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Schedules for home visits in the early postpartum period (Review)

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[Intervention Review]

Schedules for home visits in the early postpartum period

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ABSTRACT

Background

Maternal complications including psychological and mental health problems and neonatal morbidity have been commonly observed in the postpartum period. Home visits by health professionals or lay supporters in the weeks following the birth may prevent health problems from becoming chronic with long-term effects on women, their babies, and their families.

Objectives

To assess outcomes for women and babies of different home-visiting schedules during the early postpartum period. The review focuses on the frequency of home visits, the duration (when visits ended) and intensity, and on different types of home-visiting interventions.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (28 January 2013) and reference lists of retrieved articles.

Selection criteria

Randomised controlled trials (RCTs) (including cluster-RCTs) comparing different types of home-visiting interventions enrolling participants in the early postpartum period (up to 42 days after birth). We excluded studies in which women were enrolled and received an intervention during the antenatal period (even if the intervention continued into the postnatal period) and studies recruiting only women from specific high-risk groups. (e.g. women with alcohol or drug problems).

Data collection and analysis

Study eligibility was assessed by at least two review authors. Data extraction and assessment of risk of bias were carried out independently by at least two review authors. Data were entered into Review Manager software.

Main results

We included data from 12 randomised trials with data for more than 11,000 women. The trials were carried out in countries across the world, and in both high- and low-resource settings. In low-resource settings women receiving usual care may have received no additional postnatal care after early hospital discharge.

The interventions and control conditions varied considerably across studies with trials focusing on three broad types of comparisons: schedules involving more versus fewer postnatal home visits (five studies), schedules involving different models of care (three studies), and home versus hospital clinic postnatal check-ups (four studies). In all but two of the included studies, postnatal care at home was

delivered by healthcare professionals. The aim of all interventions was broadly to assess the wellbeing of mothers and babies, and to provide education and support, although some interventions had more specific aims such as to encourage breastfeeding, or to provide practical support.

For most of our outcomes only one or two studies provided data, and overall results were inconsistent.

There was no evidence that home visits were associated with improvements in maternal and neonatal mortality, and no consistent evidence that more postnatal visits at home were associated with improvements in maternal health. More intensive schedules of home visits did not appear to improve maternal psychological health and results from two studies suggested that women receiving more visits had higher mean depression scores. The reason for this finding was not clear. In a cluster randomised trial comparing usual care with individualised care by midwives extended up to three months after the birth, the proportions of women with Edinburgh postnatal depression scale (EPDS) scores ≥ 13 at four months was reduced in the individualised care group (RR 0.68, 95% CI 0.53 to 0.86). There was some evidence that postnatal care at home may reduce infant health service utilisation in the weeks following the birth, and that more home visits may encourage more women to exclusively breastfeed their babies. There was some evidence that home visits are associated with increased maternal satisfaction with postnatal care.

Authors' conclusions

Increasing the number of postnatal home visits may promote infant health and maternal satisfaction and more individualised care may improve outcomes for women, although overall findings in different studies were not consistent. The frequency, timing, duration and intensity of such postnatal care visits should be based upon local and individual needs. Further well designed RCTs evaluating this complex intervention will be required to formulate the optimal package.

PLAIN LANGUAGE SUMMARY

Home visits in the early period after the birth of a baby

Health problems for mothers and babies commonly occur or become apparent in the weeks following the birth. For the mothers these include postpartum haemorrhage, fever and infection, abdominal and back pain, abnormal discharge, thromboembolism, and urinary tract complications, as well as psychological and mental health problems such as postnatal depression. Mothers may also need support to establish breastfeeding. Babies are at risk of death related to infections, asphyxia, and preterm birth. Home visits by health professionals or lay supporters in the early postpartum period may prevent health problems from becoming long-term, with effects on women, their babies, and their families. This review looked at different home-visiting schedules in the weeks following the birth.

We included 12 randomised trials with data for more than 11,000 women. Some trials focused on physical checks of the mother and newborn, while others provided support for breastfeeding, and one included the provision of practical support with housework and childcare. They were carried out in both high-resource countries and low-resource settings where women receiving usual care may not have received additional postnatal care after early hospital discharge.

The trials focused on three broad types of comparisons: schedules involving more versus less postnatal home visits (five studies), schedules involving different models of care (three studies), and home versus hospital clinic postnatal check-ups (four studies). In all but two of the included studies postnatal care at home was delivered by healthcare professionals. For most of our outcomes only one or two studies provided data and overall results were inconsistent.

There was no evidence that home visits were associated with reduced newborn deaths or serious health problems for the mothers. Women's physical and psychological health were not improved with more intensive schedules of home visits although more individualised care improved women's mental health in one study. Overall, babies were less likely to have emergency medical care if their mothers received more postnatal home visits. More home visits may have encouraged more women to exclusively breastfeed their babies. The different outcomes reported in different studies, how the outcomes were measured, and the considerable variation in the interventions and control conditions across studies were limitations of this review. The studies were of mixed quality as regards risk of bias.

More research is needed before any particular schedule of postnatal care can be recommended

BACKGROUND

Description of the condition

The postpartum period, defined by the World Health Organization (WHO) as the period from childbirth to the 42nd day following delivery (WHO 2005), is critical for both mothers and newborns. An estimated 529,000 maternal deaths occur worldwide each year because of pregnancy-related complications in the antenatal, intrapartum, and postpartum periods, especially in resource-limited settings (WHO 2005). These deaths are often sudden and unpredictable, with 11% to 17% occurring during childbirth itself and 50% to 71% occurring during the postpartum period (WHO 2005). Maternal health problems commonly observed in the postpartum period include postpartum haemorrhage, fever, abdominal and back pain, abnormal discharge, puerperal genital infection, thromboembolic disease, and urinary tract complications (Bashour 2008), as well as psychological and mental health problems such as postnatal depression. The postpartum period is also critical for newborns. Every year approximately 3.7 million babies die in the first four weeks of life. Most of these infants are born in developing countries and most die at home. Nearly 40% of all deaths of children younger than five years old occur within the first 28 days of life (neonatal or newborn period). Just three causes—infections, asphyxia, and preterm birth—account for nearly 80% of these deaths (WHO/UNICEF 2009). Moreover, the postpartum period is a time of transition for women and their families, who are adjusting on physical, psychological, and social levels (Shaw 2006). In most developed countries, postpartum hospital stays are often shorter than 48 hours following a vaginal birth; thus most postpartum care is provided in community and ambulatory-care settings. Early intervention in the postpartum period may prevent health problems from becoming chronic with long-term effects on women, their babies, and their families.

Description of the intervention

The purpose of a home-visiting program is to provide support at home for mothers, babies, and families by health professionals or skilled attendants. However, a single clearly defined methodology for this intervention does not exist. Further, the term "home visiting" is used differently in various contexts (AAP 2009). Since the 1970s, the length of hospital stay after childbirth has fallen dramatically in many high-resource settings. Early postnatal discharge of healthy mothers and term infants does not appear to have adverse effects on breastfeeding or maternal depression when women are offered at least one nurse-midwife home visit after discharge (Brown 2002). Home-visiting programs provide breastfeeding and hygiene education, parenting and child health instruction, and general support to families, successfully addressing many of the barriers to access including transportation issues, initiation of timely care, and completeness of services (AAP 1998; AAP 2009). Several trials have assessed the impact of home-visiting programs, especially effects on child abuse and neglect in vulnerable families (Donovan 2007; Olds 1997; Quinlivan 2003). Others focused on the effectiveness and cost-effectiveness of intensive home-visiting programs (Barlow 2006; Carabin 2005; McIntosh 2009). Some home-visiting programs have specifically targeted high risk groups such as women suffering domestic abuse (intimate partner violence) or families that are economically or socially disadvantaged. Home-visiting programs for high risk groups or those by child health nurses may include components during pregnancy and may continue over many months or years;

such programs are outside the scope of this review and have been addressed in other Cochrane reviews (Bennett 2008; Jahanfar 2013; Macdonald 2008; Turnbull 2012). In this review we focus on the early postnatal period following discharge from hospital.

In 2009, WHO and the United Nations Children's Fund recommended home visits by a skilled attendant in resource-limited settings. In high-mortality settings and where access to facility-based care is limited, at least two home visits are recommended for all home births: the first visit should occur within 24 hours of the birth, the second visit on day three, and if possible, a third visit should be made before the end of the first week of life (day seven). For babies born in a healthcare facility, the first home visit was recommended to be made as soon as possible after the mother and baby return home with remaining visits following the same schedule as for home births (WHO/UNICEF 2009).

A recent review demonstrated the effectiveness of community-based intervention packages in improving neonatal outcomes and reducing maternal and neonatal morbidity and mortality in resource-limited settings; home visiting is the one of the main components in each of these intervention packages. This review offers encouraging evidence of the value of integrating maternal and newborn care in community settings (Lassi 2010). We, therefore, did not include intervention packages of continuous care with components of antenatal or hospital care in our review.

How the intervention might work

In high-resource settings healthy women and babies are frequently discharged from hospital within one or two days of the birth, and in low-resource settings women may be discharged within hours of the birth or give birth at home (Brown 2002). Potentially, home visits in the first few days of the birth by healthcare professions or trained support workers offer opportunities for assessment of the mother and newborn, health education, infant feeding support, emotional or practical support and, if necessary, referral to other health professionals or agencies (Carabin 2005; Donovan 2007; Lassi 2010; Shaw 2006). Postpartum visits may prevent health problems developing or reduce their impact by early intervention or referral. Home visits have improved coverage of key maternal and newborn care practices such as early initiation of breastfeeding, exclusive breastfeeding, skin-to-skin contact, delayed bathing, attention to hygiene (e.g. hand washing and water quality), umbilical cord care, infant skin care. In addition, home visits may identify conditions that require additional care or check-up, as well as counselling regarding when to take the mother and newborn to a healthcare facility (WHO/UNICEF 2009). Home visits may involve not only the assessment of the mother and newborn for physical problems but also assessment of maternal mental health, family circumstances and the home environment.

Depending on the context, home visits may take a non-judgmental and supportive role or a more directive approach in which the goals are to monitor family compliance with standards of parenting care and ensure the newborn's health and welfare. The type of approach used can influence the ability of the carers to engage mothers and newborns, resulting in acceptance or rejection of the help offered and potential for further disengagement (Doggett 2005).

Why it is important to do this review

Despite many studies and reviews, evidence regarding the effectiveness of different types of home-visiting programs in the early postnatal period is not sufficient. In some contexts once women have been discharged from hospital there may be no, or very limited postnatal follow-up. In higher-resource settings once women are at home, services may be provided by a range of health and social care agencies (newborn health visitors, social workers, paediatricians and general practitioners) and may be fragmented; postnatal home visits potentially allow continuity of care after hospital discharge and for the assessment and referral of the mother and newborn.

This review addresses the following questions: do different schedules of postpartum home-visiting programs reduce maternal/neonatal mortality and morbidities, and if they do, what is the optimal schedule for postpartum home visits? This review includes reports evaluating the frequency, timing, duration and intensity of home visits. The optimal schedule has been set out by [WHO/UNICEF 2009](#), however, there was no clear evidence underpinning recommendations.

OBJECTIVES

The primary objective of this review is to assess outcomes (maternal and newborn mortality) of different home-visiting schedules during the early postpartum period. The review focuses on the frequency of home visits (how many home visits altogether), the timing (when visits started, e.g. within 48 hours of the birth), duration (when visits ended), intensity (how many visits per week), and different types of home-visiting interventions.

METHODS

Criteria for considering studies for this review

Types of studies

We included studies that compared outcomes after home visits with outcomes of no home visits or different types of home-visiting interventions; studies that used random or quasi-random allocations of participants; and those in which the unit of allocation was the individual or group (cluster-randomised). We also planned to include studies available only as abstracts, noting that these studies were awaiting assessment, pending publication of the full report. There was, however, no such study identified.

Types of participants

Eligible studies were ones that enrolled participants in the early postpartum period (up to 42 days after birth). We excluded studies in which women were enrolled and received an intervention during the antenatal period, even those in which the intervention continued into the postnatal period.

We planned to exclude studies that only recruited women from specific high-risk groups (e.g. women identified with alcohol or drug problems) as interventions to support such women have been addressed elsewhere ([Turnbull 2012](#)).

Types of interventions

Interventions included scheduled home visiting in the postpartum period (excluding studies with antenatal home visiting in which

the visits continued over many months). Interventions were home visits with various frequency, timings, duration and intensity.

