

6.2 Implications for applied research

In addition to summarising evidence from available systematic reviews, this report has identified gaps in their coverage of potential intervention types and outcomes. Specific gaps relevant to the NSW breastfeeding objectives are:

- strategies that encourage breastfeeding for 12 months or more
- strategies that specifically support breastfeeding continuation between 3 and 4 months
- strategies that foster exclusive breastfeeding to 6 months
- knowledge of factors related to the early introduction of solids, and how this might be countered in favour of continued exclusive breastfeeding
- the effectiveness of environmental or structural interventions, such as availability of physical facilities in public places and workplaces
- the effectiveness of interventions designed to influence public attitudes and support for breastfeeding, such as mass media strategies.

The body of evidence from the available reviews does not provide a complete basis for achieving all of the priority objectives related to breastfeeding in NSW. The next logical step is to identify the scope and quality of primary intervention research studies that address these gaps and questions. Further steps in building the evidence base include:

- developing ideas and identifying strategies tackling a wider range of determinants of breastfeeding
- identifying examples of strategies tackling breastfeeding
- identifying primary studies and evidence of effectiveness of strategies not covered in the available reviews.

Given the disparity between the strategies and outcomes covered by the systematic reviews, and the NSW breastfeeding objectives and range of potential intervention strategies, it is important to investigate further the extent and relevance of primary research studies in these overlooked areas.

Recommendation 3: The identification and appraisal of primary research studies addressing interventions to promote exclusivity of breastfeeding, and addressing social and environmental factors associated with breastfeeding, is a priority. This information should be appraised and reported in a form that practitioners can draw on to guide the development of further programs and services to promote breastfeeding

Recommendation 4: Further local intervention research is required to investigate the effectiveness of specific strategies in promoting breastfeeding practices in NSW population groups. The priority for research on specific questions depends, in part, on the findings of further investigation of primary research studies (see recommendation 3). The following are likely areas requiring further local intervention research:

- Evaluation studies of interventions seeking to increase breastfeeding duration and intensity, using recommended indicators as outcome measures.
- Qualitative research on factors associated with decline in breastfeeding in order to identify potential intervention approaches
- Assessment of long-term duration of breastfeeding, following interventions
- Evaluations of interventions that are tailored to address the specific needs of more disadvantaged and younger mothers
- Evaluated interventions on strategies for providing advice and support to mothers on the introduction of solid foods (weaning) in relation to breastfeeding.
- Interventions involving partners, or specifically directed to partners
- Evaluation of the impact of contacts by mothers with existing support groups (eg ABA)
- Evaluation of interventions addressing local environmental facilities, including measures of women's knowledge and use of facilities
- Investigation and evaluation of the extent to which workplace policies and facilities impact on breastfeeding practices.

References

- Anderson GC, Moore E, Hepworth J, Bergman N (2003) Early skin-to-skin contact for mothers and their healthy newborn infants. In: *The Cochrane Library*, Volume (3), 2003. (Most recent update 16 April 2003)
- Central Coast Area Health Service (1997) Breastfeeding Taskforce. Unpublished report.
- Central Sydney Area Health Service (1994) *Program Management Guidelines for Health Promotion*. NSW Health, Sydney.
- Chapman S, Lupton D (1994). *The fight for Public Health*. BMJ Publishing, London.
- Commonwealth Department of Health and Family Services (1998). *Review of current interventions and identification of best practice currently used by community based Aboriginal and Torres Strait Islander health service providers in promoting and supporting breastfeeding and appropriate infant nutrition*. (November 1997). Prepared by MA McDonald, ME Miller, A Groos, ME Black, D Leonard, supported by S Tanna, O Tasic. Commonwealth of Australia, 1998.
- Commonwealth Department of Health and Family Services (1996) *Health throughout Life policy*.
- Commonwealth Department of Health and Aged Care (2001) *National Breastfeeding Strategy*.
- de Oliveira MI, Camacho LA, Tedstone AE (2001) Extending breastfeeding duration through primary care: a systematic review of prenatal and postnatal interventions. *Journal of Human Lactation* 7(4): 326-43
- Donnelly A, Snowden HM, Renfrew MJ, Woolridge MW (2000) Commercial hospital discharge packs for breastfeeding women. In: *The Cochrane Library* Volume (3), 2003 (Most recent update 30 May 2000)
- Dennis CL (2002) Breastfeeding initiation and duration: a 1990-2000 literature review. *Journal of Obstetric, Gynecologic and Neonatal Nursing* (JOGNN) 31:12-32 jognn.awhonn.org/cgi/content/full/31/1/12?ijkey=aBnJIA5x.Dq4s
- Fairbank L, O'Meara S, Renfrew MJ, Woolridge MW, Sowden A, Lister-Sharp D (2000) A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding. *Health Technology Assessment Programme* Vol. 4: No.25. www.ncchta.org/fullmono/mon425.pdf
- Green CP (1999a) *Interventions to improve breastfeeding behaviours: Detailed summaries of 51 studies*. 105 pages. <http://linkagesproject.org/download/GreenTables.PDF>
- Green CP (1999b) *Improving breastfeeding behaviours: Evidence from two decades of intervention research*. 79 p. www.linkagesproject.org/download/green2decades.pdf
- Green LW, Kreuter MW (1990) *Health Promotion Planning: An Educational and Ecological Approach*. 3rd edition. Mountain View, CA: Mayfield Publishing.
- Hawe P, Degeling D, Hall J (1990) *Evaluating Health Promotion. A Worker's Guide*. MacLennan and Petty. Sydney
- Health Department of Western Australia (1998) *Public Health Action in Breastfeeding 1998-2003*.
- Health Development Agency (Protheroe L, Dyson L, Renfrew MJ, Bull J, Mulvihill C) (2003) *The effectiveness of public health interventions to promote the initiation of breastfeeding: Evidence briefing*. www.had.nhs.uk/evidence/ebbd.html#pub
- Hector D, Webb K, Lymer S (2004) *State of Food and Nutrition in NSW series: Report on breastfeeding in NSW 2004*. NSW Health.
- Henderson L, Kitzinger J, Green J (2000) Representing infant feeding: content analysis of British media portrayals of bottle-feeding and breastfeeding. *British Medical Journal* 321: 1196-1198
- Higginson C (2001) *Evidence into Action: Nutrition in the Under Fives*. Health Education Board for Scotland. www.hebs.com/researchcentre/pdf/Infant_nutrition_Evidence_into_action.pdf

- Hughes R, Gowans M, Green H (2001) *Evaluation of the effect of early intervention breastfeeding services on increasing breastfeeding duration among motivated mothers*. Poster presented at the Dietitians Association of Australia, 20th National Conference. [www.daa.asn.au/pdf\(conferences\)/Posters 2001 Part1.pdf](http://www.daa.asn.au/pdf(conferences)/Posters%202001%20Part1.pdf)
- Khoury AJ, Hinton A, Mitra AK, Carothers C, Foretich C (2002) Improving breastfeeding knowledge, attitudes, and practices of WIC clinic staff. *Public Health Reports*, Sept-Oct 2002 117: 453-462
- McInnes RJ, Stone DH (2001) The process of implementing a community-based peer breastfeeding support programme: the Glasgow experience. *Midwifery* 17: 65-73
- McInnes RJ, Love JG, Stone DH (2000) Evaluation of a community-based intervention to increase breastfeeding prevalence. *Journal of Public Health Medicine* 22:138-145
- McLeod D, Pullon S, Cookson T (2002) Factors influencing continuation of breastfeeding in a cohort of women. *Journal of Human Lactation* 8(4): 335-43
- Mannien J, van den Brandhof WE, McIntyre E, Hiller JE (2002) Breastfeeding articles in the Australian press: 1996-1999. *Breastfeed Rev* 10(1): 5-10
- National Public Health Partnership (2000) *A Planning Framework for Public Health Practice*. National Public Health Partnership Secretariat: Melbourne.
- NSW Childhood Obesity Summit (2002) *Communique. 12 September 2002. Resolutions agreed to by the summit*. www.health.nsw.gov.au/obesitysummit/docs/communique.pdf
- NSW Health (2002) *Healthy People 2005*. NSW Department of Health: Sydney.
- NHMRC (2003) Food for Health. *Dietary Guidelines for Children and Adolescents*.
- NSW Health (2004a) *Eat Well NSW: Strategic Directions for Public Health Nutrition 2003–2007*. Sydney: NSW Department of Health.
- NSW Health (2004b) *NSW Health and Equity statement. In All Fairness*, Sydney: NSW Department of Health.
- NSW Department of Health (2003) *Prevention of Obesity in Children and Young People*. NSW Government Action Plan 2003-2007.
- Rychetnik L, Frommer M. (2002) *A schema for appraising the evidence for effectiveness*. National Public Health Partnership Secretariat: Melbourne.
- Scott JA, Binns CW (1999) Factors associated with the initiation and duration of breastfeeding: a review of the literature. *Breastfeeding Review* 7(1): 5-16
- Sikorski J, Renfrew M J, Pindoria S, Wade A (2001) Support for breastfeeding mothers. In: *The Cochrane Library*, Volume (3), 2003. (Most recent update 29 November 2001)
- Stickney B, Webb K (1995) *Strategies to Promote Breastfeeding: An Overview*. NSW Department of Health: Health Promotion Branch. State Health Publication No. (HP) 950142.
- Stockley L (2000) *Consolidation and updating the evidence base for the promotion of breastfeeding*. www.wales.gov.uk/subihealth/content/keypubs/breast/promotionofBreastfeeding.pdf
- Tedstone AE, Duncanson NA, Aviles M, Shetty PS, Daniels LA (1998) Effectiveness of interventions to promote healthy feeding in infants under one year of age: a review. *Health Promotion Effectiveness Review: Summary Bulletin 09*. Health Education Authority 1998 www.healthpromis.had-online.org.uk/Archimages/225.pdf
- US Preventive Services Task Force (2003a) The effectiveness of primary care-based interventions to promote breastfeeding: evidence review and meta-analysis for the US Preventive Services Task Force. *Ann Fam Med* 1(2): 70-78. www.ahrq.gov/clinic/3rduspstf/brstfeed/brfeedsum.pdf
- US Preventive Services Task Force (2003b) Behavioural interventions to promote breastfeeding: Recommendations and rationale. *Ann Fam Med* 1(2): 79-80. www.ahrq.gov/clinic/3rduspstf/brstfeed/brfeedrr.pdf

WHO/UNICEF (1992) *The Global Criteria for the WHO/UNICEF Baby-Friendly Hospital Initiative*. New York

World Health Organisation (1998) *Evidence for the Ten Steps to Successful Breastfeeding*. WHO/CHD/98.9. Division of Child Health and Development. Geneva, 1998. www.who.int/reproductive-health/docs/breastfeeding.pdf

WHO/UNICEF (1989) *Protecting, promoting and supporting breastfeeding: The special role of maternity services*. A joint WHO/UNICEF statement. Geneva, World Health Organisation, 1989. [This is the 'Ten Steps to Successful Breastfeeding']

WHO (1996) *The International Code of Marketing of Breast-milk Substitutes: A Common Review and Evaluation Framework*, WHO, Geneva.

Wilmouth TA, Elder JP (1995) An assessment of research on breastfeeding promotion strategies in developing countries. *Soc. Sci. Med.* 41: 579-594

Summaries of systematic reviews

Anderson GC, Moore E, Hepworth J, Bergman N (2003)

Early skin-to-skin contact for mothers and their healthy newborn infants (Cochrane Review; Last substantive update: 17/02/2003)

Synopsis

Statistically significant and positive effects of early skin-to-skin contact were found for breastfeeding at one to three months postpartum (8 trials) and for breastfeeding duration (6 trials) in this Cochrane review.

Purpose/aims

To assess the effects of early skin-to-skin contact on breastfeeding, maternal-infant behaviour and infant physiology.

