

Institution: University of York
Unit of Assessment: 2, Public Health, Health Sciences and Primary Care
Title of case study: Promotion and support of breastfeeding for newborn infants
<p>1. Summary of the impact</p> <p>Our research, which identified effective and cost-effective interventions to help women, particularly those in low income groups, make informed choices and establish and maintain breastfeeding for newborn infants, has changed health policy and practice nationally and internationally. The findings have been included in national and international practice recommendations including National Institute for Health and Care Excellence guidelines. Active dissemination of our research outputs and adoption of their recommendations have been associated with stepwise increases in breastfeeding rates in the UK, particularly for socially disadvantaged women who typically have low breastfeeding rates, and is likely to be associated with improved health of infants.</p>
<p>2. Underpinning research</p> <p>Breastfeeding improves important outcomes for mothers and infants. Initiation and maintenance of breastfeeding in the UK have historically been low, particularly in socially disadvantaged young women. Breastfeeding is particularly important for the 10% of infants born preterm or with low birth weight (LBW). York researchers conducted seminal systematic reviews which identified effective and cost-effective interventions to increase rates of initiation and maintenance of breastfeeding.</p> <p><i>(i) Initiation of breastfeeding:</i> Our systematic review of 59 studies evaluating a range of policy, supportive and educational interventions showed the effectiveness of multi-faceted packages of interventions including: targeted, small group, interactive education programmes and peer support for women with low incomes (1). Our Cochrane review of randomised controlled trials (RCTs) identified the substantial benefits of interactive health education interventions. For every 100 women receiving education, 20 extra initiated breastfeeding (2).</p> <p><i>(ii) Maintenance of breastfeeding:</i> Our Cochrane review of 34 RCTs involving ~30000 mother-infant pairs in 14 countries showed that extra support for women (particularly integrated lay and professional support) increased the duration of breastfeeding. For every 100 women receiving extra support, 5 more continued to breastfeed up to six months (3).</p> <p><i>(iii) Breastfeeding infants in neonatal units:</i> Our systematic review of the effectiveness of interventions to promote breastfeeding or feeding with expressed breast milk for infants admitted to neonatal units (4) included 8 studies from 17 countries. We reported strong evidence for the effectiveness of parent-baby “skin-to-skin” contact and UNICEF Baby Friendly Initiative (BFI) accreditation. Our cost-effectiveness analysis found that enhanced contact and support reduced overall costs and increased “quality adjusted life years” for preterm or LBW infants, especially those with very low birth weight (5). Our Cochrane review found that feeding preterm or LBW infants in response to hunger and satiation cues rather than a caregiver-led regimen shortened both transition to oral feeding and hospital stay (6).</p> <p><i>Researchers:</i> Britton (Lecturer, Nov 1996 - present); Craig (Research fellow, Nov 2004 - present); Dyson (Research fellow, Feb 2005 - present); Lister-Sharp (Research fellow June 1996 - June 2002); McCormick (Research fellow, Nov 2004 - Dec 2012); McFadden (Research fellow, Nov 2004 - Dec 2012); McGuire (Professor, Dec 2008 - present); O’Meara (Research fellow, Nov 1995 - June 2013); Renfrew (Professor, Nov 2004 - July 2012); Rice (Research fellow, Mar 2003 – present); Sowden (Senior Researcher, Feb 1994 - present).</p>
<p>3. References to the research</p> <ol style="list-style-type: none"> 1. Fairbank (Dyson) L, O’Meara S, Renfrew MJ, Woolridge M, Sowden AJ, Lister-Sharp D. Systematic review to evaluate the effectiveness of interventions to promote the uptake of breastfeeding. <i>Health Technol Assess</i> 2000;4(25):1-171. DOI: 10.3310/hta4250 2. Dyson L, McCormick FM, Renfrew MJ. Interventions for promoting the initiation of breastfeeding. <i>Cochrane Database Syst Rev</i> 2005;(2):CD001688. DOI: 10.1002/14651858.CD001688 3. Britton C, McCormick FM, Renfrew MJ, Wade A, King SE. Support for breastfeeding mothers. <i>Cochrane Database Syst Rev</i> 2007;(1):CD001141 DOI: 10.1002/14651858.CD001141.pub3