We planned to include studies with co-intervention(s). Home visits may include outreach visits to non-healthcare facilities. Trials including a group that did not receive home visits would have been eligible but would have been analysed separately.

Types of outcome measures

Primary outcomes

1. Maternal mortality at 42 days post birth.
2. Neonatal mortality.

Secondary outcomes

Maternal outcomes

1. Maternal morbidities (postpartum haemorrhage, puerperal fever, abdominal and back pain, abnormal discharge, puerperal genital infection, thromboembolic disease, and urinary tract complications) within 42 days after birth.
2. Maternal mental health (depression, anxiety) and related problems (intimate partner violence, drug use) at 42 days after birth.
3. Satisfaction with overall care and service at 42 days after birth.

Neonatal outcomes

1. Neonatal morbidities (pneumonia, upper respiratory tract infection, diarrhoea, septic meningitis, encephalopathy or cerebral injury, and jaundice) within 28 days after birth.
2. Established feeding regimen (e.g. exclusive breastfeeding) at 28 days after birth.
3. Incomplete immunisation.
4. Failure to thrive, abuse, neglect, domestic violence from parents for any reason within 28 days after birth.

Search methods for identification of studies

Electronic searches

We contacted the Trials Search Co-ordinator to search the Cochrane Pregnancy and Childbirth Group's Trials Register (28 January 2013).

The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. monthly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. weekly searches of MEDLINE;
3. weekly searches of Embase;
4. handsearches of 30 journals and the proceedings of major conferences;
5. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL, MEDLINE and Embase, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Specialized Register' section within the editorial information about the [Cochrane Pregnancy and Childbirth Group](#).

Trials identified through the searching activities described above are each assigned to a review topic (or topics). The Trials Search Co-ordinator searches the register for each review using the topic list rather than keywords.

Searching other resources

(1) References from published studies

We searched the reference lists of relevant trials and reviews identified.

(2) Unpublished literature

We planned to contact the authors for more details about the published trials/ongoing trials.

We did not apply any language restrictions.

Data collection and analysis

Selection of studies

Two review authors (NY and SN) independently assessed eligibility for inclusion for all studies identified as a result of the search strategy. We resolved discrepancies by discussion and by consulting a third review author (RM).

Data extraction and management

We designed a form to extract data. For eligible studies, two review authors (NY and SN) extracted the data using the agreed form. We resolved discrepancies through discussion. We entered data into the Review Manager (RevMan) software ([RevMan 2012](#)) and checked for accuracy.

If information regarding any of the above had been unclear, we planned to contact authors of the original reports to provide further details.

Assessment of risk of bias in included studies

Two review authors (TD and NY) independently assessed the risk of bias for each study using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)). We resolved any disagreement by discussion or by involving an additional assessor (RM).

(1) Sequence generation (checking for possible selection bias)

We described for each included study the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.

We assessed the method as:

- low risk of bias (any truly random process, e.g. random number table; computer random number generator);
- high risk of bias (any non-random process, e.g. odd or even date of birth; hospital or clinic record number);
- unclear risk of bias.

(2) Allocation concealment (checking for possible selection bias)

We described for each included study the method used to conceal the allocation sequence in sufficient detail and determine whether intervention allocation could have been foreseen in advance of, or during recruitment, or changed after assignment.

We assessed the methods as:

- low risk of bias (e.g. telephone or central randomisation; consecutively numbered sealed opaque envelopes);
- high risk of bias (open random allocation; unsealed or non-opaque envelopes, alternation; date of birth);
- unclear risk of bias.

(3) Blinding (checking for possible performance and detection bias)

Blinding study participants and personnel from knowledge of which intervention a participant received is generally not feasible for this type of intervention. It may however, be possible to blind outcome assessment. We considered that studies were at low risk of bias for detection bias if outcome assessors were blinded, or if we judged that the lack of blinding could not have affected the results. We assessed blinding separately for different outcomes or classes of outcomes.

We assessed the methods as:

- low, high or unclear risk of bias for outcome assessors.

(4) Incomplete outcome data (checking for possible attrition bias through withdrawals, dropouts, protocol deviations)

We described for each included study, and for each outcome or class of outcomes, the completeness of data including attrition and exclusions from the analysis. We stated whether attrition and exclusions were reported, the numbers included in the analysis at each stage (compared with the total randomised participants), reasons for attrition or exclusion where reported, and whether missing data were balanced across groups or were related to outcomes. Where sufficient information was reported we planned to re-include missing data in the analyses. We were not, however, able to re-include data, as the data were not available. We assessed methods as:

- low risk of bias (e.g. no missing outcome data; missing outcome data balanced across groups);
- high risk of bias (e.g. numbers or reasons for missing data imbalanced across groups; 'as treated' analysis done with substantial departure of intervention received from that assigned at randomisation);
- unclear risk of bias.

(5) Selective reporting bias

We described for each included study how we investigated the possibility of selective outcome reporting bias and what we found.

We assessed the methods as:

- low risk of bias (where it was clear that all of the study's pre-specified outcomes and all expected outcomes of interest to the review were reported);
- high risk of bias (where not all the study's pre-specified outcomes were reported; one or more reported primary outcomes were not pre-specified; outcomes of interest were reported incompletely and so could not be used; study failed to include results of a key outcome that would have been expected to have been reported);
- unclear risk of bias.

(6) Other sources of bias

We described for each included study any concerns we have about other possible sources of bias.

We assessed whether each study was free of other problems that could put it at risk of bias:

- low risk of other bias;
- high risk of other bias;
- unclear whether there is risk of other bias.

(7) Overall risk of bias

We made explicit judgements about whether studies are at high risk of bias, according to the criteria given in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). With reference to (1) to (6) above, we assessed the likely magnitude and direction of the bias and whether we considered it was likely to impact on the findings. We planned to explore the impact of the level of bias through undertaking sensitivity analyses - see [Sensitivity analysis](#).

Measures of treatment effect

Dichotomous data

For dichotomous and categorical data, we used risk ratios (RR) with 95% confidence intervals (CI) and used the summary RR to combine trials that measured the same outcome. We had also planned to use the risk difference (RD).

Continuous data

For continuous data, we used the mean difference (MD) with 95% CI if outcomes were measured in the same way between trials. If required, we would have used the standardised mean difference (SMD) to combine trials that measured the same outcome, but used different methods.

Unit of analysis issues

Cluster-randomised trials

We included cluster-randomised trials in the analyses along with individually-randomised trials. When including cluster trials, we adjusted their sample sizes using the methods described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011) using an estimate of the intra cluster correlation co-efficient (ICC) derived from the trial, from a similar trial or from a study of a similar population. Where we used ICCs from other sources, we reported this and planned to conduct sensitivity analyses to investigate the effect of variation in the ICC. We identified both cluster-randomised trials and individually-randomised trials, and we synthesised the relevant information provided there was little heterogeneity between the study designs and the interaction between the effect of intervention and the choice of randomisation unit was considered to be unlikely.

Trials with multiple treatment arms

One trial with three arms has been included in this review as two separate studies (Bashour 2008a; Bashour 2008b); to avoid double counting, the control group data (events and sample) were shared between the two study comparisons.

Dealing with missing data

For included studies, we noted levels of attrition as:

- low risk of bias (indicates no or low level of missing data on intention-to-treat basis);
- high risk of bias (indicates high level of missing data);
- unclear.

We planned to explore the impact of including studies with high levels of missing data in the overall assessment of treatment effect by using [Sensitivity analysis](#).

For all outcomes, we carried out analyses, as far as possible, on an intention-to-treat (ITT) basis, i.e. we attempted to include all participants randomised to each group in the analyses, and all participants were analysed in the group to which they were allocated, regardless of whether or not they received the allocated intervention. The denominator for each outcome in each trial was the number randomised minus any participants whose outcomes were known to be missing.

Assessment of heterogeneity

We used the T^2 , I^2 and Chi^2 statistics to examine heterogeneity among the trials in each analysis.

We regarded heterogeneity as substantial if the I^2 was greater than 30% and either the T^2 was greater than zero, or there was a low P value (less than 0.10) in the Chi^2 test for heterogeneity. If we had identified substantial heterogeneity, we planned to explore it by pre-specified subgroup analysis.

Assessment of reporting biases

Had there been 10 or more studies in the meta-analysis, we planned to investigate reporting biases (such as publication bias) using funnel plots. We planned to assess funnel plot asymmetry visually. If asymmetry was suggested by a visual assessment, we planned to perform exploratory analyses to investigate it. In this version of the review, too few trials contributed data to allow us to carry out this planned analyses.

Data synthesis

We carried out statistical analysis using the RevMan software (RevMan 2012). We used a fixed-effect model for combining data where trials examined the same intervention, and the trials' populations and interventions were judged sufficiently similar. When there was clinical heterogeneity sufficient to expect that the underlying treatment effects differed between trials, or when substantial statistical heterogeneity was detected, we used random-effects meta-analysis to produce an overall summary if an average treatment effect across trials was considered clinically meaningful. The random-effects summary was treated as the average range of possible treatment effects and we discussed the clinical implications of treatment effects differing between trials. When the average treatment effect was not clinically meaningful, we did not combine trials. If we had identified heterogeneity for different types of study designs, we planned to carry out separate meta-analysis by type of studies (individually-randomised trial, cluster-randomised trial).

Subgroup analysis and investigation of heterogeneity

We planned to perform a subgroup analysis according to the following clinically logical predefined groups.

1. Initiation of the intervention (within 48 hours after birth or later).
2. Duration of the intervention (< three weeks or ≥ three weeks).
3. Intensity or frequency of the intervention (< one visit/week versus ≥ one visit/week.).
4. Person doing the visit: medical professional versus skilled attendant.
5. Parity: primiparity versus multiparity.

However, interventions in included trials were too heterogeneous to conduct subgroup analyses planned as above, and we therefore decided to conduct subgroup analyses by intensity/frequency of the intervention only in the comparison of more versus fewer home visits as below.

1. Any number of home visits versus no home visit.
2. Four or more home visits versus fewer than four visits.
3. More home visits versus fewer home visits (both groups had more than four visits).

We planned subgroup analyses on both the primary and secondary outcomes.

For post hoc analyses, we considered a 99% CI excluding a zero treatment effect as statistically significant.

Also, when we identified substantial heterogeneity, we investigated it using subgroup analyses and sensitivity analyses. We considered whether an overall summary was meaningful, and where it was, used random-effects analysis to produce it.

We assessed differences between subgroups using interaction tests available in [RevMan 2012](#).

Sensitivity analysis

We planned to perform sensitivity analyses to explore the effect of trial quality on the primary analysis and primary outcomes.

We planned to explore any risk of bias associated with a particular aspect of study quality (e.g. high risk of bias for allocation concealment) by sensitivity analyses.

Where we included cluster-randomised trials, we planned to carry out sensitivity analysis using a range of values for intra class correlation coefficients.

RESULTS

Description of studies

Results of the search

The search of the Cochrane Pregnancy and Childbirth Group's Trials Register identified 21 reports, and our additional searches of reference lists identified eight reports. Some studies resulted in multiple publications and one duplicate report. The 28 unique reports equated to 24 separate studies. After assessing eligibility we included 12 studies (one trial with three arms has been reported in this review as two separate studies ([Bashour 2008a](#); [Bashour 2008b](#))). We excluded 10 studies. Two reports are awaiting

further assessment pending translation from the original Spanish ([Furnieles-Paterna 2011](#); [Salazar 2011](#)) and more information about these trials is set out in [Characteristics of studies awaiting classification](#) tables.

Included studies

After assessing eligibility we included 12 randomised trials with a total of 11,287 women.

Three of the trials ([Christie 2011](#); [Kronborg 2007](#); [MacArthur 2002](#)) were cluster-randomised and health centres or healthcare staff were the units of randomisation. For these trials event rates and, or sample sizes have been adjusted in the analysis to take account of cluster design effect.

One of the trials included three arms; women in the intervention groups received either four or one home visits, while the control group received no visits. In order for us to set out the results for all three groups we have reported this trial as though it was two studies ([Bashour 2008a](#); [Bashour 2008b](#)). In the [Data and analyses](#), women receiving four visits versus no visits are entered under [Bashour 2008a](#); whereas one versus no visits are compared in [Bashour 2008b](#). The events and sample number for the control group have been divided between these comparisons to avoid double counting.

Results of trials were published between 1998 and 2012 although study data may have been collected some years before publication (e.g. in [Ransjo-Arvidson 1998](#) women were recruited between 1989 and 1992).

