The effectiveness of public health interventions to promote safe and healthy milk feeding practices in babies

Initiation and Duration of Breastfeeding

Authors Year Country Study Design Quality
Couto de Oliveira 2001 SR 2+
Review Question:
To assess the effectiveness of prenatal and postnatal interventions in primary care for extending breastfeeding duration

Data Sources:

- The literature search used the Tedstone 1998 SR methods as a starting point (a review that focussed on the developed world) but further search terms were added. Searches from 1980-1999 in the following databases:The Cochrane Library, Medline, Popline, Health-Star, CAB-health, CINAHL and Lilacs and key researchers in the field also contacted.

Inclusion Criteria

- Experimental or quasi-experimental trials included. No country or language limitation
- Interventions carried out during pregnancy and/or infant care conducted in primary health care services, community settings or hospital clinics included.
- Studies with methodological problems were highlighted and only included in the text (not in tables) e.g.bias, limited adjustment for confounders and follow-up <75%..

Exclusion criteria

- Interventions covering only the delivery period excluded
- Studies excluded – those with observational designs and where the outcome was not breastfeeding duration

Quality score
Internally valid studies were assessed as good, moderate or poor after evaluating the approach to covariate imbalance in the intervention and control groups, the independence of outcome assessment, the statistical analysis method and the presentation of the results.

Studies (28) RCTs and (9) Quasi-experimental trials	Country Study type (quality score)	Sample No	Intervention	Main results (include effect size(s)/CIs for each outcome if available) Summary of Results				Applicability to UK settings/ Comments
				Outcome value	Int vs. Con (%)	Attributable Fraction (95% CI)	p	Conclusions were based on the results of studies from a relatively high number of underdeveloped or low income countries (13 of 37 studies), particularly the studies with interventions over both prenatal and postnatal phases.
Akram 1997	Pakistan RCT (good)	n=140	Prenatal and Postnatal Frequent home vsits and group discussions until 6 m	Full BF at 4m	94% vs. 7%	92(79-97)	p<0.001	
*Alvarado 1996	Chile Q-exp (poor)	n=138	Prenatal, hospital and postnatal Prenatal home visits, Q-exp hospital visit, group sessions, individual consultations unitl 6 m, posters and pamphlets	Full BF at 5m Full BF at 6m Any BF at 6m	53% vs. 3% 42% vs. 0% 98% vs. 62%	94(77-99) 100 37(24-48)	p<0.001 p<0.001 p<0.001	
Barros 1994	Brazil RCT (good)	n=900	Postnatal Home visits (3) at d 5,10,20 by social assistant or nutritionist who had either successfully breastfed or received relevant training	Any BF at 2m Any BF	73% vs. 62% Median BF duration (d) 120 vs. 105	15(6-22)	p<0.001	
*Bloom 1982	Canada RCT (good)	n=100	Postnatal Phone calls at d 10, 17, 21 + referrral to nurse care	Any BF	Median BF duration (d)		p=0.05	

				28.6 vs. 21.0			Most of the good studies were post 1990 (77%). There were 3 UK studies in this review; all took place in the 1980s. Nine studies had not been included in the other reviews but 6 of them were in nondeveloped countries and of the remaining 3 studies, 2 took place in the eighties and one in 1991 in Turkey. This 'good' study did not have a significant outcome. Nine of the 33 studies were quasi-experimental and the remainder were RCTs. Four of the studies that had not been included in other reviews were quasi-experimental.
*Bolam 1998	Nepal n=540 RCT (moderate)	<u>Hospital and Postnatal</u> Individual sessions (20 min) Int 1: at birth and at 3m; Int 2: at birth Int 3: at 3m	Exclusive BF at 5m				
			Int 1	33% vs. 28%		ns	
			Int 2	24% vs. 28%		ns	
			Int 3	29% vs. 28%		ns	
Brent 1995	USA n=115 RCT (moderate)	<u>Prenatal, hospital and postnatal</u> Daily round at hospital, 1 phone call, pre- and post-natal individual consultations until 1 y	Any BF at 2m	37% vs. 9%	76(42-91)	p<0.001	
			Any BF	Median BF duration (d) 84 vs. 33		p=0.05	
*Chen 1993	Taiwan n=180 RCT (moderate)	<u>Postnatal</u> Int 1: home visits wk 1,2,4,8 Int 2: phone calls wk 1,2,4,8	Any BF	Median BF duration (wk)			
			Int 1	4.07 vs. 3.35		p=0.005	
			Int 2	3.62 vs. 3.35			
Curro 1997	Italy n=200 RCT (good)	<u>Postnatal</u> Booklet given at 1st paediatric visit		Median BF duration (d)			
			Full BF	24 vs. 22		ns	
			Any BF	27 vs. 25		ns	
			Full BF at 6m	48% vs. 44%		ns	
			Any BF at 6m	59% vs. 52%		ns	
Davies-Adetugbo 1997	Nigeria n=1003 Q-exp (moderate)	<u>Prenatal and Postnatal</u> Lactation management/counselling sessions on days 0, 2 and 7 for 30m each given by trained community health workers and 2 research assistants for mothers of children with uncomplicated diarrhoea	Full BF at 4m	40% vs. 14%	65(41-79)	<0.001	
Duffy 1997	Australia n=70 RCT (good)	<u>Prenatal</u> One 1 h group session using dolls in last month	Any BF at 6wk	91% vs. 29%	69(47-82)	<0.001	
Frank 1987	USA n=343 RCT (good)	<u>Hospital and Postnatal</u> Research breastfeeding counsellor - 1st session in hospital (20-40 m), then by telephone at 5,7,14,21 and 28 d, then 6,8 and 12 w + 24 h advice by pager + research discharge pack in Spanish and English. Int 1: bedside session at hospital + phonecalls until 3m + research discharge pack Int 2: research discharge pack Int 3: bedside session at hospital + phonecalls until 3m	Int 1				
			Exclusive BF at 3m	20% vs. 6%	70(22-89)	p=0.014	
			Any BF at 4m	71% vs. 54%	24(3-40)	p=0.043	
			Int 2				
			Exclusive BF at 3m	15% vs. 6%	61(0-86)	ns	
			Any BF at 4m	58% vs. 54%		ns	
			Int 3				
			Exclusive BF at 3m	29% vs. 54%		ns	
			Any BF at 4m	56% vs. 54%		ns	
Froozani 1999	Iran n=134 RCT (moderate)	<u>Hospital and Postnatal</u> Hospital visit after birth, then at 10-15 d, >30 d, then 2, 3 and 4 m at home or lactation clinic by trained nutritionist	Exclusive BF at 4m	54% vs. 6%	88(68-95)	p<0.001	
			Any BF at 4m	95% vs. 81%	14(2-24)	p=0.054	
				Median BF duration (m)			
			Exclusive BF	2.96 vs. 1.05		p<0.05	
Gagnon 2002	Canada n=596 RCT (good)	<u>Prenatal, hospital and postnatal</u> Home visit by trained community nurse at 3-4 d postpartum, phone calls until 10 d postpartum, further contact if required	Any BF at 4m	55% vs. 39%	29(2-48)	p=0.051	
			No longer significant after adjustment for confounders				

*Greiner and Mitra 1999	Bangladesh n=10,128 Q-exp (moderate)	Prenatal and Postnatal Home visits, radio jingles, and talks, adverts, printed matter	Any BF at 12-23m 93% vs. 92% ns Any BF at 30, 42, 54 and 66m ns	
Grossman 1990	USA n=97 RCT (moderate)	Hospital and Postnatal Lactation counsellor (registered nurse) session after birth (30-45 m) + education booklet, then telephone contacts on days 2,4,7,10 and 21 + helpline staffed by nurse or paediatrician + back up support from lactation clinic	Any BF at 6wk 59% vs. 73% ns Any BF at 3m 35% vs. 48% ns Any BF at 6m 14% vs. 23% ns Median BF duration (wk) Any BF 8.0 vs. 14.8 ns	
Haider 1998 (same study as Haider 2000)	Bangladesh n=726 RCT (good)	Prenatal and Postnatal Paid trained peer consellors – 15 home visits (20-40 m each): 2 last trimester, 4 in 1st m, 2/w in months 2-5	Exclusive BF at 5m 70% vs. 6% 91(86-95) p<0.001 Full BF at 5m 77% vs. 19% 75(68-81) p<0.001	
Hauck and Dimmock 1994	Australia n=150 RCT (moderate)	Postnatal 33- page BF booklet sent to home soon after discharge	Any BF at 6m 55% vs. 56% ns Any BF at 12m 16% vs. 22% ns	
Hill 1987	USA n=64 RCT (moderate)	Prenatal One group session: 40 min lecture, 5-10 min questions + pamphlet	Any BF at 6wk 39% vs. 30% ns	
*Houston 1981	Scotland n=80 Q-exp (poor)	Hospital and Postnatal Hospital and home visits in the 1st week and then fortnightly to week 24	Any BF at 20 wk 89% vs. 65% 27(7-42) p=0.04 But reviewer suggests that there is a lack of effect	
*Jakobson 1999	Guinea Bissau n=1154 RCT (good)	Prenatal and Postnatal Individual session at 1st prenatal visit and until 9m	Full BF at 4m 31% vs. 25% 20(1-36) p=0.051	
Jenner 1988	England n=38 RCT (moderate)	Prenatal, hospital and postnatal Lay supporter (mother with breastfeeding experience)- 3 antenatal visits/1 hospital visit/ 1 immediate home visit + 2 further home visits in early weeks	Exclusive BF at 3m 68% vs. 21% 69 (22-88) p=0.009	
Jones and West 1985	Wales, UK n=678 RCT (good)	Hospital and Postnatal Support by lactation nurse in hospital and at home in early weeks	Any BF at 6m 38% vs. 28% 27(7-42) p=0.013	
Kistin 1990	USA n=159 RCT (moderate)	Prenatal Int 1: group session at least one: 50-80 min Int 2: individual counselling: 15-30 min (from before the 30th week)	Any BF at 7-12wk 15% vs. 4% p=0.058 Any BF at 7-12wk 6% vs. 4% ns Any BF at 0-2wk 36% vs. 18% ns	
Kistin 1994	USA n=102 Q-exp (poor)	Prenatal and Postnatal Antenatal talk, frequent postnatal phone calls until ≥3 m	Median BF duration (m) Full BF 8 vs. 4 p<0.05 Any BF at 4m 15 vs. 8 p<0.05 Full BF >12wk 29% vs. 7% 76(22-92) p=0.013 Any BF >12wk 44% vs. 12% 74(37-89) p<0.001	
Lynch 1986	Canada n=270 RCT (moderate)	Postnatal Home visit by breastfeeding consultant ≤5 d birth (2 h) + telephone calls weekly for 1st month, monthly from 2-6 m	Any BF at 1,3 6 and 9 m 84%, 62%, 42%, 29% in both groups ns	
Mongeon 1995	Canada n=200 RCT (good)	Prenatal and Postnatal Peer support from supervised trained volunteer who had breastfed – home visit in last month of pregnancy, then telephone contact weekly for 6 w, then 2 weekly to 5 m or weaning	Any BF at 6m 25% vs. 20% ns Any BF at <1,1,2, 3,4 and 5 m All times ns	

Morrow 1999	Mexico n=130 RCT (good)	Prenatal and Postnatal Home visits by peer-counsellor (La Leche League trained - not necessary to have own experience of BF) Int 1: 1.6 visits (mid and late pregnancy + 1,2,4 and 8 w); Int 2: 2.3 visits(late pregnancy + 1 and 2 w)	Exclusive BF at 3m Int 1 Int 2	 67% vs. 12% 50% vs. 12%	 82(53-93) 76(37-91)	 p<0.001 p<0.001	
*Neyzi 1991	Turkey n=941 RCT (good)	Hospital and Postnatal Hospital group session + 10 min video, 1 home visit at 5-7 d + booklet	Exclusive BF at 2m BF at 3m	4% vs. 2% 75% vs. 70%	53 (1-78) 6 (0-14)	p=0.065 ns	
Palti 1988	Israel n=310 Q-exp (poor)	Prenatal and Postnatal Individual sessions from 7th m of pregnancy until 6m	Full BF at 13wk Any BF at 26wk Median BF duration (m) Full BF	29% vs. 18% 29% vs. 12% 9.3 vs. 7	39(1-62) 58(26-76)	p=0.061 p=0.003 p=0.028	
Pugh and Milligan 1998	USA n=60 RCT (moderate)	Postnatal 2 home visits with help with home tasks at d 3-4 and 12 + phone call	Any BF at 6m Median BF duration (d) Any BF	50% vs. 27% 136.3 vs. 88.3	47(0-73)	ns ns	
*Pugin 1996	Chile n=422 Q-exp (poor)	Prenatal Group sessions 3-5 times in last trimester (20 min)	Full BF at 6m	80% vs. 65%	19(6-30)	p=0.035	
Rossiter 1994	Australia n=194 RCT (moderate)	Prenatal Group sessions 3 times: 2h + 25 min video (after 12th week)	Any BF at 4wk	50% vs. 26%	49(21-67)	p=0.002	
Serafino-Cross and Donovan 1992	USA n=52 RCT (moderate)	Postnatal 5-8 home visits during 2 m + counsellor's phone no available	Any BF at 2m	62% vs. 35%	44(0-69)	ns	
Serwint 1996	USA n=156 RCT (poor)	Prenatal One one-on-one educational visit to pediatrician between 32 and 36 w	Any BF at 1m	19% vs. 14%		ns	
Valdes 1993	Chile n=735 Q-exp (poor)	Postnatal Individual consultation at d 7-10 and monthly until 6m	Full BF at 6m Any BF at 6m	67% vs. 32% 89% vs. 77%	53(44-60) 14(8-20)	p<0.001 p<0.001	
Vega-Franco 1985	Mexico n=50 Q-exp (moderate)	Prenatal Group sessions 4 times: 30 min + pamphlet (after the 6th m)	Any BF at 4wk	72% vs. 16%	78(44-91)	p<0.001	
Wiles 1984	USA n=40 RCT (moderate)	Prenatal One group session after the 32nd week (duration not given)	Any BF at 1m	90% vs. 30%	67(34-83)	p<0.001	
*Most of the studies were already included in this NICE review – those highlighted were not already present in this review			Studies were grouped in accordance with the period when the interventions took place: Prenatal (8 studies): Duffy 1997, Hill 1987, Kistin 1990, Pugin 1996, Rossiter 1994, Serwint 1996, Vega-Franco 1985, Wiles 1984 Postnatal (9 studies): Barros 1994, Bloom 1982, Chen 1993, Curro 1997, Hauck and Dimmock 1994, Lynch 1986, Pugh and Milligan 1998, Serafino-Cross and Donovan 1992, Valdes 1993 Prenatal and postnatal (9 studies): Akram 1997, Davies-Adetubgo 1996, Greiner and Mitra 1999, Haider 1998, Jakobsen 1999, Kistin 1994, Mongeon 1995, Morrow 1999, Palti 1988			

		Hospital and postnatal (7 studies): Bolam 1998, Frank 1987, Froozani 1999, Grossman 1990, Houston 1981, Jones and West 1985, Neyzi 1991, Prenatal, hospital and postnatal phase (4 studies): Alvarado 1996, Brent 1995, Gagnon 1997, Jenner 1988, Summary of Results Since the majority of the studies were already included in the more recent SRs included in this review (Dyson 2005, Renfrew 2005, Britton 2007) in which specific interventions have been considered in more detail, only the major conclusions of the review are described. The most effective interventions in extending duration of breastfeeding combined information, guidance and support and were long term and intensive. During prenatal care, group education was the only effective strategy. During the postnatal period or both periods (antenatal and postnatal), home visits used to identify mother's concerns with breastfeeding, assist with problem solving and involve family members in breastfeeding support were effective. Individual education sessions were also effective in these periods, as was a combination of 2 or 3 of these strategies in interventions involving both periods. Strategies with no effect had no face-to-face interaction, gave contradicting messages or were small-scale interventions.	

Authors Year Country Study Design Quality
Dyson 2005 SR 2++
Review Question:
To evaluate the effectiveness of interventions to promote the initiation of breastfeeding to women

Data Sources:

- Cochrane Pregnancy and Childbirth Group trials register, CENTRAL, MEDLINE, hand searches of 30 journals, weekly current awareness search of a further 37 journals
- Other databases including databases for grey literature searched from inception to 2002 October

Inclusion Criteria

- RCTs with or without blinding; no country or language limitation
- Pregnant women, mothers of newborn infants and women who may decide to breastfeed in the future. Any population group except women and infants with a specific health problem such as mothers with AIDS, or infants with cleft palate; all those exposed to interventions intended to promote breastfeeding including
- Any breastfeeding promotion intervention taking place before the first breastfeed
- Primary outcome measure was initiation of breastfeeding

Quality assessment based on potential sources of selection, performance, attrition and detection bias and overall risk of bias

Studies (7) RCTs (Quality grade)	Main results (include effect size(s)/CIs for each outcome if available) Outcome initiation of breastfeeding		Summary of Results	Applicability to UK settings/ Comments
	Sample No	Effect size*		
Health Education + Postnatal support			Brent 1995 A small single study combining breastfeeding education and postnatal support had a positive effect on increasing breastfeeding initiation rates amongst white, low-income, unmarried, pregnant women with an educational level of 12 years or below.	Health education intervention studies were conducted in the US with low income populations and are applicable to similar populations in UK
Brent 1995 (1+)	n= 108	RR 2.17, 95% CI, 1.42 – 3.32		
Intervention Health education				
Coombs 1998 (1-)	n=200		The combined data meta-analysis of the five small studies evaluating the effectiveness of breastfeeding education on increasing breastfeeding initiation rates amongst pregnant women on low incomes found the intervention effective overall.	
Hill 1987 (1+)	n=64			
Ryser 2004 (1+)	n=54			
Serwint 1996 (1-)	n=156			
Total	582	RR 1.53 , 95% CI,1.25 - 1.88		
Breastfeeding promotion packs			Howard 2000 A single study evaluated hospital breastfeeding promotional packs compared to formula company produced materials about infant feeding found this intervention had no effect on increasing initiation rates of breastfeeding amongst women of middle or higher income groups.	
Howard 2000 (1+)	n= 547	RR 0.93, 95% CI, 0.80 – 1.08		
All studies except Lindenberg 1990 were in low income women in the US.				