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[updated 2012]. DOI: 10.1002/14651858.CD001141.pub4

4. Renfrew MJ, Craig D, Dyson L, McCormick F, Rice S, King SE, et al. Breastfeeding promotion for infants in neonatal units: a systematic review and economic analysis. *Health Technol Assess* 2009;13(40):1-146. DOI: 10.3310/hta13400

5. Rice SJ, Craig D, McCormick F, Renfrew MJ, Williams AF. Economic evaluation of enhanced staff contact for the promotion of breastfeeding for low birth weight infants. *Int J Technol Assess Health Care* 2010;26:133-40. DOI: 10.1017/S0266462310000115

6. McCormick FM, Tosh K, McGuire W. Ad libitum or demand/semi-demand feeding versus scheduled interval feeding for preterm infants. *Cochrane Database Syst Rev* 2010;(2):CD005255. DOI: 10.1002/14651858.CD005255.pub3.

This research was funded from the following competitive grants:

- Systematic review of factors which promote or inhibit the initiation of breastfeeding. NHS R&D HTA programme. £56,000; 1998-9 (Lister-Sharp).
- Systematic review of interventions to promote the initiation of breastfeeding. Canadian Child Health Field Bursary, Cochrane Collaboration. £3304; 2002-3 (Dyson).
- NICE Public Health Collaborating Centre for Maternal and Child Nutrition. £446,000; 2004-7 (Renfrew, Dyson).
- Infant feeding for babies in Special and Intensive Care Units. NIHR HTA programme: £204,000; 2007-8 (Craig, Renfrew).

4. Details of the impact

Active dissemination of the research as a pathway to impact

We planned a targeted dissemination and implementation strategy to promote the adoption of our research findings into practice in health services across England. This included distribution of 60,000 copies of an *Effective Health Care* bulletin (<http://www.york.ac.uk/inst/crd/EHC/ehc62.pdf>), which summarised the findings of our systematic review of interventions to promote the initiation of breastfeeding, to NHS practitioners and service-users and supported this with a targeted media campaign. Second, we produced a NICE 'Evidence into Practice' briefing based on our systematic reviews of interventions to promote breastfeeding. Finally we conducted a national consultation with health professionals and management, government, service user and voluntary organisations which highlighted that the routine implementation of multifaceted, local packages of breastfeeding services and the UNICEF UK BFI standards for maternity services should be priorities for action (nice.org.uk/aboutnice/whoweare/aboutthehda/hdapublications/promotion_of_breastfeeding_initiation_and_duration_evidence_into_practice_briefing.jsp). Our dissemination and implementation strategy has helped our research have a significant impact on national and international health policy, clinical guidelines, staff education, practice, and infant feeding behaviour as outlined below.

Impact on policy statements, guidelines, toolkits and care pathways

Our work has directly contributed to the development of national and international policy, including NICE Clinical Guidelines (CG) which UK healthcare professionals are expected to follow.

--Initiation and maintenance of breastfeeding

- The NICE 'Evidence into Practice' briefing which we produced was referenced explicitly for its specific contribution to formulating recommendations in the full NICE Clinical Guidance on postnatal care (in 2006 and updated in 2012) as well as being cited 16 times in the text. This included the priority recommendation that all maternity care providers in acute and primary settings should implement care using the UNICEF UK BFI as a minimum standard (*source 1*).
- Our reviews and evidence summary documents were incorporated into the NICE Maternal and Child Nutrition Public Health Guidance CG 037 (*source 2*) and the 2008 NICE CG on antenatal care (*source 3*). Both NICE documents cited the reviews as evidence to support specific recommendations for "interactive antenatal breastfeeding education" and "one-to-one counselling and peer support", using the UK UNICEF BFI as a minimum standard.
- The recent evidence document underpinning the 2013 revision of the UK UNICEF BFI standards cited our reviews and evidence summary documents more than 20 times (*source 4*).
- Our systematic reviews are cited in guidelines in Australia and the USA:
 - The Australian National Health & Medical Research Council (NHMRC) Infant Feeding

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Guideline cites reference 3 in recommending “evidence-based actions for promoting the initiation and duration of exclusive breastfeeding” (*source 5*).