The studies were carried out in countries across the globe in both high- and low-resource settings. Three studies were carried out in the USA ([Escobar 2001](#); [Lieu 2000](#); [Paul 2012](#)), three in the UK ([Christie 2011](#); [MacArthur 2002](#); [Morrell 2000](#)), two in Canada ([Gagnon 2002](#); [Steel 2003](#)), and one each in Turkey ([Aksu 2010](#)), Syria ([Bashour 2008a](#); [Bashour 2008b](#)), Denmark ([Kronborg 2007](#)) and Zambia ([Ransjo-Arvidson 1998](#)). It is important to take the time and setting into account when interpreting results as routine practice varied across time and in different settings; for example, in the UK usual care may have involved up to seven home visits, whereas in other settings there may have been no postnatal care after hospital discharge.

The number and type of visits examined varied considerably across these trials, and control conditions also varied. Broadly, trials examined three types of comparisons: schedules involving more versus less postnatal home visits; schedules involving different models of care; and home versus hospital clinic postnatal follow-up. In view of the complexity of interventions we have set out the main components of interventions and a description of control conditions in [Table 1](#).

1. Schedules involving more versus fewer home visits

In five of our included studies the main comparison was between women receiving more versus fewer home visits in the postnatal period.

[Aksu 2010](#) examined the effect of one postnatal visit by a trained supporter versus no postnatal visits; [Bashour 2008a](#); [Bashour 2008b](#) compared four or one postnatal home visits from midwives versus no home visits following hospital discharge. [Ransjo-](#)

Arvidson 1998 compared four versus one midwife home visits. In these three studies, carried out in low-resource settings, women may have received no additional postnatal care.

In contrast, Christie 2011 and Morrell 2000 examined the impact of additional care in settings where women already received more than four postnatal visits from midwives as part of usual care. Christie 2011 compared groups receiving six versus one health visitor visits (in addition to midwifery care) and Morrell 2000 examined the impact of up to 10 visits from lay supporters; again visits were provided in addition to routine midwifery care which was available to women in both intervention and control groups. (In the data and analysis tables we have separated studies where women in both groups received more than four home visits as the impact of interventions is likely to be different from that in settings where women received no, or very limited postnatal care.)

2. Schedules comparing different models of postnatal care

Three studies examined different ways of providing postnatal care.

Steel 2003 compared the effects of two visits by public health nurses in the early postnatal period compared with a telephone screening interview with discretionary nurse home visits.

In a cluster-randomised trial Kronborg 2007 looked at the effects of more structured postnatal visits; women in the intervention group were visited between one and three times by health visitors who had attended special training on promoting and supporting breastfeeding. Women in the control group received usual care by health visitors who had not attended the breastfeeding courses.

MacArthur 2002 compared postnatal care that was adapted to the individual needs of women and home visits extended beyond the usual period of care (flexible visits up to 10 to 12 weeks postpartum). This was compared with usual care which involved a more rigid schedule of midwife home visits confined to the early postnatal period.

3. Home versus hospital postnatal care

Four of the included studies compared outcomes in women attending hospital clinics for postnatal checks and follow-up (usual care) versus home visits by nurses (Escobar 2001; Gagnon 2002; Lieu 2000; Paul 2012).

For all types of comparisons the purpose of visits was broadly similar: to assess the physical health and wellbeing of mothers and babies (with referral for further care where necessary), to promote and support breastfeeding, to assess maternal emotional wellbeing and to offer health education and support. In some cases the intervention focused on a particular aspect of care (e.g. breastfeeding), whereas other interventions were more general.

The outcomes measured in different studies varied. Most studies included some measure of maternal and infant health (although the particular outcomes measured, the way they were measured, and the time of follow-up varied considerably between studies). Health service utilisation was also reported in a number of trials. Maternal emotional wellbeing and rates of breastfeeding were reported in some of the studies, and a minority reported maternal satisfaction with postnatal care. In the data and analyses tables we have set up analyses for all prespecified outcomes even where no studies have reported results. We did this in order to illustrate

gaps in the evidence, and so that empty tables can be populated in updates of the review as more data become available.

Excluded studies

Ten studies identified by the searches were excluded after assessing the full trial reports. Two trials were excluded as they focused on outcomes in women following early hospital discharge after the birth rather than on different schedules of home visits for women discharged at the same time (Boulvain 2004; Carty 1990). Two studies did not specifically examine postnatal home visits (Gunn 1998; Simons 2001). One study, which recruited high-risk women, involved intervention by child health nurses, rather than more general care of the mother and baby in the early postnatal period (Izzo 2005). Quinlivan 2003 also focused on a high-risk group rather than on the impact of different schedules of care. Three excluded studies examined complex interventions that included components delivered during the antenatal period (Korfmacher 1999; Lumley 2006; Olds 2002). Finally, Stanwick 1982 was excluded for methodological reasons; there were major protocol deviations in this study, with many women in the intervention group failing to receive the intervention as planned, and analysis was carried out according to treatment received rather than by randomisation group (data were not available to allow us to restore women to their original randomisation group).

Risk of bias in included studies

The included studies were of mixed methodological quality; we were unable to carry out planned sensitivity analysis (temporarily excluding studies at high or unclear risk of bias for allocation concealment) as too few studies contributed data to allow any meaningful additional analysis.

Allocation

Ten of the 12 included studies used methods to generate the randomisation sequence that we judged were at low risk of bias: seven used computer-generated sequences or external trial randomisation services (Aksu 2010; Escobar 2001; Gagnon 2002; Kronborg 2007; Lieu 2000; MacArthur 2002; Paul 2012) and three used random number tables (Christie 2011; Morrell 2000; Steel 2003). In the Bashour 2008a; Bashour 2008b trial, it was not clear how the randomisation sequence was decided, and the method used by Ransjo-Arvidson 1998 was assessed as being at high risk of bias.

Concealment of group allocation at the point of randomisation was assessed as being at low risk of bias in nine of the studies; five trials reported using sequentially numbered, sealed envelopes to conceal allocation (Bashour 2008a; Bashour 2008b; Escobar 2001; Lieu 2000; Morrell 2000; Steel 2003) and four used external randomisation services (Christie 2011; Gagnon 2002; Kronborg 2007; MacArthur 2002). In the trials by Aksu 2010, Paul 2012, and Ransjo-Arvidson 1998 the methods used to conceal allocation were not described, or were not clear.

Blinding

Blinding women and care providers to this type of intervention is not generally feasible and no attempts to achieve blinding for these groups were described. All studies were judged to be at high risk of bias for this domain. It is possible that lack of blinding may have been an important source of bias.

In seven of the trials it was reported that outcome assessors were blind to group allocation ([Bashour 2008a](#); [Bashour 2008b](#); [Escobar 2001](#); [Gagnon 2002](#); [Lieu 2000](#); [MacArthur 2002](#); [Paul 2012](#); [Steel 2003](#)). However, where outcome data were assessed by interview, women may have revealed their treatment group and it was not clear whether or not blinding was successful; none of the trialists reported checking the success of blinding. Blinding of outcome assessors was either not attempted or not mentioned in the remaining five trials ([Aksu 2010](#); [Christie 2011](#); [Kronborg 2007](#); [Morrell 2000](#); [Ransjo-Arvidson 1998](#)).

Incomplete outcome data

In six of the included trials sample attrition and missing data did not appear to be important sources of bias (assessed as low or unclear risk of bias) ([Bashour 2008a](#); [Bashour 2008b](#); [Christie 2011](#); [Escobar 2001](#); [Lieu 2000](#); [Paul 2012](#); [Steel 2003](#)). In some trials, although attrition was balanced across groups there was more than 10% loss to follow-up; in the [Aksu 2010](#) trial the response rate at four months postpartum was 82%; 16% were lost to follow-up in the [Kronborg 2007](#) study and 15% in the trials by [Gagnon 2002](#) and [Ransjo-Arvidson 1998](#). By four months postpartum more than 20% of the sample were lost to follow-up in the [MacArthur 2002](#) trial. Loss to follow-up was not balanced in the intervention and control groups in the [Morrell 2000](#) study; while the response rate was 83% for those women receiving additional postnatal visits it was only 75% in the control group.

Selective reporting

Assessing selective reporting bias is not easy without access to study protocols, and for all studies included in the review, risk of bias was assessed from published study reports. In most, but not all

of the studies the primary outcomes were specified in the methods section and trialists reported results for these outcomes. We were unable to carry out planned investigation of possible publication bias by generating funnel plots as too few studies contributed data.

Other potential sources of bias

In most of the studies there were no other obvious sources of bias. In four of the trials there was some imbalance between groups at baseline ([Escobar 2001](#); [Gagnon 2002](#); [Lieu 2000](#); [Morrell 2000](#)). In the cluster trial reported by [Christie 2011](#), health visitors were the unit of randomisation and it appeared that there were differences between health visitors in terms of the number of women recruited to the trial and in their practices; the impact of these differences in individual practices is unclear. In the [Steel 2003](#) study women were recruited in two study areas and usual practice was different in each area and this led to protocol deviations; again, it is not clear how this would affect results. Finally, in the [Ransjo-Arvidson 1998](#) trial much of the analysis related to the intervention group only, in addition, the nature of the intervention may have affected findings. Midwives asked women about their health as part of the intervention so women in the intervention group were asked repeatedly to identify health problems, whereas women in the control group were only asked as part of follow-up assessments; this may have affected recall and introduced a risk of response bias. This trial may also have had the potential for publication bias because the publication date was more than six years after study completion.

We have set out the 'Risk of bias' assessments for individual studies in [Figure 1](#) and for overall bias across all studies for different bias domains in [Figure 2](#).

Figure 1. 'Risk of bias' graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.

Figure 2. 'Risk of bias' summary: review authors' judgements about each risk of bias item for each included study.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Aksu 2010	+	?	-	?	-	-	+
Bashour 2008a	?	+	-	-	+	-	+
Bashour 2008b	?	+	-	-	+	-	+
Christie 2011	+	+	-	?	?	+	?
Escobar 2001	+	+	-	?	?	?	?
Gagnon 2002	+	+	-	+	-	?	-
Kronborg 2007	+	+	-	?	-	+	+
Lieu 2000	+	+	-	?	+	-	-
MacArthur 2002	+	+	-	+	-	+	+
Morrell 2000	+	+	-	?	-	+	-
Paul 2012	+	?	-	?	?	+	?
Ransjo-Arvidson 1998	-	?	-	?	-	-	-
Steel 2003	+	+	-	?	?	+	-

Effects of interventions

Comparison 1: Schedules involving more versus fewer home visits (five trials with 2102 women)

In five included studies the main comparison was between women receiving more versus less home visits in the postnatal period (Aksu 2010; Bashour 2008a; Bashour 2008b; Christie 2011; Morrell 2000; Ransjo-Arvidson 1998). One trial included three arms and to allow us to report findings for two different intervention groups this trial has been treated as two separate studies in this review (Bashour 2008a; Bashour 2008b). One of the trials (Christie 2011) was a cluster-randomised trial and in the data and analyses tables we

have used the effective sample size and event rates (adjusted for cluster design effect).

Aksu 2010 examined the effect of one postnatal visit versus no postnatal visits; Bashour 2008a; Bashour 2008b four or one home visits versus none; Ransjo-Arvidson 1998 four versus one home visits. Christie 2011 and Morrell 2000 examined the impact of additional care in settings where women already received more than four visits as part of usual care. Christie 2011 compared groups receiving six versus one health visitor visits (in addition to midwifery care) and Morrell 2000 up to 10 lay supporter visits versus no additional visits with routine midwifery care available to women in both intervention and control groups. (In the data and analysis

tables we have separated studies where women in both groups received more than four home visits.)

For many of our prespecified outcomes only one or two studies contributed data and results were not always available for all women randomised. For each result we have specified the number of studies and women for whom data were available (for cluster-randomised trials these are the adjusted figures). We anticipated that the treatment effect might differ in trials comparing different numbers of visits, we therefore used a random-effects model for all analyses in this comparison.

Primary outcomes

Maternal mortality up to 42 days postpartum

Only one trial reported this outcome ([Christie 2011](#)). There was no evidence of differences in maternal mortality between groups receiving additional health visitor visits compared with controls, with only one death in 951 women (risk ratio (RR) 2.46, 95% confidence interval (CI) 0.10 to 60.14, one study with 951 women) ([Analysis 1.1](#)).