Methods

Inclusion criteria

- RCTs and quasi-randomised clinical trials comparing early skin-to-skin contact with usual hospital care

Exclusion criteria

- Trials without a concurrent control group

Outcome measure(s)

- Exclusivity
- Duration
- Maternal bonding

Quality assessment

Methodological quality criteria:

- Adequate allocation concealment
- Method of random assignment
- Selection bias
- Performance bias
- Detection bias
- Attrition bias

Intervention groupings

Early skin-to-skin contact (SSC) involves placing the naked baby prone on the mother's bare chest at birth or soon afterwards (< 24 hour). This could represent a 'sensitive period' for priming mothers and infants to develop a synchronous, reciprocal, interaction pattern, provided they are together and in intimate contact. Routine separation shortly after hospital birth is a uniquely Western cultural phenomenon that may be associated with harmful effects including discouragement of successful breastfeeding.

Description of studies selected

17 studies (16 RCTs) were considered (806 women) – none met all of the methodological quality criteria. Note – breastfeeding outcomes were measured in eight studies.

Review findings

- Early SSC resulted in statistically significant and better overall performance on all measures of breastfeeding status (using the Index of Breastfeeding Status (Labbock 1990, Caldwell 2002)), and duration.
- Statistically significant and positive effects of early skin-to-skin contact on breastfeeding at 1-3 months post-birth (8 trials, 329 participants, OR 2.15, 95% CI 1.10, 4.22)
- Statistically significant and positive effects of early skin-to-skin contact on breastfeeding duration (6 trials; 266 participants; Weighted mean difference 41.99, 95% CI 13.97, 70.00)
- Mothers of SSC infants were twice as likely to be breastfeeding one to three months postbirth than mothers in the control groups. Infants in the SSC group breastfed an average of 42 days longer than those in the control group.

Implications

- The positive results in this review were obtained in diverse countries and among women of low and high socioeconomic class. In the two studies with the highest odds ratio of breastfeeding one to three months postbirth, the researchers stated that most

of the infants suckled during the SSC intervention. Effective suckling may be a critical component of this intervention in regards to long term breastfeeding success. Timing may also be critical as most healthy fullterm infants will spontaneously grasp the nipple and begin to suckle by approximately 55 minutes postbirth. During the first 30 minutes postbirth, they may only lick the nipple. After the first two hours postbirth, they often become sleepy and difficult to arouse. Also, because many primipara are so insecure during their first breastfeeding attempt, the intervention may be more successful if a clinician provides initial breastfeeding assistance as part of the intervention.

Cautions

- 1 study included women who had caesarean births
- Very diverse populations
- 1 study was done with healthy pre-term infants
- Overall methodological quality of studies – marginally adequate
- The characteristics of the intervention varied greatly between studies. Duration of SSC ranged from approximately 15 minutes to a mean of 37 of 48 hours (84%) of continuous SSC.
- The amount of assistance the mothers received with breastfeeding during SSC is unclear in many of the research reports. Assistance with the first breastfeeding may be a necessary component of SSC because many mothers are often very insecure about their ability to successfully initiate breastfeeding.
- *Substantial differences were found between studies in the amount of mother-infant contact provided in the control group. In four studies infants were removed from their mothers immediately postbirth and reunited 12 to 24 hours later. In two studies, the mothers held their swaddled infants for about five minutes soon after birth.

US Preventive Services Task Force (2003)

The effectiveness of primary care-based interventions to promote breastfeeding: Evidence reviews and meta-analysis and recommendations and rationale

The US Preventive Services Task Force (USPSTF) provides access to scientific evidence, recommendations on clinical preventive services, and information on how to implement recommended preventive services in clinical practice.

Synopsis

This review primarily examined research that offered educational interventions, interventions using in-person support, or both. They also examined the value of written materials. Thirty studies were identified and a meta-analysis performed on some of the studies. The USPSTF recommends structured breastfeeding education and behavioural counselling programs to promote breastfeeding. There was insufficient evidence to recommend for or against: brief education and counselling by primary care providers, peer counselling used alone and initiated in a clinical setting, or written materials, used alone or in combination with other interventions.

Purpose/aims

To evaluate the effectiveness of counselling, behavioural, and environmental (primary care-based) interventions to improve breastfeeding.

Methods

Inclusion criteria

- RCTs and non-randomised controlled trials
- Conducted in developed countries
- 1966 – Dec 2001
- Any counselling or behavioural intervention originating from a clinician's practice (office or hospital)
- Conducted by a variety of providers and in a variety of settings – as long as they originated from the health care setting

Exclusion criteria

- Community-based or peer-originated interventions

Outcome Measure(s)

- Initiation (before hospital discharge)
- short-term duration (1-3 months)
- long-term duration (4-6 months)

Quality assessment

Individual studies were rated as poor if they used poor randomisation techniques or if they failed to maintain comparable groups and failed to consider or adjust for potential confounders.

Intervention groupings

- Group or one-to-one education. Usually conducted by lactation specialists or nurses as postnatal sessions. Structured content was consistently delivered on core topics: breastmilk as the ideal nutrition for infants, benefits of breastfeeding (health and other), physiology, and anatomy. Skills training, such as breastfeeding positioning and latch-on techniques, equipment (clothing, pumps, storage), and questions and answers addressing common fears, problems and myths. Most lasted 30-90 minutes.
- In-person and/or telephone support (including peer counselling) – telephone or in-person (clinic, hospital, home) social support, advice or encouragement by lactation consultants, nurse or peer counsellors). Often personalised to individual patient needs- combined prearranged appointments and unscheduled visits or telephone calls for problems.
- Support plus Education – All studies used in-person contact through either clinics or home visits
- Written materials – varied in their length and detail, from a list of key points, to pamphlets reinforcing educational materials, to more detailed booklets.
- Rooming-in
- Early contact – skin-to-skin contact between mother and infant soon after birth.
- Commercial discharge packs

Presentation of information*Data synthesis*

Separate meta-analyses of 3 outcome measures:

- Initiation of breastfeeding
- Breastfeeding for 1-3 months
- Breastfeeding for 4-6 months

Included trials that offered educational interventions, interventions using in-person or telephone support, or both.

Mean differences and 95% confidence intervals were calculated for the individual and combined effects of education and support. Within these categories, they examined the effect of written materials as a co-intervention.

Review findings*Breastfeeding education 12 RCTs*

- No apparent association between length of session and effectiveness.
- Whether the education sessions were individual or in groups did not appear to predict success.
- Greater effectiveness of educational sessions in populations where the pre-intervention breastfeeding rate is less than 50%.
- Size of effect:
 - Breastfeeding initiation difference 0.23 (95% CI 0.12,0.34)
 - Short-term continuation up to 3 months 0.39 (95% CI 0.27,0.50)
 - Long-term duration up to 6 months 0.04 (95% CI -0.06,0.16) – ie no difference

Breastfeeding support 8 RCTs

- Support alone increased duration
- Size of effect:
 - Short-term duration increase 0.11 (95% CI, 0.03-0.19)
 - Long-term duration increase 0.08 (95% CI, 0.02-0.16)
 - No significant effect on initiation 0.06 (95% CI, -0.02-0.15)

Support plus education 4 RCTs

- Compared with support alone, studies that combined breastfeeding education and support produced larger differences in initiation (0.21, 95% CI 0.07-0.35) and short-term duration (0.37, 95% CI 0.17-0.58) of breastfeeding. However, the combination of education and support was not substantially different from that of education alone.

Peer counselling 1 RCT, 4 non-RCTs (all poor quality)

- No conclusive evidence.

Written materials 7 RCTs (3 RCTs written materials alone; 4 RCTs in combination with education and/or support)

- Written materials alone did not increase breastfeeding rates
- Effectiveness of written materials plus education was comparable to that of education alone
- The combination of education plus written materials, in 3 studies measuring short-term duration of breastfeeding, appeared less effective (0.10, 95% CI -0.01-0.21) than education alone (0.39, 95% CI 0.27-0.5)

Rooming-in

One study in a developed country – contained multiple other interventions thus the effect of rooming-in alone could not be ascertained.

Early maternal contact

One good quality Cochrane review; in this study, meta-analysis of 4 studies in developed countries – no significant benefit (OR 1.23; 95% CI 0.65-2.05).

Commercial discharge packs

One good quality Cochrane review of 9 RCTs – found that giving mothers commercial discharge packs often containing samples and coupons for formula reduced exclusive breastfeeding. Women with uncertain goals for breastfeeding were significantly less likely to breastfeed and to breastfeed exclusively if given commercial discharge packs.

One trial found no increase in short-term breastfeeding for an intervention targeted at **pacifier avoidance**.

Review conclusions

- For initiation and short-term duration of breastfeeding, the combination of education plus support may be more effective than support alone, but not more effective than education alone.
- Educational sessions that review the benefits of breastfeeding, principles of lactation, myths, common problems, solutions, and skills training appear to have the greatest single effect.
- Education alone increased initiation and short-term duration
- Support alone increases short and long-term duration
- Written materials alone were not effective in increasing initiation or duration.
- The addition of written materials to education did not increase (and may have decreased) the effectiveness of education.
- There are insufficient data to determine the effectiveness of peer counsellor programs. Previous good quality systematic reviews (Sikorski & Renfrew 2000; Fairbank et al. 2000) indicated that education and peer counselling increased breastfeeding initiation and support measures increased duration.
- None of the studies compared the combined intervention against each component separately.
- The use of discharge packs containing promotional material with or without formula samples significantly reduced exclusive breastfeeding for up to 6 weeks. However, these previous reviews included studies in developing countries.

Summary of recommendations

- **The US Preventive Services Task Force (USPSTF) recommends structured breastfeeding education and behavioural counselling programs to promote breastfeeding.**

Rationale: The USPSTF found fair evidence that programs combining breastfeeding education with behaviourally-oriented counselling are associated with increased rates of breastfeeding initiation and its continuation for up to 3 months, although effects beyond 3 months are uncertain. Effective programs generally involved at least 1 extended session, followed structured protocols, and included practical, behavioural skills training and problem-solving in addition to didactic instruction.

The USPSTF found fair evidence that providing ongoing support for patients, through in-person visits or telephone contacts with providers or counsellors, increased the proportion of women continuing breastfeeding for up to 6 months. Such support, however, had a much smaller effect than educational programs on the initiation of breastfeeding and its continuation for up to 3 months. Too few studies have been conducted to determine whether the combination of education and support is more effective than education alone.

- **The USPSTF found insufficient evidence to recommend for or against the following interventions to promote breastfeeding: brief education and counselling by primary care providers; peer counselling used alone and initiated in the clinical setting; and written materials, used alone or in combination with other interventions.**

Rationale: The USPSTF found no evidence for the effectiveness of counselling by primary care providers during routine visits and generally poor evidence to assess the effectiveness of peer counselling initiated from the clinical setting when used alone to promote breastfeeding in industrialised countries. The evidence for the effectiveness of written materials suggests no significant benefit when written materials are used alone and mixed evidence of incremental benefit when written materials are used in combination with other interventions.

De Oliveira MI, Camacho LA, Tedstone AE (2001)

Extending breastfeeding duration through primary care: a systematic review of prenatal and postnatal interventions

Synopsis

This is the results of a systematic literature review of the effectiveness of strategies and procedures (primary care interventions conducted during the prenatal and postnatal phases (excluding delivery care)) used to extend breastfeeding duration. Each of 37 internally-valid studies were reviewed and a measure of effectiveness of the intervention (attributable fraction) determined for studies where the data showed conclusive or suggestive effects.

Purpose/aims

To review the available evidence with regard to primary care interventions conducted during the prenatal and postnatal phases (excluding delivery care) to improve breastfeeding duration, so that a program of effective breastfeeding promotion, protection, and support for primary care can be defined.