- The US Surgeon General’s Call to Action to Support Breastfeeding cites our research (refs 1 and 3) as the basis for recommending “professional and lay support [...] to increase the duration of breastfeeding”, and for adoption of UNICEF-BFI training (*source 6*).

--Breastfeeding in neonatal units

- The systematic reviews of interventions to promote breast (milk) feeding for infants in neonatal units (refs 4, 6) informed the development of the NICE CG on donor breast milk banks (*source 7*), the Department of Health toolkit for high-quality neonatal services (*source 8*), and the UNICEF-BFI guideline for neonatal units (*source 9*).
- The Australian NHMRC Infant Feeding Guideline cites ref 4 as providing evidence that “expressed breast milk reduces the incidence of necrotising enterocolitis” among preterm infants (*source 5*).
- WHO Guidelines on optimal feeding of LBW infants in low/middle-income countries cites our review (ref 6) as evidence to recommend feeding infants based on hunger cues (*source 10*).

Impact on education and training

Our work has had a direct influence on staff education and training. It has formed the basis for the three modules on infant feeding of the Department of Health-funded Royal College of Paediatrics and Child Health e-learning programme on early years, freely available since 2009 to all health professionals in the UK [www.rcpch.ac.uk/hcp]. Prof Renfrew worked closely with the charity “Best Beginnings” to produce a DVD (‘From Bump to Breastfeeding’) www.bestbeginnings.org.uk/fbtb which promotes and supports breastfeeding based on evidence from our systematic reviews. 1.5million copies have been distributed free to pregnant women throughout the UK since 2008.

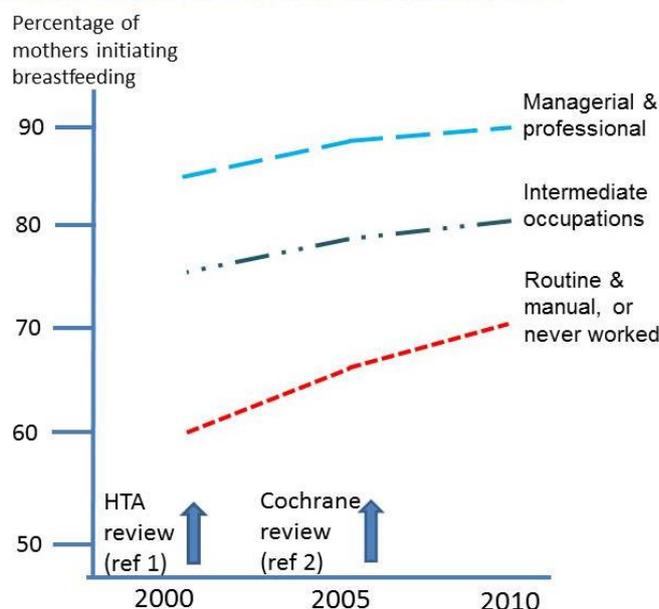
Impact on behaviour and outcomes

-- Initiation of breastfeeding

Data from the Infant Feeding Survey, collected every 5 years since 1990 and standardised for factors associated with breastfeeding (age, education and social class), show that breastfeeding initiation remained static at 62% of all women in England & Wales between 1990 and 2000. Comparable data in 2005 and 2010, however, show a 5% point increase at each time point in the number of women starting to breastfeed since the start of the York research programme, from 62% in 2000 to 72% in 2010 (*source 11*).

Standardised data are not available by socio-economic group, but non-standardised data (see graph) indicate relatively larger and sustained increases in the proportion of women from lower socio economic groups starting to breastfeed in England & Wales from 2000 to 2010. This is consistent with York’s research (*source 11*). Changes in the definitions used to categorize “socio-economic status” limit the direct comparability of data from the IFS prior to 2000. However, no increases in breastfeeding initiation rates were observed between 1995 and 2000 for both “non-manual” (81%) and “manual” occupation households (61%) before this research was carried out.