Neonatal mortality

Two trials reported on neonatal death ([Bashour 2008a](#); [Bashour 2008b](#); [Ransjo-Arvidson 1998](#)); there was no strong evidence that more visits were associated with fewer deaths. Pooled results showed no evidence of differences between intervention and control groups (average RR 0.99, 95% CI 0.26 to 3.69, two studies, 1281 women), similarly women receiving four or one visits versus none, or four visits versus one had similar numbers of neonatal deaths (RR 3.06, 95% CI 0.37 to 25.39, one study, 873 women; and, RR 0.48, 95% CI 0.09 to 2.60, one study, 408 women, respectively) ([Analysis 1.2](#)).

Secondary outcomes

Maternal outcomes

Severe maternal morbidity

Two studies reported this outcome, [Bashour 2008a](#); [Bashour 2008b](#) reported the number of women seeking medical help for a health problem and [Ransjo-Arvidson 1998](#) the number of women where a doctor had identified a problem up to 42 days. The numbers of women with problems were very similar in intervention and control groups and there was no evidence of differences between groups either overall, or for women receiving different patterns of visits (overall RR 0.96, 95% CI 0.81 to 1.15, two studies, 1228 women; four or one visits versus none RR 0.97, 95% CI 0.80 to 1.17, one study, 876 women; and, four visits versus one RR 0.90, 95% CI 0.52 to 1.54, one study, 352 women) ([Analysis 1.3](#)).

Maternal health problems up to 42 days

Only one study reported results for most of our pre-specified outcomes relating to maternal postpartum health problems up to 42 days after the birth ([Bashour 2008a](#); [Bashour 2008b](#)). There was no evidence of differences between women receiving four or one postnatal home visits versus none for secondary postpartum haemorrhage (RR 0.78, 95% CI 0.49 to 1.26); abdominal pain (RR 1.06, 95% CI 0.83 to 1.34); back pain (RR 0.96, 95% CI 0.83 to 1.11); urinary tract complications (RR 0.83, 95% CI 0.63 to 1.10); fever (RR 1.30, 95% CI 0.93 to 1.82) or dyspareunia (RR 1.18, 95% CI 0.90 to 1.55). No studies reported on thromboembolic disease or puerperal genital tract infections.

One study reported mean scores on a scale measuring maternal perceptions of their general health at six weeks postpartum ([Morrell 2000](#)). There was no strong evidence of differences between women receiving additional postnatal support and controls (mean difference (MD) -1.60, 95% CI -4.72 to 1.52) ([Analysis 1.12](#)).

Postnatal depression and anxiety

None of the studies included in this comparison reported the number of women with a diagnosis of depression in the postnatal period. Two studies looked at mean scores on the Edinburgh postnatal depression scale (EPDS) at six weeks ([Morrell 2000](#)) and eight weeks postpartum ([Christie 2011](#)). In the [Morrell 2000](#) study women received additional support from lay people, and in [Christie 2011](#), women received additional health visitor support as well as routine midwife home visits. The intervention did not appear to have a positive effect in either study, and overall, women receiving the additional visits had slightly higher mean depression scores (MD 1.05, 95% CI 0.27 to 1.82) ([Analysis 1.14](#)).

[Christie 2011](#) reported mean anxiety scores at eight weeks postpartum; there was no strong evidence of a difference between groups (MD 3.80, 95% CI -0.44 to 8.04) ([Analysis 1.16](#)).

Maternal satisfaction with care in the postnatal period

Women were asked about their satisfaction with postnatal care in two studies. In one study the number of women saying they were "happy" with their postnatal experience was reported ([Bashour 2008a](#); [Bashour 2008b](#)) ([Analysis 1.17](#)). Women receiving no formal postnatal care were slightly more satisfied with their experience, but there was no evidence of difference between groups, and in all groups most women reported satisfaction (RR 0.96, 0.90 to 1.02). In a second study ([Christie 2011](#)), the additional support provided by health visitors was associated with increased mean satisfaction scores (MD 14.70, 95% CI 8.32 to 21.08) ([Analysis 1.18](#)).

Infant outcomes

Neonatal health service use

Three studies reported the number of babies requiring urgent health care during the postnatal period although the way this outcome was defined varied in the three studies ([Bashour 2008a](#); [Bashour 2008b](#) reported hospital visits up to four months; [Ransjo-Arvidson 1998](#) doctor-identified infant health problem at six weeks; and [Christie 2011](#) use of emergency medical services up to eight weeks). Overall, babies were less likely to have emergency medical care if their mothers received more postnatal home visits (average RR 0.65, 95% CI 0.45 to 0.95, three studies with 1370 infants) ([Analysis 1.19](#)).

Breastfeeding

Exclusive breastfeeding at up to six weeks was reported in three studies. Women receiving additional support at home were more likely to be exclusively breastfeeding their babies at six weeks postpartum, and at the last assessment up to six months postpartum (average RR 1.17, 95% CI 1.01 to 1.36, three studies 960 women, and, average RR 1.38, 95% CI 1.10 to 1.73, three studies 1309 women respectively) ([Analysis 1.20](#); [Analysis 1.21](#)).

For any breastfeeding there was no evidence of differences between women receiving additional postnatal visits and controls at either six weeks or up to six months postpartum (average RR 0.89, 95% CI 0.57 to 1.38, two studies 813 women, and, average RR 1.01, 95% CI

0.99 to 1.03, two studies 1315 women, respectively) ([Analysis 1.22](#); [Analysis 1.23](#)).

[Aksu 2010](#) reported mean duration of breastfeeding (months) in 54 women who had received one versus no postnatal care at home. In both groups women on average breast fed their babies for approximately a year or more, but the mean duration was increased by three months in women receiving a home visit (MD 3.00, 95% CI 2.33 to 3.67) ([Analysis 1.24](#)).

Neonatal morbidity

Two studies reported infant respiratory tract infections up to eight weeks postpartum, although the condition was not defined in the same way in the two trials. In [Bashour 2008a](#); [Bashour 2008b](#) the number of babies suffering a cough or cold was reported, whereas in the [Ransjo-Arvidson 1998](#) trial infants appeared to have more serious illness. Overall, and in individual studies there was no clear evidence of difference between groups (pooled RR 0.99, 95% CI 0.84 to 1.17, two studies 1217 infants) ([Analysis 1.25](#)).

A single study reported on the number of infants with jaundice (not defined); very similar numbers of infants had jaundice in both intervention and control groups (RR 1.04, 95% CI 0.85 to 1.26, 861 infants) ([Analysis 1.26](#)). In the same study, approximately half of the babies were reported to have had diarrhoea, however, more infants in the group receiving no visits were reported to suffer from diarrhoea compared to those whose mothers received postnatal home visits (RR 0.85, 95% CI 0.74 to 0.98, 861 infants) ([Analysis 1.27](#)).

There were no clear differences between groups in the number of infants receiving immunisations; the vast majority of infants were immunised whether or not their mothers received postnatal care at home (RR 0.99, 95% CI 0.96 to 1.01) ([Analysis 1.28](#)).

Non-prespecified outcomes

One study reported on contraceptive use at 42 days postpartum; no clear differences between groups were identified (RR 0.98, 95% CI 0.82 to 1.16) ([Analysis 1.29](#)).

Comparison 2: Schedules comparing different models of postnatal care (three studies with 4394 women)

Three studies are included in this comparison; each examined a different type of intervention and control condition and we have not pooled findings in meta-analyses. In brief, [Steel 2003](#) compared two home visits compared with a telephone screening interview with discretionary nurse home visits. In [Kronborg 2007](#), health visitors (HVs) were randomised, and women were visited between one and three times by HVs who had attended special training on supporting breastfeeding compared with usual care by HVs who had been specially trained. [MacArthur 2002](#) compared individualised postnatal care up to 10 to 12 weeks postpartum with usual care, which involved a more rigid schedule of midwife home visits in the early postnatal period.

For most of our prespecified outcomes no data were reported in any of the three trials.

Primary outcomes

None of the studies reported on maternal mortality.

In the study by [MacArthur 2002](#) there were only three neonatal deaths from a sample of 2064 women, and no significant differences between treatment groups were identified.

Secondary outcomes

None of the studies reported on maternal general morbidity although [MacArthur 2002](#) reported on the number of women with EPDS scores greater than 12 (the cut-off used to denote high risk of postnatal depression) at four months postpartum. Women receiving individualised extended postnatal care were less likely to have EPDS scores ≥ 13 compared with women receiving routine care (RR 0.68, 95% CI 0.53 to 0.86) ([Analysis 2.9](#)).

[Steel 2003](#) reported the number of babies with health problems up to four weeks; there was no strong evidence of any difference between groups (RR 0.97, 95% CI 0.85 to 1.12) ([Analysis 2.15](#)).

Breastfeeding

The cluster-randomised trial by [Kronborg 2007](#) examined the impact of care from HVs with special training to promote and support breastfeeding. In this study there was no evidence of difference in the number of women who had stopped exclusive breastfeeding at six weeks (RR 0.81, 95% CI 0.58 to 1.14) ([Analysis 2.16](#)). Few women in either group continued to exclusively breastfeed at six months and there was no evidence of difference between groups identified (RR 1.47, 95% CI 0.81 to 2.69) ([Analysis 2.17](#)).

In the study comparing home visits versus telephone screening by [Steel 2003](#) most women in both groups were breastfeeding their babies at six weeks postpartum (any breastfeeding) and there was no clear difference between groups (RR 1.03, 95% CI 0.99 to 1.08) ([Analysis 2.18](#)).

None of our other prespecified infant outcomes were reported in any of these studies.

Comparison 3: Home versus hospital postnatal care (four studies with 3917 women)

Four studies compared women attending hospital clinics for postnatal checks (usual care) versus home visits by nurses ([Escobar 2001](#); [Gagnon 2002](#); [Lieu 2000](#); [Paul 2012](#)).

None of these studies reported on maternal or neonatal mortality.

Secondary outcomes

Maternal morbidity

All four studies reported on maternal use of emergency health care in the postnatal period although there were some differences in definitions; [Escobar 2001](#) and [Lieu 2000](#) reported on the number of women making an urgent hospital visit up to two weeks, and [Paul 2012](#) the number of women seeking unplanned emergency health care up to two weeks, whereas [Gagnon 2002](#) reported hospital admissions up to eight weeks postpartum. Pooled results from these studies revealed no evidence of differences between women receiving hospital clinic versus home postnatal care (RR 1.04, 95% CI 0.85 to 1.26, four studies, 3755 women) ([Analysis 3.3](#)).

Maternal anxiety and depression

Two studies reported on the number of women with depressive symptoms at two weeks postpartum; similar numbers of women in

the intervention and control groups had symptoms (RR 1.10, 95% CI 0.93 to 1.30, two studies with 2177 women) ([Analysis 3.10](#)).

[Gagnon 2002](#) reported mean scores on the State Trait Anxiety Inventory (STAI) at two weeks. There was no evidence of differences between groups (MD 0.30, 95% CI -1.08 to 1.68, 513 women) ([Analysis 3.13](#)).

Data on depression and anxiety were also collected in the [Paul 2012](#) study. However, while the MDs between groups were set out, mean scores for women in the home and hospital groups were not reported and we were unable to enter data from this trial in our data and analyses tables. The authors reported no statistically significant differences in mean EPDS or STAI scores at two weeks, two months and six months postpartum.

Satisfaction with care

In two studies, women seemed to prefer home rather than hospital clinic care; postnatal care was rated as good or excellent by 68% of women in the home care group compared with 55% in the clinic group (unweighted percentages). This difference between groups was statistically significant (there was high heterogeneity for this outcome and we used a random-effects model; average RR 1.26, 95% CI 1.09 to 1.45) ([Analysis 3.14](#)). [Gagnon 2002](#) identified no evidence of difference in mean scores for satisfaction with postnatal care at eight weeks (MD -0.10, 95% CI -0.88 to 0.68) ([Analysis 3.15](#)).

Breastfeeding

All four studies examined at least one outcome relating to breastfeeding. [Gagnon 2002](#) reported the number of women exclusively breastfeeding at two weeks. There was no strong evidence of differences between groups (RR 1.05, 95% CI 0.93 to 1.18) ([Analysis 3.16](#)). [Escobar 2001](#) and [Lieu 2000](#) reported the number of women who had discontinued any breastfeeding at two weeks; again, there were no clear differences between groups (RR 0.93, 95% CI 0.78 to 1.12) ([Analysis 3.18](#)). [Paul 2012](#) examined the number of women breastfeeding at eight weeks postpartum and while slightly more women in the home visit group were still breastfeeding at this time, the difference between groups did not reach statistical significance (RR 1.09, 95% CI 1.00 to 1.18) ([Analysis 3.19](#)).