Early mother infant contact Lindenberg 1990 (1+)	n=259 Total 1388	RR 1.05, 95% CI, 0.94 - 1.17	Lindenberg 1990 A single study in Nicaragua found immediate contact after birth followed by separation until discharge (the authors do not report why the babies were separated from their mothers) from hospital had no effect on increasing breastfeeding initiation rates among women living in low and middle income groups.	Nicaragua – Unlikely to be applicable to UK populations

Authors Year Country Study Design Quality
Fairbank 2000 SR 2++
Review question:
To evaluate existing evidence to identify which promotion programmes are effective at increasing the number of women who start to breastfeed

Data Sources: 15 relevant databases were searched from inception to 1998, 4 journals were hand-searched; references of retrieved papers were examined; experts were contacted to help identify further published and unpublished material.
Inclusion criteria:

- RCTs, non-randomised controlled trials and before-after study designs included
- Pregnant women, postpartum women, participants linked to pregnant women and new mothers, women who may breastfeed in the future, people linked with these women
- Interventions that promote the uptake of breastfeeding; control groups could receive an alternative breastfeeding promotion programme or standard care

Primary outcome was initiation of breastfeeding; secondary outcomes were duration and exclusivity of breastfeeding; intermediate outcomes were included even if they were not associated with primary outcome

*RCTs, **Non-RCTs, *** Before and After	Main results (include effect size(s)/CIs for each outcome if available) Outcome initiation of breastfeeding				Summary of Results	Applicability to UK settings Comments
Intervention: Breastfeeding Antenatal Education	Control Breastfeeding N/Total (%)	Breastfeeding N/Total (%)	Difference %	Results	Intervention Small, informal, group education about breastfeeding delivered in the antenatal period can be effective among women from different income or ethnic groups. One-to-one education about breastfeeding in the antenatal period can be effective particularly for women on low incomes Changes in hospital practices to promote breastfeeding can be effective either as part of, or	Review includes developing country studies; wide range of study designs included; when effectiveness compared to later reviews of only high quality RCTs the effectiveness shifts for example in favour of health education
Group/leaflet Hill 1987* -	15/33(46)	19/31(61)	15%	95% CI, 0.822-2.375		
Pamphlets Kaplowitz&Olson 1983* -	23	21	18/40			
Individual & group Kistin 1990* +	13/56 (22%)	II: 17/38 (45%) [I2:18/36(50%)]	23-28%	I1 CI, 1.079-2.763 I2 CI, 1.206-3.212		
Fact sheet Loh et al 1997* +	30/95 (32%)	43/98 (44%)	12%	p=0.07 95% CI, 0.978 - 1.689		
Group/leaflet McEnery & Rao 1986*	16/51 (31%)	7/16 (48%)	13%			
Group/leaflet Ross et al 1983*	NO Data	No Data	No Data			
Group/Video Rossiter 1994* +	28/86 (32%)	73/108 (67%)	35%	p<0.0001 CI, 1.440-2.562		
Paediatrician Indiv Serwint et al 1996* ++	22/75 (29%)	31/81 (38%)	9%	CI, 0.891-1.629		
Group Wiles 1984* -	6/20 (30%)	18/20(90%)	60%	P=0.01 % CI, 1.512 - 5.954		
Agboatwalla & Akram 1997**	NO Data	No Data 18/19 (95%)	No Data 5%	No Data 95% CI, 0.241-4.155		

Video Barwick et al 1997** +	19/19 (100%)				independent to the Baby Friendly Hospital Initiative. These may include stand alone interventions, including training of health professionals, lactation consultants, rooming in and early contact or a combination of interventions. In most studies, interventions delivered via the WIC program among women of low income, such as, one-to-one antenatal breastfeeding education, training of health professionals, lactation consultants and peer counselling in the ante and postnatal period was effective. Limited evidence available suggests that training health professionals improves breastfeeding knowledge but training is most effective when delivered as part of a package of interventions as	
Leaflet Gilmore et al 1979** -	8/48 (16%)	16/63(25%)	9%			
Prof training AN education Kjellmer et al 1978**	LOWER	HIGHER	UNKNOWN			
Individual education Roman 1992**	NO CONTROL	No Data	UNKNOWN			
Group education Vega-Franco et al 1985**	13/25 (52%)	11/25 (44%)	8% *	95% CI, 0.485-1.493		
	NS	NS	NS			
Verma et al 1995**	87/219 (40%)	93/125 (74%)	34%			
Hart et al 1980***	NO Data	No Data	No Data			
Redman et al 1991***	84/146 (58%)	142/210 (68%)	10%	p<0.07		
Thorley et al 1997***						
General Health Service Rooming-in /early contact Lindenberg et al 1990*	101 / 123 (82%)	I1 117/136 I2 108/116	4%-11%	P>0.001		
Breastfeeding programme Lutter et al 1997**	5/206 (2.2%)	154/236 (65.3%)	63.10%	P<0.001 95% CI, 2.779-4.020		
Palti et al 1988**	98/130 (75%)	80/100 (80%)	5%	P=0.004 95% CI, 0.799-1.709		
Winikoff et al 1987*** -	41/148+ 54/132	9/60 (15)+ 34/60 (56)	12% & 16%	CI,0.296-1.051 & CI, 1.011-2.363		
	NO Data	No Data	No Data			
Bradley & Meme 1992***	No Data	No Data	Data unclear	0.39 p=0.007		
Bruce & Griffioen 1995***	NO Data	No Data	16%			
Popkin et al 1991***						
Baby Friendly Hospital Westphal et al 1995**	NO Data	No Data	No Data			
Buranasin 1991***	85%	99%	14%	p<0.05		
AN/PN BF Education/ Support/Prof Training Brent et al 1995* +	18/65 (27%)	31/58 (53%)	26%	P=0.002 CI, 1.199-2.507		
WIC/Incentives Sciacca et al 1995*	24/34 (70%)	26/34 (76%)	6%	P<0.05 CI,0.654-2.092		
Video/Peer Counselling Caulfield et al 1998** ++	15/57 (26%)	I1 32/64 I2 34/55 I3 34/66	24+36+26	P<0.05 I1 CI1.136-2.102, I2CI, 1.401-3.092, I3 CI, 1.164-2.211		

WIC/Peer Support	13/24 (54%)	13/23 (56%)	2%	CI, 0.582-1.896	above.	
Reifsnider & Eckhart 1997**	1063/6224 (17%)	2171/7413 (29%)	12%			
Carroll 1994***					Social support from	
Peer support	20/64 (31.0%)	117/143 (82.0%)	51%	CI, 1.682-3.143	health professionals	
Schafer et al 1998** ++	B 9.2% A 10.7%	A 12.3% A 19.9%	?9.2%		did not significantly	
Grummer-Strawn et al 1997***	70%	84%	14%	P=0.07	increase	
Long et al 1995***	50%	67%	17%		breastfeeding	
Michaels 1993***	25%	33%	8%	UNCLEAR	initiation rates.	
Nadel 1993***						
					Peer support	
Professional Training	No Data	No Data		Increase in knowledge p<0.0001	programmes	
Bleakney et al 1996***	228/500 (45.6%)	264/539 (49.0%)	3.40%		delivered as stand	
Brimblecombe et al 1977*** -	NO Data	No Data			alone intervention to	
Ellis and Hewat 1983***	NO Data	No Data		Increase in knowledge mean 73.7% - 88.5% p<0.001	women in low-income	
McIntyre et al 1996***	71.30%	71.90%	0.60%	No Increase	groups was effective	
Stokoe and Clarey 1994***					in increasing	
					breastfeeding	
Support Professionals	89/254 (39%)	105/255 (46%)	7%	CI, 0.955-1.352	initiation rates.	
Oakley et al 1990*						
					Limited evidence	
Peer Support	30/43 (70%)	55/59 (93%)	23%	P<0.05 CI, 1.085-1.646	available suggest	
Kistin et al 1994** -	94/521 (18%)	105/474 (22%)	4.00%	CI, 0.957-1.575	media campaigns as	
McInnes 1998** ++					stand-alone	
					intervention,	
Media Campaigns	81%+ 57%	89%+72%	8%+15%	p<0.001	particularly television	
Coles et al 1978*** -	NO Data	No Data	No Data	Increased knowledge p<0.05	commercials may	
Friel et al 1989*** +					improve attitudes and	
					increase	
Multi-faceted Interventions					breastfeeding	
	Base(65.9) A 56%	Base(74.9) A 88.8%	33%	Combines 3 intervention results	initiation rates.	
Rodriguez-G et al 1990**	13/86 (15%)	25/81 (31%)	16%	p<0.05		
Hartley et al 1996***	34 (44%)	137 (68%)	24%	p<0.005	Several studies found	
Kirk 1980*** +	69/300 (23.1%)	181/300 (60.2%)	37.10%	p<0.05	multi-faceted	
Lal et al 1992***	158/277 (57%)	140/249 (56%)	-1%		interventions to be	
Manitoba Ped Soc 1982***	724/800 (90.5%)	755/777 (97.2%)	6.70%	p<0.0001	effective in increasing	
McDivitt et al 1993***	89.6% (600)	94.2% (736)	4.60%	p<0.05	breastfeeding	
Rea 1990***	35/129 (27.1%)	112/306 (39.8%)	12.70%	p<0.001	initiation rates. These	
Sloper et al 1975***	No Data	No Data	No Data	No Data	included, peer	
Valdes et al 1993***	Data not clear	Data not clear			support programmes	
Vandale-T et al 1992***	71.10%	81.10%	10%	P<0.00001	and/or media	
					campaigns combined	
					with changes in	

Wright et al 1997*** +		hospital practices or, in fewer studies, combined with breastfeeding education.	

Authors Year Country Study Design Quality
Guise 2003 SR 2+
Review Question:
To find whether primary care-based interventions improve initiation and duration of breastfeeding

Data Sources:

- Searches of Medline (1966-2001), Health-STAR, the Cochrane Database of Systematic Reviews, NHS CRDD, bibliographies and reviews.
- Inclusion Criteria
- RCTs, non-randomised control trials, cohort studies and SRs included in developed countries and in English.
- Studies in a primary care setting with a concurrent control group.
- Studies involving any counselling or behavioural intervention originating from a clinician's practice or hospital to improve breastfeeding initiation and/or duration.
- Interventions conducted in any setting and conducted by a variety of providers (physicians, nurses, lactation consultants or peer counsellors).

Exclusion criteria

- Community-based or peer-originated interventions excluded
- For interventions not found in RCTs, nonRCTs were included but not for other nonRCTs.
- Quality score

Quality was assessed using the current criteria of the US Preventive Services Task Force (Harris 2001). Each paper was assessed as good, fair or poor. For SRs criteria included: the use of explicit selection criteria, systematic appraisal of study quality and relevance. Invidual studies rated as 'poor' had poor randomisation or failed to have comparable groups or adjust for appropriate confounders. 'Poor' studies also tended to have high attrition and insufficient data for intention-to-treat analysis. Of 30 studies there were 2 good, 12 fair and 16 of poor quality.

Studies	Country Study type (quality score)	Intervention Education	Support	Written Materials	Time of Assessment	Main results (include effect size(s)/CIs for each outcome if available) Summary of Results				Applicability to UK settings/ Comments
						Breastfeeding initiation Intervention n/N (%)	Control n/N (%)	Difference %	p	All of the included studies were in developed countries.
McEnery & Rao 1986	UK RCT (poor)	Yes	No	No		7/16 (44)	16/51 (31)	13%	ns	18 studies were used in the meta-analysis of which all but one were RCTs.
Hill 1987	USA RCT (fair)	Yes	No	Yes		19/31 (61)	15/33 (46)	15%	<0.05	
Kistin 1990	USA RCT (fair)	Yes	No	No		17/38 (45)	13/56 (23)	22%	<0.05	12 of the 18 studies used in the meta-analysis were post 1990.
Oakley & Rajan 1990	UK RCT (fair)	No	Yes	No		105/230 (46)	89/226 (39)	7%	ns	
Rossiter 1994	Australia RCT (poor)	Yes	No	Yes		73/104 (70)	28/74 (38)	32%	<0.05	
Brent 1995	USA RCT (fair)	Yes	Yes	No		33/58 (57)	18/57 (32)	25%	<0.05	There were 3 UK studies in this review – 2 in the 1980s and 1 in 1990.
Sciacca 1995	USA RCT (poor)	Yes	Yes	No		26/26 (100)	24/29 (83)	17%	<0.05)	

Loh 1997	Ireland RCT (poor)	No	No	Yes		43/98 (44)	30/98 (32)	12%	ns	All of the studies included in the meta-analysis were included in the other SRs included in this NICE review.
Reifsnider & Eckhart 1997	USA Non-RCT (poor)	Yes	No	No		13/14 (93)	13/17 (77)	17%	ns	
					Time of assessment	Short term breastfeeding				
Kaplowitz & Olson 1983	RCT (poor)	No	No	Yes	2 months	5/18 (28)	5/22 (23)	5%	ns	
Wiles 1984	USA RCT (poor)	Yes	No	No	1 month	18/20 (90)	6/20 (30)	60%	ns	
Jones and West 1985	Wales, UK RCT (poor)	No	Yes	No	4 weeks	191/228 (84)	255/355 (72)	12%	<0.05	
Hill 1987	USA RCT (fair)	Yes	No	Yes	6 weeks	12/31 (39)	10/33 (30)	9%	<0.05	
Kistin 1990	USA RCT (fair)	Yes	No	No	<6 weeks	8/38 (21)	8/56 (14)	7%	ns	
Serafino-Cross and Donovan 1992	USA RCT (fair)	No	Yes	No	2 months	16/26 (62)	9/26 (35)	27%	ns	
Rossiter 1994	Australia RCT (poor)	Yes	No	Yes	4 weeks	52/104 (50)	19/74 (26)	24%	<0.05	
Brent 1995	USA RCT (fair)	Yes	Yes	No	2 months	19/51 (37)	5/57 (9)	28%	<0.05	
Redman 1995	Australia RCT (fair)	Yes	Yes	Yes	6 weeks	64/81 (79)	68/83 (82)	-3%	ns	
Sciacca 1995	USA RCT (poor)	Yes	Yes	No	2 months	21/26 (81)	9/29 (31)	50%	<0.05)	
Loh 1997	Ireland RCT (poor)	No	No	Yes	4 weeks	29/98 (76)	17/98 (63)	10%	ns	
Duffy 1997	Australia RCT fair)	Yes	No	No	<6 weeks	32/35 (92)	10/35 (29)	62%	<0.05	
						Long term breastfeeding				
Jones and West 1985	Wales, UK RCT (poor)	No	Yes	No	6 months	86/228 (38)	98/355 (28)	10%	ns	
Frank 1987	USA RCT (poor)	No	Yes	Yes	4 months	103/63 (63)	90/160 (56)	7%	ns	
Rossiter 1994	Australia RCT (poor)	Yes	No	Yes	6 months	26/101 (26)	12/74 (16)	10%	ns	
Brent 1995	USA RCT (fair)	Yes	Yes	No	6 months	7/51 (14)	4/57 (7)	7%	ns	
Redman 1995	Australia RCT (fair)	Yes	Yes	Yes	4 months	42/75 (56)	45/77 (58)	-2%	ns	

Curro 1997	Italy RCT (good)	Yes	No	Yes	6 months	61/103 (59)	50/97 (52)	7%	ns	
Pugh and Milligan 1998	USA RCT (fair)	Yes	Yes	No	6 months	15/30 (50)	8/30 (27)	23%	ns	

Studies included in review

22 RCTs: Duffy 1997; Kistin 1990; Pugh & Milligan 1998; Hill 1987; Brent 1995; Oakley & Rajan 1990; Serafino-Cross and Donovan 1992; Sciacca 1995; Frank 1987; Lynch 1986*; Redman 1995; Curro 1997; Loh 1997; Kaplowitz & Olson 1983; McEnery & Rao 1986; Wiles 1984; Rossiter 1994; Serwint 1996*; Jones and West 1985; Escobar 2001*; Howard 2000*; Kramer 2001*

8 non-RCTs: Roman 1992*; Barwick 1997*; Sjolin 1979*; Caulfield 1998*; Reifsnider & Eckhart 1997; Schafer 1998*; Kistin 1994*McInnes 2000*.

5 SRs: Perez-Escamilla 1994; Bernard-Bonnin 1989; Sikorski 2000; Fairbank 2000; Donnelly 2001. .

5 of 22 RCTs not used in meta-analysis.; only one of 8 non-RCTs used in meta-analysis

Results of meta-analysis of studies of education and support

Main Effects (Meta-regression)

	No. of Studies (No. of Participants)	Education Mean Difference % (95% CI)	Support Mean Difference % (95% CI)
Breastfeeding			
Initiation	8 (1060)	23 (12-34)	6 (-2-15)
Short-term	10 (1408)	39 (27-50)	11 (3-19)
Long-term	7 (1601)	4 (-6-16)	8 (2-16)

Short-term 1-2 m; long-term 4-6 m

Combined Effects

	No. of Studies (No. of Participants)	Education plus support Mean Difference % (95% CI)
Breastfeeding		
Initiation	2 (170)	21 (7-35)
Short-term	2 (163)	36 (22-49)
Long-term	3 (168)	13 (1-25)

Summary of Results

Since all the studies were already included in the more recent SRs included in this review (Dyson 2005, Renfrew 2005, Britton 2007) in which specific interventions have been considered in more detail, only the major conclusions of the review are described.

Educational programmes had the greatest effect of any single intervention on both initiation and short-term duration. Support programmes conducted by telephone, in person, or both increased both short-term and long-term duration. Written materials did not significantly increase breastfeeding. There was insufficient data to determine whether a combination of education with support was more effective than education alone.

Conclusion: Educational programmes were the most effective single intervention

Tedstone 1998 SR 2-

Review Questions:

- To identify the most effective promotional methods to increase the incidence and duration of breastfeeding,
- to reduce the prevalence of feeding infant formula, especially for young infants;
- to delay the onset of weaning to no earlier than 4 months;
- to increase the consumption of iron-rich foods and good sources of vitamin C in infants under one year of age;
- to increase the variety of weaning foods, especially fruits and vegetables and decrease the consumption of salty, sweet and fatty snack foods in infants under one year of age.

Data Sources:

- Systematic searching of electronic databases and hand searching of relevant journals;
- contacting experts in the field

Inclusion Criteria

- Studies with an experimental or quasi-experimental design (RCTs, non-RCTs, prospective cohorts with concurrent controls, studies with a historical cohort or retrospective controlled studies, published between 1984 and 1996
- Participants were parents of 0-1 year olds, other family members, healthcare staff, other infant carers
- Interventions were those that focussed on or included healthy feeding promotion
- Primary outcomes were initiation or duration of breastfeeding, exclusivity; knowledge and attitudes of healthcare workers; dietary intake, biochemical and anthropometric measurements, food choice and behaviour of parents and carers of weaning infants

Included studies RCTs	Main results (include effect size(s)/CIs for each outcome if available)				Summary of Results	Comments/ Applicability to the UK populations and settings
Interventions to promote breastfeeding Antenatal Education		Control Breastfeeding N/Total%	Intervention Breastfeeding N/Total Class	 Individual	Results	
Kistin 1990		n=56	n=38	n=36		
	Initiation	22	45	50	p<0.05	
	2 weeks	18	32	36		
	6 weeks	14	21	22		
	12 weeks	4	15	4		
Grossman 1990		Data not clear	Data not clear		Data not clear	
Grossman 1988		n=88	n=120	n=70		
		17	37		p <0.004	
	(Class + Peer C)			66	p<0.0002	
McEnery 1986		n=34	n=35			
		62	73		Difference 11%	
Rossiter 1994		n=86	n=108			
	Initiation	38	70		p<0.001	

The most successful interventions were:

- Long term, spanning the pre and postnatal period.
- One- to-one antenatal education sessions were more successful in increasing initiation rates than group education sessions and further enhanced by contact with peer counsellors.
- Group antenatal education was more likely to increase breastfeeding duration rates.

This is a 1998 review. The majority of studies included here have been included in more recent reviews, where a systematic review process was followed.