Methods

Inclusion criteria

- Primary care interventions (primary health care services, community settings, or hospital clinics) conducted during the prenatal and/or postnatal period
- Published between 1980 and 1999
- Experimental or quasi-experimental designs were included, as were unpublished material or narrowly disseminated reports

Outcome measure(s)

- Breastfeeding duration (exclusive, full, or any kind of breastfeeding) – points of time varying from 4 weeks to 6 months

Exclusion criteria

- Interventions that took place during the delivery period only
- Observational design studies
- Interventions targeting high risk groups
- Studies reporting only the effect of the intervention on mother's knowledge of breastfeeding, infant-feeding decision, or breastfeeding initiation, rather than breastfeeding duration.

Quality assessment

The studies reviewed were divided into 3 blocks: internally valid studies, studies with methodological problems, and studies excluded from this review. Studies with methodological problems are included in the text but not in the tables.

Internally valid studies were assessed using a 3-item quality scale:

- Approach to covariate unbalance in the intervention and control groups
- Independence of outcome assessment
- Methods of statistical analysis and presentation of results

Intervention groupings

- Prenatal phase
- Postnatal phase
- Prenatal and postnatal phase
- Hospital and postnatal phase
- Prenatal, hospital and postnatal phase

Presentation of information*Data synthesis*

Maximum duration of effect (for each study):

- % exclusive, full or any breastfeeding, in intervention and control groups with P value

- Derived attributable fraction and constructed 95% confidence intervals when the data were conclusive or suggestive. [The attributable fraction (AF) is defined as the proportion of the outcome rate achieved in the intervention group that is due to the intervention – hence a measure of effectiveness in this context.]
- Summary measures of association derived with meta-analysis techniques were not considered meaningful.

Tables

- Country
- Study design
- Quality score
- Sample size
- Strategy
- Timing
- Maximum duration of effect

Discussion

The main features of each intervention (context or setting, type of support staff, strategies and procedures, and effectiveness) are described in the text.

Description of studies selected

33 experimental and 31 quasi-experimental studies identified. 37 were considered internally valid, 27 had methodological problems.

Interventions took place in women's homes (34%), primary health care units (29%), hospital clinics (29%), and the community (8%).

Most frequent strategies: home visits, individual consultations, group sessions, phone calls, a combination of 2 or more strategies, and printed matter.

Some procedures were used nearly universally (eg guidance on positioning and attachment), whereas others appeared infrequently (eg education with regard to the protective role of colostrum was more frequent in African and Asian studies). The combination of approaches often used prevents an evaluation of the effects of individual components and any interaction between them. Nevertheless, a set of procedures occurred consistently in successful interventions, suggesting they were effective components.

Most interventions were conducted by health professionals (70%). Peer counsellors (generally local mothers with a positive personal experience in breastfeeding (trained by health professionals) carried out 14% of the interventions. Some combined both (13% of studies), and a few used printed matter (3%). Among the internally valid studies, there was no significant difference between the proportion of effective interventions carried out by health professionals (21/27) and by peer counsellors (4/6).

Review findings

Effective interventions

- Generally combined face-to-face information, guidance, and support and were long term and intensive.
- Interventions spanning the prenatal period or both periods were generally more effective than interventions conducted only during the postnatal phase, except for one study.
- The most effective strategies identified were:
 - group sessions during the prenatal phase
 - home visits during the postnatal phase or in both periods
 - combination of group sessions, home visits, and individual sessions in interventions spanning both periods
 - Individual sessions carried out in the postnatal phase or in both periods were also effective.
- During prenatal care, group education was the only effective strategy reported.
- The combination of effective strategies seemed to produce a synergistic effect.
- In the effective studies, the most common information given to pregnant women and mothers (and sometimes also to family members) was related to the benefits of breastfeeding for mother and baby;

early initiation; how breastmilk is produced; hazards of bottle-feeding or providing teats to babies; breastfeeding on demand; exclusive breastfeeding up to 4, 5, or 6 months; prolonged breastfeeding for at least 2 years; and family planning and the lactational amenorrhea method. Mothers also received guidance on positioning and attachment; expression and storage of breast milk; combining breastfeeding and work; and overcoming problems such as engorgement, colic and crying. Emotional support, encouragement, and reassurance were provided to promote maternal confidence, and mothers were encouraged to share experiences.

Ineffective interventions

- When practices contradicted messages (such as programs advising mothers to breastfeed while providing formula to infants)
- Small-scale, limited to a short period of time during pregnancy or postnatal care.
- The isolated use of printed matter, such as booklets given to mothers.
- No, or brief, face-to-face interaction – only one study based on phone calls (conducted by peer counsellors trained in Paulo Freire's empowerment technique) was effective in extending full breastfeeding duration until 3 months.
- Combination of effective and ineffective strategies.

Review conclusions

- A mix of information, guidance and support over a prolonged period increased duration.
- Effects on duration were generally better with a mix of group and individual sessions, and postnatal home visiting.
- Effects did not vary according to whether they were provided by professionals or peers.

Sikorski J, Renfrew M J, Pindoria S, Wade A (2001)

Support for breastfeeding mothers (Cochrane Review; Last substantive update: 07/11/2001)

Synopsis

This review provided clear evidence for the effectiveness of professional support on the duration of any breastfeeding, although the strength of its effect on the rate of exclusive breastfeeding is uncertain. Lay support is effective in promoting exclusive breastfeeding while the strength of its effect on the duration of any breastfeeding is also uncertain.

Purpose/aims

- To assess the effects of breastfeeding support for mothers who wish to breastfeed
- To describe the forms of support which have been evaluated in controlled trials and the settings in which they have been used
- To examine the effectiveness of different modes of offering similar support interventions (eg face-to-face or over the telephone), and whether interventions containing both antenatal and postnatal elements were more effective than those taking place in the postnatal period alone
- To compare the effectiveness of different care providers and training
- To explore the effect of baseline breastfeeding prevalence (where known) on the effectiveness of supportive interventions.

Methods

Inclusion criteria

- Randomised or quasi-randomised controlled trials, with or without blinding and with a minimum of 75% follow-up.
- Contact with an individual or individuals (either professional or volunteer) offering support which is supplementary to standard care (in the form of, eg appropriate guidance and support) with the purpose of facilitating continued breastfeeding

- Support provided by – medical, nursing and allied professionals (eg nutritionists), as well as lay people. Lay support was either voluntary or remunerated.
- Studies were included if the intervention occurred in the postnatal period alone or also included an antenatal component.

Outcome measure(s)

- Duration of any breastfeeding
- Duration of exclusive breastfeeding
- Maternal satisfaction

Outcomes were recorded for stopping breastfeeding before 4 to 6 weeks, and two, three, four, six, nine and 12 months.

Exclusion criteria

- antenatal period only
- solely educational interventions

Description of studies selected

- Twenty randomised or quasi-randomised controlled trials from 10 countries were identified
- Participants were women who intended to breastfeed, who had initiated breastfeeding or who accepted the provision of support before or after the birth of their child.
- Six studies used either the 18-hour or 40-hour WHO/UNICEF breastfeeding counselling/lactation management courses as the basis for the training of breastfeeding supporters

Presentation of information

Data synthesis

- Meta-analysis of all forms of extra support on duration of any breastfeeding, and for exclusive breastfeeding
- Examined the effect of professional support, versus usual care
- Examined the effect of lay support versus usual care
- Examined differing modes and timing of support: face-to-face, telephone support, postnatal only, antenatal + postnatal
- Effect of differing training programmes

Review findings

- Beneficial effect on the duration of any breastfeeding of all forms of support (RR for stopping breastfeeding up to six months 0.88 (0.81,0.95) – 15 trials. Findings persisted with other analyses and if higher quality trials were analysed separately. Excluded study by Morrell et al (2000).
- Further analysis based on baseline prevalence of breastfeeding showed clear evidence of benefit appeared to be confined to settings where there were high rates of breastfeeding initiation. RR = 0.84 (0.74,0.96) for high initiation areas (> 80%); 0.91 (0.80, 1.03) for intermediate initiation (60-80%); 0.88 (0.69, 1.12) for low initiation (<40%).
- Effect of support on exclusive breastfeeding (RR = 0.78 (0.60, 0.89)) – 11 trials – was greater than that observed for any breastfeeding, but there was marked heterogeneity in trials.
- Extra professional support increased any breastfeeding (RR for stopping breastfeeding before last study assessment up to 6 months 0.89 (0.81,0.97). The beneficial effect of professional support on exclusive breastfeeding did not achieve statistical significance but there was evidence of significant benefit up to 2 months (RR before 4-6 weeks 0.50 (0.27,0.90); RR before 2 months 0.76 (0.61,0.94).
- Trials of lay support showed a non-significant trend towards reducing breastfeeding cessation. However, in studies of lay support which reported exclusive breastfeeding, there was a marked reduction in the cessation of exclusive breastfeeding (RR 0.66 (0.49, 0.89)) – 5 trials.
- Studies reporting a predominantly face-to-face intervention showed a statistically significant benefit (RR for giving up breastfeeding 0.86 (0.78,0.94) – 8 trials; whilst those using mainly telephone contact failed to do so 0.92 (0.78, 1.08) – 5 trials.
[It is pertinent to note that although the meta-analysis of interventions using mainly telephone contact failed to show a statistically significant effect, the relative risk was similar to that determined by meta-analysis of studies using predominantly face-to-face interventions, and the 95% confidence intervals were not very different.]

- The effect measured in studies of interventions containing an antenatal element to breastfeeding support was not significant (RR 0.85 (0.70, 1.04)) – 3 trials; while studies offering only postnatal support were clearly beneficial (RR 0.88 (0.80, 0.96)) – 12 trials.
- 6 trials reported using either the 18 or 40 hour WHO/UNICEF breastfeeding training courses, while one trial used the peer counsellor programme developed by La Leche League. The length of training offered to lay supporters varied from 2.5 hours to 40 hours. Meta analysis of 4 trials using WHO/UNICEF training showed significant benefit in prolonged exclusive breastfeeding (RR 0.70 (0.53, 0.93)) but the findings were highly heterogeneous.

Review conclusions

- There is clear evidence for the effectiveness of additional professional support on any breastfeeding (the strength of its effect on exclusive breastfeeding is less certain).
- There is an indication that an early culture of breastfeeding acts synergistically with the provision of extra support.
- WHO/UNICEF training courses appear to be an effective model for professional training.
- Lay support is effective in promoting exclusive breastfeeding while the strength of its effect on duration of any breastfeeding is uncertain.
- Face-to-face support appears to be more effective than telephone support.
- There appears to be no beneficial effect on the duration of breastfeeding to be derived from including an antenatal component to the support offered (note – this is in women who intend to breastfeed)

Cautions

Reporting in studies was often not comprehensive – lacking in terms of details of the training and qualifications of supporters, the definitions used of the extent of breastfeeding and in the description of adherence to the support protocol.

There was also a failure to present details of the informational element of the interventions and on the background detail of the care received by the comparison groups. There was a diversity of supportive interventions and widely differing timing of study end-points.

'Usual postnatal care' varies both within and between countries; and the care at the time of the trial may differ from that which is offered at the present time.

Donnelly A, Snowden HM, Renfrew MJ, Woolridge MW (2000)

Commercial hospital discharge packs for breastfeeding women (Cochrane Review; Last substantive update: 21/02/2000)

Synopsis

Nine trials, of women from North America only, were identified. The giving of commercial discharge packs (with or without formula) appears to reduce the number of women exclusively breastfeeding at all times but has no effect upon the earlier termination of non-exclusive breastfeeding.

Purpose/aims

To determine whether exclusivity and duration of breastfeeding is affected by giving mothers commercial discharge packs in hospital which contain artificial formula or promotional material for artificial formula.

Discharge Packs: 'useful' items such as talc, nappies, formula, dummies – an assortment of sample products, educational and promotional literature. Contents vary according to local marketing and advertising strategies.