Infant severe morbidity and health care use

All four studies reported on infant use of emergency health care; [Escobar 2001](#) and [Lieu 2000](#) reported on the number of infants re-hospitalised within two weeks of initial discharge, and [Paul 2012](#) the number of infants requiring unplanned emergency health care up to two weeks. [Gagnon 2002](#) reported infant hospital admissions up to eight weeks postpartum. Pooled results revealed no evidence of differences in infant health service use for women receiving hospital clinic versus home postnatal care (RR 1.11, 95% CI 0.86 to 1.43, four studies 3770 infants) ([Analysis 3.21](#)).

Planned subgroup and sensitivity analysis

For our primary outcomes we had planned subgroup analysis by when visits were initiated, by the duration and intensity of the intervention, by the person carrying out the visit (medical professional versus skilled attendant), by content of the visit, by parity, and by other potential modifying factors (e.g. study in developed versus developing country). However, within each comparison, data for our primary outcomes were

scarce. For maternal mortality only one study reported findings and for neonatal mortality, within the different comparisons, at most two studies contributed data. For both of our primary outcomes event rates were low and within studies there were no significant differences between groups, nor was there evidence of heterogeneity between studies where more than one study contributed data. For these reasons, we did not think that in this version of the review subgroup analysis would throw any further light on findings. In future updates of the review, as more data become available we will carry out planned additional analysis.

Similarly, planned sensitivity analysis by risk of bias was not performed; again, too few studies contributed data to any particular analysis to make such additional analyses meaningful.

DISCUSSION

Summary of main results

In this review we have included data from 12 randomised trials with data for more than 11,000 women. The trials were carried out in countries across the world, and in both high- and low-resource settings. In low-resource settings, women receiving usual care may have received no additional postnatal care after early hospital discharge.

The interventions and control conditions varied considerably across studies with trials focusing on three broad types of comparisons: schedules involving more versus fewer postnatal home visits (five studies), schedules involving different models of care (three studies), and home versus hospital clinic postnatal check-ups (four studies). In all but two of the included studies, postnatal care at home was delivered by healthcare professionals. The broad aims of all interventions were to assess the wellbeing of mothers and babies, and to provide education and support, although some interventions had more specific aims such as to encourage breastfeeding or to provide practical support.

For most of our outcomes only one or two studies provided data, and overall results were inconsistent.

In the five studies comparing more versus less postnatal home visits there was no evidence of differences between groups for maternal and neonatal mortality. Only one study (which reported a large number of outcomes overall) reported results for most of our outcomes relating to maternal morbidity, and there was no strong evidence that more postnatal visits at home were associated with improvements in maternal health.

Two studies examining maternal depression compared mean scores on the EPDS and results suggested that women receiving more visits had higher mean scores, denoting an increased risk of depression. The reason for this finding is not clear. It is possible that women who had more contact with healthcare professionals may have been more willing to disclose their feelings. The authors of one trial ([Morrell 2000](#)), also speculated that increased provision of support may somehow disrupt women's usual support networks, or that the withdrawal of services may result in increased depression.

Two studies reported on maternal satisfaction with postnatal care and in one of these, additional health visitor support was associated with increased satisfaction scores. There was some evidence that postnatal care at home may reduce infant health

service utilisation in the weeks following the birth, and that more home visits may encourage more women to exclusively breastfeed their babies. The evidence regarding any breastfeeding was less clear, although one study with a small sample size suggested that a home visit may encourage women to continue to breastfeed for longer. There was no strong evidence that infant morbidity including jaundice and respiratory tract infections was affected by home visits, although episodes of diarrhoea were reported less often by women in the groups receiving visits in a single study (this study reported a large number of outcomes and as findings were not consistent it is possible that this finding occurred by chance).

For the three studies comparing different ways of offering care involving postnatal home visits it was not clear that interventions had a consistent effect, and many of our prespecified outcomes were not reported. There did not appear to be strong evidence from two studies that experimental interventions increased the number of women breastfeeding their babies. In one study, women in the experimental groups receiving an extended programme of home visits by midwives appeared to have lower EPDS scores at four months postpartum.

Four studies examined home versus hospital clinic postnatal checks. There were no data reported for most of our outcomes. There were no clear differences between groups for maternal emergency healthcare utilisation or maternal anxiety or depression. In two studies women seemed to prefer home rather than hospital care, while a third study examining satisfaction with care did not identify any clear difference between groups. There was no strong evidence that home care was associated with an increase in breastfeeding, or that infant emergency healthcare utilisation differed between groups.

Overall completeness and applicability of evidence

The studies included in the review examined different sorts of interventions in different types of settings and drawing clear conclusions is not simple. The trials had a variety of aims with some focusing on physical checks of the mother and newborn, while others specifically aimed to provide support for breastfeeding, and one included the provision of more practical support with housework and childcare; under these circumstances it is not surprising that results from studies were not entirely consistent. This variation in aims was reflected in the choice of outcomes reported in different studies, and for most of our outcomes there were very few data. Further, for outcomes such as breastfeeding there were differences in how outcomes were measured and when. Important clinical outcomes relating to maternal and infant health were mainly not reported, and for these outcomes results were dominated by a single study. Perhaps surprisingly, not all of the studies reported maternal satisfaction with different schedules or ways of offering care; those studies that did, provided some evidence that women preferred care at home. Improved maternal satisfaction with care involving home visits may be related to women's increased health awareness, support for behavioural change, and improved access to health-care services, however, the evidence on maternal views is still limited. There was some evidence from two studies carried out in high-resource settings that maternal depression scores were increased in women receiving more postnatal visits; the reasons for this finding are not clear, and this finding warrants further research attention in future trials and qualitative research.

Quality of the evidence

The studies included in the review were of mixed quality as regards risk of bias. Most of the studies used methods to generate the randomisation sequence and to conceal allocation at the point of randomisation that we judged were at low risk of bias. On the other hand, blinding women and healthcare staff to this type of intervention is not generally feasible, and in many of the studies the experimental and control interventions may have been delivered by quite different staff. Although in eight of the 12 studies it was stated that outcome assessors were blind to treatment group, many of the data on breastfeeding and maternal depression, for example, were derived from interviews and it is possible that women disclosed their allocation. It is also possible that the interventions themselves led to a response bias; women in the groups receiving more care were asked to discuss their health (physical and psychological) as part of the intervention, and it is possible that this may have affected reporting of health problems as part of study assessments. Loss to follow-up was a further problem in half of these trials. Even relatively low sample attrition (less than 5%) may mean it is more difficult to interpret results for outcomes that occur infrequently (such as serious maternal morbidity) as those with health problems may be less likely to respond. We were unable to investigate possible publication bias as too few studies contributed data.

Most of the results in the review are derived from one or two studies and several of the studies had small sample sizes; we were unable to pool many of the data in meta-analysis; there was a lack of consistency between studies in terms of the outcomes reported, and the time and way in which outcomes were measured. In addition, there was considerably diversity in terms of the aims of interventions and the way they were delivered. These differences mean that for any one outcome there were few data and most of our results were inconclusive.

Potential biases in the review process

We are aware that authors carrying out a review may themselves introduce bias. We took a number of measures to try to reduce bias; at least two review authors carried out data extraction and assessed risk of bias. All data were checked after entry. Nevertheless, assessing risk of bias for example, requires individual judgements and it is possible that a different review team may have made different assessments.

Agreements and disagreements with other studies or reviews

Generally, postnatal home visits seem likely to increase maternal satisfaction, and may promote breastfeeding, and reduce infant morbidities, but these effects are very much dependent upon the aims of the package of the postnatal interventions. The findings are in line with what the previous literature has shown.

AUTHORS' CONCLUSIONS

Implications for practice

Generally, postnatal home visits have been recommended where mothers and their newborns are discharged early to promote infant health and maternal satisfaction. However, the results of this review are inconclusive and in the absence of strong or consistent evidence the frequency, timing, duration and intensity of

such postnatal care visits should be determined by individual and local needs, and where possible, should take account of maternal preferences.

Implications for research

Further well designed randomised controlled trials or any other studies evaluating this complex intervention will be required to formulate the optimal package. The design of interventions in such a trial should be based upon postpartum health priorities in each context, which would determine the intensity and content of postnatal care visits.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Aksu 2010

Methods	Study design: randomised controlled trial carried out in Aydin,Turkey. Duration of study: from March to July, 2008.
Participants	66 women who gave birth at Zübeyde Hanim Maternity Hospital located in Aydin,Turkey. Inclusion criteria: Mothers: (1) Being primiparous(giving birth to a live infant for the first time). (2) Giving birth by vaginal delivery. (3) Delivering a healthy newborn. (4) Birth occurring at gestational age of 37 weeks or more. (5) Giving birth to a singleton baby. (6) Providing informed consent. (7) Living in the city of Aydin (to make home visits more convenient). (8) Being able to communicate/speak in Turkish. (9) Not using any drugs that would be likely to affect breast milk. (10) Having an intention to breast feed.

Schedules for home visits in the early postpartum period (Review)

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Aksu 2010 (Continued)

- (11) Not having history of chronic diseases.
(12) Not smoking.
Exclusion criteria:
Infants:
(1) Lower than 2500 g at birth.
(2) With an Apgar score of 7 or lower.
(3) With congenital anomalies or serious disease.
(4) Those needing intensive care.

Interventions	<p>(1) Intervention group (n = 33):</p> <p>A single home visit 3 days after delivery from trained supporters and focusing on breastfeeding education.</p> <p>All women received standard breastfeeding education in the first few hours (within 24 hours) after delivery.</p> <p>(2) Control group (n = 33):</p> <p>Routine care which included breastfeeding education in the first few hours (within 24 hours) after delivery (no breastfeeding education at home on day 3 postpartum from supporters).</p>
Outcomes	<p>(1) Exclusive breastfeeding at 2 weeks. (2) Exclusive breastfeeding at 6 weeks. (3) Exclusive breastfeeding at 6 months. (4) Duration of breastfeeding reported by the participants at 18 months after delivery. (5) Duration of exclusive breastfeeding (month). (6) Duration of breastfeeding (month). (7) Breastfeeding knowledge scores at 2 weeks. (8) Breastfeeding knowledge scores at 6 weeks.</p>
Notes	The study was carried out in a developing country.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Use of computer-generated random numbers.
Allocation concealment (selection bias)	Unclear risk	After the baseline interview, participants were randomly allocated to 1 of the 2 groups; the method used at the point of randomisation was not described.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible, but the authors state, "obviously, the intervention could not be blinded, however, those obtaining the outcomes could have been blinded to the patient groups".
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	The authors state, "obviously, the intervention could not be blinded, however, those obtaining the outcomes could have been blinded to the patient groups".
Incomplete outcome data (attrition bias) All outcomes	High risk	Not ITT analysis. There was some loss to follow-up (Intervention group: 3+3 /33, Control group: 3+3 /33). 54/66 were followed up at 18 months (82%).
Selective reporting (reporting bias)	High risk	The primary outcome was not pre-defined in the methods.

Schedules for home visits in the early postpartum period (Review)

Aksu 2010 (Continued)

Other bias	Low risk	Groups appeared comparable at baseline. No other bias apparent.
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Bashour 2008a

Methods	This was a 3-arm trial involving 2 intervention groups. in order to include all the data from the trial we have treated it as 2 studies with the control group data shared between each study. In the Bashour 2008a arm women received 4 visits (vs no visits). In Bashour 2008b women received 1 visit (vs no visits).
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Study design: randomised controlled trial carried out in Damascus, Syria. Women were recruited between June and December 2004.

Participants	903 women who had recently given birth at the Maternity Teaching Hospital in Damascus, Syria.
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Inclusion criteria:

- (1) Women who delivered a healthy newborn whether by vaginal delivery or caesarean section.
- (2) Women who lived within 30 km from the hospital.
- (3) Women who were available for the follow-up for the coming 6 months.

Exclusion criteria:

- (1) Women who delivered prematurely.
- (2) Women who delivered babies with low birthweight (< 2500 g).
- (3) Women who delivered babies with apparent congenital anomalies.

Interventions	The intervention consisting of home visits aimed to examine, follow-up, educate, support, and counsel women who had recently given birth.
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(1) Group A (n = 301):

[Initiation: ≤ 48 hours, Duration: ≥ 3 weeks, Intensity: > 1/week].

4 postnatal home visits by registered midwives; on days 1, 3, 7, and 30.

(2) Group B (n = 301):

[Initiation: > 48 hours, Duration: < 3 weeks, Intensity: < 1/week]

1 postnatal home visit by registered midwives; on day 3.