		Control Breastfeeding N/Total%	Intervention Breastfeeding N/Total	Results		
	4 weeks	26	50	p=0.001		
	6 months	16	26	p=0.185		
Serwint 1996		n=75	n=81			
	Initiation	31	42	p=0.26		
	30 days	14	19	p=0.82		
	60 days	9	11	p=0.98	• Intensive involving multiple contacts with a lactation consultant or peer counsellor.	
Lactation Consultant Brent 1995		n=57	n=51			
	Incidence	32	61	p=0.00		
	2 weeks	18	47	p=0.001		
Auerbach 1985		n=50	n=50			
		1983	1984		Least successful interventions were:	
	8 weeks	46	28		• Postnatal input only	
	8-12 weeks	22	8			
	13-16 weeks	10	12			
	17+ weeks	22	52	p<0.02	• Breastfeeding promotion as one of a number of health promotion programmes	
Bruce 1995		n=250	n=386			
	2days	77	82	p=0.21		
	6 weeks	57	64	p=0.15		
Jones 1985		n=355	n=228		• Additional visits to the hospital/clinic	
	4 weeks	72	84	p<0.05		
Lynch 1986		n=135	n=135		• Postnatal support provided by telephone only	
		No Data	No Data			
Mother-mother support Jenner 1988		n=19	n=19			
	Exclusive BF 3 months	4 (21%)	13 (68%)	p<0.01		
Multi-faceted programme Hartley 1996		n=90	n=90			
	Initiation	15	31	p<0.03		
	2 weeks	13	21	p >0.2		

Redman 1995		n=115				n=120					
	During/after										
	6 weeks	82				79					
	4 months										
	Or longer	58				56					
		Control Breastfeeding N/Total%				Intervention Breastfeeding N/Total				Results	
Sciacca 1995		n=34				n=34					
	Initiation	83				100					
	2 weeks	55				96				p=0.000	
	6 weeks	31				81				p=0.023	
	3 months	24				61				p=0.01	
Grossman 1990		n=48				n=49					
	6 weeks	73				59				p=0.25	
	3 months	48				35				p=0.29	
	6 months	23				14				p=0.43	
Peer Counsellors											
Kistin 1994		n=43				n=59					
	Initiation	70				93				p<0.05	
	6 weeks	28				64				p<0.05	
	12 weeks	12				44				p<0.05	
Frank 1987				1	2	3	4				
1 routine counselling/				n=83	n=78	n=84	n=79				
commercial pack	1 month			53	20	6	5				
2rountine counselling/	2 month			53	28	15	6				
Research pack	3 month			57	29	6	2				
3research counselling/	4 month			62	43	20	9				
Commercial pack											
4research counselling/											
Research pack											
Professional Education											
Stokoe 1994		n=353				n=356					
				March			September				
	Initiation	No data		71			72				
	2 weeks	No data		55			58				
Literature											
Hauck 1994		n=75				n=75					
		No Data				No Data					

Renfrew 2005 SR 2++

Review question: To identify effective interventions that enable women to continue breastfeeding

Data Sources: A number of relevant databases were searched from 1990 to 2003 for all studies bar those studying healthcare professional training in which case the search included studies from 1980 to 2003. Two journals were hand-searched; references of retrieved papers were examined

Inclusion criteria:

- RCTs of support, education and multi-faceted interventions; RCTs; non-RCTs and before-after studies for community interventions organisation of care, public policy and healthcare professional training interventions studies
- Pregnant and postpartum women for support, education, multifaceted and organisation of care interventions; countries experiencing policy change for policy intervention studies and healthcare professionals for healthcare professional support interventions
- Interventions were support from peers and professionals, breastfeeding education, multi-faceted interventions, community interventions, organisation of care, public policy interventions and healthcare professional training and education interventions

Primary outcome was any and exclusive breastfeeding to 6 months; secondary outcomes were breastfeeding beyond six months and participants' views

*RCTs, ***Before-and-after	Main results (include effect size(s)/CIs for each outcome if available) Outcome duration of breastfeeding			Summary of Results (as reported by the authors of the SR)	Applicability to UK settings Comments
<u>Intervention: Breastfeeding support</u>	Intervention group: Any Breastfeeding N/Total (%)	Control group: Any Breastfeeding N/Total (%)	**Results** *These results provide a brief overview, but cannot be interpreted without information on context*	Breastfeeding support (11 RCTs) • Breastfeeding support from both peers and professionals is effective at increasing breastfeeding among women who plan to breastfeed so long as it is pro-actively offered to new mothers soon after birth • Such support is effective at increasing exclusive breastfeeding among women from relatively advantaged backgrounds, but not among women from disadvantaged backgrounds	This SR includes public health and clinical interventions – only the public health interventions have been summarised in this table. Review includes developing country studies; wide range of study designs included Quality assessments
Telephone based peer–support:	(12 weeks)	(12 weeks)			
Dennis et al 2002* ++ (Canada)	107/132 (81.1)	83/124 (66.9)	P=0.01, RR 1.21 (95% CI 1.04, 1.41)		
Volunteer counsellor support:	(4 months)	(4 months)			
Graffy et al 2004* ++ (UK)	143/310 (46)	130/310 (42)	NS		
Volunteer telephone support:	(6 months)	(6 months)			
Mongeon & Allard 1995* - (Canada)	24/95 (25)	20/99 (20)	NS		
Community postnatal support:	(6 months)	(6 months)			
Morrell et al 2000* + + (UK)	19/260 (7.3)	19/233 (8)	NS		
Individualised professional postnatal support:	(4 weeks)	(4 weeks)			
Porteous et al 2000* ++ (Canada)	26/26 (100)	17/25 (68)	Significant - No data reported		
Postpartum home nursing:	(6 months)	(6 months)			
Pugh & Milligan 1998* - (US)	No data (50%)	No data (27%)	Results of stats tests not reported		
Postnatal community nurse/peer counsellor:	(6 months)	(6 months)			
Pugh et al 2002* + (US)	3/21 (14)	4/20 (20)	Results of stats tests not reported		
Postnatal home visiting for teenagers:	(6 months)	(6 months)			

Quinlivan et al 2003* ++ (Australia)	16/65 (25)	16/71 (23)	P=1.00, RR 1.00 (95% CI 0.55,1.82)	• General postnatal support regardless of infant feeding intention or practice is unlikely to affect breastfeeding duration • There is *no* evidence from this review that professionals who do not have additional training are effective at supporting women to breastfeed Breastfeeding education (9 RCTs) • Written educational material on its own is not effective at increasing duration of breastfeeding • Breastfeeding self-assessment tools show potential to increase breastfeeding duration among higher income groups • Didactic prenatal breastfeeding education in a paediatric outpatient clinic is ineffective at increasing breastfeeding duration among Black American women on low incomes • Group education session on positioning and attachment has been shown to be effective at increasing exclusive breastfeeding	were not clear for some of the before-and-after studies
Professional home support:	(2 months)	(2 months)			
Serafino-Cross& Donovan* 1992* + (US)	16/26 (61.5)	9/26 (34.6)	P<0.01		
	(6 months)	(6 months)			
	12/26 (48)	No data	No tests of significance reported		
Self-selected female confident support:	(>3 months)	(>3 months)			
Winterburn et al 2003* - (UK)	7/30 (23)	3/42 (7)	NS		
Health professional support:	(6 weeks)	(6 weeks)			
Wrenn 1997* + (US)	8/68 (9)	14/90 (16)	NS		
<u>Intervention: Educational</u>					
Self-help manual:	(3 months)	(3 months)			
Coombs et al 1998* - (US)	No data	No data	NS		
Information booklet on bf duration:	(6 months)	(6 months)			
Curro et al 1997* + (Italy)	No data (59.2)	No data (51.2)	NS		
Breastfeeding information booklet:	(52 weeks)	(52 weeks)			
Hauk & Dimmock* 1994 - (Australia)	No data (16)	No data (22)	NS		
Antenatal group education session:	Exclusive bf(6 weeks)	Exclusive bf (6 weeks)			
Duffy et al 1997* + (Australia)	32/35 (92)	10/35 (29)	P<0.001		
Prenatal group education:	(≤12 weeks)	(≤12 weeks)			
Kistin et al 1990* - (US)	6/38 (15)	2/56 (4)	P<0.05		
Simple fact sheet on bf:	(6 weeks)	(6 weeks)			
Loh et al 1997* - (Ireland)	29/38 (76)	17/27 (63)	Results of stats tests not reported		
Self-monitoring intervention:	Mean bf duration	Mean bf duration			
Pollard 1998* ++ (US)	13.75 weeks	12.12 weeks	P=0.2387 (but women who completed I per protocol bf sig longer than C group)		
Culture specific education programme:	(6 months)	(6 months)			
Rossiter 1994* - (Australia)	26/100 (26)	12/75 (16)	NS		
Prenatal visit to paediatrician:	(60 days)	(60 days)			
Serwint et al 1996* ++ (US)	8/74 (11)	6/70 (9)	NS		
<u>Intervention: Multifaceted</u>					
Prenatal education and postnatal support:	(6 months)	(6 months)			
Brent et al 1995* + (US)	No data (14)	No data (7)	NS		
Prenatal education and postnatal support:	Mean bf duration	Mean bf duration			
Campbell 1996* - (US)	42 days	37 days	NS		
Prenatal education/incentive marketing:	Exclusive bf (2 months)	Exclusive bf (2 months)			
Finch & Daniel 2002* - (US)	9/19 (47)	5/29 (17)	Significant – No data		

WIC prenatal teaching and/or non-formula hospital discharge packs:	(24 weeks)	(24 weeks)		at 6 weeks among women on low incomes	
Fredrickson 1995* ++ (US)	3 groups: 14%, 13%, 15%	8%	NS (but results demonstrate that a plan to breastfeed is critical to effectiveness of teaching intervention)	Multifaceted interventions (9 RCTs)	
Postnatal bf counselling and support:	(6 months)	(6 months)		• A combination of antenatal education and limited postnatal telephone support is not effective at increasing the duration of breastfeeding among high income women who intend to breastfeed	
Grossman et al 1990* - (US)	7/49 (14)	10/44 (23)	NS		
Antenatal education and postnatal support:	Exclusive bf (4 months)	Exclusive bf (4 months)			
Redman et al 1995* ++ (Australia)	45/77 (58)	42/75 (56)	P<0.761		
Bf education and support by nurse for Mothers intending to return to work:	(16 weeks)	(16 weeks)			
Rojjanasrirat 2000* + (US)	Data not clear	Data not clear	NS		
Antenatal education and postnatal support:	(4-6 months)	(4-6 months)			
Schy et al 1996* - (US)	No data	No data	NS reported but no data		
Incentive-based antenatal education and peer support:	Exclusive bf (3 months)	Exclusive bf (3 months)		• There is indicative evidence that a combination of education and support with incentives may have a positive effect. This is worthy of replication in UK settings among women on low incomes	
Sciacca et al 1995* - (US)	11/26 (42)	5/29 (76)	P<0.05		
Intervention: Community based					
No controlled studies were identified that evaluated community based interventions					
Intervention: Organisation of Healthcare provision					
Postnatal ward organisation: bf room	(6 weeks)	(6 weeks)			
Berry 1994* (pilot study) - (UK)	16/20 (80)	15/20 (75)	NS	Community based interventions	
Birthing centre vs standard obstetric care:	Exclusive bf (2 months)	Exclusive bf (2 months)		• There is a need for longitudinal studies that allow assessment of community initiatives, including media campaigns, on attitudes to breastfeeding among all age groups as well as breastfeeding outcomes	
Waldenstrom and Nilsson 1994* + (Sweden)	551/593 (93%)	514/554) (93%)	NS		
Rooming-in:	Exclusive bf (6 weeks)				
Watters and Sparrow 1990*** - (Canada)	215/321 (67)		NS		
Watters and Kristiansen 1995*** - (Canada)	202/312 (66)				
Intensive home visits by health visitors vs generic home visiting	(6 weeks)	(6 weeks)			
Emond et al 2002* ? (UK)	No data (61)	No data (39)	Significant (no data) – but NS when adjusted for confounders (not reported)		
Community nurse home visiting vs a hospital nurse clinic visit:	Exclusive bf (14 days after hospital discharge)	Exclusive bf (14 days after hospital discharge)			
Gagnon et al 2002* + (Canada)	183/252 (72.6)	171/247 (69.2)	RR 1.04 (95% CI 0.94, 1.17)		
Additional GP visit 1 week after discharge:	(6 months)	(6 months)			
Gunn et al 1998* - (Australia)	81/no data	98/no data	NS	Organisation of care (5	

Telephone contact vs home visits by public health nurse: Steel O'Connor et al 2003* + (Canada) <u>Intervention: Public policy</u> Discharge packs: breast pump vs breast pump and formula vs formula Dungy et al 1997*- (US) Discharge packs: formula vs breast pump vs breast pump and formula vs nothing Bliss et al 1997* - (US) Pack including bf promotion materials vs pack including formula company materials at 1st prenatal visit: Howard et al 2000* + (US) Scottish initiative to promote and support bf: Britten and Proudfoot 2002*** (UK) Financial incentive/penalty motivated breastfeeding programme implemented by a regional health authority: Cattaneo et al 2001*** (Italy) Adherence to BFI standards in hospitals: Giovannini et al 2003*** (Italy) <u>Intervention: Health professional training</u> UNICEF training to prepare hospitals for BFHI: Cattaneo and Buzzetti 2001*** (Italy) Education programme based on UNICEF: Durand et al 2003*** (France) Training for nursery personnel: Gainotti and Pagani 1980*** (Italy) Evidence-based guidance on bf: Grant et al 2000*** (UK)	(6 months) 149/332 (45) Exclusive bf (mean) Group 1: 6.13 weeks Partial bf (mean) Group 1: 10.03 weeks Exclusive bf (6 months) A: 23.9% B: 23.3% Partial bf (6 months) A: 12.7% B: 15.2% Bf termination at <u>≤</u>2 weeks 15% 1995-1999 show a 2.5% Bf at 16-19 weeks (1998) 38% (6 months) 1995 19.4% (17.5-21.3) (6 months) 1996 206/485 (43) Any bf at hospital discharge (before) 68% Exclusive bf at discharge (before) 156/325 (48) Any bf at 11 weeks (before)	(6 months) 146/306 (48) Exclusive bf (mean) Group 2: 7.10 weeks Partial bf (mean) Group 2: 10.21 weeks Exclusive bf (6 months) C: 23.3% D: 19.2% Partial bf (6 months) C: 19.3% D: 15.1% Bf termination at <u>≤</u>2 weeks 24% increase in duration at six- Bf at 16-19 weeks (1999) 41% (6 months) 1999 46.8 (44.8-48.8) (6 months) 1998 226/366 (62) Any bf at hospital discharge (after) 72% Exclusive bf at discharge (after) 292/325 (90) Any bf at 11 weeks (after)	NS Exclusive bf (mean) Group 3: 6.43 weeks NS Partial bf (mean) Group 3: 9.79 weeks NS NS NS RR 1.58 (no CI provided) seven weeks postpartum. It is reported that this is sig <P 0.001! P<0.000001 P<0.05 NS Significant - No data	RCTs, 1 CT, 2 before-after studies) • There are no high quality studies of rooming-in, shared breastfeeding rooms and mother-infant combined care (although studies on rooming-in are unnecessary and unethical) – and none showed a significant impact on breastfeeding duration. There is insufficient evidence on which to base decisions regarding the types of care examined here. • No significant effects on breastfeeding duration were observed in the various post-discharge interventions-including home visiting and early GP appointment after hospital discharge Public policy (3 RCTs, 3 before-after studies) • National policy of encouraging maternity units to adhere to the UNICEF Baby Friendly Hospital Initiative is likely to extend the duration of breastfeeding • Regionally and	

'Best Start' bf educational programme: Hartley and O'Connor1996***+ (US) Training midwives in the use of a "hands-off" technique for teaching bf (with coincidental hospital organisational changes): Ingram et al 2002*** + (UK) Education for professionals and public: Manitoba Pediatric Society1982*** (Canada) Bf promotion training to professionals at clinic: Matilla-Mont and Rios-Jimenez 1999*** (Spain) Training for midwives: Stokoe et al 1994*** (UK)	71% Bf at hospital discharge (before) 13/86 (15) Bf at 2 weeks (before) 256/ (13) Any bf at 2 weeks (before) 256/301 (85) Any bf at 6 weeks (before) 201/265 (76) Bf at 6 months (before) Urban: 16% R ural: 22% Exclusive bf at 3 months (before) 30/96 (31.4) Mixed feeding at 3 mos 9/96 (9.4) Exclusive bf at 2 weeks after hospital discharge (before) 55.2%	73% Bf at hospital discharge (after) 25/81 (31) Bf at 2 weeks (after) 17/81 (21) Any bf at 2 weeks (after) 257/279 (92) Any bf at 6 weeks (after) 218/263 (83) Bf at 6 months (after) Urban: 26% Rural:21% Exclusive bf at 3 months (after) 57/113 (50.4) Mixed feeding at 3 mos 8/113 (7.1) Exclusive bf at 2 weeks after hospital discharge (after) 58.1%	NS P<0.03 NS P<0.2 P<0.005 NS Results of stats tests not reported Results of stats tests not reported Results of stats tests not reported No tests of significance reported	nationally determined targets with supporting activities and/or penalties and/or incentive may help in extending the duration of breastfeeding • Commercial hospital discharge packs that include formula promotion materials are not conducive to exclusive breastfeeding Healthcare professional education (9 before-and-after studies) • Many of the studies have methodological limitations • There appears to be no single way that consistently achieves changes in professional practice that support breastfeeding and that impact positively on bf duration	

Support for breastfeeding mothers

Authors Year Country Study Design Quality
Britton 2007 SR 2++
Review Question:
To assess the effectiveness of support for breastfeeding mothers

Data Sources:

- Cochrane Pregnancy and Childbirth Group trials register, CENTRAL, MEDLINE, hand searches of 30 journals, weekly current awareness search of a further 37 journals
- Other databases including databases for grey literature searched from 1966 to 2005 November

Inclusion Criteria

- RCTs with or without blinding with a minimum of 75% follow-up; no country or language limitation
- Pregnant women intending to breastfeed, postpartum women intending to breastfeed and women breastfeeding their babies.
- Contact (professional or voluntary) offering support supplementary to standard care with the purpose of facilitating continued breastfeeding in the postnatal period, which can also include an antenatal component but not antenatal contact alone. Solely educational interventions excluded.
- Primary outcome measure was duration of breastfeeding to specific points in time, including stopping breastfeeding before 4-6 w, and 2, 3, 4, 6, 9 and 12 m and also exclusive breastfeeding. Measures of maternal satisfaction with care or feeding method and neonatal and infant morbidity were also included.

Studies (34) RCTs	Main results (include effect size(s)/CIs for each outcome if available) Either			Summary of Results	Applicability to UK settings/ Comments
	Country	Sample No	Intervention		Eleven of the 34 studies were conducted in countries which would not have similar populations or health systems to those found in the UK, including Bangladesh (2), Belarus (1), Brazil (4), India (1), Iran (1), Mexico (1), Nigeria (1). However, there were 6 UK studies contributing a total of 2742 subjects. Generally, the effects of most of the UK intervention studies
Albernaz 2003	Brazil	n=169	Hospital visit followed by 6 home visits by lactation team		
Barros 1994	Brazil	n=900	Home visits (3) by social assistant or nutritionist who had either successfully breastfed or received relevant training		
Bhandari 2003	India	n=410	Birth visit then monthy home visits + clinics and local meetings by trained local health and nutrition workers		
Brent 1995	USA	n=115	Hospital/clinic based 2-4 prenatal sessions, lactation clinic 1 week postpartum (paediatrician or lactation consultant), telephone call after 48 h, routine clinics till aged 1 y or weaned, cheifly by lactation consultantant (all staff trained)		
Chapman 2004	USA	n=165	Home visits – 1 prenatal, within 24 h of birth + ≥2 more as requested, daily visits in hospital post partum, telephone/pager contact from		
	trained		paid peer cousellors		
Davies-Adetugbo 1997	Nigeria	n=1003	Lactation management/counselling sessions on days 0, 2 and 7 for 30 m each given by trained community health workers and 2 research assistants for mothers of children with uncomplicated diarrhoea		
Dennis 2002	Canada	n=258	Telephone contact by briefly trained volunteers with breastfeeding experience, 1st contact within 48 h. Mean no of calls = 5.4; mean duration 16 m		
Di Napoli 2004	Italy	n=605	Home visit by trained midwife within 7 d of birth + telephone counselling from same midwife		

Frank 1987	USA	n=343	Research breastfeeding counsellor - 1st session in hospital (20-40 m), then by telephone at 5,7,14,21 and 28 d, then 6,8 and 12 w + 24 h advice by pager + research discharge pack in Spanish and English		tended not to be significant.
Froozani 1999	Iran	n=134	Hospital visit after birth, then at 10-15 d, >30 d, then 2, 3 and 4 m at home or lactation clinic by trained nutritionist		
Gagnon 2002	Canada	n=596	Home visit by trained community nurse at 3-4 d postpartum, further contact if required		
Graffy 2004	UK	n=720	One antenatal visit from NCT trained breastfeeding counsellor + postnatal visits or telephone contact as requested		
Grossman 1990	USA	n=97	Lactation counsellor (registered nurse) session after birth (30-45 m) + education booklet, then telephone contacts on days 2,4,7,10 and 21 + helpline staffed by nurse or paediatrician + back up support from lactation clinic		
Haider 1996	Bangladesh	n=250	Infants <12 d old admitted with diarrhoea for <5 d – hospital counselling on days 1 (5-7 m),2 and discharge day (30-40 m) by lactation counsellor or research physician (trained), then home visit by lactation counsellor for 2-4 h		
Haider 2000	Bangladesh	n=726	Paid trained peer consellors – 15 home visits (20-40 m each): 2 last trimester, 4 in 1st m, 2/w in months 2-5		
Jenner 1988	England	n=38	Lay supporter (mother with breastfeeding experience)- 3 antenatal visits/1 hospital visit/ 1 immediate home visit + 2 further home visits in early weeks		
Jones and West 1985	UK	n=678	Support by lactation nurse in hospital and at home		
Kools 2005	TheNetherlands	n=781	3 elements: structured health counselling by health care nurses and physician; lactation consultancy via caregiver who faxes consultant; who then contacts caregiver or mother within 24 h		
Kramer 2001	Belarus	n=17046	WHO/UNICEF Baby Friendly Initiative training for all staff in hospitals and polyclinics. Monthly well child polyclinics + whenever ill		
Leite 1998	Brazil	n=1003	Paid trained peer consellors with experience of breastfeeding and from same background. Home visits at 5,15,30,60,90 and 120 d (30-40 m).		
Lynch 1986	Canada	n=270	Home visit by breastfeeding consultant ≤5 d birth (2 h) + telephone calls weekly for 1st month, monthly from 2-6 m		
McDonald 2003	Australia	n=849	In hospital postnatal education session, then offered weekly home support visits and twice weekly telephone contact with midwife for 6 w		
Mongeon 1995	Canada	n=200	Peer support from supervised trained volunteer who had breastfed – home visit in last month of pregnancy, then telephone contact weekly for 6 w, then 2 weekly to 5 m or weaning		
Moore 1985	UK	n=525	Health visitor or clinical medical officer: daily visits in hospital, home visit at 4-6 w, follow-up at home or hospital at 3,6 and 9 m + 24 h telephone support line		