Methods

Inclusion criteria

- All RCTs with or without blinding
- Postpartum women of any parity who initiate breastfeeding while in hospital or immediately on discharge

Outcome measures

- Proportion of women exclusively breastfeeding at 6 weeks
- Proportion of women exclusively breastfeeding at 3 months
- Prevalence of partial versus exclusive breastfeeding between zero and 13 weeks postpartum and 6 months
- Timing of introduction of solid food

Intervention groupings

- Commercial hospital discharge packs containing samples of formula versus modified non-commercial research packs (formula sample replaced by an aid to breastfeeding, eg a manual breast pump or breastpads or containing promotional literature on breastfeeding).
- Commercial hospital discharge packs not containing samples, but promoting the use of infant formula versus non-commercial hospital discharge packs (as above), or versus no discharge packs

NOTE: As commercial discharge packs represent standard postnatal care – the control condition (commercial discharge pack) is regarded as the ‘intervention’, and the experimental group (removal of discharge pack or giving research pack) as the control.

1. No intervention – nothing was given to mothers leaving hospital
2. Non-commercial pack – no promotional material, pamphlets about breastfeeding and how to prevent problems may have been included with other items of use to breastfeeding mothers, ie breastpads or hand pump.
3. Commercial packs – containing branded information with-without formula, plus other items of use if bottle feeding, eg bottles, teats, pacifiers.

Description of studies selected

Nine RCTs were identified. The studies only included women from North America.

Presentation of information

Data synthesis

Meta-analysis of effects of commercial discharge packs compared with any controls on exclusive breastfeeding at different time points post-partum.

Review results

- The giving of commercial hospital discharge packs significantly reduced the number of women exclusively breastfeeding at 0 to 2 weeks and 8 to 10 weeks.
- The effect at 3 to 6 weeks was less pronounced and was non-significant at 16 weeks.
- In the 2 studies where solid food introduction was measured, solid foods were introduced into the diet earlier when discharge packs contained promotional material for formula or where free formula was given out in the pack.
- No effect of giving commercial discharge packs upon exclusive breastfeeding at 6 months.

Implications

As there were no detrimental effects demonstrated by not giving commercial discharge packs and some mothers found the non-commercial packs to be of more use, it is suggested that commercial packs should not be given to mothers on discharge from hospital. It may indicate that some form of non-commercial pack, comprising breastpads and/or pumps could be considered.

Fairbank L, O'Meara S, Renfrew MJ, Woolridge MW, Sowden A, Lister-Sharp D (2000)

A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding

Synopsis

14 RCTs, 16 non-RCTs and 29 before-after studies of interventions aimed primarily at breastfeeding initiation were reviewed. Forest plots were presented for the RCTs and a narrative synthesis of the other studies was included.

Informal small group programs, peer support in prenatal and postnatal periods, and multifaceted interventions influence breastfeeding outcomes. Changes in hospital practices are effective in developing countries.

Purpose/aims

The primary aim of this review was to evaluate existing evidence to identify which promotion programmes are effective at increasing the number of women who start to breastfeed. In addition, the review aimed to assess the impact of such programmes on the duration and/or exclusivity of breastfeeding and the intermediate and process outcomes.

Methods

Inclusion criteria

- Up to 1998
- Published and unpublished material
- A detailed selection criteria based on study design was used.

Outcome measure(s)

- Initiation
- Duration and exclusivity (if initiation was reported in the same study)
- Intermediate and process outcomes (not necessarily associated with reported initiation rates), eg knowledge and attitudes, change in cultural norm.

Quality assessment

The quality of study appraised according to its particular study design. A quality score was not given.

Presentation of information

Intervention groupings

- Health education
- Health sector initiatives (HSI) – general
- HSI – Baby Friendly Hospital Initiative (BFHI)
- HSI – training of health professionals
- HSI – USDA Special Supplemental Nutrition Program for Women, Infants and Children (WIC)
- HSI – social support from health professionals
- Peer support
- Media campaigns
- Multifaceted interventions

Data synthesis

- Relative risks (with associated 95% confidence intervals) for initiation rates were estimated for individual RCTs and non-RCTs, with calculations performed on an intention-to-treat basis where possible.
- Results from the individual RCTs were displayed on a common scale (forest plots) allowing visual comparison of trial results and examination of the degree of heterogeneity between studies.
- Pooling of relative risks was considered inappropriate owing to the lack of similarity across the studies (ie no meta-analysis was performed).

Tables

Data were extracted into standardised, structured tables.

Discussion

Results from primary studies were assessed and summarised in a qualitative synthesis for each type of intervention and within types of intervention. Owing to the heterogeneity of interventions, settings, participants, outcome measures and comparison groups, a quantitative synthesis was not considered appropriate.

On the basis of the evidence, implications for both practice and future research are suggested.

Description of studies selected

14 RCTs, 16 non-RCTs and 29 before-after studies.

Review results

- Health Education (9 RCTs, 7 non-RCTs, 3 before – after studies)
Breastfeeding literature alone, or combined with a more formal, non-interactive method of health education, appears to have limited impact on initiation rates.
Small, informal, group health education classes, delivered in the antenatal period, can be an effective intervention to increase initiation rates, and in some cases the duration of breastfeeding, among women from different incomes or ethnic groups.
- HSI: general, and based on the BFHI (2 RCTs, 3 non-RCTs, 4 before-after studies)
Institutional changes in hospital practices to promote breastfeeding, either as part of, or independent to, the BFHI, can be effective at increasing both the initiation and duration of breastfeeding, particularly in developing countries. These may include stand-alone interventions such as rooming-in, or a package of interventions, such as rooming-in, early contact and health education.
- HSI: WIC (2 RCTs, 3 non-RCTs, 5 before-after studies)
In most studies, WIC programs were effective at increasing both the initiation and duration of breastfeeding among women of low-income groups in the USA. Effective WIC interventions included: one-to-one health education in the antenatal period, peer counselling in the ante- and postnatal periods, or a combination of one-to-one health education and peer counselling in the antenatal and postnatal periods.
- HSI: training of health professionals (5 before-after studies)
Limited evidence available suggests that these programmes may be useful in improving knowledge of midwives and nurses; however, favourable results were not shown in terms of changes in attitudes of health professionals, or changes in breastfeeding rates.
- HSI: social support from health professionals (1 RCT)
No increase in initiation rates.
- Peer support (2 non-RCTs)
Both studies showed peer support programmes, when delivered as a stand-alone intervention to women in low-income groups, to be an effective

intervention at increasing initiation rates (and duration) among women who had expressed a wish to breastfeed.

- Media Campaigns (2 before-after studies)
Limited evidence suggests that a media campaign as a stand-alone intervention, and particularly television commercials, may improve attitudes towards, and increase initiation rates of, breastfeeding.
- Multifaceted interventions (1 non-RCT, 10 before – after studies)
Several studies found multifaceted interventions to be effective in increasing initiation rates (and duration and exclusivity of breastfeeding). Most of the multifaceted interventions that were found to be effective comprised a media campaign and/or a peer support programme combined with structural changes to the health sector (HSI), or, in fewer cases, combined with health education alone.

Review conclusions

- In developed countries, 3 types of stand alone intervention are effective in promoting breastfeeding:
- Informal, small group health education delivered during the antenatal period – effective at increasing initiation rates among women from different income groups and from some minority ethnic groups.
- One-to-one health education can be effective at increasing initiation rates among women on low incomes
- Peer support programmes, delivered in the ante- and postnatal periods, have also shown to be effective at increasing both initiation and duration rates among women on low incomes, particularly among women who have expressed a wish to breastfeed.
- In developed countries, effective packages of interventions appear to include a peer support programme and/or a media campaign combined with structural changes to the health sector and/or health education activities. These increase both initiation and duration.
- Changes in hospital practices increase initiation and duration in developing countries. Rooming-in, either as a stand-alone intervention or as one component of a package of interventions, is a key example of an effective HSI.

*Green CP (1999)****Interventions to improve breastfeeding behaviours: Detailed summaries of 51 studies AND Improving breastfeeding behaviours: Evidence from two decades of intervention research*****Synopsis**

This is a narrative review. Although the methodological quality of the studies is assessed, this information is not then specifically used (although the author states that the weaknesses in studies have been taken into consideration in assessing the impact of various interventions).

Ten out of 51 studies reviewed were conducted in the USA or Europe.

Purpose

The purpose of this report was to clarify what is known from existing research about improving four key breastfeeding practices (early initiation of breastfeeding, feeding of colostrum, exclusive breastfeeding for the first 6 months, continued breastfeeding through the second year and beyond) in order to guide program planners and managers.

Methods*Inclusion criteria*

- Studies between 1978 and 1998

Exclusion criteria

- Failed to provide both: (1) information on specific interventions implemented to change breastfeeding practices, and (2) data on changes in at least one of the four breastfeeding behaviours over time or among groups receiving different treatment regimes.

Outcome measure(s)

- Early initiation of breastfeeding (ideally within the first hour after birth)
- Feeding of colostrum to the newborn
- Exclusive breastfeeding for the first six months
- Continued breastfeeding through the second year and beyond.

Quality assessment

Methodological limitations of each study are described according to WHO's Evidence for the Ten Steps to Successful Breastfeeding.

Study Design A: Studies comparing intervention and control or comparison groups before and after the intervention (29% of studies)

Study Design B: Studies comparing intervention and control or comparison groups (no baseline) (38%)

Study Design C: Studies comparing the same group(s) before and after the intervention (no control group) (33%)

Presentation of information***Document 1***

In the first document the studies are tabulated and annotated, listed according to rigour of the study.

All tables are divided according to the four main outcome measures.

1. Summary of interventions and benefits

- Reference
- Country
- Study design (quality)
- Intervention category:
 - Prenatal education
 - Hospital Policies/Actions
 - Health worker Training
 - Peer counselling
 - Mass media
 - Women's groups
 - Home visits
 - Community Education
 - Post-partum clinics

Beneficial? (Yes/Probably/Possibly/Partly/Slightly/No)

2. Details of studies divided according to study quality:
- (A) Studies comparing intervention and control or comparison groups before and after the intervention;
- (B) Studies comparing intervention and control or comparison groups (no baseline); (C) Studies comparing the same group(s) before and after the intervention.
- Author, Country, Methodological limitations
 - Population characteristics
 - Intervention (specific)
 - Sample size
 - Results (control and intervention or pre-intervention/post-intervention)
 - Conclusion (benefit?)

Document 2

Data synthesis

This document makes some conclusions about the effectiveness of the interventions in terms of the four outcome measures. The author points out that most studies suffer from methodological limitations (flawed designs, inadequate controls, failure to account for confounding variables, participant self-selection, small sample sizes, etc.) that results need to be interpreted cautiously. Even so, in some instances there is sufficient evidence from a few rigorous studies to draw conclusions about best practices with some degree of confidence. Additionally there may be a number of methodologically weaker studies that when taken as a whole, suggest that the weight of evidence favours certain approaches to promoting and sustaining breastfeeding measures.

Tables

Each study:

- Behaviour(s) – outcome(s)
- Country
- Study site
- Author(s)
- Publication date
- Citation
- Study design

- Implementing agency
- Project name
- Intervention description
- Results/impact
- Comments
- Programme implications – overall findings

The second document is a more detailed written summary of each of the 51 studies tabulated in the first document.

Discussion of effectiveness and studies:

- Interventions to promote early initiation of breastfeeding
 - Changing hospital policies/Training hospital workers
 - Prenatal education
 - Peer counsellors and other social support
 - Multimedia campaigns
 - Women's groups
- Interventions to promote feeding of colostrum
 - Changing hospital policies/Training hospital workers
 - Prenatal education
 - Multimedia campaigns
 - Women's groups
- Interventions to promote exclusive breastfeeding
 - Combinations of interventions
 - Changing hospital policies/Training hospital workers
 - Prenatal education
 - Psycho-social support during delivery
 - Commercial discharge packs
 - Postpartum guidance by health workers/ Lactation centres/Clinic visits
 - Peer counselling/Women's groups
 - Mass media campaigns and community education

Description of studies selected

Of the 51 included in the final review, 24 were from Latin America and the Caribbean, 9 in Asia, 4 in sub-Saharan Africa, 3 in the Near East, 1 in the newly Independent States, and 10 in Europe and the United States.