(3) Group C (n = 301):

[No home visit : Initiation: NA, Duration: NA, Intensity: NA].

Current standard of care in Syria (no visit following hospital discharge).

Outcomes	Primary outcomes:
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- (1) Maternal postpartum morbidities at 4 months postpartum.
- (2) Postnatal care uptake at 4 months postpartum.
- (3) Contraceptive uptake and type at 4 months postpartum.
- (4) Infant morbidities at 4 months of life.
- (5) Infant immunisation according to the national schedule at 3 months.
- (6) Infant feeding, namely exclusive breastfeeding during the first 4 months of life.

Bashour 2008a (Continued)

Secondary outcomes:

(7) Women's perceptions of their health, their impressions about the home visit/s and perceptions of the quality of care.

Notes The study was carried out in a developing country.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	It was stated that randomisation was in blocks of 7, but it was not clear how the sequence was generated.
Allocation concealment (selection bias)	Low risk	Numbered opaque and sealed envelopes.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible.
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcome assessors were reported to be blinded to the group assignment. However, it was evident that the assessors were able to tell whether women had received home visits or not from the interviews.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Not ITT analysis. 16 of Group A, 7 Group B, 4 Group C were excluded.
Selective reporting (reporting bias)	High risk	Assessment from published study report. Primary outcomes were pre-defined 6 measures, but sample size calculation was based maternal morbidity only.
Other bias	Low risk	Other bias not apparent.

Bashour 2008b

Methods This was a 3-arm trial involving 2 intervention groups. In order to include all the data from the trial we have treated it as 2 studies with the control group data shared between each study. In the [Bashour 2008a](#) arm women received 4 visits (vs no visits). In [Bashour 2008b](#) women received 1 visit (vs no visits).

Study design: randomised controlled trial carried out in Damascus, Syria. Women were recruited between June and December 2004.

Participants 903 women who had recently given birth at the Maternity Teaching Hospital in Damascus, Syria.

Inclusion criteria:

- (1) Women who delivered a healthy newborn whether by vaginal delivery or caesarean section.
- (2) Women who lived within 30 km from the hospital.
- (3) Women who were available for the follow-up for the coming 6 months.

Exclusion criteria:

- (1) Women who delivered prematurely.
- (2) Women who delivered babies with low birthweight (< 2500 g).

Bashour 2008b (Continued)

(3) Women who delivered babies with apparent congenital anomalies.

Interventions	<p>The intervention consisting of home visits aimed to examine, follow-up, educate, support, and counsel women who had recently given birth.</p> <p>(1) Group A (n = 301):</p> <p>[Initiation: ≤ 48 hours, Duration: ≥ 3 weeks, Intensity: > 1/week]</p> <p>4 postnatal home visits by registered midwives; on days 1, 3, 7, and 30.</p> <p>(2) Group B (n = 301):</p> <p>[Initiation: > 48 hours, Duration: < 3 weeks, Intensity: < 1/week]</p> <p>1 postnatal home visit by registered midwives; on day 3.</p> <p>(3) Group C (n = 301):</p> <p>[No home visit: Initiation: NA, Duration: NA, Intensity: NA]</p> <p>Current standard of care in Syria (no visit following hospital discharge).</p>
Outcomes	<p>Primary outcomes:</p> <p>(1) Maternal postpartum morbidities at 4 months postpartum.</p> <p>(2) Postnatal care uptake at 4 months postpartum.</p> <p>(3) Contraceptive uptake and type at 4 months postpartum.</p> <p>(4) Infant morbidities at 4 months of life.</p> <p>(5) Infant immunisation according to the national schedule at 3 months.</p> <p>(6) Infant feeding, namely exclusive breastfeeding during the first 4 months of life.</p> <p>Secondary outcomes:</p> <p>(7) Women's perceptions of their health, their impressions about the home visit/s and perceptions of the quality of care.</p>
Notes	The study was carried out in a developing country.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	It was stated that randomisation was in blocks of 7, but it was not clear how the sequence was generated.
Allocation concealment (selection bias)	Low risk	Numbered opaque and sealed envelopes.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible.
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcome assessors were reported to be blinded to the group assignment. However, it was evident that the assessors were able to tell whether women had received home visits or not from the interviews.

Bashour 2008b (Continued)

Incomplete outcome data (attrition bias) All outcomes	Low risk	Not ITT analysis in All Tables. 16 of Group A, 7 Group B, 4 Group C were excluded.
Selective reporting (reporting bias)	High risk	Assessment from published study report. Primary outcomes were pre-defined 6 measures, but sample size calculation was based maternal morbidity only.
Other bias	Low risk	Other bias not apparent.

Christie 2011

Methods	Cluster-randomised controlled trial in Northern Ireland, United Kingdom.
Participants	<p>102 eligible health visitors, 976 first-time 'low risk' mothers were recruited, and 295 mothers agreed to take part and completed baseline assessment.</p> <p>Inclusion criteria:</p> <p>(1) Given birth during 2002–2004.</p> <p>(2) Agreed to take part in the study (visited by a health visitor).</p> <p>Exclusion criteria:</p> <p>(1) History of family violence.</p> <p>(2) Parent indifference towards baby.</p> <p>(3) Lone parent.</p> <p>(4) Mother under 19 years old.</p> <p>(5) History/current mental illness or physical illness/disability-parent.</p> <p>(6) Drug or alcohol addiction.</p> <p>(7) Parent abused or neglected as a child.</p> <p>(8) Infant premature (pre 37 weeks).</p> <p>(9) Infant learning difficulty or severe physical illness.</p> <p>(10) Low-birth weight baby (under 2500 g) or multiple birth.</p> <p>(11) Previous still birth.</p> <p>(12) Pressures on family unit (intense).</p> <p>(13) Difficulty understanding English.</p>
Interventions	<p>(1) Intervention group: (n = 453 first-time 'low risk' mothers were recruited, and 136 mothers agreed to take part).</p> <p>[Initiation: > 48 hours, Duration: ≥ 3 weeks, Intensity: ≥ 1/week]</p> <p>6 home visits from 10–14 days to 8 weeks postpartum, i.e. weekly home contacts by health visitors who provided support, carried out assessments and offered health promotion.</p> <p>(2) Control group: (n = 523 first-time 'low risk' mothers were recruited, and 159 mothers agreed to take part).</p> <p>[Initiation: > 48 hours, Duration: < 3 weeks, Intensity: < 1/ week]</p> <p>1 home visit from 10 to 14 days postpartum home visit (the standard frequency of home visits). Any further visits were discretionary.</p>
Outcomes	<p>Primary outcomes:</p> <p>(1) The Edinburgh Postnatal Depression Scale (EPDS) at 8 weeks and 7 months postpartum.</p> <p>Secondary outcomes:</p>

Schedules for home visits in the early postpartum period (Review)

Christie 2011 (Continued)

- (2) Role restriction sub scale of Parenting Stress Index at 8 weeks and 7 months postpartum.
- (3) Perceived stress index at 8 weeks and 7 months postpartum.
- (4) Maternal physical health wellbeing rating at 8 weeks and 7 months postpartum.
- (5) Baby nurture (parenting difficulty with baby's crying, sleeping, physical health and feeding, and breastfeeding) at 8 weeks and 7 months postpartum.
- (6) Satisfaction with health visiting service—surgery satisfaction questionnaire at 8 weeks and 7 months postpartum.
- (7) Attending family doctor for baby at 8 weeks and 7 months postpartum.
- (8) Use of emergency medical services for baby at 8 weeks and 7 months postpartum.
- (9) Self-efficacy (Parenting Expectations Survey—PES) at 8 weeks and 7 months postpartum.

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	A random number table was used for randomisation of health visitor. All families with newborn infants in Northern Ireland are systematically and routinely allocated to a health visitor according to each family's doctor, geographical location and/or last name.
Allocation concealment (selection bias)	Low risk	Cluster-randomised trial. Each Health Visitor was assigned a code' and this code was used to conceal identity during the randomisation process. Allocation was undertaken by clerical staff associated with a computerised Child Health System which directly receives notification of all births directly from maternity services.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible. Due to ethical and program considerations, it was not possible to hide study allocation from mothers or health visitors once randomisation had occurred.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not clearly described.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Not ITT analysis. Of 102 eligible health visitors 3 were excluded and a further 20 did not refer any women to the trial. In addition of 976 eligible women, 295 completed baseline assessment and 256 were followed up at 7 months.
Selective reporting (reporting bias)	Low risk	The primary outcome was pre-defined in the method.
Other bias	Unclear risk	Baseline characteristics of women of women in the 2 groups appeared similar. Cluster design effect was considered in the analysis. There was some variation amongst Health Visitors in terms of the way the intervention was delivered and women's outcomes.

Escobar 2001

Methods	Study design: randomised controlled trial carried out in a private hospital in Santa Clara, California, USA. (Duration of the study: a 17-month period in 1998 to 1999.)
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Escobar 2001 (Continued)

Participants

1014 mother–infant pairs.

Eligibility criteria:

- (1) Mother–infant pairs whose hospital length of stay (LOS) was expected to be 48 hours or less.
- (2) Based on the hospital's clinical protocol for selecting mothers and newborns at low medical and social risk.

Exclusion criteria:

- (1) Infant weighed < 2500 or > 4600 g at birth.
- (2) Infant was < 36 or > 42 weeks' gestation.
- (3) Infant was admitted to the intensive care nursery.
- (4) Mother or the infant had a medical problem that warranted special follow-up by a paediatrician or a nurse practitioner.
- (5) By clinical protocol, paediatricians ordered complete blood counts only for newborns with medical problems (e.g., “rule out sepsis”).
- (6) Newborns with a haematocrit of < 40 or an absolute neutrophil count of < 7000 at any time.
- (7) Mothers and newborns whose anticipated LOS was > 48 hours, usually because of caesarean delivery.
- (8) Mother was 14 years old or younger; was 15 to 17 years old without a parent or a guardian available for informed consent.
- (9) Mother had a positive toxicology screen for drugs of abuse after admission to labour and delivery.
- (10) A social worker had requested, before eligibility assessment for the study, that a home visit be done.
- (11) Mother did not speak English.
- (12) Infant did not have Kaiser Foundation Health Plan, Inc, coverage.
- (13) Infant was being adopted.
- (14) Family lived outside the area served by the home health nurses.
- (15) Family was not reachable by telephone.
- (16) Family was in the process of moving.

* For those mother–infant pairs with multiple reasons for exclusion, we recorded only the first reason for exclusion on a hierarchically ordered list of exclusions.

Interventions

- (1) Intervention (home nurse visit) group (n = 508):

[Initiation: > 48 hours, Duration: < 3 weeks, Intensity: < 1/week]

A single home health visit within 48 hours after hospital discharge by a registered nurse from the KPM-CP Home Health department.

- (2) Control (hospital-based follow-up) group (n = 506):

[No home visit: Initiation: NA, Duration: NA, Intensity: NA]

Usual hospital-based follow-up care.

Escobar 2001 (Continued)

Women were allocated to receive a 1-2 hour group-based visit (in groups of 5-8). Women were offered newborn checks and guidance. Multiparous women could opt for a 15 minute paediatric clinic visit within 48 hours of the birth. This visit may also have included some guidance and education.

Outcomes	<p>Primary outcomes:</p> <p>(1) Combined clinical outcome measure that was considered present if either the mother or the newborn experienced any of the following:</p> <p>a) Re-hospitalisation, emergency department use, or urgent clinic visit use within 10 days after delivery;</p> <p>b) Occurrence of maternal depressive symptoms as documented by a telephone interview 2 weeks after delivery; and/or</p> <p>c) Discontinuation of breastfeeding as documented by a telephone interview 2 weeks after delivery.</p> <p>Secondary outcomes:</p> <p>(2) Maternal satisfaction was assessed.</p> <p>(3) The average regional costs of these services were derived using the KPMCP's computerised Cost Management Information System, which estimates the costs of each unit of service.</p>
Notes	Data from the Kaiser Permanente Medical Care Program (KPMCP).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Study group assignments determined in advance by a random number generator.
Allocation concealment (selection bias)	Low risk	A series of sealed, opaque, sequentially numbered envelopes containing allocations.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	1 of investigators who was kept blinded to group assignment, reviewed all re-hospitalisations using objective criteria.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	There was less than 5% attrition although there was some deviation from protocol.
Selective reporting (reporting bias)	Unclear risk	The primary outcome was pre-defined in the method. Data source of cost analysis was unclear.
Other bias	Unclear risk	Baseline (household income) was unbalanced.