Morrell 2000	UK	n=623	Trained community postnatal support worker – ≤10 home visits in 1st 28 d (≤3 h per visit)		
Morrow 1999	Mexico	n=130	Home visits by peer-counsellor (La Leche League trained - not necessary to have own experience of BF) Int 1: 1.6 visits (mid and late pregnancy + 1,2,4 and 8 w); Int 2: 2.3 visits(late pregnancy + 1 and 2 w)		
Pinelli 2001	Canada	n=128	Very low birthweight babies. 4 elements of SSBC programme: video on breastfeeding premature infants; individual counselling by research lactation consultant; weekly in hospital contact; post discharge contact until breastfeeding stopped (up to age 1)		
Porteus 2000	Canada	n=52	Community midwife support: daily visits in hospital; telephone call within 72 h discharge; min 1 home visit in 1st week (60-90 m)		
Pugh 2002	USA	n=41	Community health nurse/ peer counsellor team: daily visits in hospital, home visits weeks 1,2 and 4 at team's discretion; telephone support from peer counsellor 2/week to week 6 and montly to age 6 m		
Quinlivan 2003	Australia	n=138	Home visits by certified nurse-midwives – structured in weeks 1 and 2, also at months 1,2,3 and 4		
Santiago 2003	Brazil	n=101	Clinic based paediatrician and multidisciplinary breastfeeding team – all MB trained. 2 interventions: Int 1: paediatrician working within the team; Int 2: same paediatrician working in individual consultations		
Sjolin 1979	Sweden	n=146	Hospital-based paediatrician: 2 visits in hospital on days 1 and 4; home visits at 2 w, 6 w and 3 m; telephone contact weekly with home visit if problem noted		
Winterburn 2003	UK	n=72	Mother while pregnant advised midwife of close female confidante to act as breastfeeding supporter, midwife visits both during 3rd trimester to discuss breastfeeding		
Wrenn 1997	USA	n=186	Breastfeeding support visit in hospital (~30 m); home visit 2-4 d after discharge (45-60 m); phone call 10-14 d after home visit		
All forms of support vs. usual care	Outcome: Stopping any breastfeeding before last study assessment up to 6 months Comparison all forms of support vs. usual care 28 studies n=4992 (Treat) n=5005 (Con) RR 0.91, 95% CI, 0.86-0.96 p=0.0004 Result not significant in trials (3) with low breastfeeding initiation or trials with high breastfeeding initiation (11) (RR 0.91, 95% CI, 0.81-1.01 p=0.07) But significant in trials with intermediate breastfeeding initiation 14 studies n=2175 (Treat) n=2314 (Con) RR 0.92, 95% CI, 0.85-0.98 p=0.01 Outcome: Stopping any breastfeeding before last study assessment Comparison all forms of support vs. usual care 20 studies n=3824 (Treat) n=3844 (Con) RR 0.81, 95% CI, 0.74-0.89 p<0.00001			There was a beneficial effect on the duration of breastfeeding up to 6 months with the implementation of any form of extra support. This was only significant however for trials where there was an intermediate level of breastfeeding initiation (60% to 80%). Analyses at different periods of follow-up suggest that the benefit was present at all time points up to 9 months. (Five UK studies contributed to the analysis (Brent 1995, Graffy 2004, Jones 1985, Morrell 2000, Winterburn 2003).)	

	Outcome: Stopping any breastfeeding before 4-6 weeks Comparison all forms of support vs. usual care 14 studies n=2355 (Treat) n=2373 (Con) RR 0.88, 95% CI, 0.78-1.00 p=0.04 Outcome: Stopping any breastfeeding before 2 months Comparison all forms of support vs. usual care 8 studies n=1187 (Treat) n=1185 (Con) RR 0.83, 95% CI, 0.69-0.99 p=0.04 Outcome: Stopping any breastfeeding before 3 months Comparison all forms of support vs. usual care 14 studies n=2320 (Treat) n=2315 (Con) RR 0.88, 95% CI, 0.80-0.98 p=0.02 Outcome: Stopping any breastfeeding before 4 months Comparison all forms of support vs. usual care 9 studies n=1891 (Treat) n=1889 (Con) RR 0.86, 95% CI, 0.77-0.96 p=0.009 Outcome: Stopping any breastfeeding before 6 months Comparison all forms of support vs. usual care 12 studies n=1872 (Treat) n=1932 (Con) RR 0.94, 95% CI, 0.90-0.99 p=0.009 Outcome: Stopping any breastfeeding before 9 months Comparison all forms of support vs. usual care 2 studies n=352 (Treat) n=336 (Con) RR 0.90, 95% CI, 0.81-0.99 p=0.03 Outcome: Stopping any breastfeeding before 12 months Comparison all forms of support vs. usual care 3 studies n=775 (Treat) n=865 (Con) RR 0.99, 95% CI, 0.90-1.08 p=0.8 Outcome: Stopping exclusive breastfeeding before 4-6 weeks Comparison all forms of support vs. usual care 10 studies n=1670 (Treat) n=1805 (Con) RR 0.67, 95% CI, 0.54-0.84 p=0.0004 Outcome: Stopping exclusive breastfeeding before 2 months Comparison all forms of support vs. usual care 5 studies n=598 (Treat) n=710 (Con) RR 0.59, 95% CI, 0.38-0.92 p=0.02 Outcome: Stopping exclusive breastfeeding before 3 months Comparison all forms of support vs. usual care 11 studies n=1459 (Treat) n=1534 (Con) RR 0.67, 95% CI, 0.53-0.84 p=0.0006 Outcome: Stopping exclusive breastfeeding before 4 months Comparison all forms of support vs. usual care 8 studies n=1404 (Treat) n=1496 (Con) RR 0.64, 95% CI, 0.48-0.86 p=0.003 Outcome: Stopping exclusive breastfeeding before 5 months Comparison all forms of support vs. usual care 1 study n=227 (Treat) n=363 (Con) RR 0.47, 95% CI, 0.40-0.54 p<0.00001 Outcome: Stopping exclusive breastfeeding before 6 months Comparison all forms of support vs. usual care 6 studies n=1318 (Treat) n=1265 (Con) RR 0.90, 95% CI, 0.81-1.00 p=0.04	The effect of providing support on mothers exclusively breastfeeding was greater than on women continuing any form of breastfeeding and was particularly significant before 5 months. (Three UK studies contributed to the analysis (Graffy 2004, Moore 1985, Morrell 2000,.)	
Professional	Outcome: Stopping any breastfeeding before last study assessment up to 6 months	The overall effect of extra professional support on stopping any breastfeeding was not	

support vs. usual care	Professional support vs. usual care 16 studies n=2633 (Treat) n=2747 (Con) RR 0.94, 95% CI, 0.87-1.01 p=0.1 Outcome: Stopping exclusive breastfeeding before last study assessment Professional support vs. usual care 12 studies n=2079 (Treat) n=2054 (Con) RR 0.91, 95% CI, 0.84-0.98 p=0.01	significant. (One UK study, Jones 1985) Professional support had a beneficial effect on exclusive breastfeeding. (One UK study contributed to the analysis (Moore 1985).)	
Lay support vs. usual care	Outcome: Stopping any breastfeeding before last study assessment up to 6 months Lay support vs. usual care 7 studies n=1579 (Treat) n=1500 (Con) RR 0.86, 95% CI, 0.76-0.98 p=0.02 Outcome: Stopping exclusive breastfeeding before last study assessment Lay support vs. usual care 6 studies n=1503 (Treat) n=1581 (Con) RR 0.72, 95% CI, 0.57-0.90 p=0.003	Overall, lay support appeared to have a significant effect compared to usual care on prevention of cessation of breastfeeding up to 6 months. (Two UK studies contributed to the analysis (Graffy 2004, Morrell 2000).) Lay support gave a marked reduction in cessation of exclusive breastfeeding before the last study assessment. (Two UK studies contributed to the analysis (Graffy 2004, Morrell 2000).)	
Professional support vs. usual care	Outcome: Stopping any breastfeeding before 4-6 weeks Professional support vs. usual care 9 studies n=1185 (Treat) n=1344 (Con) RR 0.85, 95% CI, 0.70-1.02 p=0.09 Outcome: Stopping any breastfeeding before 2 months Professional support vs. usual care 3 studies n=446 (Treat) n=451 (Con) RR 0.89, 95% CI, 0.67-1.19 p=0.4 Outcome: Stopping any breastfeeding before 3 months Professional support vs. usual care 8 studies n=1307 (Treat) n=1383 (Con) RR 0.90, 95% CI, 0.77-1.04 p=0.1 Outcome: Stopping any breastfeeding before 4 months Professional support vs. usual care 5 studies n=475 (Treat) n=482 (Con) RR 0.78, 95% CI, 0.67-0.91 p=0.001 Outcome: Stopping any breastfeeding before 6 months Professional support vs. usual care 8 studies n=1335 (Treat) n=1444 (Con) RR 0.94, 95% CI, 0.86-1.03 p=0.2 Outcome: Stopping any breastfeeding before 9 months Professional support vs. usual care 1 study n=287 (Treat) n=265 (Con) RR 0.87, 95% CI, 0.78-0.97 p=0.01 Outcome: Stopping any breastfeeding before 12 months Professional support vs. usual care 3 studies n=775 (Treat) n=865 (Con) RR 0.99, 95% CI, 0.90-1.08 p=0.8 Outcome: Stopping exclusive breastfeeding before 4-6 weeks Professional support vs. usual care 6 studies n=714 (Treat) n=743 (Con) RR 0.69, 95% CI, 0.51-0.92 p=0.01 Outcome: Stopping exclusive breastfeeding before 2 months Professional support vs. usual care	The effect of extra professional support in preventing the cessation of any breastfeeding showed that professional support was only effective at 4 and 9 months and not at the other time points. (At 4 months, 5 studies, and at 9 months, 1 study contributed to the analysis with none from the UK.) Professional support had a significant beneficial effect on exclusive breastfeeding at all time points but 4 months when it was marginally significant. The effect appeared to be greater in the first 3 months. (One UK study contributed to the analysis (Moore	

	3 studies n=316 (Treat) n=317 (Con) RR 0.76, 95% CI, 0.61-0.94 p=0.01 Outcome: Stopping exclusive breastfeeding before 3 months Professional support vs. usual care 6 studies n=916 (Treat) n=913 (Con) RR 0.84, 95% CI, 0.72-0.99 p=0.03 Outcome: Stopping exclusive breastfeeding before 4 months Professional support vs. usual care 5 studies n=478 (Treat) n=444 (Con) RR 0.69, 95% CI, 0.47-1.02 p=0.06 Outcome: Stopping exclusive breastfeeding before 6 months Professional support vs. usual care 3 studies n=765 (Treat) n=744 (Con) RR 0.95, 95% CI, 0.91-0.98 p=0.004	1985).)	
Lay support vs. usual care	Outcome: Stopping any breastfeeding before 4-6 weeks Lay support vs. usual care 5 studies n=996 (Treat) n=970 (Con) RR 0.91, 95% CI, 0.73-1.14 p=0.4 Outcome: Stopping any breastfeeding before 2 months Lay support vs. usual care 2 studies n=232 (Treat) n=226 (Con) RR 0.86, 95% CI, 0.41-1.78 p=0.7 Outcome: Stopping any breastfeeding before 3 months Lay support vs. usual care 4 studies n=402 (Treat) n=331 (Con) RR 0.76, 95% CI, 0.54-1.09 p=0.1 Outcome: Stopping any breastfeeding before 4 months Lay support vs. usual care 3 studies n=966 (Treat) n=957 (Con) RR 0.92, 95% CI, 0.74-1.14 p=0.4 Outcome: Stopping any breastfeeding before 6 months Lay support vs. usual care 3 studies n=491 (Treat) n=442 (Con) RR 0.98, 95% CI, 0.92-1.04 p=0.5	Despite the fact that overall, lay support appeared to have a significant effect compared to usual care on prevention of cessation of breastfeeding up to 6 months, subgroup analysis did not give a statistically significant effect at any time point. (Two UK studies contributed to the analysis(Graffy 2004, Morrell 2000).)	
	Outcome: Stopping exclusive breastfeeding before 4-6 weeks Lay support vs. usual care 4 studies n=956 (Treat) n=1062 (Con) RR 0.66, 95% CI, 0.46-0.96 p=0.03 Outcome: Stopping exclusive breastfeeding before 2 months Lay support vs. usual care 2 studies n=282 (Treat) n=393 (Con) RR 0.44, 95% CI, 0.26-0.73 p=0.002 Outcome: Stopping exclusive breastfeeding before 3 months Lay support vs. usual care 3 studies n=301 (Treat) n=412 (Con) RR 0.42, 95% CI, 0.31-0.57 p<0.00001 Outcome: Stopping exclusive breastfeeding before 4 months Lay support vs. usual care 2 studies n=705 (Treat) n=863 (Con) RR 0.62, 95% CI, 0.25-1.53 p=0.3 Outcome: Stopping exclusive breastfeeding before 5 months Lay support vs. usual care 1 study n=227 (Treat) n=363 (Con) RR 0.47, 95% CI, 0.40-0.54 p<0.00001	Further subgroup analysis found that lay support appeared to have a significant effect compared to usual care on prevention of cessation of exclusive breastfeeding mainly within the first 3 months. (Two UK studies contributed to the analysis(Graffy 2004, Morrell 2000).)	Four studies contributed to this result. The 2 UK study results were not significant and the other 2 studies were in Mexico and Bangladesh and therefore not strictly relevant to UK populations.

	Outcome: Stopping exclusive breastfeeding before 6 months Lay support vs. usual care 1 study n=311 (Treat) n=312 (Con) RR 0.98, 95% CI, 0.93-1.03 p=0.5		
Differing modes of support vs. usual care	Outcome: Stopping any breastfeeding before last study assessment up to 6 months Predominate telephone support vs. usual care 5 studies n=587 (Treat) n=581 (Con) RR 0.92, 95% CI, 0.78-1.08 p=0.3 Outcome: Stopping any breastfeeding before last study assessment up to 6 months Predominate face-to-face contact support vs. usual care 14 studies n=2552 (Treat) n=2575 (Con) RR 0.85, 95% CI, 0.79-0.92 p=0.00004 Outcome: Stopping any breastfeeding before last study assessment up to 6 months Balanced telephone and face-to-face support vs. usual care 9 studies n=1853 (Treat) n=1849 (Con) RR 1.00, 95% CI, 0.91-1.09 p=0.9 Outcome: Stopping any breastfeeding before last study assessment up to 6 months All differing modes of support vs. usual care 28 studies n=4992 (Treat) n=5005 (Con) RR 0.91, 95% CI, 0.86-0.96 p=0.0004	Predominate face-to-face contact support showed a significant benefit when compared to predominate telephone support or balanced telephone and face-to-face support when compared to usual care. For the latter 2 types of support there was no significant improvement in breastfeeding continuance. (Four UK studies contributed to the analysis (Brent 1995, Graffy 2004, Jones 1985, Morrell 2000, Winterburn 2003).) .	
Differing timings of support vs. usual care	Outcome: Stopping any breastfeeding at last study assessment up to 6 months Postnatal support alone vs. usual care 20 studies n=3581 (Treat) n=3678 (Con) RR 0.89, 95% CI, 0.84-0.96 p=0.002 Outcome: Stopping any breastfeeding at last study assessment up to 6 months Antenatal component to support vs. usual care 8 studies n=1411 (Treat) n=1327 (Con) RR 0.92, 95% CI, 0.83-1.02 p=0.1 Outcome: Stopping any breastfeeding at last study assessment up to 6 months All differing timings of support vs. usual care 28 studies n=4992 (Treat) n=5005 (Con) RR 0.91, 95% CI, 0.86-0.96 p=0.0004	The effect on stopping breastfeeding at last study assessment before 6 months in studies containing an antenatal element to breastfeeding support was not significant whereas for studies containing a postnatal element alone there was a statistically significant benefit. However, the effect estimates were similar and the difference between the 2 effects was not significant. (Three UK studies contributed to the analysis (Brent 1995, Jones 1985, Morrell 2000).)	
Differing training vs. usual care	Outcome: Stopping exclusive breastfeeding before last study assessment WHO/UNICEF courses vs. usual care 6 studies n=1374 (Treat) n=1455 (Con) RR 0.69, 95% CI, 0.52-0.91 p=0.009 Outcome: Stopping exclusive breastfeeding before last study assessment La Leche League training vs. usual care 1 study n=80 (Treat) n=30 (Con) RR 0.52, 95% CI, 0.39-0.69 p<0.00001	Six studies using WHO/UNICEF training showed significant benefit in prolonging exclusive breastfeeding. One study using the La Leche League peer counselling programme was also successful in prolonging exclusive breastfeeding.	All 6 studies were in countries originally excluded from NICE reviews (Bangladesh, Belarus, Brazil (2), India, Iran and Mexico)
Combination of lay and professional support vs. usual care	Outcome: Stopping any breastfeeding before 4-6 weeks Combination of lay and professional support vs. usual care 1 study n=450 (Treat) n=450 (Con) RR 0.65, 95% CI, 0.51-0.82 p=0.0004 Outcome: Stopping any breastfeeding before 2 months Combination of lay and professional support vs. usual care 3 studies n=538 (Treat) n=549 (Con) RR 0.74, 95% CI, 0.66-0.83 p<0.00001 Outcome: Stopping any breastfeeding before 3 months Combination of lay and professional support vs. usual care	Combined lay and professional support showed a significant reduction overall in cessation of any breastfeeding but on subgroup analysis this was only significant up to 3 months and especially in the first 2 months. (Two small UK studies contributed to the analysis (Brent 1995, Winterburn 2003).)	The results for a combination of lay and professional support and any breastfeeding are dominated by one Brazilian study (Barros 1994).

	3 studies n=701 (Treat) n=681 (Con) RR 0.90, 95% CI, 0.80-1.00 p=0.05 Outcome: Stopping any breastfeeding before 4 months Combination of lay and professional support vs. usual care 1 study n=450 (Treat) n=450 (Con) RR 0.95, 95% CI, 0.85-1.06 p=0.4 Outcome: Stopping any breastfeeding before 6 months Combination of lay and professional support vs. usual care 2 studies n=471 (Treat) n=470 (Con) RR 0.95, 95% CI, 0.86-1.05 p=0.3 Outcome: Stopping any breastfeeding at different times – overall effect for 5 studies Combination of lay and professional support vs. usual care 5 studies n=2610 (Treat) n=2600 (Con) RR 0.84, 95% CI, 0.77-0.92 p=0.0001 Outcome: Stopping exclusive breastfeeding before 3 months Combination of lay and professional support vs. usual care 2 studies n=242 (Treat) n=209 (Con) RR 0.60, 95% CI, 0.43-0.86 p=0.005 Outcome: Stopping exclusive breastfeeding before 4 months Combination of lay and professional support vs. usual care 1 study n=221 (Treat) n=189 (Con) RR 0.47, 95% CI, 0.40-0.55 p<0.00001 Outcome: Stopping exclusive breastfeeding before 6 months Combination of lay and professional support vs. usual care 2 studies n=242 (Treat) n=209 (Con) RR 0.71, 95% CI, 0.59-0.86 p=0.0003 Outcome: Stopping exclusive breastfeeding at different times – overall effect for 2 studies Combination of lay and professional support vs. usual care 2 studies n=705 (Treat) n=607 (Con) RR 0.62, 95% CI, 0.50-0.77 p=0.00002	Combined lay and professional support showed a significant reduction overall in cessation of exclusive breastfeeding, which was also significant on subgroup analysis for different time periods up to 6 months.	The results for a combination of lay and professional support and exclusive breastfeeding are dominated by one Indian study (Bhandari 2003).

Does peer support effectively increase the initiation and duration of breastfeeding?