Review findings

- Policy – only 1 of 51 studies examined national policy changes. The Kenya Ministry of Health implemented a breastfeeding promotion program, which included the adoption of a Code of Marketing of Breastmilk substitutes, directives to all hospitals to stop distributing infant formula, the promotion of early breastfeeding, and training of health workers. After policy implementation, hospital policy-makers and maternity staff were more knowledgeable about breastfeeding and their practices improved dramatically.
- Prenatal Education – some results suggest that prenatal education, when combined with other interventions (such as training of health providers, changes in hospital policies to allow early breastfeeding and contact with the newborn, and access to an outpatient breastfeeding support clinic), is associated with improved breastfeeding practices.
- Changes in hospital Practices including Health Worker Training – on the whole such studies show that:
 - counselling (especially individual counselling) and discharge packs that are supportive of breastfeeding can have a dramatic and positive effect on exclusive breastfeeding rates,
 - training of hospital staff in lactation management can likewise have a dramatic, positive effect on exclusive breastfeeding,
 - once women are discharged from the hospital, home visits are influential in extending the period of exclusive breastfeeding, and
 - changes in hospital practice influence early breastfeeding behaviour but are less likely to have a long-term impact.
- Mass Media and Print Materials – no conclusions, few definitive studies.
- Peer Counselling and Education – A majority of studies lend credence to the notion that peer counselling and social support in general have a positive effect on the initiation of breastfeeding, the giving of colostrum and exclusive breastfeeding. In particular, home visits appear to play a critical role in supporting women's breastfeeding behaviours and have been associated with longer durations of exclusive breastfeeding. In general, mothers visited more frequently are more likely to adopt recommended behaviours than those visited less often or not at all.
- Women's Groups – no evidence.
- Postpartum counselling and guidance by health workers – mixed evidence.
- Interventions to promote exclusive breastfeeding
 - Most studies combined several types of interventions, making it impossible to determine which ones were most effective.
 - Of 8 studies that focused mainly on changes in hospital practices and training hospital workers, 7 studies found that these interventions increased the prevalence or duration of exclusive breastfeeding.
 - Of 3 studies that looked at prenatal education alone, all showed substantial increases in prevalence of exclusive breastfeeding (1 study at 6 months, 1 study at 3 months, 1 study at 1 month).
- Interventions to promote continued breastfeeding
 - Only 3 studies cited outcome variables relating to breastfeeding beyond 6 months
 - 3 other studies included that aimed to increase the duration of breastfeeding.

Tedstone AE, Duncie NA, Aviles M, Shetty PS, Daniels LA (1998)

Effectiveness of interventions to promote healthy feeding in infants under one year of age: a review

Synopsis

Narrative review of 20 studies in 'Western' countries (11 USA, 5 UK, 3 Australia, 1 Canada) of different breastfeeding outcomes. Review findings were divided by target group (women at prenatal and/or postnatal stages), and by intervention setting (hospitals, clinics and/or homes).

Purpose/aims

Review, commissioned by the Health Education Authority, aimed to identify interventions promoting healthy feeding of infants (aged 0-1 years) that have been evaluated for effectiveness at improving nutritional health and wellbeing.

Methods

Inclusion criteria

- 1984-1996 (published in English)
- 'Western, industrialised' countries only
- Experimental or quasi-experimental design, RCTs, non-RCTs, prospective cohort studies with concurrent controls, intervention studies with an historical control group or retrospective controlled studies

Exclusion criteria

- observational studies
- targeted high-risk or disease populations

Outcome measure(s)

- Initiation
- Duration
- Exclusivity
- Knowledge of and attitudes to breastfeeding
- Intention to breastfeed

Quality assessment

- Study design
- Sample size and power
- Comparability of intervention and control groups
- Rates of attrition
- Validity of method assessing outcome
- Blinding of outcome assessment
- Treatment of potential bias
- Treatment of potential confounding factors

Classified as: good, good/moderate, moderate, moderate/poor, poor.

Presentation of information

- Tables for each of the study categories/descriptors
 - author and year, intervention description, target group, overall effect (not quantitative), quality of study
- Text describes each study and indicates some qualitative results
- Appendix of 'Details of Included Studies' (valid studies):
 - Design
 - Focus
 - Setting
 - Sample
 - Intervention: baseline assessment, duration, theoretical model
 - Outcome and main results: outcome assessment, major outcomes, length of follow-up, attrition rate
 - Assessment of effectiveness: Authors' conclusion
 - Reviewer's assessment: Overall quality assessment.

Description of studies selected

- 20 studies aimed at promoting breastfeeding were included (also 6 studies aimed at weaning)
- 11 USA, 5 UK, 3 Australia, 1 Canada
- 19 studies excluded on the basis of poor study quality or because they targeted ethnic groups significantly under-represented in the UK. Note – Although not methodologically sound, some studies appropriate to the UK population have been included if the design was considered to be novel or useful for future promotions.

Review findings

Review findings were divided by target group (women at prenatal and/or postnatal stages), and by intervention setting (hospitals, clinics and/or homes).

- Prenatal interventions in a hospital or clinic setting – 5 studies. All focused on low-income groups, 3 targeted specific racial groups, 3 USA, 1 UK, 1 Australia
- Prenatal interventions set in the home – no studies found
- Prenatal interventions combining hospital or clinic, and home settings – no studies found
- Prenatal and postnatal interventions in the hospital or clinic – 4 studies. 3 USA (low-income women), 1 UK
- Prenatal and postnatal interventions combining hospital or clinic, and home settings – 4 studies. 3 aimed at low-income women. 2 USA, 1 UK, 1 Australia
- Prenatal and postnatal interventions set in the home – 1 study, USA.
- Postnatal interventions in the hospital or clinic – no studies found
- Postnatal interventions combining hospital or clinic, and home settings – 4 studies. All evaluated the effect of seeing a breastfeeding specialist (breastfeeding nurse, lactation consultant or lactation adviser). 2 USA, 2 UK.
- Postnatal interventions set in the home only – 2 studies, 1 Canada, 1 Australia.

Review findings and conclusions

Types of intervention

- Interventions were delivered either by lactation specialists, peer counsellors or, in one study, by paediatricians. Most were educational in design.
- No interventions were targeted at the carers of new mothers alone (such as hospital or community health workers), women prior to pregnancy or men alone.
- Breastfeeding initiation was the most common outcome measure. Few studies aimed to support women who had initiated breastfeeding to sustain breastfeeding.
- In general, pre-natal promotions were aimed at low-income or minority ethnic groups, and based in hospital or clinic settings.

Intervention success

- Prenatal breastfeeding promotions were aimed at low-income or minority ethnic groups, and based in hospital or clinic settings.
 - These were successful at increasing breastfeeding knowledge and initiation, with the exception of one intervention, which required attendance at a series of lectures where attrition rates were high.
 - In this setting, one-to-one education sessions were more successful than group education in persuading women, who had initially decided to feed infant formula, to breastfeed.
 - In this setting, group sessions were better at increasing duration of breastfeeding.
 - In this setting, the effectiveness of education settings were enhanced by contact with peer counsellors.
- Promotions spanning both the pre and postnatal period were primarily aimed at low-income groups and set in the hospital or clinic and at home.
 - Mixed effectiveness. USA interventions generally more successful than UK or Australian interventions.

- When programmes were personalised or ‘needs-focused’, they were successful at increasing breastfeeding initiation but not duration with three exceptions: One of these interventions offered prizes and included partners, another evaluated the effect of contact with a breastfeeding specialist, and a third examined a peer counsellor support group.
- Postnatal breastfeeding promotions were aimed at women who had already initiated breastfeeding, and were based in the hospital or home setting.
 - In general, they comprised visits by a lactation consultant, telephone support services, a breastfeeding advice booklet, and training sessions aimed at improving midwife awareness of the needs of breastfeeding women.
 - One of these interventions, which modified the contents of a commercial discharge pack given to mothers on leaving hospital, significantly increased breastfeeding duration.
 - One USA-based evaluation of contact with a single lactation specialist provided evidence of an improvement in overall breastfeeding outcome.
 - One cultural and language specific intervention that was implemented in conjunction with clinic visits was successful at increasing breastfeeding prevalence up to four weeks post-partum.

Additional information

There is a sister publication – ‘Opportunities for, and barriers to, change in dietary behaviour in women of childbearing age, those who are pregnant, infants up to one year and children one to five years old’ – by Reid and Adamson (1998).

World Health Organisation, Division of Child Health and Development, Geneva (1998)

Evidence for ‘The Ten Steps to Successful Breastfeeding’

Synopsis

This mainly narrative review (although comparative tables of studies are provided indicating supportive evidence) summarises the evidence from experimental or quasi-experimental studies for breastfeeding outcomes, in historical order. Studies with fewer limitations are discussed in greater detail. Additional supportive evidence is provided from prospective and cross-sectional studies.

The ten steps

1. Have a written breastfeeding policy that is routinely communicated to all health care staff
2. Train all health care staff in 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 should be separated from their infants
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated
7. Practice 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.

“The available evidence indicates that implementation of the ‘Ten Steps’ in maternity facilities can increase breastfeeding in almost any setting. Implementing each Step by itself has some effect, but implementing all of them together can be expected to have a greater effect, while omitting one or two may limit the impact of those that are in place.”

Purpose/aims

To identify published studies relating to each of the 'Ten Steps', and the effect on breastfeeding of their implementation inside health facilities.

Methods*Inclusion criteria*

- A literature search of published studies relating to each of the 'Ten Steps' and indicating the effect on breastfeeding of their implementation inside health facilities. (Exceptionally studies assessing interventions outside health facilities were included.)
- Only RCTs and quasi-experimental (controlled studies where allocation was systematic or when a 'before-after intervention' design was used).

Quality assessment

- Assessed according to pre-established criteria. Limitations were identified.

Outcome measure(s)

- Breastfeeding rates
- Infant weight change
- Bilirubin levels
- Sleep patterns

Presentation of information

Evidence from experimental or quasi-experimental studies for breastfeeding outcomes, are discussed for each study in historical order. Studies with fewer limitations are discussed in greater detail. Limitations of studies are presented separately in comparative tables.

Evidence from prospective (longitudinal) or cross-sectional studies if they provided useful information and were not seriously methodologically flawed.

Tables

A comparative table of experimental and quasi-experimental studies, when available, and/or of longitudinal or cross-sectional studies providing supportive evidence.

- Year of publication
- Country or area of study
- Population characteristics
- Methodological limitations (numbered according to a list)
- Results – indicator considered in relation to duration of breastfeeding (exclusive, full, any)

The information on one study per Step is presented graphically.

Review findings and conclusions

1. Have a written breastfeeding policy that is routinely communicated to all health care staff
 - Difficult to use an experimental design to show that policies effect change.
 - This section describes the elements of weak and strong policies making conclusions about the main elements of a policy and the process of policy development.
2. Train all health care staff in skills necessary to implement this policy
 - Health professionals' knowledge, attitudes and practices are often not supportive of breastfeeding.
 - Improving knowledge may not be effective in changing practices if there is no underlying change of attitude or increase in skills.
 - A strong practical component can have more effect on both attitudes and skills than training that consists primarily of theoretical information.
 - Current experience with the BFHI seems to confirm that 18 hours (3 days) is an appropriate length of training, while longer courses (eg 5-6 full-time days) with daily clinical sessions are desirable.
 - Training must be compulsory and combined with strong, specific breastfeeding policies to ensure change in hospital practices. Probably neither intervention alone is sufficient.