Gagnon 2002

Methods	<p>Study design: randomised controlled trial carried out at a university teaching hospital (3700 births/year) and affiliated community health centres in Montreal, Quebec, Canada.</p> <p>Duration of the study: from January 1997 to September 1998.</p>
Participants	<p>586 healthy mother-infant pairs.</p> <p>Inclusion criteria:</p> <ol style="list-style-type: none"> (1) Infant breast fed at least once in the hospital. (2) Living in a defined catchment area proximal to the hospital. (3) Mothers and newborn infants participated in the short stay program when certain health and psychosocial criteria were met. The program included discharge within 36 hours of birth, telephone follow-up, and a hospital nurse clinic visit. <p>Exclusions criteria:</p> <ol style="list-style-type: none"> (1) Women not eligible for the short stay program including those having caesarean birth. (2) Parity ≥ 5. (3) Blood loss at birth ≥ 500 mL. (4) More than second-degree perineal tear. (5) Maternal inability to void adequately. (6) Non receipt of indicated RhoGAM. (7) Mother unable to care for self or infant. (8) Multiple birth. (9) Birthweight < 2500 g. (10) Gestational age < 37 weeks. (11) Abnormal neonatal examination. (12) Infant unable to maintain body temperature. (13) Breastfeeding not tolerated in hospital. (14) Language barrier. (15) The need for social services referral. <p>*The only exclusion criterion for this study was non-participation in the short-stay program.</p>
Interventions	<p>(1) Experimental (Community follow-up) group (n = 292):</p> <p>[Initiation: > 48 hours, Duration: < 3 weeks, Intensity: < 1/week]</p> <p>Women in both the experimental and control groups received a 48-hour postpartum telephone contact. In addition women in the experimental group received a community nurse visit at 3 to 4 days postpartum in the woman's home. Nurse contacts continued when community follow-up was judged to be required.</p> <p>(2) Control (Hospital follow-up) group (n = 294):</p> <p>[No home visit: Initiation: NA, Duration: NA, Intensity: NA]</p> <p>48-hour postpartum telephone contact and a hospital clinic visit at 3 to 4 days postpartum.</p>
Outcomes	<p>Primary outcomes:</p>

Gagnon 2002 (Continued)

- (1) Breastfeeding frequency at 2 weeks' postpartum by maternal diary.
 - (2) Infant weight gain at 2 weeks postpartum by research assistants using digital scales.
 - (3) Maternal anxiety at 2 weeks postpartum using the State-Trait Anxiety Inventory.
 - (4) Post discharge service satisfaction at 2 weeks postpartum using the Client Satisfaction Questionnaire.
 - (5) Health and community services use at 2 months postpartum using a diary and medical record review.
- Secondary outcomes:
- (6) Insufficient breastfeeding (defined by us as < 4.5 feeds per day).
 - (7) Type of feeding (breastfeeding, formula, or mixed).
 - (8) Birthweight not regained at follow-up.

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were stratified by parity in blocks of 8 using a computer-generated table of random numbers.
Allocation concealment (selection bias)	Low risk	By telephone within 24 hours of hospital discharge with notification of group assignment.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible, given the nature of the intervention, masking of the women and health professionals was not possible.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Research assistants, blind to both treatment group and research questions, collected all data. Different research assistants collected outcome data and notified women and clinicians of group assignment; outcome assessors were blind to group assignment and during any contact with subjects were instructed to ask subjects not to divulge their group status. Furthermore, research hypotheses were not divulged to the research assistants. Outcome data were not collected by clinical staff.
Incomplete outcome data (attrition bias) All outcomes	High risk	There were some missing data (about 15%), but it relatively balanced.
Selective reporting (reporting bias)	Unclear risk	The main outcomes measured were breastfeeding frequency and infant weight gain assessed at 2 weeks postpartum (abstract only).
Other bias	High risk	There were differences between groups for some baseline characteristics.

Kronborg 2007

Methods	A community-based cluster-randomised trial in Western Denmark.
Participants	22 municipalities clusters randomised, 1597 mothers recruited.
Interventions	<p>(1) Intervention group (n = 781, 11 clusters).</p> <p>[Initiation: < 48 hours, Duration: ≥ 3 weeks, Intensity: < 1/week]</p> <p>The intervention included special Health Visitor training focusing on promoting breastfeeding. Mothers received 1–3 home visits during the first 5 weeks postpartum. The intervention addressed maternal psychosocial factors. The first visit was scheduled as soon as possible after coming home from the hospital. Mothers who were primipara and multipara with previously short breastfeeding experience more likely to be selected for further support; the 2 additional visits within the first 5 weeks after delivery. In addition, mothers received an informative booklet about breastfeeding.</p> <p>(2) control group (n = 816, 11 clusters).</p> <p>[No home visit: Initiation: NA, Duration: NA, Intensity: NA]</p> <p>(Health Visitors received no additional training.) Mothers offered the health visitor's usual practice consisting of 1 or more non-standardised visits.</p>
Outcomes	<p>Primary outcome:</p> <p>(1) Duration of exclusive breastfeeding during 6 months of follow-up.</p> <p>Secondary outcome:</p> <p>(2) Mother's satisfaction with the breastfeeding period.</p>

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	The randomisation was computerised.
Allocation concealment (selection bias)	Low risk	Cluster randomisation was carried out by staff not involved in the project.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible (the randomisation was computerised and done independently of the investigators, and the identity of the health visitors was blinded to the investigators).
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not clearly described.
Incomplete outcome data (attrition bias) All outcomes	High risk	There were some discrepancies in the numbers reported in the text and tables. There was no loss of clusters reported. Response rate was 84%.
Selective reporting (reporting bias)	Low risk	2 primary outcomes were pre-defined in method.
Other bias	Low risk	Groups appeared similar at baseline and analysis took account of the cluster design effect.

Schedules for home visits in the early postpartum period (Review)

Lieu 2000

Methods	Randomised controlled trial carried out in the Kaiser Foundation hospital linked 5 outpatient clinics in California United States between 1996-1997.
Participants	<p>1163 mother-newborn pairs.</p> <p>Inclusion criteria:</p> <p>(1) Hospital length of stay was expected to be 48 hours or less based on the hospital's clinical protocol for selecting mothers and newborns at low medical and social risk.</p> <p>Exclusion criteria:</p> <p>(1) If mother-newborn pairs planned to receive follow-up at non-study clinics.</p> <p>(2) Medical reasons if the infant weighed < 2500 or > 4600 g at birth, or had stayed in the intensive care nursery.</p> <p>(3) If the mother or infant had a medical problem that warranted follow-up by a paediatrician or nurse practitioner.</p> <p>(4) Mothers and newborns whose anticipated length of stay was > 48 hours, usually due to caesarean delivery.</p> <p>(5) Potential participants for social reasons if the mother was 14 years old or younger; was 15 to 17 years old without a parent or guardian available for informed consent; had a positive toxicology screen for drugs of abuse after admission to labour and delivery; or if a social worker had requested, before eligibility assessment for the study, that a home visit be done.</p> <p>(6) If the mother spoke a language other than English or Spanish, the newborn was not covered by the health maintenance organisation (HMO) or was being adopted.</p> <p>(7) The family lived outside the area served by the home health nurses, was not reachable by telephone, or was in the process of moving.</p>
Interventions	<p>(1) Home visit group A (n = 580):</p> <p>[Initiation: > 48hours, Duration: < 3 weeks, Intensity: < 1/week]</p> <p>A home visit within 48 hours after hospital discharge by a registered nurse or public health nurse from the HMO's home health department. The clinical protocol and a standardised charting form specified the recommended elements of history, physical examination, and anticipatory guidance for the home visits, which were intended to last 60 to 90 minutes. Women were not offered follow-up at the hospital clinic.</p> <p>(2) Control group B (n = 583):</p> <p>[Initiation: NA, Duration: NA, Intensity: NA]</p> <p>Usual follow-up care, a 20-minute paediatric clinic visit within 48 hours after hospital discharge. Nurse practitioners and paediatricians at 4 clinics conducted the visits, which included history and physical examination of the newborn, anticipatory guidance, and laboratory testing if indicated.</p>
Outcomes	<p>(1) Re-hospitalisation, urgent clinic visit by the mother or newborn within 2 weeks.</p> <p>(2) Maternal urgent clinic visit within 6 weeks.</p> <p>(3) Breastfeeding discontinuation at 2 weeks.</p> <p>(4) Breastfeeding discontinuation at 12 weeks.</p> <p>(5) Maternal depressive symptoms at 2 weeks.</p> <p>(6) Maternal satisfaction at 2 weeks.</p>

Lieu 2000 (Continued)

(7) Costs of home visits and paediatric clinic follow-up visits given on the third or fourth postpartum day to low-risk mothers and newborns with postpartum hospital stays of 48 hours or less.

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Study group assignments determined in advance by a random number generator.
Allocation concealment (selection bias)	Low risk	Using a series of sealed, opaque, sequentially numbered envelopes.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	2 paediatrician investigators assigned severity of illness for each newborn re-hospitalisation after blinded review other data were collected by interviewers and may have been susceptible to bias.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Missing cases are 6 at 2 weeks and 11 at 12 weeks in home visit group, 10 at 2 weeks and 18 at 12 weeks in control group (< 5% attrition).
Selective reporting (reporting bias)	High risk	The primary outcome was not pre-defined in the method.
Other bias	High risk	Many baseline characteristics were unbalanced (race, education, household income, initiated prenatal care in first trimester).

MacArthur 2002

Methods	Cluster-randomised controlled trial carried out in the general practice from the West Midlands health region in United Kingdom.
Participants	<p>37 general practice clusters randomised, 36 clusters recruited, 3580 women eligible, and 2064 women recruited.</p> <p>Eligible criteria:</p> <p>(1) If they had postnatal care in the recruited practices between October 1997, and April 1999.</p> <p>(2) Women were informed about the study between 34 weeks' gestation and the first home visit.</p> <p>(3) Written informed consent was obtained.</p> <p>Exclusion criteria:</p> <p>(1) Women who expected to move out of the general practice in the postnatal period.</p>
Interventions	<p>(1) Home visits group A (clusters = 18 randomised, 17 recruited, n = 1830 eligible, 1087 recruited):</p> <p>[Initiation: > 48 hours, Duration: ≥ 3 weeks, Intensity: < 1/week]</p>

Schedules for home visits in the early postpartum period (Review)

MacArthur 2002 (Continued)

Community-based postnatal care meant that care could be tailored flexibly to individual needs. Care was led by midwives, with contact with general practitioners based on referral, including home visits and the final discharge consultation. To ensure that specific needs could be identified, even if not spontaneously reported by the women or observed by the midwife, a symptom checklist was used at the first visit (immediate symptoms only), at days 10 and 28, and at the discharge consultation and at 10–12 weeks.

"The Edinburgh postnatal depression scale (EPDS) was also used to screen for depression at day 28 and at the discharge consultation. Care plans were made and visits scheduled on the basis of these results so that care could be tailored to individual needs rather than based on a predetermined schedule. we extended care so that the last home visit was routinely at 28 days and women had their discharge consultation at 10–12 weeks."

(2) Home visits group B (Cluster = 19 randomised and recruited, n = 1750 eligible, 977 recruited):

[Initiation: > 48 hours, Duration: ≥ 3 weeks, Intensity: ≥ 1/week]

Usual postnatal care generally consists of about 7 midwife home visits up to 10–14 days (can continue to day 28) after birth, and care from health visitors thereafter. General practitioners did routine home visits and a final 6–8 week check.

Outcomes	Primary outcome: (1)The women's health and wellbeing (summary physical and mental component scores (PCS and MCS)) of the short form 36 (SF36) general health questionnaire at 4 months. (2) Edinburgh postnatal depression scale at 4 months. Secondary outcome: (3) Women' views about care (overall satisfaction and others).	
Notes		
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence genera- tion (selection bias)	Low risk	A member of the Birmingham Clinical Trials Unit who was independent of the trial team, with a customised computer program, Minimisation method.
Allocation concealment (selection bias)	Low risk	A member of the Birmingham Clinical Trials Unit who was independent of the trial team, with a customised computer program, Minimisation method.
Blinding of participants and personnel (perfor- mance bias) All outcomes	High risk	Not feasible, masking of health professionals or participants was not possible.
Blinding of outcome as- sessment (detection bias) All outcomes	Low risk	Questionnaires were returned to the study office in prepaid envelopes.
Incomplete outcome data (attrition bias) All outcomes	High risk	Not ITT analysis, 1 cluster was excluded following randomisation in the home visit group, 743 not recruited of 1830, 286 of 1087 not returned at 4 month in the home visit group, 773 not recruited of 1750, 255 of 977 not returned at 4 month in the control group.
Selective reporting (re- porting bias)	Low risk	2 primary outcomes were pre-defined in method.