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Anderson 2005 USA (Hartford, Connecticut) RCT 1-	<u>Inclusion criteria: mother</u> ≥ 18 y of age ≤ 32 w gestation at registration to study Absence of gestational diabetes, hypertension, HIV, illegal drug use Considering bf Planned delivery in local hospital Planned to stay in study area for 3 months after delivery Household income < 185% of federal poverty line Available through telephone contact <u>Inclusion criteria: baby</u> Gestational age ≥ 36 w BW ≥ 2.5 kg No neonatal complications Apgar scores at 1minute & 5 minutes greater than or equal to 6. <u>Randomised</u> I= 90 C= 92 <u>Participant characteristics (of 135 women who completed the study - baseline characteristics for all women randomised were not reported)</u> I C n 63 72 Maternal age ≤ 30 y,% 77.8 83.4	<u>Research question</u> To assess the efficacy of peer counselling to promote exclusive bf (EBF) among low-income women <u>Study quality</u> Power calculation not reported SPSS was used to randomly assign participants to study groups. The study was not double blinded and the interviewer knew the study hypothesis (no other information is provided by the authors on study	<u>Intervention</u> 3 prenatal home visits, daily in-hospital intrapartum visits ,9 postnatal home visits and telephone counselling as needed from a peer counsellor Prenatal visits covered bf education topics benefits and reasons for EBF; avoidance of bottles/dummies; screening for inverted nipples; barriers of EBF; additional fluids and EBF; infant cues; positioning and attachment. A bf video was offered. Family encouraged to participate in the education Postnatally bf support and individualised bf counselling was provided in the woman's home Peer counsellors were	Coverage by the peer counsellors ranged from 88.9% for the prenatal home visits to 63.5% at 6 weeks postpartum. The 'average' duration of home visits was 2.6 ± 1.9 hours, and the 'average' duration of hospital visits was 2.2 ± 2.0 hours The authors reported their results using relative risks of 'non-exclusive' breastfeeding. Exclusive breastfeeding was defined using "24-hour" recall (For the past 24 hours, did your baby receive any other foods besides breastmilk?), "previous week" recall (Over the past week, how did you feed your baby?), and the "ever given" recall (Did the infant receive any foods other than breastmilk since birth?) <u>Bf at hospital discharge, %</u> I C RR (95% CI) Not initiating bf 9 24 2.48 (1.04-5.90) Non-exclusive bf 56 41 1.35 (0.94-1.93) <u>Prevalence of non-exclusive bf[2], %</u> 1 m 65.1 91.7 1.41 (1.16-1.71) 2 m 71.4 95.8 1.34 (1.14-1.58) 3 m 73.0 97.2 1.33 (1.14-1.56) <u>Not bf at 3 m, %</u> 63.9 50.8 1.26 (0.93-1.70) The authors concluded that this intervention was effective in improving exclusive breastfeeding rates among low-income, inner city women in the US.	It is likely that an intervention as intensive as this one may reduce the rates of non-exclusive bf in a low-income population that has good initiation rates	Participants were not strictly similar as baseline (for example more Caucasian women in the control group) <u>Funding</u> The study was supported by the Centre for Disease Control and Prevention through a subcontract by the Association of Teachers of Preventive Medicine

[1] Among multiparous women
[2] Although not made explicit in the paper, non-EBF is the undesirable outcome, therefore a lower rate is a good thing. EBF rates are not provided in the paper!

1st Au, Year, Country, Design, Quality	Study population		Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	Married/cohabiting, % Ethnicity Hispanic, % Black, % Caucasian, % Education high school graduate, % > high school Primiparous, % Previous bf experience[1] Planned bf duration < 6m 6-12 > 12 m Employed full time, % part-time, % unemployed, % WIC participation Infant BW, mean, kg	39.7 81 14.3 1.6 36.4 31.8 55.6 89.3 20.4 75.5 4.1 11.1 23.8 65.1 92.1 3.39	26.4 63.9 20.8 12.5 30.6 31.9 48.6 78.4 46.2 50.0 3.8 9.7 29.2 61.1 88.9 3.46	quality)	women from the community, with bilingual skills, who had bf experience and received training from a IBCLC based on the WHO 40 hour bf counselling training course + the Hispanic Health Council bf training manual <u>Control group</u> Lactation education and support as per BFHI requirements 24 hour bf helpline Lactation consultant services while in hospital <u>Length of follow-up</u> 3 months <u>Follow-up rate</u> 20 women were ineligible (13 in intervention group and 7 in the control group). Of the remaining women 63 in the intervention group and 72 in the control group completed the study at 3 months.			

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / comments Funding
Chapman 2004a Chapman 2004b USA Hartford, Connecticut RCT 1-	<u>Inclusion criteria</u> ≥18 years of age Gestation ≤ 26 w Low income (WIC participant, Food Stamp participant, household income <180% of food poverty level) Intention to bf Delivered a healthy term singleton Have access to telephone Residents of the local area Not yet enrolled in the peer counselling programme Absence of congenital abnormalities <u>Exclusion criteria</u> History of maternal HIV Admission to SCBU <u>Sample size</u> I = 113 C= 106 (of these prenatally randomised women, 54 were not eligible for participation at delivery – 23 in intervention group and 31 in the control group. Reasons for	To evaluate the effectiveness of a breastfeeding peer counselling programme <u>Study quality</u> Power calculation not reported The authors state that participants were randomised using the SPSS program. They also reported that all analyses were completed on an ITT basis The study was not double blind, although interviewers were unaware of group assignment at	<u>Intervention</u> Contacts between peer counsellor and participant included: Prenatally – one home visit to review benefits of bf, screen for inverted nipples, provide written materials, discuss common bf myths, review positioning and attachment and provide anticipatory guidance; optional viewing of bf video; Hospital visits – daily, hands-on assistance, education on infant cues, bf frequency, signs of adequate feeding and management of bf problems; Postpartum visits – 3 home visits, the 1st within 24 hours of hospital discharge, assistance with positioning and attachment, verbal encouragement, free mini-electric breast pumps for those who need, pager access to peer counsellor, further (i.e. > 3) visits on request 3 peer counsellors delivered the intervention. Peer counsellor characteristics- completed high school; bf one child up to 6 m; trained in bf management. They worked a total of 2.3 wte Also in the programme were:	<u>Chapman 2004a:</u> <u>Prenatal peer counsellor contact n= 89</u> ≥ 1 visit, % 53 Duration, mean, min 69.0 ± 57.6 ** Half the participants reporting no prenatal visit had received a telephone call from the counsellor <u>Perinatal peer counsellor contact n= 71</u> ≥ 1 hospital visit, % 94 No. of visits, mean 2.7± 3.7 Total duration, mean, min 63.8± 123.0 **! <u>Postpartum contact n= 76</u> ≥ 1 home visit, % 50 ≥ 1 telephone call, % 53 No. of visits, mean (SD) 1.2 ± 1.6 ** The authors reported results as negative breastfeeding outcomes: <u>Prevalence of (not) Bf</u> I C RR (95% CI) Not initiating bf 8.9 22.7 0.39 (0.18-0.86) Not bf at 1 m 35.7 49.3 0.72 (0.50-1.05) Not bf at 3 m 55.6 70.8 0.78 (0.61-1.00) At 6 months, the impact of peer counselling on exclusive bf was not apparent – RR 0.94 95% CI 0.79-1.11 The authors concluded that peer counsellors can significantly improve breastfeeding initiation rates, and have an impact on breastfeeding duration in this population group.	The conclusions apply to a particular group of women (primarily single Puerto Ricans, approximately 25 years of age, with on average, 11 years of education)	**these results are as presented in the paper – but do not seem to make sense Chapman 2004a does not demonstrate effectiveness in bf duration, and Chapman 2004b demonstrates a marginal effect on duration. <u>Funding</u> Centres for Disease Control and Prevention and Hartford Hospital Research Foundation

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / comments Funding
	ineligibility were provided) Participant characteristics (for 165 women eligible at delivery) I C n 90 75 Age, mean, y 25.0 24.6 Education, mean, y 11.4 11.8 Parity, mean 2.0 1.9 Infant BW, mean, kg 3.4 3.4 Bf duration intention, m 6.3 7.0 Married, % 18.0 29.3 WIC participation, % 70.0 74.7 Ethnicity Spanish, % 80.0 80.0 Ethnicity African-American 8.9 8.0 Previous bf experience 44.9 43.2 Planned pregnancy, % 22.7 32.9 More married in C group, p <0.09 More planned pregnancies in C group,	the beginning of the interview. No other information on quality was reported	1 bilingual programme co-ordinator who was IBCLC qualified (1.0 wte) 2 co-directors one of who serves as a clinical resource for the peer counsellors Controls Received routine bf education offered at the hospital: Prenatally individualised bf information; written bf materials; Perinatally hands-on assistance and education from maternity ward nurses in the perinatal period; access to IBCLC Postpartum access to nurse managed helpline Follow-up Monthly until bf stopped, maximum to 6 months Loss to follow-up 12% at 6 m	Chapman 2004b: This paper reports on the association of degree and timing of exposure to breastfeeding peer counselling services with breastfeeding duration. These results are based on a sample size of 60. Length of prenatal visit, mean, minutes = 65 Content areas reported by participants, % Positioning 96 Bf brochures reviewed 92 Bf myths 92 Breast pump 85 Bf video viewed 54 Reasons for lack of prenatal visit, % Appointment made, no further documentation 29 Participants failed to return phone calls 13 Re-scheduled visits did not occur 13 Refused prenatal visit 8 No documentation of attempted contact from PC 8 Perinatal visits Actual contact 94% No. of visits 2.5 ± 4.1 Total contact with PCs 58.9 ± 135.5 minutes ** Postnatal home visits, % Home visit contact, total in 1st m 45 1 visit (1st m) 30 2 visits (1st m) 26 3 visits (1st m) 30 ≥ 4 visits (1st m) 13		

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / comments Funding
	p =0.14			Home visit contact, total in 2nd m 8 <u>Postnatal telephone contact, %</u> Telephone contact, total in 1st m 51 1 call (1st m) 35 2 calls (1st m) 12 3 calls (1st m) 23 ≥ 4 calls (1st m) 31 Telephone contact, total in 2nd m 12 <u>1st quartile of bf duration, months</u> With prenatal contact in 1st m 1.8 Without prenatal contact 0.5 *p* 0.05 With perinatal + postpartum contact 1.8 No perinatal ± postnatal contact 0.5 *p* 0.05 With prenatal + perinatal + postnatal contact 2.1 No prenatal ± perinatal ± postnatal contact 0.9 *p* 0.08 The authors concluded that the coverage levels provided reflect "real world" conditions – and are sufficient to expect differences in breastfeeding rates.		

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders/ Comments Funding
Muirhead, 2006 UK (Ayshire, Scotland) RCT 1++	<u>Inclusion criteria</u> Women at 28 weeks gestation Registered at specified general practice Total randomised 225 Peer support 112 Controls 113 I C n 112 113 Age, mean, y 28.5 27.8 Primipara,% 53.6 53.1 Previous experience of breastfeeding[3], % 23.2 23.8 Intending to bf , % 50.8 52.2 Intending to ff, % 31.2 31.8 Undecided, % 17.8 15.9 The intervention took place in a general practice setting – no specific information is provided on the economic status of the sample	To test if a specified programme of additional practical help from trained peer supporters affects the initiation and duration of breastfeeding <u>Power calculation</u> 160 women in each group would have 95% power to detect increase from 30 to 50% at 6 weeks Allocation to intervention or control was conducted by post-recruitment concealed allocation	<u>Intervention</u> 2 peer supporters were assigned to each mother, each pair supervised by health care professional - plus normal breastfeeding support (community midwife for the first 10 days, heath visitor after 10 days, breastfeeding support groups and breastfeeding workshops) Antenatally ≥ 1 visit Hospital – no visit (midwives helped mothers initiate breastfeeding) Postnatally alternate day contacts either on telephone or at home until 28 days *first visit not necessarily within the first 72 hours postnatally* After 28 days further support only on request until 16 weeks 12 peer supporters experienced in bf trained (2 days), refereed, security checked, given identity badge and sweat-shirt with trial logo; paid £ 5.00 per visit to cover costs of travel Peer supporter training involved breastfeeding education,	<u>Women completed questionnaires for breastfeeding in the presence of a health visitor.</u> <u>Any breastfeeding, %</u> I C d[4] 95% CI n 112[5] 113 Initiated 54.5 53.1 1.4 –11.7,14.4 At 10 days 41.1 40.7 0.4 –12.5,13.2 At 6 weeks 31.3 29.2 2.0 -10.0,14.0 At 16 weeks 23.2 17.7 5.5 -5.0,16.0 <u>Exclusive breastfeeding, %</u> At 6 weeks 24.1 21.2 2.9 -8.1,13.8 At 8 weeks 20.5 14.2 6.4 –3.5,16.2 At 16 weeks 1.8 0.0 1.8 –0.7,4.2 <u>Bf + Solids + NO formula</u> 16 weeks 14.3 8.0 6.3 -1.9,14.5 <u>Reasons for stopping bf</u> Did not want to bf *most common reason* Difficult baby/premature/special care Family circumstances/no family support Baby started on bottle in hospital Hospital MW told mother not to bf <u>Breastfeeding among women who intended to bf</u> I (95% CI) C (95% CI) *p* n 57 59 median, days 72 (28,116) 56 (28,84) ns <u>Breastfeeding among women who initiated bf</u>	Setting Scotland, applicable UK-wide Two points worth noting – there may be differences in areas where breastfeeding initiation is higher than in this setting (50%) and there may be some impact of availability of voluntary support locally	This was a well conducted study, however, the sample size did not reach target, this reduced the power of the study to detect a difference of 20% bf at 6 weeks between groups We do not know how peer supporters were received by local MW and HV <u>Funding</u> Departments of Ayrshire and Arran Health Board

[3] Not including primiparas
[4] Difference
[5] 13 of the randomised women did not have peer support; analysis includes all 112 randomised

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders/ Comments Funding
		(generated by computer in blocks of 10) for each of four strata (primigravidae, previous formula feeder, previously breastfed >6 weeks, previously breastfed <6 weeks). Allocation of each woman was done by telephone call. The authors analysed the data by ITT	transferable skills, health & safety, confidentiality, patient-professional relationships Specific details on what the peer supporters discussed with the mothers was not reported <u>Controls</u> Normal midwife support for initiating breastfeeding in hospital plus normal bf support from community midwife in 1st 10 days and health visitor after, breastfeeding support groups, breastfeeding workshops <u>Length of follow-up</u> 16 weeks <u>Follow-up rate</u> 97%	n 61 60 median, days 72 (6,138) 56 (22,90) ns <u>Breastfeeding duration among primigravidae</u> n 60 60 median, days 7 (0,23) 3 (0,13) ns The authors concluded that peer supporters in this population did not increase breastfeeding in this population by a statistically significant amount.		

Does a lactation consultant effectively increase the initiation and duration of breastfeeding?

1st Au , Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders/ Comments Funding
Bonuck 2005 USA (New York) RCT 1+	<u>Inclusion criteria</u> English or Spanish speaking Twin or singleton pregnancy Intention to keep infant Intention to continue care with the centre and hospital system to 12 mo Pregnancy < 24 weeks ≥ 2 contact telephone numbers (the reason for this is not explicitly stated in the paper) <u>Exclusion criteria</u> HIV positive status Chronic illness with medications incompatible with bf Pre-gestational diabetes mellitus Women with breast reduction surgery, hepatitis B/C, T cell leukaemia <u>Sample size</u> I group=188 C group=194 <u>Participant characteristics (for all women randomised)</u> I C n 188 145 Age in y, mean[SD] 25.68[6.38] 24.84[5.86] High school yes, % 58.5 63.4 Married/partner, % 50.3 54.6 Foreign born yes, % 44.1 34.5	<u>Research question</u> To determine if an individualised prenatal and postnatal lactation consultant intervention resulted in increased cumulative intensity of breastfeeding up to 52 weeks <u>Power calculation</u> 52 women per group were needed at each centre to detect a difference of 29% breastfeeding initiation rate as a result of the intervention	<u>Intervention</u> Lactation consultants (LCs) from out of the hospital system delivered the intervention Two prenatal visits: Visit 1: to build trust, assess feeding intentions, discuss benefits of bf, bf education using flip-charts; Visit 2: to teach practical BF initiation skills using models; Prenatally weekly telephone contact Hospital visit / postnatal home visits to enhance bf skills – latching on, positioning, avoiding common bf problems; use of pump; other bf related information such as frequency of feeding, determining adequate intake in the infant; maternal nutrition; expression/storage;	A total of 304 women (intervention =145, control=159) were included in the final analysis Breastfeeding was measured through maternal self-report. Breastfeeding status was assessed with the Index of Breastfeeding Status (7-level ordinal scale). Breastfeeding intensity was created by summing weekly scores (range from 1 to 7, with 1 being exclusive breastfeeding and 7 being exclusive formula feeding) The intervention group was significantly more likely to breastfeed at each week up to and including week 20, with the exception of week 18.: <u>Any bf rates, %</u> I C *p* 2 weeks 90.0 65.0 <0.03 6 weeks 75.0 55.0 <0.03 20 weeks 53.0 39.3 <0.03 12 months 18.0 15.0 ns <u>≥ 50% bf rates, %</u> 1st week 69.0 47.0 <.001 1st 9 weeks 45.8 33.1 <0.03 <u>Exclusive bf, unadjusted, %</u> 2 w 20.0 19.0 ns 6 w 15.0 16.0 ns 13 w 9.0 11.0 ns	LC comprehensive input (skills building, education, problem solving, support) both prenatal and postnatal can increase the rate of any breastfeeding, but not of exclusive breastfeeding in a low-income sample of women. Likely that this intervention will work in UK groups where bf rates are low Cost was $ 266 in 2003 (calculation as if LC was a health centre employee).	Effect significantly modified by country of origin in regression analysis: US born control subjects had significantly greater risk of low breastfeeding at 13 weeks in the entire sample compared with foreign-born women in the intervention group (OR 5.22; 95% CI 2.43-21.36) Recall bias for method of feeding may have led to misclassification or over-reporting Funding US Department of Agriculture,

[6] Higher values indicate greater intensity of formula feeding, lower values indicate greater intensity of bf. Range of weekly intensity for 13 weeks was 13-91.