3. Inform all pregnant women about the benefits and management of breastfeeding
 - Some evidence that antenatal education is helpful for primigravid women.
 - Antenatal preparation should cover breastfeeding technique and build a mother's confidence
 - Group discussions covering topics such as myths and inhibitions and practical demonstrations seem to be useful methods
 - Talks about the advantages of breastfeeding are of doubtful value. May be more effective if those in a woman's social environment who influence her decision to breastfeed are also included – such as the baby's father or grandmother, or close friends.
 - Possible alternatives to health facility-based classes are mother-to-mother support groups, home visits by lay counsellors or community education during pregnancy.
4. Help mothers initiate breastfeeding within a half-hour of birth
 - Early contact increases breastfeeding both soon after delivery and 2-3 months later. However, it is difficult to make exact recommendations because the timing and duration of early contact in the various studies is different.
 - Spontaneous suckling may not occur until from 45 minutes to 2 hours after birth, but skin-to-skin contact should start as soon as possible after delivery.
 - Providing the mother is in close contact with its mother and can suckle when it shows signs of readiness, there is no justification for forcing it to take the breast. Doing so may have an adverse effect on breastfeeding subsequently.
 - Mothers and babies should not be separated from birth unless there is an unavoidable medical reason.
 - An arbitrary but practical minimum recommendation is for skin-to-skin contact to start within at most half an hour of birth and to continue for at least 30 minutes.
 - Routine use of pethidine should be minimised.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants
 - Although carefully worked out educational messages may be beneficial, this may not be the most effective form of assistance.
 - Individual practical help with breastfeeding technique and psychological support to build a mother's confidence may be as or more effective in increasing the duration of breastfeeding.
 - Appropriate help given in even the short time spent in the maternity ward can have an effect lasting up to 4 months.
 - Every mother needs to learn how to express breastmilk.
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated
 - The use of supplements without a medical indication is associated with earlier cessation of breastfeeding.
 - It is not clear to what extent the use of supplements is causal, interfering with infants' feeding behaviour, or undermining mothers' confidence; and to what extent it is a marker of mothers with breastfeeding difficulties or of staff with insufficient breastfeeding support skills.
 - Restricting the use of prelacteal feeds and supplements is one of the most cost-effective health interventions identified.
 - There is no justification for giving mothers free samples of breastmilk substitutes before or after delivery.
7. Practice rooming-in – allow mothers and infants to remain together – 24 hours a day
 - Rooming-in has beneficial effects both on breastfeeding and the mother-infant relationship.
 - Once instituted it is usually reported by both staff and mothers as being preferable to nursery care.

8. Encourage breastfeeding on demand
 - Benefits of demand feeding include less weight loss in the immediate postpartum period and increased duration of breastfeeding subsequently.
 - Helps to prevent engorgement and breastfeeding is established more easily.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants
 - There is growing evidence that the use of artificial teats and pacifiers is associated with early cessation of breastfeeding as well as some other problems
 - The use of artificial teats should be minimised, or avoided altogether if possible, to avoid giving families conflicting messages
 - Pacifiers should not be necessary at any time in maternity facilities
 - The evidence for Step 9 needs to be considered with that for Step 6 concerning supplementary feeds.
 - Cups should be used in preference to bottles with teats for feeding infants who will later be breastfed.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.
 - It is probably an advantage if support starts before discharge to enable mothers to establish breastfeeding and to prevent difficulties.
 - A combination of antenatal, in-hospital and post-discharge support are likely to act synergistically.
 - A mother's immediate family, especially her male partner and her baby's grandmothers, and close friends, should be involved, as they may have an important influence on breastfeeding practices.
 - Studies suggest that more frequent contacts have more effect.
 - One-to-one counselling and help targeted at specific difficulties or crises of the mothers' confidence may be the most useful.

- Telephone calls appear not to be useful on their own.
- Possibly a combination of day-to-day support from the community backed by more specialised help from health services when the need arises could be more effective than either alone.

11. Combined Interventions

- Benefits are most likely to be realised when interventions are strengthened by institutional policy and potentially harmful practices are discontinued.

Saunders and Carroll (1988) – 3 simple interventions combined (one in-hospital guidance session, one telephone call and one post-discharge breastfeeding class) had a significant effect on breastfeeding, but none of the interventions had any effect alone.

Strachan-Lindenburgh et al (1990) found that when breastfeeding guidance was combined with rooming-in there was an increase in breastfeeding at both 1 week and at 4 months but when breastfeeding guidance was combined with early contact, the effect was only significant at one week.

- While removal of formula and rooming-in may be essential pre-requisites in breastfeeding initiation, the activities related to direct support and information have the greatest impact in extending the duration of exclusive breastfeeding (Lutter et al 1997).

Overall conclusions

- The basic premise of the BFHI, which requires all maternity facilities to implement the 'Ten Steps to Successful Breastfeeding', is valid.
- Steps 1 and 2, on policy and training, are necessary for the implementation of all other steps. Without strong policies and relevant staff training it is not possible to change practices.
- Selective implementation of only some steps may be ineffective and discouraging.

Appendix B

List of intervention studies* included in systematic reviews – in chronological order

Shaded rows indicate study included in two or more systematic reviews

Author(s)	Year	Country	Anderson et al	USPSTF	de Oliveira et al	Sikorski et al	Donnelly et al	Fairbank et al	Green	Tedstone et al	WHO
Sloper	1975	England						Y			
Sosa	1976	Guatemala	Y								Y
Hales et al	1977	Guatemala	Y								
de Chateau & Winberg	1977	Sweden	Y	Y							Y
Brimblescombe & Cullen	1977	UK						Y			
Salariya et al	1978	Scotland		Y					Y		Y
Carlsson et al	1978	Sweden	Y								
Kjellmer et al	1978	Sweden						Y			
Coles et al	1978	UK						Y			
Hall	1978	USA									Y
Thomson et al	1979	Canada	Y	Y							Y
Gilmore et al	1979	Ireland						Y			
Sjolin et al	1979	Scandinavia				Y					
Hart et al	1980	England						Y			
Kirk	1980	Scotland						Y			
Fardig	1980	USA	Y								
McClellan & Cabrianca	1980	USA	Y								
Svedja et al	1980	USA	Y								
Slavin	1981	England									Y
Ali	1981	Jamaica									Y
Houston et al	1981	Scotland			Y						Y
Bloom et al	1982	Canada			Y						Y
Manitoba Pediatric Society	1982	Canada, Manitoba						Y			
Procianoy	1983	Brazil									Y
Bergevin et al	1983	Canada					Y				
Ellis & Hewat	1983	Canada						Y			
Ross et al	1983	South Africa						Y			
Anisfield & Lipper	1983	USA	Y								
Kaplowitz & Olson	1983	USA		Y				Y			Y
Manoff International	1984	Indonesia							Y		
Kurini	1984	USA									Y
Wiles	1984	USA							Y		Y
Gray-Donald	1985	Canada									Y
Vega-Franco et al	1985	Mexico			Y			Y			

* Publication details of intervention studies available from CPHN on request.

Appendix B

Author(s)	Year	Country	Anderson et al	USPSTF	de Oliveira et al	Sikorski et al	Donnelly et al	Fairbank et al	Green	Tedstone et al	WHO
Saner	1985	Turkey									Y
Moore et al	1985	UK				Y					
Auerbach	1985	USA						Y		Y	
Taylor et al	1985	USA		Y							Y
Jones & West	1985	Wales		Y	Y	Y				Y	Y
Lynch et al	1986	Canada			Y	Y				Y	
Elander	1986	Sweden									Y
McEnery & Rao	1986	UK(asian women)						Y		Y	
Evans et al	1986	USA					Y				
Feinstein et al	1986	USA					Y				
Frank et al	1986	USA					Y				
Wiles	1986	USA			Y			Y			
Bathija &	1987	India									Y
Frank et al	1987	USA		Y	Y	Y			Y	Y	Y
Grossman	1987	USA									Y
Hill	1987	USA		Y	Y			Y			
Winikoff et al	1987	USA		Y				Y			Y
Jenner	1988	England			Y	Y				Y	Y
Palti et al	1988	Jerusalem			Y			Y			
Neifert et al	1988	USA					Y				
Saunders & Carroll	1988	USA							Y		Y
Martines	1989	Brazil									Y
Friel et al	1989	Canada						Y			
Gerung	1989	Indonesia							Y		
Rea & Venacio (&Berquo?)	1990	Brazil						Y	Y		Y
Rodriguez-Garcia et al	1990	Mexico						Y	Y		
Lindenberg et al	1990	Nicaragua						Y			
Strachan-Lindenberg	1990	Nicaragua							Y		Y
Righard & Aldale	1990	Sweden							Y		Y
Oakley et al	1990	UK						Y			
Grossman et al	1990	USA			Y	Y				Y	Y
Kistin et al	1990	USA		Y	Y			Y		Y	Y
Avoa	1990	Zaire									Y
Redman et al	1991	Australia						Y			
Burkhalter & Marin	1991	Chile							Y		Y
Popkin et al	1991	Honduras						Y	Y		Y
Nylander et al	1991	Norway							Y		Y

Appendix B

Author(s)	Year	Country	Anderson et al	USPSTF	de Oliveira et al	Sikorski et al	Donnelly et al	Fairbank et al	Green	Tedstone et al	WHO
Huffman	1991	Panama							Y		
Altobelli	1991	Peru									Y
Hofmeyr	1991	South Africa							Y		Y
Buranasin	1991	Thailand						Y			
Neyzi et al	1991	Turkey			Y				Y		Y
Lundgren	1992	Honduras									Y
Lal et al	1992	India, Punjab						Y	Y		
Bradley & Meme	1992	Kenya						Y	Y		Y
Perez-Escamilla et al	1992	Mexico									Y
Vandale-Toney et al	1992	Mexico						Y	Y		
Alexander et al	1992	UK									Y
Dungy et al	1992	USA							Y		
Roman	1992	USA						Y			
Serafino-Cross & Donovan	1992	USA		Y	Y						
Snell	1992	USA					Y				Y
Valdes et al	1993	Chile			Y			Y	Y		
Stone-Jiminez & de Maza	1993	Guatemala							Y		
AHLACMA	1993	Honduras							Y		
Rivera et al	1993	Honduras							Y		
McDivitt et al	1993	Jordan						Y	Y		
Altobelli	1993	Peru							Y		
Chen	1993	Taiwan			Y						
Chung-Hey	1993	Taiwan									Y
Michaels	1993	USA						Y			
Nadel	1993	USA						Y			
Hauck & Dimmock	1994	Australia		Y						Y	
Rossiter	1994	Australia(Vietnamese)		Y	Y			Y		Y	
Barros et al	1994	Brazil			Y	Y			Y		Y
MAIN trial	1994	Canada, UK									Y
Stokoe & Clarey	1994	England						Y			
Perez-Escamilla et al	1994	Mexico		Y							Y
Blomquist	1994	Sweden									Y
Waldenstrom & Nilsson	1994	Sweden							Y		
Stokoe	1994	UK								Y	
Carroll	1994	USA						Y			
Kistin et al	1994	USA		Y	Y			Y	Y	Y	Y