Breastfeeding initiation rates by mother’s socio-economic classification (UK infant feeding survey) <http://www.data.gov.uk/dataset/infant-feeding-survey-2010>



-- Maintenance of breastfeeding

The 2010 UK Infant Feeding Survey found that the proportion of women maintaining breast-feeding

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has continually increased from 2005. The prevalence of breastfeeding at six weeks was static at 45% between 1995 and 2000, but then rose to 48% in 2005 and 55% in 2010. Six months rates were 21% in both 1995 and 2000, but then rose to 25% in 2005 and 34% in 2010. Exclusive breast-feeding rates have also increased (at three months they were 17% in 2010 compared with 13% in 2005, and at four months they were 12% in 2010 compared with 7% in 2005). Rates of increase were highest in low income women, reflecting our research recommendations to focus on those where the potential to impact on important health outcomes is greatest (*source 11*).

-- *Health outcomes*

Increased rates of breastfeeding, particularly amongst those at higher risk improves health outcomes in infants in the short and long term. The UNICEF report, *Preventing Disease and Saving Resources*, estimates that even moderate increases in breastfeeding could see millions in potential annual savings to the NHS from improved health outcomes (*source 12*).

--*Breastfeeding in neonatal units*

In 2010, as part of the DH-funded regional Health Innovation and Education Cluster (HIEC), York developed educational packages to support quality-improvement initiatives to promote bonding, attachment and breastfeeding in neonatal units based on our research. Following implementation of recommendations from our reviews, the prevalence of skin-to-skin care in neonatal units across Yorkshire & the Humber increased from 20% in 2010 to >40% in 2012 and receipt of breast milk on discharge from 40% to 52% (*source 13*). This has resulted in all UK units now collecting breast (milk) feeding outcomes within the UK national routine audit systems and the RCPCH National Neonatal Audit Programme. This national audit found that the proportion of very preterm infants receiving any breast milk at discharge rose from 54% in 2011 to 58% in 2012, which will reduce mortality and morbidity associated with diseases such as necrotising enterocolitis (*source 14*).

5. Sources to corroborate the impact

1. Routine postnatal care of women and their babies. NICE guideline (2006) www.nice.org.uk/CG037
2. Maternal and child nutrition: NICE public health guidance 11 (2008) www.nice.org.uk/PH11
3. Routine care for the healthy pregnant woman. NICE guideline 62 (2008). www.nice.org.uk/CG062
4. Entwistle FM (2013) *The evidence and rationale for the UNICEF UK Baby Friendly Initiative standards*. UNICEF UK.
5. Infant Feeding Guidelines. National Health and Medical Research Council (2012). www.nhmrc.gov.au/guidelines/publications/n56
6. US Department of Health and Human Services. The Surgeon General's Call to Action to Support Breastfeeding. Department of Health and Human Services, Office of the Surgeon General (2011).
7. Donor breast milk banks. NICE clinical guideline 93 (2010). www.nice.org.uk/CG093
8. Department of Health. Commissioning local breastfeeding support services (2009). http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_106497.pdf
9. Nyqvist KH et al. Expansion of the Baby-Friendly Hospital Initiative ten steps to successful breast-feeding into neonatal intensive care: expert group recommendations. *J Hum Lact* 2013;29:300-309. DOI: 10.1177/0890334413489775
10. Guidelines on optimal feeding of low birth weight infants in low-and middle-income countries. World Health Organization (2011). Available from: www.who.int/maternal_child_adolescent/documents/infant_feeding_low_bw/en/
11. McAndrew F, et al. Infant Feeding Survey 2010 www.esds.ac.uk/doc/7281/mrdoc/pdf/7281_ifs-uk-2010_report.pdf
12. Preventing disease and saving resources: the potential of increasing breastfeeding in the UK unicef.org.uk/Documents/Baby_Friendly/Research/Preventing_disease_saving_resources.pdf
13. Yorkshire & Humber HIEC. Turning best practice into common practice. Final report (2013) yhhiec.org.uk/wp-content/uploads/2013/07/12120503_HIEC_Report_2012_2013_PRINT-FINAL.pdf
14. National Neonatal Audit Programme, Annual Report 2012. [www.rcpch.ac.uk/system/files/protected/page/RCPCH_NNAP_Report%202012%20\(2\).pdf](http://www.rcpch.ac.uk/system/files/protected/page/RCPCH_NNAP_Report%202012%20(2).pdf)