1st Au , Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders/ Comments Funding
	Ethnicity black, % 35.6 38.7 Ethnicity Spanish, % 54.8 55.2 Medicaid yes, % 53.7 58.2 Other children yes, % 59.9 62.0 Bf before yes, % 67.9 67.8 Intention only bf, % 33.0 32.4 Intention mixed, % 47.3 50.3 Intention ff, % 8.5 7.6 Intention don't know, % 11.2 9.7 The authors state that there were no significant differences between the women randomised, but not included in the final analysis compared with those women included in the final analysis, within or across treatment groups	with an α of 0.05 and β of 0.20 (2 tailed test) Women were randomised using an undisclosed blocking factor and stratification according to centre. A biostatistical office generated and maintained a list of random codes. Concealment was maintained by sealed envelope. No blinding	nursing in public; return to work/school; establishing social support in family, school, workplace, healthcare providers. Nursing bra offered to all women, breast pump offered in some circumstances LCs maintained diaries <u>Control group</u> Women had no contact with LCs Received standard care – 1 mandatory prenatal care class. WIC women had the opportunity to visit the WIC breastfeeding co-ordinator Follow-up until 12 months follow-up rate: 79.5% (and 83.5% of eligible women after exclusions)	26 w 5.0 8.0 ns 52 w 6.0 5.0 ns <u>Bf intensity at 13 week, median score[6]</u> n=145 Any prenatal visits 61.0 2 prenatal visits 60.0 Any postnatal visit 54.5 Hospital visits 58.5 Home visits 49.0 Telephone calls 53.0 Any prenatal/ postnatal 60.0 Both prenatal and postnatal 58.5 The authors concluded that this intervention was effective in increasing breastfeeding duration and intensity.		Maternal and Child health Bureau Agency for Healthcare Quality and Research

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Dias de Oliveira 2006 Brazil, Porto Alegre RCT 1-	Inclusion criteria Mothers living in the city of Porto Alegre Users of public health care systems Healthy non-twin newborns with birthweight at least 2500g Recruited on the maternity ward of the study hospital June-Nov 2003 Exclusion criteria Mother-infant pairs unable to stay together due to a health concern in either the mother or infant Sample size 233 eligible Number randomised not explicitly reported (by implication 221); number randomised to each group not reported Final sample 211 (74 intervention and 137 control) Participant characteristics I C n 74 137 Mothers ≥20 y old 56 (75.7%) 104 (75.9%) Vaginal delivery 59 (79.7%) 92 (67.2%) Male child 40 (54.1%) 70 (51.1%) White mother 53 (71.6%) 95 (69.3%) Mother educated ≥8y 42 (56.8%) 93 (67.9%) Couple living together 61 (82.4%) 114 (83,2%) 5+ antenatal visits 57 (78.1%) 109 (80.7%) First child 34 (45.9%) 65 (47.4%) Breastfeeding duration for previous children ≥6 months (among 112 women with previous child) 19 (47.5%) 47 (65.3%)	Research question To assess the impact of one breastfeeding technique intervention on the rate of exclusive breastfeeding (and on breast problems related to breastfeeding) in the first month postpartum Power calculation Not reported Randomisation method, and concealment of allocation Allocation stated to be randomised. Report states two mother-infant pairs fulfilling the inclusion criteria were chosen by lot daily	Intervention In addition to standard care the intervention group received reinforcement of the orientation routinely given to mothers, in one 30min session with no more than 2 mother-infant pairs. The session was given by 2 nurses, one of whom was a lactation consultant Control group Received standard care, including; breastfeeding within half an hour of delivery whenever possible, overall guidance on breastfeeding technique including aspects related to breastfeeding technique and practical helping case of any breastfeeding difficulty At the time of the study, the study hospital had Baby-Friendly accreditation Follow-up Feeding patterns were assessed during home visits at 7 and 30 days after the birth Follow-up rate Not explicitly reported, probably 211/221 (95%)	Breastfeeding (bf) at 7 days I C n 74 137 Stopped bf 1 0 Exclusive bf 82.5% 79.7% Breastfeeding (bf) at 30 days I C n 73 137 Stopped bf 2 5 Exclusive bf 53.3% 60.8% Numbers are as reported in the paper No statistically significant differences were found between the groups for exclusive breastfeeding at 7 or 30 days Other results are reported Researchers conclude that one session to reinforce proper breastfeeding technique in the maternity ward is not sufficient for improving breastfeeding technique Researchers recommend further studies to investigate factors relating to exclusive breastfeeding rates in the Brazilian environment more fully	Researchers advise caution before generalising the conclusions of the study, because the participants come from a sample of Brazilian women in only one setting	 Funding Not reported

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	Guidance on proper positioning and latch-on before delivery 8 (11%) 28 (20.7%) No statistically significant differences found between the groups The designated Baby Friendly hospital mainly served a low socioeconomic population	(including weekends) from the maternity ward				

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Su 2007 Singapore RCT 1+	<u>Inclusion criteria</u> Healthy pregnant women ≥34 weeks' gestation who intended to breastfeed attending antenatal clinics at a Singapore hospital (2004-2005). (n=450 randomised) <u>Exclusion criteria</u> Illnesses that would contradict breastfeeding or severely compromise its success. Women with high risk and multiple pregnancies. <u>Participant characteristics</u> Con Int 1 Int 2 n 151 150 149 Mothers age Mean y 28.6 29.5 29.9 Vaginal delivery (%) 76 75 77 Ethnicity (%) Chinese 31 41 44 Malay 54 43 46 Indian 11 13 8 Other 5 2 2 Higher education (%) 35 37 34 Employed (%)	<u>Research question</u> To investigate whether antenatal breastfeeding education alone or postnatal lactation support alone improve rates of exclusive breastfeeding compared with routine hospital care. <u>Power calculation</u> To detect expected differences across the 3 groups with a 2-sided test of 5% with 90% power, equal randomisation of 450 women between 3 groups was required.	<u>Interventions</u> <u>Intervention 1</u> (n=150), one session of antenatal breastfeeding education, including a 16 m video introducing the benefits of breastfeeding, correct positioning, latching on, breast care, common problems + printed guides + opportunity for a 15 m talk with a lactation consultant <u>Intervention 2</u> (n=149), 2 session postnatal lactation support programme (30 m each session) to include	<u>Percentage of women exclusively breastfeeding</u> Relative risk (95% CI); no. needed to treat (NNT) (95% CI) Con Int 1 Int 2 Int 1 vs. Con Int 2 vs. Con Int 2 vs. Int 1 At discharge 18 20 27 1.08 (0.63-1.86) 1.48 (0.89-2.47) 1.37 (0.83-2.26) At 2 weeks 21 27 38 1.32 (0.80-2.15) 1.82 (1.14-2.90)* 1.39 (0.90-2.13) NNT = 6 (4-17) At 6 weeks 17 29 31 1.73 (1.04-2.09)* 1.85 (1.11-3.09)* 1.07 (0.69-1.66) NNT = 8 (5-41) NNT = 7 (4-24) At 3 months 13 24 24 1.92 (1.07-3.48)* 1.87 (1.03-3.41)* 0.97 (0.59-1.62) NNT = 9 (5-43) NNT = 9 (5-60) At 6 months 9 19 19 2.16 (1.05-4.43)* 2.12 (1.03-4.37)* 0.98 (0.55-1.76) NNT = 10 (6-60) NNT = 11 (6-80) n at 6 months 126 122 119 * p<0.05 <u>Percentage of women with any breastfeeding</u> Relative risk (95% CI); no. needed to treat (NNT) (95% CI) Con Int 1 Int 2 Int 1 vs. Con Int 2 vs. Con Int 2 vs. Int 1 At discharge 95 96 98 1.01 (0.79-1.28) 1.03 (0.81-1.31) 1.02 (0.80-1.30) At 2 weeks 93 95 98 1.02 (0.79-1.20) 1.05 (0.82-1.35) 1.04 (0.81-1.33) At 6 weeks 71 73 84 1.03 (0.89-1.20) 1.19 (1.05-1.36)* 1.16 (1.02-1.31)* NNT = 8 (5-26) NNT = 9 (5-60) At 3 months 49 58 58 1.19 (0.85-1.66) 1.20 (0.86-1.68) 1.01 (0.73-1.40) At 6 months 34 43 40 1.25 (0.83-1.87) 1.18 (0.78-1.78) 0.95 (0.64-1.40) n at 6 months 126 122 119 * p<0.03 *Conclusions:* Antenatal breastfeeding education and postnatal lactation support, as single interventions based in hospital both significantly improve rates of exclusive breastfeeding up to 6 months after delivery. Postnatal support was marginally more effective than antenatal education. (Only postnatal support had a significant effect on rate of any breastfeeding and then only at 6 months after delivery.)	56% women had breastfed previously. Only 6% women attended the routine antenatal classes. The study was in Singapore, chiefly in Chinese and Malay women, and thus the result may not be applicable to the UK.	<u>Funding</u> Funded by the National Healthcare Group

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	43 43 54 Household income <5000 $/m (%) 93 88 91 Nuclear family (%) 53 54 46 Attended hospital antenatal class (%) 5 8 6 Primiparous (%) 40 39 40 Had previously breastfed (%) 56 57 56 No statistically significant differences found between the groups	<u>Randomisation method, and concealment of allocation</u> Randomisation (using telephone calls) carried out for trial by a clinical trials and epidemiology unit at the National Medical Council, who were deeply involved in the trial and also carried out the analysis, according to good clinical practice. The unit generated and maintained a list of random codes for participants. Treatment assignment	hands-on instruction on latching on, positioning, etc.. Visited by lactation consultant in hospital within 1st 3 days + 2nd support session during 1st postnatal visit 1-2 w after delivery. + the same printed guides as Int 1. <u>Control group</u> (n=151), routine care i.e. optional antenatal classes which did not address infant feeding, and postnatal visits from a lactation consultant should problems arrive			

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
		carried out by computer on the phone with backup envelopes if there were website problems (used for 4 women). Concealment not addressed.	Interviews with women then carried out at 2 and 6 weeks either at routine postnatal clinics or at home and for data at 3 and 6 months on the phone. <u>Follow-up rate</u> After 6 months: Int 1, 81% Int 2, 80% Con, 83% All, 82%			

Does a healthcare service professional effectively increase the initiation and duration of breastfeeding?

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Di Napoli 2004 Italy (Rome) RCT 1- Study was conducted in 2000-2001	Inclusion criteria Pregnant women intending to bf Exclusion criteria Not available by telephone contact Inability to speak Italian Did not reside in catchment area of hospital Women suffering from tuberculosis, psychosis, active Hep A/B, Hep C or HIV +ve Baby SCBU admission Sample size I group=303 C group=302 Participant characteristics I C n 303 302 Age ≤ 35 y, , % 79.5 81.5 Primipara, % 45.2 43.4 Education high school, % 60.1 61.9 Unemployed, % 40.9 46.4 Pre-pregnancy smoking, % 27.4 25.2 BF experience[7], % 66.3 67.3 Knowledge of bf techniques[8], poor, %	Research question To assess the effectiveness of a bf support intervention delivered by midwives to increase bf initiation and duration Objectives were to reduce premature discontinuation of exclusive bf by 50% and 25% increase in number of women bf by the end of the 3rd month Power calculation	Intervention Home visit of 30 minutes within 7 days of discharge + bf counselling by telephone Delivered by midwives from maternity ward who had attended the UNICEF 18-hour intensive training course on bf techniques and management. Same midwife for each woman Control group The authors stated "no specific intervention" Follow-up	Infant's feeding habits were assessed by 24-hour recall. An interviewer administered a questionnaire once every 2 weeks over 6 months (=12 questionnaires). WHO definitions of breastfeeding were used ANALYSIS BY INTENTION TO TREAT (I=276; C=266) I C Risk of discontinuing bf at 4 m[10] HR 1.01 1.0 95% CI 0.82-1.27 - Risk of discontinuing bf at 6 m HR 1.04 1.0 95% CI 0.85-1.26 - ANALYSIS BY ADHERANCE TO PROTOCOL Risk of discontinuing bf at 4 m in women who received intervention HR 0.92 1.0 95% CI 0.74-1.13 - Risk of discontinuing bf at 6 m in women who received intervention HR 0.96 1.0 95% CI 0.78-1.18 - - Differences in bf duration at 4 and 6 m by ITT analysis and by Adherence to Protocol analysis were not significant	Likely applicable to UK populations and settings	Low response rate Funding Not reported

[7] Among multiparous women
[8] Obtained by adding answers (1 point if correct) to following questions with 3 possible answers each- 1) definition of bf on demand, 2) sufficient quantity of breast milk, 3) daily frequency of feedings, 4) method of increasing bm production, and 5) method of avoiding nipple pain. Poor knowledge = score between 0 and 3; good knowledge either score 4 or 5.
[9] Complementary feeding, or exclusive formula feeding

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	71.9 75.2 Knowledge of bf techniques good, % 28.1 24.8 Vaginal delivery 68.6 62.6 Caesarean section 31.4 37.4 First bf < 2 h after birth 5.6 7.6 In hospital ebf 41.3 52.3 (p 0.01) In hospital ff[9] 49.5 43.4	A sample size of 500 women was required to detect a 25% reduction in discontinuation of bf at 3 m, with a 80% power and 95% significance in observed differences Participants were stratified by age and parity – and randomly assigned (details on randomisation method, and concealment of allocation not reported)	To 6 m <u>Follow-up rate</u>, Complete follow-up 45.9% (those who completed 12 interviews) Partial follow-up 43.6% (those who completed less than 12 interviews)	- A 50% increase in risk of complementary and/or formula feeding was noted among those women who refused the midwife's home visit; bf duration was shorter than those in the intervention group who received the home visit (p <0.01) - A 50% increase in bf discontinuation was observed when complementary feeds were provided in hospital The authors concluded that this early home support programme delivered by midwives was not effective in increasing breastfeeding initiation and duration,		

[10] Intervention group adjusted for age, mother/father education level, smoking habits before/during pregnancy, parity, participation in bf course, knowledge of bf techniques, mother's health status, pre-pregnancy BMI, type of delivery/infant feeding in hospital

1st Au, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Labarere 2005 France (Chambery) RCT 1++ (Oct 2001-May 2002)	Inclusion criteria Mothers who had delivered a healthy singleton baby Breastfeeding on discharge Exclusion criteria Baby admitted to SCBU Mother admitted to ICU Age ≤ 18 years Residence outside catchment area of designated hospital Inability to speak French Unable to complete study due to known psychosocial problems such as homelessness Sample size I group 116 C group 115 (Mother infant-pairs were recruited in Chambery Teaching Hospital) Participant characteristics (women) I C n 116 115 Age, y, mean (SD) 29.3 (4.1) 29.7 (4.8) > high school education,% 75.0 73.0 White collar worker, % 79.3 75.6 Living with spouse, % 98.3 97.4 Prenatal class attendance,% 72.4 76.5 Primiparity, % 50.0 54.8 Epidural anaesthesia, % 59.5 63.5 Caesarean section, % 8.6 8.7 Participant characteristics (baby)	To determine whether attending an early, routine, preventive, outpatient visit delivered in a primary care physician's office would improve breastfeeding outcomes Power calculation: A sample of 115 women in each arm had 85 % power at α error of <0.05 to detect a rise in exclusive breastfeeding at 4 weeks from 70% to 87.5%, taking into account ~ 5 % loss to follow-up Allocation sequence was generated using random permuted	Intervention: women were invited to attend a routine, individual , preventive, out-patient visit in the office of a primary care physician within 2 weeks after the birth Primary care physicians (family doctors and paediatricians) practicing in the catchment area of the hospital – all received a 5 hour training on breastfeeding related knowledge and counselling. Content of training – general health assessment, lactation physiology, feeding position and latch-on assessment, management of common lactation problems, management of infant problems, maternal medication use and sources of support	Breastfeeding status was determined using 24-hour recall. I C OR (95% CI) p n 112 114 Exclusive bf 4 wk, % 83.9 71.9 1.17 (1.01-1.34) 0.03 Any bf At 4 wk, % 89.3 81.6 1.09 (0.98-1.34) 0.10 Duration of any bf, wk, median 18 13 1.40 (1.03-1.92) 0.03 Reporting any bf difficulty, % 55.3 72.8 0.76(0.62-0.93) <0.01 Very/fairly satisfied with bf experience, % 91.1 87.7 1.04(0.95-1.14) 0.41 The authors concluded that in this setting, the study provides preliminary evidence of the effectiveness of breastfeeding support provided by trained physicians on breastfeeding outcomes – and that a short training programme for physicians might contribute to improving breastfeeding outcomes.	Marked difference in LOS after normal vaginal delivery, rates of caesarean section, routine breastfeeding support between France and UK This sample was a fairly affluent educated group of women; people in difficult psychosocial circumstances were not included; non-French speaking women not included	Participating physicians were self-selected to the group therefore were highly motivated; Postal questionnaires may not all have returned correct bf information; bf status may have varied during the intervening 4 weeks; this was a low risk population group Funding Grants from Union Professionnelle des Médicins Libéraux de la Region Rhone Alpes (Lyon, France), and grants from Délégation Régionale a la Recherche Clinique, Centre Hospitalier Universitaire

1st Au, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	I C n 116 115 Gestational age at birth, w, mean (SD) 39.7(1.3) 39.8(1.2) Birth weight, g, mean (SD) 3314(441) 3325 (396) Apgar score <7 at 1 min, % 0.9 0 Breastfed within 1 hour of birth, % 41.4 46.1 Expected duration of breastfeeding, mo, median (interquartile range) 4(3-6) 4(3-6) Postpartum length of stay 4 d, % 49.1 51.3 Return to work at 18 w, % 35.7 30.7	<u>blocks; concealed using opaque envelopes; analysis were conducted using ITT</u>	Control group: (and intervention group) received pre-discharge and post-discharge breastfeeding support – verbal encouragement to maintain breastfeeding from maternity ward staff; paediatrician assessment on day of discharge with evaluation for successful breastfeeding behaviour (considered valid for routine preventive 8 day visit) ; provision of a telephone number for peer support; preventive outpatient visits at 1, 2, 3, 4, 5 & 6 months <u>Follow up: 4 and 26 weeks</u> n= 92 (79.3%) women in the I group actually received the intervention, and 8 (7%) of women in the C group received the			(Grenoble, France), lead researcher supported from the Egide Foundation

1st Au, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
			intervention			

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Wallace 2006 UK English Midlands RCT 1++	Inclusion criteria Primiparous mothers Intending to breastfeed term babies Able to sit out of bed at the time of the first feed in a postnatal ward Exclusion criteria Babies delivered by caesarean section under general anaesthetic Sample size 370 randomised to an intervention or control group midwife at the time of the first feed on the postnatal ward I group=188 C group=182 Participant characteristics I C n 188 182 Age <20y 5% 5% 20-29y 50% 52% 30-30y 43% 40% 40+y 2% 2% Spontaneous vaginal birth 71% 70% Instrumental birth 21% 22% Caesarean birth 9% 8% Prior feed in delivery suite 66% 65% Socioeconomic status, ethnicity, education and civil status not reported	Research question To determine whether 'hands off' care by midwives at the first feed on the postnatal ward, on positioning and attachment of the baby, improves breastfeeding duration Power calculation Researchers state that using a log-rank test, the study had 80% power to detect a change from 40% to 55% in the numbers continuing to breastfeed beyond 17 weeks Randomisation method, and concealment of allocation Allocation of mothers was initially by telephone randomisation; later	Intervention At the first feed on the postnatal ward, care from a midwife who volunteered to take part in the trial and received 4h training in the experimental protocol at a workshop. Training covered the rationale and skills of a 'hands off' approach; advice about breastfeeding initiation, positioning and attachment; physiological explanation of milk synthesis, supply and removal; mother sitting upright and supported; feeding uninterrupted; feed times and duration baby-led. Control group At the first feed on the postnatal ward, care from a midwife who volunteered to take part in the trial and received 1h breastfeeding policy update and briefing on the trial. Breastfeeding policies at the four hospitals involved in the trial stated to be broadly similar and not to stipulate	Breastfeeding initiation (6 week interview data alone) I C Data available from 170/188 155/182 Not breastfeeding at all at discharge from hospital 16/170 (9.4%) 7/155 (4.5%) ns Breastfeeding at discharge 154/170 (91%) 148/155 (95%) ns Breastfeeding at 6 weeks (diary and interview data) I C Data available from 172/188 163/182 Ceased exclusive breastfeeding (includes both formula feeding and mixed breast and formula feeding) 130/172 (76%) 126/163 (77%) ns Exclusive breastfeeding 42/172 (24%) 37/163 (23%) ns Ceased any breastfeeding 61/172 (35%) 53/167 (32%) ns No significant differences detected between the groups Breastfeeding at 17 weeks (diary and interview data) I C Data available from 174/188 168/182 Ceased exclusive breastfeeding (includes both formula feeding and mixed breast and	UK study Researchers recommend that future studies should differentiate the elements of care that are effective in achieving postnatal feeds, and apply this advice consistently at successive feeds	Researchers suggest: -lack of beneficial effect found may be because aspects of the intervention were already within routine UK practice -other care practices at subsequent feeds may have negated benefits -'hands off' care at the first feed may be less important to subsequent feeding than achieving a first feed under supervision in the postnatal ward Funding Sponsored by

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
		randomisations used computers installed in each ward. Allocation of mothers was concealed to the point of randomisation. Mothers and assessors (not midwives) were blind to treatment allocation.	advice about positioning, attachment or verbal-only care. <u>Follow-up</u> Diary data, and semi-structured home interviews at 6 weeks and telephone interview at 17 weeks by researchers blind to allocation <u>Follow-up rate</u> 335/370 (91%) at 6 weeks 342/370 (92%) at 17 weeks	formula feeding) 167/174 (96%) 161/168 (96%) ns Exclusive breastfeeding 7/174 (4.0%) 7/168 (4.2%) ns Ceased any breastfeeding 109/173 (63%) 101/167 (60%) ns No significant differences detected between the groups Other outcomes are reported Researchers conclude no significant beneficial effect was found on breastfeeding duration of the verbal-only advice on positioning and attachment		the Department of Health Infant Feeding Initiative, UK

Does breastfeeding education effectively increase the initiation and duration of breastfeeding?