Appendix B

Author(s)	Year	Country	Anderson et al	USPSTF	de Oliveira et al	Sikorski et al	Donnelly et al	Fairbank et al	Green	Tedstone et al	WHO
Holley-Newsome	1995	Armenia							Y		
Redman et al	1995	Australia		Y						Y	
Sanghvi	1995	Brazil							Y		
Westphal et al	1995	Brazil						Y			Y
Mongeon et al	1995	Canada			Y	Y					Y
Hernandez et al	1995	Honduras							Y		
Prasad & Costello	1995	India							Y		
Verma et al	1995	India, Punjab						Y			
Gottert	1995	Mali							Y		
Creed-Kanashiro et al	1995	Peru							Y		
Christensson et al	1995	Spain	Y								
Bruce & Griffioen	1995	UK						Y		Y	
Brent et al	1995	USA		Y	Y	Y		Y		Y	
Long et al	1995	USA						Y			Y
Sciacca et al	1995	USA		Y				Y	Y	Y	
McIntyre & Lawlor-Smith	1996	Australia						Y			
Haider	1996	Bangladesh				Y			Y		Y
Alvarado et al	1996	Chile			Y				Y		Y
Pugin et al	1996	Chile			Y				Y		Y
Valdes et al	1996	Chile							Y		
Langer et al	1996	Mexico							Y		
Morrow et al	1996	Mexico							Y		Y
Davies-Adetugbo	1996	Nigeria			Y	Y					Y
Bleakney & McErlain	1996	Northern Ireland						Y			
Hartley & O'Connor	1996	USA						Y		Y	
Serwint et al	1996	USA			Y			Y		Y	
Syfrett & Anderson	1996	USA	Y								
Duffy et al	1997	Australia		Y	Y						
Lutter et al	1997	Brazil						Y	Y		
Gagnon et al	1997	Canada			Y						
Thorley et al	1997	England						Y			
Loh et al	1997	Ireland		Y				Y			
Curro et al	1997	Italy		Y	Y						
Agboatwalla & Akram	1997	Pakistan						Y			
Akram et al	1997	Pakistan			Y						
Martin-Calama	1997	Spain									Y

Appendix B

Author(s)	Year	Country	Anderson et al	USPSTF	de Oliveira et al	Sikorski et al	Donnelly et al	Fairbank et al	Green	Tedstone et al	WHO
Shiau	1997	Taiwan	Y								
Barwick et al	1997	UK						Y			
Bliss	1997	USA					Y				Y
Dungy et al	1997	USA					Y				Y
Grummer-Strawn et al	1997	USA						Y			
Reifsnider & Eckhart	1997	USA		Y				Y			
Wright et al	1997	USA						Y			
Haider	1998	Bangladesh			Y						
Leite	1998	Brazil				Y					Y
Wellstart International	1998	India							Y		
Bolam et al	1998	Nepal			Y						
McInnes	1998	UK						Y			
Caulfield et al	1998	USA		Y				Y			
Pugh & Milligan	1998	USA		Y	Y						
Schafer et al	1998	USA		Y				Y			
Greiner & Mitra	1999	Bangladesh			Y						
Dennis	1999	Canada				Y					
Jakobsen et al	1999	Guinea Bissau			Y						
Froozani et al	1999	Iran			Y	Y					
Morrow et al	1999	Mexico			Y	Y					
Haider	2000	Bangladesh				Y					
Porteous et al	2000	Canada				Y					
Morrell et al	2000	UK				Y					
Kramer et al	2001	Belarus		Y		Y					

Summaries of non-systematic reviews

Health Development Agency (2003)

The effectiveness of public health interventions to promote the initiation of breastfeeding

This briefing document aimed to provide a synthesis of high quality evidence – an overview of the findings and recommendations from a review of selected systematic reviews and meta-analyses published since 1996. Note that, as for Fairbank et al (2000), the review only examined studies/summaries of interventions aimed at the initiation of breastfeeding. The only two reviews that met their selection criteria were those by Tedstone et al. (1998) and Fairbank et al. (2000) and thus the report is essentially a merging of the evidence on interventions to increase the initiation of breastfeeding from these two systematic reviews. It also reports on monitoring and trend data from Scandinavia.

Health education

- There is some evidence that distributing breastfeeding literature alone among the general population is not effective in promoting breastfeeding among women of different income and ethnic groups in the UK, Republic of Ireland and USA.
- Breastfeeding literature and formal education delivered to low income groups in the USA were not effective at promoting the initiation of breastfeeding. However, evidence was based on small-scale studies.
- Group health education can be effective among women from different ethnic and low income groups in westernised countries.
- One-to-one educational programs were more effective for women who planned to bottle feed whereas group programmes were more effective for women who planned to breastfeed. The evidence is based on studies of low income black Americans.
- Paying participants to attend increased participation rates for group classes.

- In a coordinated three-step approach to health education for women in Sweden, advice, leaflets and routine health education plus intensive staff training had significant effects on initiation rates. There may be some difficulties in generalising the intervention to the UK but, in principle, the combined approach looks promising.
- Breastfeeding promotions delivered over both the antenatal and postnatal periods were most likely to have a positive effect on breastfeeding. The interventions involved were intensive, involving multiple contacts with a professional promoter or peer counsellor.
- Antenatal educational sessions were more effective when enhanced by peer counsellors.
- Weaker evidence suggests promotion efforts may be assisted by including partners, providing incentives and changing the content of commercial hospital packs given to women upon discharge from hospital.
- The least successful interventions were those where breastfeeding promotion was only one part of a multiple health promotion programme, and involved special visits to the hospital/clinic or took place by telephone.

Health sector initiatives

- In a combined approach, training of staff, employment of a breastfeeding counsellor, written information and rooming-in were effective for both initiation and duration in the USA among low-income women. However, this evidence is based on a poor quality trial.
- The large health sector initiative set up by the US Department of Agriculture's WIC programme focussed on low income American women and reported increases for initiation and duration of breastfeeding. Interventions included group or individual health education programmes, delivered in both the antenatal and postnatal periods in either hospital or clinical settings. Programmes including a peer support component appeared to be most effective.

- Rooming-in has been shown to be an effective measure in developing country settings, although studies have before-after study designs. Rooming-in, early contact and breastfeeding education, were effective for initiation and duration in Brazil.

Training of health professionals

- Training health professionals as a stand-alone intervention did not produce statistically significant increases in initiation rates.
- Women's knowledge and attitudes about breastfeeding were significantly improved by the training of health professionals as part of a health sector initiative. A five-year programme, which included training of health professionals, reported small increases in initiation but these were not proved to be statistically significant.
- There is limited evidence to show that intensive lactation training courses for health professionals alone can have an effect on breastfeeding initiation rates. A package of interventions including training, however, may be more likely to influence attitudes and encourage uptake of breastfeeding.

Social support from health professionals

- Only one UK-based randomised controlled trial was found which evaluated the effect of social support for socially disadvantaged women. Support was provided in the form of home visits and telephone calls by a midwife on hospital discharge.
- No significant difference was reported in initiation rates between the intervention and control groups. However, this finding may have been influenced by some of the control group as 'standard care'. Feedback given by women regarding the intervention was very positive and suggested that a midwife listening to them was important.

Peer support programmes

- Peer support programmes as stand-alone interventions have been shown to be effective in both the antenatal and postnatal periods for women who expressed a wish to breastfeed, but not for women who had decided to bottlefeed.
- Three out of five effective WIC interventions with women on low incomes included a peer support programme.
- Qualitative research exploring why some women on low incomes do not want to breastfeed concluded that breastfeeding is a practical skill. The confidence and commitment to breastfeed successfully are best achieved by exposure to breastfeeding rather than talking or reading about it.

Media campaigns

- Local media campaigns (in one case TV) can be effective in improving attitudes towards breastfeeding. One study showed an increase in initiation rates as a result of a hospital-based media campaign, although the age and methodological quality of the study limits its usefulness.

Multi-faceted interventions

- Multi-faceted interventions have been shown to increase initiation rates. Five out of six multi-faceted interventions included a media campaign, in combination with health education programmes, training of health professionals and/or changes in government and hospital policies.
- Four out of six multi-faceted interventions included a peer support programme in combination with health education programmes, media programmes and/or legislative and structural changes to the healthcare sector.

Package of interventions: the Scandinavian experience

In Scandinavia, where breastfeeding rates have remained at around 98%, multi-faceted interventions have been implemented at a national level over the last 20 years. Four types of intervention, which follow, have contributed to the high level of breastfeeding in Scandinavia. However, no evaluation has been undertaken to examine which, if any, of these aspects were more effective, or if the combined package was necessary.

The interventions were:

- An increase in problem-based information about breastfeeding, written mostly for and often by mothers, but read also by health workers. Consequently, more health workers also succeeded in their own breastfeeding.
- Increased availability of mother-to-mother support groups, health workers with better management skills and sometimes personal experience, and the rise in collective breastfeeding experience as more women successfully breastfeed.
- Increase in paid maternity leave with guaranteed return to previous employment.
- Maternity ward practices changed substantially towards mother-infant contact and autonomy.

*Dennis CL. (2002)****Breastfeeding initiation and duration: a 1990-2000 literature review*****Synopsis**

This publication reviews literature on many aspects of breastfeeding – not only breastfeeding interventions. It focuses on studies of relevance to North America, and primarily draws from the Cochrane review by Sikorski et al. (2001) for evidence on the effectiveness of professional support. It also identifies 10 studies on lay/peer support (mother-to-mother) and refers to the review of peer support by Fairbank et al (2000). There is also discussion (and a review of the literature) of hospital policies and intrapartum experience, as well as other sources of support – informal and formal.

Aim

To 'review the literature on breastfeeding initiation and duration and to delineate effective strategies for promoting positive breastfeeding behaviours'.

Method

Data were extracted from computerised searches of articles published after 1990 (to 2000?) on: benefits of breastfeeding, breastfeeding initiation and duration, personal characteristics, attitudinal and intrapersonal characteristics, hospital policies and intrapartum experience sources of support, breastfeeding interventions and review implications.

Review findings

- Support from the mother's partner or a non-professional greatly increased the likelihood of positive breastfeeding behaviours.
- Health care professionals can be a negative source of support if their lack of knowledge results in inaccurate or inconsistent advice.
- A number of hospital routines are potentially detrimental to breastfeeding (interrupted mother-infant contact, supplementation, restricted feedings).
- Although professional interventions that enhance the usual care of mothers receive increase breastfeeding duration to 2 months, these supportive strategies have limited long-term effects.

- Peer support interventions also promote positive breastfeeding behaviours and should be considered.

Overall conclusion

- A promising intervention is the complementation of professional services with peer support from a mother experienced in breastfeeding. This lay support appears to be an effective intervention with socially disadvantaged women.

Higginson C. (2001)

Evidence into action: Nutrition in the under fives (Health Education Board for Scotland)

Synopsis

This is a literature review that presents policy conclusions for the Health Education Board for Scotland (HEBS). It is not a systematic review but draws on the findings of systematic reviews undertaken by others, from official reports and evidence from individual papers drawn from reputable sources. Initiatives were divided into five types: health education initiatives, health service initiatives, peer support programmes, media campaigns, community-based initiatives. No evaluated interventions were identified for the fifth category. There were 7 studies reviewed in this report that weren't reviewed in any of the systematic reviews. However, no systematic treatment of these studies means that it is difficult to ascertain their relative importance.

Health education initiatives

- The most successful interventions for increasing breastfeeding by improving mothers' knowledge and expectations tend to:
 - Include small discussion groups or one-to-one sessions with health professionals
 - Take place in an informal environment
 - Emphasise the benefits of breastfeeding and provide practical 'how to' advice
 - Span both the ante-natal and postnatal periods
 - Be intensive, with multiple contacts with a breastfeeding promoter.

Health service initiatives

- The most successful interventions appear to:
 - Make provision for both ante-natal and postnatal support
 - Involve individual breastfeeding education including 'how to' information
 - Make provision for rooming-in
 - Encourage hospital-wide breastfeeding promotion, including staff training in clinical skills/breastfeeding support.

- Skilled, knowledgeable health care professionals working in an environment conducive to and supportive of breastfeeding play an important part in enhancing new mothers' knowledge about and expectations of breastfeeding, and make it easier for them to feed effectively.
- No randomised controlled studies have evaluated the effectiveness of the BFHI on breastfeeding initiation rates (Fairbank et al 2000).