1st au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Forster 2004 Australia (Melbourne) RCT 1++	<u>Inclusion criteria</u> Booking for AN care as public patient Primigravida 16-24 weeks pregnant Fluency in English <u>Exclusion criteria</u> Physical problems preventing breastfeeding Choosing a birth centre/ private obstetric care <u>Sample size</u> Recruited (when women attended midtrimester scan) 984 P/ Skills group (PS) 327 Attitudes group (A) 329 Standard care group 328 <u>Participant characteristics</u> Mean age at recruitment, y Std A A 28.7 28.0 28.2 Completed sec. School (%) 78.7 71.1 75.5 Lives with partner (%) 90.5 86.8 86.8	To determine the influence of mid-pregnancy breastfeeding education on the proportions of women breastfeeding at hospital discharge; and breastfeeding duration <u>Power calculation</u> Sample size required to increase breastfeeding rates among primiparous women at discharge from 75% to 85% with 95 % CI and 80% power + 20% loss to follow-up was 324 in each group; this sample wise was	Practical skills group - single session class of 1.5 hours with women (not their partners) focussing on practical breastfeeding skills like latching-on, using teaching aids Attitudes group – 2 class sessions of 1 hour each with women (and their partners) to change attitudes towards breastfeeding and making a breastfeeding plan Standard care group - received standard care (any or al l of the following - formal breastfeeding education, breastfeeding information,	<u>Breastfeeding intention</u> Planned to breastfeed 92.5% Of the above - Planned to breastfeed for 6 months or longer 26% Planned to breastfeed for 3 months or less 7% No plans about duration of breastfeeding 45.8% <u>Breastfeeding at 2/4 days postpartum</u> P/Skills Attitudes Std care OR (CI) *p* n= 306 308 310 (these figures exclude babies who were not yet feeding Breastmilk only(%) 77.8 77.6 78.1 P/S 0.98(0.67,1.44) 0.93 A/S 0.97(0.66, 1.42) 0.89 Any breastmilk 96.7 94.5 95.8 P/S 1.30(0.56,3.0) 0.55 A/S 0.75(0.36,1.57) 0.45 <u>Breastfeeding at 6 months</u> n = 297 293 299 Exclusive breastfeeding 8.8 8.5 7.4 P/S 1.20(0.67,2.18) 0.53 A/S 1.17 (0.66, 2.13)0.60 Any breastfeeding 54.5 49.8 54.2 P/S 1.01(0.74,1.40) 0.99 Adjusted for income *p* 0.20 A/S 0.84(0.61,1.16)0.29 Adjusted for income *p* 0.88 No statistically significant between-group differences in median values for any breastfeeding	These interventions may be more effective in UK settings where initiation rates are much lower; in addition there is a need to change societal attitudes and improve bf skills	The local hospital was Baby Friendly 3 years before the study, and already supportive of breastfeeding; these same interventions *may* have been more effective in a less supportive environment Breastfeeding intention is an indicator of initiation and duration- many participants did not intend to breastfeed for 6 months- therefore results are not surprising <u>Funding</u> Grant from the National Health

[11] Likert scale 1= strongly disagree; 5= strongly agree

1st au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	Women were on low incomes and from culturally diverse backgrounds	sufficient to increase breastfeeding at 6 months from 38% to 52% in either intervention group compared to the standard care group The authors state that a computerised system of biased urn randomisation was accessed by telephone to ascertain women's group allocation; analysis was by ITT	lactation consultant support, peer support, education on breastfeeding on postnatal ward, 24-hour telephone counselling, postnatal home visit from community midwife) Midwife+ community educator with specific training in childbirth education (Note: lactation consultant qualifications not required) delivered both interventions in a classroom setting of not more than 8 participants Follow-up: 6 months Follow-up rate: Practical skills=297, Attitudes=293 and controls=299	Attendance at intervention classes – less than anticipated; but same as women booking in to childbirth education classes at local women's hospital Class evaluations median scores[11] Skills Attitudes Class was enjoyable 4 4 Infant feeding information useful 5 4 Did not learn new things 1 1 Enough opportunities to ask Q's 5 5 Class leader able to answer Q's 5 5 Felt uncomfortable participating in classes 1 1 Time/place convenient 4 4 Would recommend to other women 5 5 The authors concluded that, in settings where breastfeeding initiation is already high, neither study intervention could be recommended as an effective strategy to increase breastfeeding initiation or duration.		and Medical research Council, Canberra plus funding from The Royal Women's Hospital and The Victorian Health Promotion Foundation, Melbourne, Australia

1st Au, Year, Country, Design, Quality	Study population	Research question Study Quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Labarere 2003 France (Annecy) RCT 1++ (Oct to Dec 2001)	<u>Inclusion criteria</u> ≥ 18 y of age Ability to speak French Employed outside home pre-natally Delivered a singleton baby before 37 w, > 2500 g BW Bf in hospital <u>Exclusion criteria</u> Mother transferred to ICU Baby transferred to SCBU Neonatal death In-hospital breastfeeding mothers were recruited <u>Randomised</u> I= 106 C= 104 <u>Participant characteristics (of women who were analysed)</u> I C n 93 97 Age, mean, y 30.5 30.9 Any University education, % 57.0 60.8 White collar worker, % 88.2 81.4 Worked full time prenatal, % 67.7 70.8 Primipara, % 52.7 52.6 Smoked during pregnancy,% 18.3 15.5 Caesarean section, % 4.3 11.3 Gestation at birth, mean, w 39.9 40.1 Infant BW, mean, g 3343 3360 Baby LOS ≥ 7 d 14.0 14.4	To determine if a single one-to-one hospital education session could increase the rate of bf at 17 w <u>Power calculation</u> 103 mother-baby pairs were required in each arm to detect a rise in bf rates at 17 weeks from 30% to 50%, assuming a power of 80% and a significance of 0.05 with a 2 sided chi squared test Randomisation was performed using computer-generated random numbers in blocks of 8; allocation concealment by numbered, sealed, opaque envelopes; the authors state that ITT analysis was performed, but the results do not appear to reflect this	<u>Intervention</u> Education intervention - single 30 minute one-to-one session of providing information + discussion + leaflet with all information to combine bf and employment - given at discharge Topics included bf legislation and its interpretation for working mothers; positioning and attachment; feeding on demand; management of common bf problems; opportunities for prolonging bf after return to work Delivered by 3 mw and 1 intern (given a handbook to ensure standardisation of intervention) <u>Control</u> Usual verbal encouragement to continue bf from maternity staff; no leaflet; no contact with staff of research project	Breastfeeding status was determined by 24-hour recall I C *p* OR (95%CI) n 93 97 Returned to work within 17 weeks after delivery, % 35.5 27.8 0.26 - Contacted peer support groups 21.5 25.8 0.49 - Delay in returning to work, mean, w 12.9 12.3 0.51 - <u>Bf outcomes</u> Bf on return to work, % 6.4 10.3 - - Any bf at 17 w, % 34.4 40.2 ns 0.86 (0.52-1.40) Exclusive bf at 17 w, % 14.0 14.4 ns 0.97 (0.42-2.22) Bf difficulties 44.1 52.6 ns 0.84(0.54-1.29) Very or fairly satisfied with bf experience 90.3 90.7 ns 0.99 (0.73-1.36) Mothers in the intervention group less likely to report sore nipples ($p<0.05$) , nipple pain ($p<0.04$) Differences in reporting breast engorgement, insufficient milk, sucking problems not significant	A large proportion of women in this trial were over 25 years of age, well-educated and white collar workers. The results may not be applicable to other population groups	Caesarean section rate higher in control group Educational interventions may not be appropriate in the face of other socio-cultural factors – also we do not know what bf provisions there were for mothers who returned to work <u>Funding</u> Not stated

1st Au, Year, Country, Design, Quality	Study population		Research question Study Quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	Bf within 2 h, % Pacifier use, %	82.8 81.4 31.2 30.9		Both groups were provided with the telephone number of a peer support group <u>Follow-up</u> 17 weeks Lost to follow-up 9.5%	The authors concluded that a single in-hospital educational intervention has no effect on the breastfeeding rate at four months.		

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Lavender 2005 UK (Liverpool) 1+	Inclusion criteria Registration with general practice in one of the 8 electoral wards Fetal abnormality not detected at the 20 week ultrasound Expressed desire to breastfeed Exclusion criteria Fetal abnormality Sample size (cluster randomised) Randomised 1312 Intervention group 679 Control group 633 Participant characteristics I C n = 679 633 Age, mean, y 29.6 29.7 Primipara, % 49.7 53.0 Ethnicity white, % 93.1 91.1 Smokers, % 14.0 13.0 Gestational age, mean, w 20.8 20.7 Deprivation score, mean 20.8 19.4 Kept diary, % 24.1 21.8 Intention to bf, % < 1 week 0.14 0.15 >1 w - < 1 m 2.4 5.2 1 m – 6 w 14.3 11.8 >6 w – 4 m 37.4 34.1 >4 m – 6 m 23.4 28.9	To evaluate the effect of an antenatal breastfeeding education intervention on individual expectation of breastfeeding duration Power calculation 1040 women were required for a study power of 90% at the 5% two sided significance level, assuming an intra-cluster correlation coefficient of 0.01 and mean cluster size is 142 Note – women, PCHTs and wards were at the 1st, 2nd and 3rd levels respectively to be treated as random effects	Intervention In addition to standard antenatal care, women in intervention group were invited to attend a single educational support afternoon session supervised by a lactation consultant but also attended by a local community midwife. Community midwives attended a separate training workshop prior to the session (the teaching programme was based on baby friendly guidelines) Control group received standard antenatal care, breastfeeding advice from attending midwives and information about hospital parent education classes Follow up Feedback was assessed through an initial questionnaire on breastfeeding. Follow up questionnaires were given at 2,4,6 weeks and	A woman was considered to be breastfeeding if she gave her baby any amount of breast milk. Achieved expected duration of breastfeeding I 44.4% C 41.7% OR 1.2 (95% CI) 0.9-1.6 p 0.2 Breastfeeding at discharge I 80.3% C 76.5% OR 1.2 95% CI 0.8-1.7 p 0.3 Frequency of exclusive bf at 4 m Prevalence data of exclusive bf by group not reported Exclusive bf 18.8% OR 1.1 95% CI 0.6-1.8 p 0.8 Reasons for stopping bf Return to work 20.3% Lack of breastmilk 15.3% No differences in study arms for reasons for stopping The authors reported that women who did not reach their expected duration of bf compared to those who did,	This was a UK study	Intervention was not designed to counter peer and societal pressure Funding Regional and development fund grant from the northwest regional R&D directorate

	> 6 m =- 12 m 18.1 15.8 > 12 m 4.3 3.9		Wards were paired matched according to the Underprivileged Area score (UPA). Within each pair, one ward was allocated to intervention and the other to the control group using opaque sealed envelopes; the authors reported to analysis the data by ITT	4,6,12 months after delivery Follow-up rate: 1249 (95%) (I=644; C=605) Reasons for drop-out are presented	were more likely to stop because they did not have enough milk (p<0.001) Those who reached expected duration of bf compared to those who did not were more likely to stop because of the return to work (p=0.02) No differences in antenatal class attendance between women in the two study arms. Qualitative data suggest that timing of support was crucial and longitudinal approach was necessary to ensure consistent advice The authors concluded that the provision of a single educational group session supervised by a lactation specialist did not effectively increase breastfeeding rates		

1st au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Noel-Weiss 2006 Canada (Ontario) RCT 1+	Inclusion criteria Primigravida EDD Aug 2004-Feb 2005 Gave birth at the study hospital, a large tertiary hospital that averaged 600-700 births per month Literate in English Telephone at home Exclusion criteria Mothers and babies not discharged at the same time Sample size 101 randomised antenatally to intervention or control group Results from 92 women (91%) included in the analyses Intervention 47 Control 45 Participant characteristics (not reported by group) Mean age 30.20 years [range 17-42 years] The majority had completed post-secondary education, had a family income >$70,000, and were in a committed relationship, with 99% rating their partner as 'very supportive' 87% decided to breastfeed before becoming pregnant Prenatal goals for breastfeeding range 3-18 months	To determine the effects of a prenatal breastfeeding workshop on maternal breastfeeding self-efficacy and breastfeeding duration Power calculation; a total of 128 subjects required to detect effect size of standard mean difference of 0.5 with a power of 80% The authors state that participants returned a registration package containing consent form, and baseline data in a sealed manila envelope, and that randomisation was completed by matching the manila envelope with a sealed, sequentially numbered, opaque envelope containing a slip of paper stating either Control or	Workshop intervention: in addition to standard care, a 2.5 hour session at 34+ weeks gestation, designed using Bandura's theory of self-efficacy and adult learning principles. The session used life-like dolls, videos and discussions in a comfortable atmosphere. Workshop given by a facilitator - not specified but assumed to be a nurse or lactation consultant to small groups of 2-8. Partners welcomed. Subjects recruited using a poster and pamphlet campaign. Standard care is stated to have included the choice of physician or midwife, frequency of prenatal visits, and attendance at prenatal classes, and	<u>Breastfeeding at 8 weeks postpartum (ITT analysis)</u> Exclusive breastfeeding (by breast or with expressed breastmilk) Intervention group 34/47 (72%) Control group 26/45 (58%) OR (95%CI) 1.7 (0.73, 4.07) ns Any breastfeeding Intervention group 40/47 (85%) Control group 35/45 (78%) ns Bottle-feeding (weaned) (no breastfeeding) Intervention group 7/47 (15%) Control group 10/45 (22%) ns <u>Breastfeeding at 8 weeks postpartum (actual workshop attendance)</u> Exclusive breastfeeding (by breast or with expressed breastmilk) Intervention group 33/41 (80%) Control group 27/51 (53%) OR (95%CI) 3.2 (1.26, 7.94) sig High/partial/token breastfeeding (any breastfeeding) Intervention group 39/41 (95%) Control group 36/51 (71%) Bottle-feeding (weaned) (no breastfeeding) Intervention group 2/41 (5%) Control group 15/51 (29%) Statistical significance of these results is not reported	The intervention would probably be applicable to the UK	Both Int and Con groups had higher levels of breastfeeding at 8 weeks than normal for Canada. Funding Not reported

	68% attended prenatal classes Babies born at mean 39.77 weeks gestation [range 36-42 weeks] Mean birthweight 3437.62g [range 2183-5046g) 36% of births by caesarean section 68% received free formula	Workshop Analysis was both by ITT and by whether or not women received the intervention	to have been defined by each mother Follow-up: 8 weeks 9/101 (9%) lost to follow-up (not reported by group) Results from 92 women (91%) included in the analyses	Other results are reported		

1st au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Schlicka u 2005 USA (Kansas) RCT 1-	Inclusion criteria Low risk primigravida In 3rd trimester Attending an antenatal clinic With normal nipples and breasts Aged 16-45 y From a stable family Planning not to work outside the home for ≥6 m Exclusion criteria None given Sample size 30 randomised antenatally to intervention or control groups Int 1 n=10 Int 2 n=10 Control n=10 Participant characteristics (not reported by group) Mean age 22 years 85% had emigrated from Mexico within the last 7 y All preferred to speak Spanish	To test the success of a prenatal breastfeeding education intervention for Hispanic women on breastfeeding duration Secondarily: To find whether women who demonstrate a commitment to breastfeed by formulating a plan for breastfeeding have a higher duration than those who do not. Power calculation No power calculation was performed as this was a pilot test Randomisation to all 3 groups occurred at enrolment – no details given. Analysis One-way analysis of variance	A two-level intervention. Controls – usual care (n=10) – offering advice to breastfeed and the distribution of handouts at 1st prenatal visit for 15 m. All intervention subjects (n=20) received prenatal breastfeeding education (PBE) during a clinic visit (1 hour) to include confirmation of the benefits of breastfeeding i.e. economic, nutritional and convenient; with charts and pictures to present supply-and-demand concepts; emphasised early and consistent breastfeeding practices; using a doll to demonstrate holding and positioning the baby and breastfeeding discretely. Level 1 intervention subjects (n=10) received PBE only. Level 2 intervention subjects (n=10) also received a 2nd hour of instruction at a later clinic visit on the concept of 'baby quarantine' (modelled on a traditional Hispanic concept of 'la cuarentana') for 40 d after childbirth, where nothing is introduced into the mother's vagina and the baby is exclusively breastfed for 40 d, with avoidance of bottles, pacifiers and supplementation. A checklist was used to reinforce: length of time to breastfeed; breastfeed within a set time after the birth; offer no bottle, formula or pacifier for a specific length of time; ask the postpartum nurse for assistance with breastfeeding at least twice; and ask for a lactation consultant while in hospital after the birth	<table><tr><th></th><th>Control</th><th>Level 1 Int</th><th>Level 2 Int</th></tr><tr><td></td><td>n=7</td><td>n=9</td><td>n=9</td></tr><tr><td>Breastfeeding at 6-7 w</td><td>28%</td><td>33%</td><td>56%</td></tr><tr><td>Breastfeeding duration average (SD) (d)</td><td>16.9 (18.2)</td><td>23.1 (15.9)</td><td>31.1 (16.1)</td></tr></table>Neither result was significant *Conclusion:* Both prenatal education interventions appeared to be successful in increasing the duration of breastfeeding in Hispanic women but neither result was significant. Women who formulate a plan for breastfeeding may have longer breastfeeding duration.	The intervention was specifically designed for a Hispanic culture therefore is not specifically applicable to the UK. This was a very small pilot study and therefore unlikely to have a significant outcome.	The more intensive intervention was apparently more successful. The intervention was specifically designed to be culturally appropriate No details of funding given

	rather than English		A Spanish interpreter was used. Follow-up: 6-7 weeks by telephone (Classified as weaning if they had not breastfed for 48 h) Loss to follow-up Level 1Int n=9, 10% Level2 Int n=9, 10% Control n=7, 30% All 17% Results from 25 women included in the analyses			

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders/ Comments Funding
Wolfberg 2004 USA (Baltimore) RCT 1- (Mar 2001-Aug 2002)	Inclusion criteria Women seeking prenatal care in the resident and faculty practices at Johns Hopkins Hospital Nothing further and no exclusion criteria stated The authors stated that they contacted 567 expectant mothers during their first and second trimester – but they also state that they conducted a RCT with 59 fathers Participant characteristics (women) I C n 27 32 Ethnicity black, % 85 84 < high school education 30 25 In receipt of public assistance, % 22 16 WIC participant, % 78 81 Employed, % 59 63 Living with father of baby, % 59 59	To test the effectiveness of an educational intervention designed to encourage fathers to advocate for bf and to support his partner if she chooses to bf Power calculation A sample size of 230 women was sufficient to detect a 50% increase in bf duration with a power of 0.8 at a significance level of 0.5, assuming an attrition rate of 25%. The authors Noted that it became clear that the attrition rate was going to be substantially higher No information was reported on method of randomisation, allocation concealment etc.	Intervention Informal, interactive non-didactic 2-hour bf class (every 2 weeks) for expectant fathers where men were encouraged to talk about their beliefs, concerns and values about bf including misconceptions about interference with relationships; cosmetic impact on a woman's breast; then to experiment with the message of the class which was that 'men can be advocates for their partner and the health of their new baby by facilitating their partners decision to bf; men were encouraged to support each other in their commitment as advocates Class facilitator was a father himself, black, knowledgeable but not overbearing, easy-going and engaging Classes were held for groups of 4-12 men at a time Teaching methods included video, slides, role play Fathers who completed the class received a stipend of $ 25.00; Mothers also received $ 25.00 if and when they completed the last telephone survey Controls The control class was similar in every aspect except for the content which as baby care and safety – car seat use, fire safety, lead exposure prevention,	567 expectant mothers contacted, only 59 completed the study Reasons for attrition, % Mother Refusal to participate 24 Father refused to participate 11 Failure to attend class 9 Loss to follow-up 36 No involvement between mother & father 8 Differences in those who stayed and did not stay on in the study not significant bar receipt of welfare funds – less women in the study on welfare, more women in the study employed Breastfeeding outcomes, n/N(%) I C *p* Bf initiation, % 20/27 (74) 13/32 (41) 0.02 Bf at 4 weeks, % 10/26 (38) 11/31 (35) 0.51 Bf at 6 weeks, % 9/26 (35) 6/31 (19) 0.13 Bf at 8 weeks, % 9/26 (35) 6/31 (19) 0.13 Associations between maternal/paternal characteristics and bf initiation Mother had bf experience, n/N (%) 5/6 (83) 4/6 (67) 0.42 Mother was bf in infancy, n/N (%) ¾ (75) 4/5 (80) 0.14 Mother planned to bf for 1st month	Could be implemented in the UK	It was not clear how many women were recruited & randomised in this study and how many losses there really were Attrition rate was high Funding Study supported by a training grant from the Centres for Disease Control and Prevention

1st Au, Year, Country, Design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders/ Comments Funding
	<u>Participant characteristics (fathers)</u> Ethnicity black, % 85 80 < high school education, % 22 27 Employed, % 85 70		sleeping positions, bath safety. There was no bf content <u>Follow-up</u> To 8 weeks after childbirth <u>Follow-up rate</u> Unclear how many were randomised; numbers given but only for those who completed the study	11/11 (100) 12/20 (60) 0.004 Mother lives with father, n/N (%) 13/15 (87) 9/19 (47) 0.24 Mothers mother in favour of baby being bf, % 5/5 (100) 5/7 (71) 0.03 Mother believes partner in favour of bf baby, n/N (%) 13/14 (93) 8/13 (62) 0.002 The authors concluded that expectant fathers can be influential advocates for breastfeeding, playing a critical role in encouraging a woman to breastfeed her newborn infant.		

What interventions effectively reduce the risks of contamination of equipment used in bottle-feeding?

First author, Year, Country, Study design, Quality	Review methodology	Research question	Studies included in the review	Main results	Applicability to UK populations and settings	Confounders/ Comments
Bernath 2001 Australia SR Search appears well conducted	<u>Inclusion/exclusion criteria</u> 1. Participants included mothers and infants 2. Case series, and non-clinical studies were excluded 3. Non-English studies were excluded Medline (1966-June 2000), CINHAL (1982-July 2001), Current Contents (1993-2001), Premedline (2001), Australasian Medical Index (2001) and the Cochrane Library were searched	To compare the effectiveness of sterilisation with disinfection of shared feeding equipment on rates of cross infection in mothers and infants.		No studies were identified in the literature search that compared the effects of sterilisation and disinfection of shared feeding equipment on rates of cross infection		Funding – none explicitly stated

First author, Year, Country, Study design, Quality	Review methodology	Research question	Studies included in the review	Main results	Applicability to UK populations and settings	Confounders / Comments
Renfrew (in press) UK SR 2-	Inclusion/exclusion criteria 1. Studies had to be carried out in developed countries 2. Any study design was included 3. Studies had to examine methods of cleaning and/or sterilisation of infant feeding equipment Medline, Embase, CINHAL, Psychinfo, British Nursing Index, Allied and Complementary Medicine, Premedline, Health Management Information Consortium, EBM reviews, SIGLE and the Cochrane Library database were searched (2006). Hand searches were also conducted and relevant published and unpublished studies were sought by contacting key professionals and companies Quality was not systematically reported	To identify the evidence base for ways of reducing infections from the use of infant feeding equipment in the home	Eight studies were included in the review: Hargrove 1974 (US non-RCT) Hughes 1987 (US non-RCT) Jacob 1985 (UK observational) Vaughan 1962 (US observational) Gatherer 1978 (UK observational) Anderson and Gatherer 1970 (UK observational) Clegg 1977 (UK observational) Rowan and Anderson 1998 (UK observational) Participants included mothers and babies from a wide range of socio-economic backgrounds	The majority of the studies were reported to be of poor quality (no other details provided) Hargrove et al 1974: No differences in frequency of illness occurred in babies fed using bottles/teats washed in hot soapy water and rinsed with hot running water compared with infants fed using sterilised bottles (not defined). Hughes et al 1987: No significant differences in incidence of gastroenteritis were observed between children whose mothers were taught the 'terminal' method of formula preparation (not defined) compared with children whose mothers were taught the 'clean' method of formula preparation (not defined) Jacob 1985: Of 28 mothers interviewed, 46.6% were sterilising correctly and 53.3% were not. 81% of the mothers who were not sterilising correctly were from social class 4 and 5. The majority of mothers not sterilising correctly were multiparous (P<0.02). Vaughan et al 1962: 20% (n-45) of samples from homes designated as sanitary showed heavy growth of organisms compared to 36% (n=26) of home designated as unsanitary. Gatherer 1978: In this study, the bottles of mothers who were using a cold chemical (hypochlorite solution) were sampled. The bacteriological results demonstrated satisfactory results in 91% (n=86) of bottles and 75% (n=71) of teats. When hypochlorite solution was compared with a crystals product, not differences were observed; on bacteriological assessment, both methods of sterilisation gave satisfactory results. Anderson and Gatherer 1970: This bacteriological assessment demonstrated that 78% (n=281) of bottles and 70% (n=253) teats sterilised by hypochlorite had ≤5 colonies compared to 46% (n=106) of bottles and 34% (n=77) teats sterilised by the boiling method. More mothers using the hypochlorite method used a more thorough cleansing routine.	Relevant	Sufficient information was provided in the studies to recommend thorough washing of equipment with hot water and soap, and handwashing before sterilisation Funding – none stated

First author, Year, Country, Study design, Quality	Review methodology	Research question	Studies included in the review	Main results	Applicability to UK populations and settings	Confounders / Comments
				Clegg et al 1977: In a bacteriological assessment, 98.1% of bottles and 90.6% of teats has a residual count of less than 5/ml (mothers were provided with a commercial sample of a stabilised solution of 1% sodium hypochlorite) (Details of this study are not clear) Rowan and Anderson 1998: In this study bottles were contaminated with different levels of enterotoxigenic Bacillus cereus that has been cleaned using different methods: Steam sterilisation: bottles were automatically steamed at 100°C for 15 min. Microwave bottle steam sterilisation: bottles were placed in a sterilising unit and steamed at 100°C in a microwave oven for 9 min Chemical method sterilisation: bottles were immersed in sodium hypochlorite solution for 90 min. All methods of disinfection successfully reduced B cereus to a non-detectable level when the initial level of contamination was $\leq 10^5$ CFU ml^{-1}. B cereus emerged earlier (after 14h) in uncleaned bottles that had been subjected to the chemical disinfection method. Both thermal disinfection methods did not totally eliminate B. cereus after 18 h. The level of contamination and the degree of bottle cleaning affected the length of time that the levels of B Cereus remained at undetectable levels ($P<0.05$). The chemical method failed to disinfect uncleaned feeding bottles contaminated with 10^5 organisms ml^{-1} . Potentially hazardous levels were detected after 14h storage following thermal disinfection. Both steam disinfection methods were equally efficient at removing B. cereus from bottles contaminated with $\leq 10^5$ CFU ml^{-1} ($P<0.05$) and both methods were significantly better than the chemical method ($P< 0.05$). The authors concluded that there is a lack of good quality information on effective ways of cleaning and sterilising infant feeding equipment in the home.		

What interventions effectively reduce the risks of contamination of equipment used in the storage and reheating of breast milk?

No studies were identified that addressed this question.

What interventions effectively reduce the risks associated with the reconstitution of formula?

First author, Year, Country, Study design, Quality	Review methodology	Research question	Studies included in the review	Main results	Applicability to UK populations and settings	Confounders/ Comments
Renfrew 2003 UK SR 2+	Inclusion/exclusion criteria 1. Studies had to be carried out in developed countries 2. Data from studies had to be collected after 1977 3. Studies had to concern full term, healthy babies 4. Any study design was included 5. Studies had to investigate the reconstitution of formula feeds Medline, CINHAL (1966 to April 2002), Web of Science and the Cochrane Database of Systematic Reviews were searched No quality criteria were systematically reported although quality was assessed. No study was of adequate quality i.e. all quality grade (-).	To examine the risks associated with errors in reconstituting the present generation of formula feeds, and to examine which methods are likely to be safest	Five studies were included in the review: Jacob 1985 (UK interview study) McJunkin et al 1987 (US interview study) Lilburne et al 1988 (Australia interview study) Jeffs 1989 (UK observational study) Lucas et al 1991/1992 (UK pilot RCT) Participants were mothers of artificially fed babies who had been selected or identified through routine child health or welfare clinics or	No detailed information was provided on the results for each of the included studies. The authors state that due to the studies' methodological problems and small sample sizes, the results were difficult to interpret. All studies, however, found errors in reconstitution with a tendency to over-concentrate feeds, although under-concentration also occurred The results from the one RCT were not reported as the study was part of the pilot phase of a small trial (Lucas 1991/1992) The authors state that there is no unbiased source of information to help parents or their advisers choose between brands of formula, including the different forms in which they are sold	Relevant	This SR demonstrates that there is a lack of good quality evidence on the subject, and that there is a clear need to further investigate the risks associated with reconstitution of formula Funding – none stated

			bottle feeding mothers from a postnatal ward Overall, the studies evaluated mothers from all types of socio-economic backgrounds Lucas et al 1991/1992 The RCT compared ready-to-feed with powdered formula			

What are the most effective methods to express breast milk?

First author, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Auerbach 1990 USA (Chicago) RCT 1+	<u>Inclusion criteria</u> Delivered at study hospital Anticipating returning to work or school and planning to pump during periods of separation or were already experiencing such separations <u>Exclusion criteria</u> None reported <u>Sample size</u> 26 women were recruited Women were their own control <u>Participant Characteristics (mothers)</u> Primiparity 80% Multiparity (2 babies) 20% Age in y modal/median (SD) range 31 (5.5) 21-42 Ethnicity: Asian 2% Black 24% White 68% Marital status: Married 92% Single 8% <u>Participant Characteristics (infants)</u> Age in w: mean range 12, 5 – 35 Feeding % Exc bf 60 bf and ff 24 bf and solids 12	To compare sequential single-breast pumping with simultaneous double-breast pumping to determine if (a)milk volume differed by different pumping regimen, (b) the time needed to pump the breasts differed by pumping regiment and (c) the milk fat concentrations differed by pumping regimen Power calculation not reported The breast pumped first was assigned using a table of random numbers	Each mother was asked to pump milk on 4 separate occasions with an electric intermittent vacuum pump using one of four possible regimens on each occasion. a) 5-min sequential pumping (breast pumped first randomly assigned) b) 5-min simultaneous pumping c) Unlimited sequential pumping (breast pumped first randomly assigned) d) Unlimited simultaneous pumping Style of pumping used at each pumping session was randomly assigned	<u>Age of baby (w) and mean milk volumes (g) obtained by pumping regimen</u> <8 8-11 12-15 16+ 5-mins Sq[1] 81 83 121 84 5-mins Sm[2] 109 120 125 101 Unlim[3] S 99 119 141 122 Unlim Sm 137 90 119 119 One-way x^2 df p <8 w 15.4 3 0.01 8 – 11 w 10.08 3 0.02 12 – 15 w 2.34 3 ns 16+ 8.74 3 0.05 <u>Unlimited Pumping time in mins.</u> Mean Range Unlim Sq 10.6 7-22 Unlim Sm 12 5-22 12% pumped same time for Sq and Sm 68% pumped longer for Sm 20% pumped longer with Sq <u>Sq v Sm pumping</u> 5-min Sq 5-min Sm Unlim Sq Unlim Sm Mean 88.56 111.28 114.36 126.04 <u>Paired 2-tailed test diffs between means</u> 5-min Sq v 5-min Sm 2.37 p<.02 5-min Sq v unlim Sq 2.39 p<.02 5-min Sq v unlim Sm 2.99 p< .006 5-min Sm v unlim Sm 1.40 ns 5-min Sm v unlim Sq 0.28 ns	Likely that these findings are applicable to UK Results only apply to 1 make of pumping equipment	Not stated whether those measuring the outcomes were aware of the pumping regimen used Funded in part by Medela – manufacturer of the pumps used

First author, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
	bf and ff and solids 4 No. of bf/day mean weekdays 6 weekends 8 Infants were 5 to 35 weeks of age			Unlim Sq v unlim Sm 1.07 ns <u>Creamatocrit by pumping regimen</u> Pumping Reg Range Median Mean (%) 5-min Sq 0-13 6 6.52 5-min Sm 0-17 6-7 7.26 Unlim Sq 0-14 6-7 7.18 Unlim Sm 0-15 7-8 7.70 No sig differences between breasts or by pumping regimen <u>Mother's preference of pumping regimen</u> By a margin of 3:1 mothers preferred double pumping regimen. Mother's preferences influenced mean milk volumes obtained in the direction of the women's preferences [1] Sequential [2] Simultaneous [3] Unlimited The authors concluded that simultaneous double pumping obtained higher mean milk volumes, but that differences in milk fat concentrations were not statistically significant between pumping regimens		

First author, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Fewtrell 2001 UK (Cambridge) RCT 1+	<u>Inclusion criteria</u> Mothers who had delivered a term infant at study hospital Breastfeeding on postnatal ward <u>Exclusion criteria</u> None stated <u>Sample size</u> Recruited 60 MP[1] first 32 MEP[2] first 28 <u>Participant Characteristics (women)</u> Mean age y (SD) 32(5) Social Class 1/2 71% Education Degree/professional 70% Primiparity 58% Multiparity 41% Bf prev child 38% Prev pump use 60% - [1]Manual pump [2]Mini-electric pump	To compare the efficacy of a mini-electric pump (MEP) and a novel manual breast pump (MP) <u>Power calculation</u> 60 participants would enable a difference of around 0.5oz to be detected between pumps with 80% power at 5% significance Randomisation was made using permuted blocks of randomised length; assignments were held in sealed opaque envelopes	Each pump was tested on a single occasion during mid to late morning when the infant was approximately 8 weeks old The mother used the pump for 20 minutes (10 minutes each side) in presence of 2 research staff Milk was collected into pre-weighed sterilised bottles at 1 minute intervals. Mothers were given each pump 48 hours before measurements were made 2nd pump tested 2-3 days after 1st	<u>Mean weight of milk (g) regardless of order</u> MP (SD) MEP (SD) 144 (64) 146 (65) difference not significant Mean weight and fat content at 1-minute intervals: differences were not significant with the same pattern of increasing fat content with both pumps <u>Mean weight of milk (g) according to pump order</u> MP (SD) MEP (SD) p First pump Side 1 81.4(43.2) 68.5 (37.4) .008 Side 2 59.9 (33.6) 51.3 (27.5) Total 142 (60) 118 (44) Second pump Side 1 80.7 (37.9) 93.2 (49.5) Side 2 66.1 (43.5) 72.3 (43) Total 149 (71) 164 (73) Weight of milk using second pump, irrespective of pump type, was sig. higher than first pump 158g (72g) vs. 133g (54g) p=.008 Peak fat content was not significantly different between first and second pump. No. hours since last feed: 1.8 (1.0) hours for both pumps No of feeds in last 24 hrs: 8 (3) feeds for both Duration of last feed: 19 (16) mins (MP), 15 (11) mins (MEP) diff. not sig. Effect of time since start of prev bf on total	Conducted in UK Sample was predominantly social class 1and 2 and well –educated. Acceptability of using pumps may be different in low income groups	Funded by a grant from Canon Avent (manufacturers of the breast pumps) who also provided the pumps

First author, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
				amount of milk expressed during 1st pumping session Increase of 23mls/hour since last feed [95% CI =9 to 38] Effect of time since start of prev bf on peak fat content both pumping sessions Decrease of 0.83g/dlper hour since last feed for 1st pump and 0.28g/dl per hour for 2nd pump <u>Maternal opinions of pumps %</u> Rank† 1 2 3 4 5 6 7 Comfortable to use MP* 45 28 13 8 3 MEP 5 5 15 45 12 7 2 Pleasant to use MP* 38 20 15 17 7 2 MEP 3 17 15 33 23 3 5 Overall opinion MP** 32 37 20 8 2 MEP 7 35 30 17 10 2 †1 = best score *p<.001 (Wilcoxon signed rank test for MP v MEP) ** p=.001 The authors concluded that there was no significant difference in the milk volume or fat content between the mini-electric pump and the manual breast pump		

First author, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Zinaman 1992 USA (Washington) RCT 1-	Inclusion criteria Mothers who were exclusively breastfeeding Exclusion criteria None stated Sample size N=23 Participant characteristics The women were between the ages of 22 and 32, and were 28 to 42 days postpartum, had normal deliveries, non-smokers, in good health and had no history of endocrine disease	To evaluate four types of milk expression (electric, battery, mechanical and manual) compared to infant suckling on prolactin and oxytocin release and milk volumes Sample size not calculated The authors do not state methods of randomisation, or allocation of concealment Each woman was randomly assigned to begin with one of the five methods, and then randomly assigned to one the remaining methods until all five had been tested	1) Electric expression: The pulsatile White River Electric (WRE) 2) Battery expression: The Gentle Expression (GEB) 3) Mechanical expression: Medela Manuelectric (MM) 4) Manual expression: Hand expression was taught according to the Marmet technique 5) Infant suckling Breasts were individually pumped for up to 15 minutes. Blood was taken at 10-minute intervals	Prolactin levels: Infant suckling and electric expression using the White River Electric pump demonstrated significantly greater prolactin levels in comparison to the other three methods ($p<0.05$). Infant suckling reached a mean peak level of 89.7 ng/mL at 40 minutes; the WRE reached a mean peak level of 95.4 ng/mL at 30 minutes and remained elevated through the 60-minute period study. The GEB rose to a maximum mean value of 59.7 ng/mL at 60 min. The MM and hand expression methods were similar, with levels rising to 67 ng/mL by 40 min Oxytocin levels: As expected, mothers exhibited peak oxytocin values prior to the initiation of breast feeding. This was not observed in any of the artificial methods. No significant differences were observed among the methods for oxytocin values (increase from baseline, or total values) Levels of plasma oxytocin over the 60 min sampling session: Method — Mean Net area under curves — SEM Infant — 224.7 — 75.4 White River Electric — 174.1 — 41.3 Medela Manuelectric — 218.5 — 157.5 Hand expression — 140.5 — 66.5 Battery expression — 186.7 — 67.6 Milk volume: Hand expression and GEB produced significantly less milk than the WRE pump (p value not reported). The authors state that the MM pump was not significantly different from the other three methods (Mean milk volumes were presented in a graph, and numbers could not be extracted) The authors state that there is a need for further studies to be conducted in order to enable women and health care providers to choose the most appropriate method of milk expression.	Based on a search of www.breastpumps.co.uk, only the Medela breastpump appears to be readily available in the UK.	Results based on a 60-minute study need to be substantiated with further research The authors note that the actual time spent using each pumping technique varied over the 60-minute period. In addition, the WRE method pumps both breasts simultaneously (serum prolactin may be higher using bilateral stimulation) The study was supported by the Institute for International Studies in Natural Family Planning through a cooperative agreement with the US Agency for International Development

First author, Year, Country, Study design, Quality	Study population	Research question Study quality	Intervention	Main results	Applicability to UK populations and settings	Confounders / Comments Funding
Field 1997 USA (Miami) RCT 1-	<u>Inclusion criteria</u> Mothers who had been bottlefeeding their first born infants for 1 month were included <u>Exclusion criteria</u> Breastfeeding infants were excluded <u>Sample size</u> N=40 (18 female and 22 male) <u>Participant characteristics</u> One-month old infants (mean age: 1.1 month, range: 21-42 days) None of the infants had any feeding problems Mothers had a mean age of 23.8 years (range: 17-38 years) Low SES (mean 4.2 on the Hollingshead Index) 45% African-American 38% Hispanic 17% Caucasian	To compare bottlefeedings using a breast feeding-like teat (Healthflow) with a standard teat (Evenflo) on vagal activity and wakefulness in one-month old infants Sample size not calculated Infants were randomised using a random numbers table; feeding sessions were videotaped and coded by a research assistant who was blind to group assignment; no dropouts reported	Intervention: Infants received one 20-minute bottlefeeding by infants mothers using a breast-like teat (Healthflow) (n=20) Control: Infants received one 20-minute bottle feeding by infants mothers using a standard teat (Evenflo) (n=20) The same type of bottle was used in both groups and the infants received their own formula. The feeding occurred early morning	(significance values were obtained using Hotelling's T^2 followed by Bonferroni t tests) <u>Infant behaviours (% time during the feeding)*</u> Healthflow / Evenflo / p level active sleep 3.7 (1.3) / 16.8 (4.7) / 0.05 drowsiness 13.0 (3.1) / 15.4 (2.4) / NS quiet awake 23.0 (3.0) / 23.0 (3.4) / NS active awake 10.7 (2.6) / 5.8 (1.9) / 0.05 fussing/crying 1.6 (0.6) / 6.8 (2.3) / 0.05 (Heart rate was monitored by placing three EKG electrodes on infant's chest. The data were converted to inter-beat intervals (IBI) and to vagal tone using computer software) <u>Vagal tone changes</u> during feeding -0.55 / -0.26 / 0.05 after feeding +0.82 / +0.18 / 0.05 <u>Salivary cortisol change</u> -1.36 / -0.54 / 0.01 Other outcomes measures included mother behaviours, sucking behaviour (the number of sucks) and formula consumed The authors state that infants who fed on the breast-like teats (Healthflow) spent less time asleep, more time awake and active and less time fussing and crying (during feeding). The vagal tone of the intervention group infants decreased more during bottle feeding and increased more after feeding, suggesting that the breast-like teat feedings were more similar to breastfeedings	Healthflow is available in the UK	Results based on one 20-minute bottlefeeding session need to be substantiated with further research The novelty effect of a different teat was not responsible for the differences Funding not stated

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