Peer support programmes

- Evaluations of peer support programmes generally show positive impacts on initiation.
- Programmes fall into two categories: ongoing peer support provided by volunteers through organisations such as La Leche League, the National Childbirth Trust and the Breastfeeding Network; individual projects set up to specifically increase breastfeeding rates. Most studies fall into the latter category and target women in low-income areas where rates of breastfeeding are lower.
- There is no published research demonstrating the effectiveness of organisations such as La Leche League in increasing breastfeeding initiation/duration. Practitioners in these groups argue that they are effective on the basis that breastfeeding rates in the communities they serve tend to increase.
- McInnes et al (2000) is the only individual peer support programme in the UK to be fully evaluated. This non-randomised, controlled study of peer support in two deprived areas of Glasgow found that when differences in socio-economic status were controlled for, significantly more women in the support group initiated breastfeeding at delivery. This difference was not maintained at six weeks. The study also showed that despite a low prevalence of breastfeeding, initiating and maintaining peer support was possible and acceptable to mothers and professionals. Study mothers spoke enthusiastically of the intervention and felt it had increased their confidence (McInnes and Stone 2001).

Media campaigns

- One study used television commercials targeted locally at a population sub-group (high school girls), and demonstrated that it was possible to change attitudes to breastfeeding.

Community-based Initiatives

- No initiatives tackling social deprivation/exclusion have reported outcomes in terms of breastfeeding.

The 'From Evidence into action' section highlights:

- One-to-one and informal small group work by trained health professionals with expectant women and their partners/key support people, when provided ante- and postnatally, has been shown to be most effective in increasing breastfeeding initiation rates and the duration of breastfeeding.
- Written information without additional support has been shown to be of little value in changing breastfeeding practice.
- Rooming-in babies with their mothers has been shown to be effective in improving rates of breastfeeding initiation in a number of studies and should be provided wherever possible (BFHI).

- Current training of health professionals who have contact with pregnant women and/or new mothers should be equipped with the appropriate skills and knowledge adequately to support breastfeeding. (A review of the contribution of nurses, midwives and health visitors to improving public health in Scotland highlighted a lack of co-ordination in approaches and showed limited or no use of evidence to inform practice.)
- Policy on 'Breastfeeding and returning to work' should be widely encouraged.
- Given that there is evidence that support from family and friends is an important influence on the successful initiation of breastfeeding, more evaluations of health education initiatives targeted at the people who support expectant and new mothers are needed.
- Peer support programmes evaluate well in the literature.

The HEBS report concluded in the 'Evidence into Action' section: 'The structure of ante-natal and postnatal education should be reviewed to ensure that one-to-one and informal group work is prioritised by all health professionals with a responsibility for supporting and promoting breastfeeding and weaning. Written information should not be provided to mothers and parents without additional professional support, since written information alone has been shown to be ineffective in changing health behaviours.'

Stockley L. (2000)

Consolidation and updating the evidence base for the promotion of breastfeeding

This review was commissioned to inform the Welsh breastfeeding strategy. It is a literature-based review, sourcing systematic reviews by Tedstone et al (1998), Fairbank et al. (2000), Cochrane reviews, non-systematic reviews, and two more recent RCTs considered of high quality. The main types of evidence are presented under settings (schools, health care, workplace); population groups (low income, adolescents); and approaches (information giving, professional development, peer support).

Conclusions

- The actual decision about the method is made usually before pregnancy or early in pregnancy (apart from in teenage mothers when the decision is often made later in pregnancy).
- Evidence from the systematic reviews indicates that interventions that increase initiation also increase duration.
- The evidence from the systematic reviews is that different approaches are needed in the antenatal period for women who are thinking of bottlefeeding, and those who are thinking of breastfeeding. One-to-one counselling appears to be most effective in encouraging those who are thinking of bottle feeding to change to breastfeeding, whereas peer support is more effective in enabling women who want to breastfeed to initiate this successfully.
- Peer support is probably the most promising intervention in terms of supporting mothers to increase the duration of breastfeeding.
- No evaluated workplace interventions were identified in this review.

Effective interventions, and opportunities and barriers to promote breastfeeding

Settings

Schools

- Initiatives that combine classroom teaching with an environment that reflects that teaching and with family and community involvement are the most promising.

- More coordinated and consistent education about breastfeeding is needed in schools for both girls and boys.
- Tackling negative attitudes to breastfeeding beginning in primary schools, and continuing into secondary schools with skills based courses, to help to overcome a culture of embarrassment.

Health care

- Hospital practices should reflect current knowledge, for example unrestricted breastfeeding support, particularly with the first few feeds, rooming in and discharge packs which do not promote infant formula.
- Implementation of the Baby Friendly Initiative codes should be encouraged
- Significant numbers of maternity staff are ambivalent about supporting breastfeeding. Initiatives such as the appointment of breastfeeding advisers (paid professionals with specific training in supporting breastfeeding) can help to address this. It is also important to tackle practical issues such as lack of time and knowledge.

Home

- Fathers have an important role in the initiation and establishment of breastfeeding. This is more likely to be positive if they are included in breastfeeding education as early as possible during pregnancy. Antenatal sessions should include opportunities and exercises to help couples communicate with one another about their feelings and attitudes toward breastfeeding. Fathers could be better informed about the benefits of breastfeeding. Analysing what enables some fathers to be supportive could provide approaches that could be more generally used by fathers.
- Women's mothers could either be involved directly, or women supported in gaining an understanding of why their mothers think as they do.

Public places

- There are consistently negative attitudes to the idea of women breastfeeding in public places. This attitude is expressed by children as well as by adults. It may be appropriate to begin to tackle these attitudes at school.

- Initiatives are needed to encourage large stores and shopping centres to develop supportive breastfeeding policies.

Workplace

- Returning to work full time is associated with shorter duration of breastfeeding. This is ameliorated with part time working.
- Workplace initiatives can address the barriers that currently exist, including negative attitudes and lack of facilities.
- Work place initiatives to support breastfeeding mothers should focus on the successful experiences of other employers and the benefits to the business.

Population groups

Low income

- Self-help manuals for low income mothers is an approach which may merit further investigation.
- Peer counselling appears to give consistently positive results.
- Community based drop in centres is a promising approach which needs proper evaluation.

Adolescents

- Whereas most adult women make the decision about how to feed before or early in pregnancy, teenage mothers make the decision later. This suggests antenatal approaches may be particularly useful in this group.
- Pregnant teenagers need practical support, for example in identifying how they can breastfeed in the parental home without feeling embarrassed.
- More information is needed on infant feeding in teenage magazines, television and books aimed at teenagers.

Approaches

Information giving

- Information provision alone is not effective, and may exacerbate inequalities.

Media

- The local media can play a useful role in interventions aimed at increasing initiation of breastfeeding in low income women.
- The national media is important in setting agendas, and portraying images of breasts and breast/bottle feeding. More positive images and a recognition of the nurturing role of breasts could play an important role in shifting current negative attitudes to breastfeeding.

Professional development

- Professionals need to be consistent in the advice and support they provide.
- Professional development needs to encourage changes in attitude as well as knowledge.
- Health professionals should be aware of the research on the negative impacts of smoking on breastfeeding.
- De briefing programmes for midwives after they themselves have had children may help them to come to terms with their own experiences.
- Basic training for midwives should address practical issues, such as time pressures, promoting breastfeeding without stigmatising bottle feeders, and the evidence for introducing the subject of infant feeding as early in the pregnancy as possible.
- Encouragement is needed for midwives to regularly attend post basic training, to update their knowledge and skills and assess their own attitudes.
- Training for doctors should include more on the benefits of breastfeeding, awareness of initiatives such as the Baby Friendly Hospital Initiative and relevant counselling skills.

Peer support

- Peer support programmes provide particularly promising results, and it is encouraging that there were such positive findings from a community based peer support programme. Note: 'Peer support' is a term used to cover voluntary support from women of a similar background. The extent of any training provided is variable.

*Commonwealth Department of Health and Family Services (1998)****Review of current interventions and identification of best practice currently used by community-based Aboriginal and Torres Strait Islander health service providers in promoting and supporting breastfeeding and appropriate infant nutrition***

This review was conducted at the same time and in conjunction with an audit of current training in breastfeeding support and infant nutrition for Aboriginal and Torres Strait Islander health workers and other health professionals providing health care to ATSI women. These two projects were commissioned in April 1997 as part of the national initiative 'Health Throughout Life: Maternal Health – Increasing rates of breastfeeding in Australia'. Submissions were gathered between May and August 1997. Contributions in the areas of community development, health promotion, information and counselling and support strategies are reviewed. Interventions supported women and their families in a variety of ways, including planning breastfeeding choices during pregnancy, establishment of breastfeeding, management of breastfeeding problems, introduction of first foods, assessing babies' health, referral to lactation consultants and access to mother-to-mother support groups. 46 projects are summarised and a subset of 13 are described in detail, together with those involved on effective aspects and suggestions for future developments.

Recommendations are made in the following areas: policy and information; staff expertise; service management; research; and, community and family support.

Of these, a few of particular note are:

- Resources which can be adapted for local usage need to be designed. These should present breastfeeding as the norm and include robust, substantial and reliable information about feeding children, especially the introduction of first foods and links to growth and development.

- A one-two-one counselling system for breastfeeding Indigenous women should be established, similar to the peer counselling system of the [Nursing Mothers Association of Australia]. However, the use of unrelated, young, volunteer peers may not be appropriate for Indigenous women ... should build on the knowledge and skills of older family and community women.
- Workplace policies and practices to support breastfeeding should be described and promoted in Indigenous settings. Community employment and development programs would be a good place to start.

It is said that no one strategy on its own will achieve substantial increases in breastfeeding rates, but multiple strategies may have a significant impact. A combination of the following strategies is more likely to be effective than one or two on their own:

- Implement the World Health Organisation (WHO) Code of marketing of breastmilk substitutes
- Improve health care practices, for example accreditation by the WHO/UNICEF Baby Friendly Hospital Initiative
- Provide breastfeeding education programs in undergraduate and post-graduate health care provider courses
- Routinely report and record breastfeeding statistics
- Improve the conditions associated with paid employment, eg maternity leave and nursing breaks
- Promote breastfeeding education programs to the community. [Nursing Mothers Association of Australia 1997].

Nutritional problems in Indigenous communities are very complex, and will not be alleviated by nutrition education alone; they require social and political action in a framework of community development.

This report also details the circumstances and experiences in other countries and indicates the need for this knowledge to be considered in the Australian context. These relate mainly to national policy and programs. A number of lessons were learnt from these programs (not derived necessarily from fully evaluated studies):

- Put the needs of the mother and child first
- Take into consideration cultural requirements
- Involve the whole community
- Ensure national legislation and facilities are available to support breastfeeding;
- Provide information which informs and empowers mothers and families
- Change attitudes and prejudices among health professionals
- Multiple strategies, especially when aimed at bringing about structural change that makes healthier food and feeding choices easier, are needed
- Carry out regular needs analysis (morning teas, focus groups, group sessions).

Stickney B, Webb K. (1995)

***Strategies to promote breastfeeding:
an overview***

The aim of this report was not to provide a comprehensive review of the literature. Rather it aimed to provide comparative information on a range of strategy options for promoting breastfeeding in NSW. The review included published and unpublished, Australian and international, evaluated and as yet unevaluated programs at local, state, national and international levels. Program evaluations were appraised. Interventions were categorised into the following types:

- Education of mothers, school children, fathers, etc. via curricula, antenatal classes and other avenues
- Breastfeeding mothers' assessment and support
- State, national and international policy
- Hospital policies and practices
- Health professional training including undergraduate training and in-service education
- Industry codes, policies and practices
- Workplace policies and facilities which support breastfeeding
- Community facilities including health and building regulations and policies
- Public campaigns directed at attitude change
- Lobbying, sanctions and advocacy
- Monitoring and surveillance
- Applied research to support the design of interventions