MacArthur 2002 (Continued)

Other bias	Low risk	Groups appeared comparable at baseline. Analysis took account of the cluster design effect.
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Morrell 2000

Methods	Randomised controlled trial carried out in United Kingdom (Duration of the study: from October 1996 to November 1997).
Participants	623 postnatal women. Inclusion criteria: (1) Aged 17 years or over. (2) Who delivered a live baby. (3) Who lived in the area served by community midwives at the recruiting hospital. * Information on the trial was given to women from the 32nd week of pregnancy Exclusion criteria: (1) Participant could not give informed consent. (2) Participant could not communicate in English. (3) Participant had a baby in the special care baby unit for more than 48 hours.
Interventions	(1) Intervention group (n = 311) [Initiation: > 48 hours, Duration: $\geq$ 3 week, Intensity: $\geq$ 1/week] Offered postnatal care at home by community midwives (usual care which involved up to 7 visits), also offered 10 visits from a support worker for up to 3 hours per day in the first 28 postnatal days. Community workers helped with housework, caring for the baby, provided emotional support and reinforced midwife advice on breastfeeding. (2) Control group (n = 312) [Initiation: > 48 hours, Duration: not written clearly, Intensity: not written clearly] Offered postnatal care at home by community midwives which involved up to 7 visits. Details were not written clearly.
Outcomes	Primary outcome: (1) The short form36 (SF36) general health perception domain measured at 6 weeks. Secondary outcomes: (2) The other SF36 domains at 6 weeks and 6 months. (3) The EPDS at 6 weeks and 6 months. (4) The Duke functional social support scale at 6 weeks and 6 months. (5) Breastfeeding rates at 6 weeks and 6 months. (6) Satisfaction with care at 6 weeks and 6 months. (7) Use of services at 6 weeks and 6 months.

Morrell 2000 (Continued)

(8) Personal costs at 6 weeks and 6 months.

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random digit tables prepared in advance.
Allocation concealment (selection bias)	Low risk	By sequentially numbered, sealed opaque envelopes.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible, and not clearly described.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Postal questionnaire follow-up.
Incomplete outcome data (attrition bias) All outcomes	High risk	Intervention group (260/311) vs control group (233/312) at 6 month, control group was relatively high attrition proportion.
Selective reporting (reporting bias)	Low risk	The primary outcome measure was pre-defined the SF-36 general health perception domain measured at 6 weeks, secondary outcomes were pre-defined the other of SF-36, EPDS, social support, and breastfeeding rates.
Other bias	High risk	Many baseline were unbalanced (twin, used TENS machine, 1 or more adults aged 18 and over living with mother).

Paul 2012

Methods	Randomised controlled trial with 2 arms at a medical centre in Pennsylvania, USA, between Sept 2006 and August 2009.
Participants	<p>1154 women intending to breastfeed.</p> <p>Inclusion criteria:</p> <ul style="list-style-type: none"> (1) Women able to speak English with telephones. (2) Living in study area. (3) After normal discharge (after vaginal delivery or caesarean) with no serious morbidities. (4) Not referred for social care visit and with healthy newborn (e.g. without jaundice or needing neonatal intensive care unit stay). <p>Exclusion criteria:</p> <ul style="list-style-type: none"> (1) Women or babies with atypical hospital stay (2 nights or longer after vaginal birth or 4 nights after caesarean).
Interventions	(1) Experimental intervention group (n = 576):

Schedules for home visits in the early postpartum period (Review)

Paul 2012 (Continued)

[Initiation: < 48 hours, Duration: < 3 week, Intensity: < 1/week]

Single visit by health visiting nurses within 48 hours of hospital discharge (typically 3-5 days after the birth). The nurse had special training in promoting and supporting breastfeeding.

(2) Control/Comparison intervention group (n = 578):

[No home visit: Initiation: NA, Duration: NA, Intensity: NA]

Usual care. (Clinic based postnatal follow-up arranged by obstetricians.)

(Women in both groups also had an office based visit for the baby approximately 1 week after the nurse visit or 5-14 days after birth arranged by the hospital newborn nursery doctor.)

Outcomes	<p>Primary outcome:</p> <p>Unplanned health service utilisation (inpatient, emergency, urgent or acute care) up to 14 days and up to 2 months following hospital discharge.</p> <p>Secondary outcomes:</p> <p>(1) Breastfeeding duration and exclusivity.</p> <p>(2) Maternal depression (EPDS).</p> <p>(3) Anxiety (STAI).</p> <p>(4) Perceived social support.</p> <p>(5) Parenting self-efficacy at 2 weeks, 2 months and 6 months post delivery.</p> <p>(6) Maternal satisfaction with postnatal care.</p>
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Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated sequence stratified for type of delivery.
Allocation concealment (selection bias)	Unclear risk	Not described. Follow-up was arranged by the hospital but it was not clear how this was done.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Women and care providers would be aware of treatment allocation.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	It was stated that telephone follow-up was by blind study co-ordinators. It was not clear whether this attempted blinding was successful.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	It was stated that an ITT analysis was carried out. Loss to follow-up was reported to be similar between group. Follow-up at 2 weeks was 92%. There was further loss to follow-up at the 2 months interview and at 6 months.
Selective reporting (reporting bias)	Low risk	Primary outcome measure was pre-defined maternal and infant use of unplanned healthcare services in the 14 days after delivery. Secondary outcomes

Paul 2012 (Continued)

measure were healthcare utilisation, breastfeeding duration and exclusively, postpartum depression, anxiety, and satisfaction.

Other bias	Unclear risk	Other bias not apparent. Sex, late preterm and birthweight (< 2500 g) were slightly unbalanced.
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Ransjo-Arvidson 1998

Methods	Randomised controlled trial carried out in the University Teaching Hospital in Lusaka, the capital city of Zambia Duration of the study: 2 year and 10 month period from May 1989 to Feb 1992.
Participants	A total of 408 mothers who had a normal delivery and gave birth to a healthy term infant. Inclusion criteria: (1) The labour was assessed as "normal" by the attending midwife; gestational age 37–42 weeks, single-ton birth, spontaneous vaginal delivery, vertex presentation, Apgar score > 8 points at 1 minute after birth, no visible malformations of the newborn, and mother and newborn assessed by the midwife as being "healthy". Exclusion criteria: none.
Interventions	Home visit Group A (n = 208): [Initiation: > 48 hours, Duration: >= 3 weeks, Intensity: >= 1/week] Mother/infant dyads who were visited by a midwife in their homes at days 3, 7, 28, and 42 after delivery. Home visit Group B (n = 200): Initiation: > 48 hours, Duration: < 3 week, Intensity: < 1/week]. Mother/infant dyads who were only visited at day 42 after delivery.
Outcomes	(1) Maternal morbidity (abdominal pain, body pain, fever, excessive bleeding, Pain from broken suture line, cough and other) (engorged breast, broken episiotomy, offensive lochia, hypertension, fever 37.6+, other). (2) Infant mortality. Infant morbidity (cord infection, eye discharge, cough and/or cold, skin infection, baby warm or cold, other) at 42 days (end of puerperium) iInfected cord, infected eyes, acute respiratory infection, skin infection, fever 37.6+, other).
Notes	The study was carried out in a developing country.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Not described well. On defined days of week 6 women were selected at random for participation. 3 women were allocated to each group.
Allocation concealment (selection bias)	Unclear risk	Not described.

Ransjo-Arvidson 1998 (Continued)

Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Data collection instruments were tested for reliability by an independent research midwife, but the blinding is not clear.
Incomplete outcome data (attrition bias) All outcomes	High risk	172 (86%) of the mothers and infants in Group A, 168 (84%) in Group B attended the postnatal clinic after 42 days.
Selective reporting (reporting bias)	High risk	Primary outcome was not pre-defined in the method.
Other bias	High risk	Much of the analysis related to the intervention group only and there may have been risk of response bias as midwives asked women about their health as part of the intervention; women in the intervention group were asked repeatedly to identify health problems. Publication of findings was more than six years after completion of the trial.

Steel 2003

Methods	Randomised controlled trial carried out in 2 tertiary centres in southeastern Ontario, Canada. Duration of the study: during the study recruited period January 27 1997 to January 31 1999.
Participants	733 participants with primiparas delivering a singleton infant and were discharged within 2 days of the birth of their infants Inclusion criteria: 1) Delivered a singleton infant vaginally. 2) Discharged within 2 days of the birth of their infants. 3) Resided in the areas served by the local Community Care Access Centre* (CCAC). 4) Capability which understand English well enough to give informed consent. Exclusion criteria: none.
Interventions	Home visit Group A (n = 380): [Initiation: > 48 hours, Duration: < 3 weeks, Intensity: >= 1/week] Consisted of 2 home visits by a Public Health Nurse (PHN). Mothers allocated to this group were telephoned on the first working day following discharge, and arrangements were made for the first PHN visit as soon as possible. The second visit was scheduled to take place within 10 days of discharge, although in some cases it was delayed by a few days. The visits were structured to include a thorough infant and postpartum assessment. Referrals to other support services, primary medical care or community support services were made if needs for these services were identified by either the mother or PHN. Telephone screen Group B (n = 353): [Initiation: > 48hours, Duration: < 3 weeks, Intensity: < 1/week] Consisted of a telephone screening call to the new mother on the first working day following her discharge from hospital. The content of the call was structured to elicit the mother's concerns in the areas

Schedules for home visits in the early postpartum period (Review)

Steel 2003 (Continued)

of infant feeding, her baby's general health and her emotional status. A home visit was made if either the mother or PHN identified a need. Referrals to other support services provided by the Health Unit, primary medical care or community support services were made if a need was identified. Otherwise no further contact was initiated by the PHN, although the mother was provided with the Health Unit telephone number and encouraged to call if she wished further support.

Outcomes	<p>Primary (main) outcome: breastfeeding rates (and duration) at 6 months</p> <p>(Mothers who were not breastfeeding at discharge were excluded from the analysis of breastfeeding outcomes)</p> <p>Secondary outcomes:</p> <p>(1) Maternal confidence (Maternal Confidence Scale of Carty and Bradley) at 2 weeks.</p> <p>(2) Infants morbidities within 4 weeks (at 2 weeks and 4 weeks).</p> <p>(Concerns about weight, feeding difficulties, dehydration, jaundice, breathing problems, cold, congenital problems, concerns with cord, gastrointestinal/colic, infection, injury, rash, other problems).</p> <p>(3) Costs of the 2 models.</p>
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Notes	The 2 sites differed slightly in the provision of service.
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Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocations determined by random numbers.
Allocation concealment (selection bias)	Low risk	A sequential set of sealed envelopes, prepared in advance by the research associate.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not feasible. The study was carried out in 2 sites and routine care was very different in the 2 sites and protocol deviations reflected normal practice in each of the sites.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Research assistants who were reported to be blinded to the allocation of the mothers.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Reported using an ITT approach, but not analysed as ITT. 733 women were randomised in 2 sites and in both sites loss to follow-up at 2 and 4 weeks was less than or approximately 5%. Only those women who were breastfeeding were followed up at 6 months (here we have used the 4 week denominators for breastfeeding outcomes at 6 months).
Selective reporting (reporting bias)	Low risk	The main outcome was the rate of breastfeeding at 6 months, but other outcomes not described in method.
Other bias	High risk	The 2 sites differed slightly in the provision of service.

EPDS: Edinburgh Postnatal Depression Scale

ITT: intention to treat

MCS: mental health score

PCS: physical health score

NA: not applicable

RhoGAM: Rh (D) immunoglobulin

Schedules for home visits in the early postpartum period (Review)

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SF-36: short 36

STAI: State-Trait Anxiety Inventory

vs: versus

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Boulvain 2004	The study recruited mothers before birth and focused on early hospital discharge.
Carty 1990	The study recruited mothers before birth and focused on early hospital discharge.
Gunn 1998	The study had no intervention of home visits.
Izzo 2005	The study included specific high-risk group (low-income, young and unmarried at the time of the birth of their first child) and focused on visits by a child health nurse rather than on early postnatal care.
Korfmacher 1999	The study included an intervention during the antenatal period.
Lumley 2006	The study examined a complex intervention which included components offered during the antenatal period.
Olds 2002	The study included an intervention during the antenatal period.
Quinlivan 2003	The study only included a special group (teenage mothers).
Simons 2001	The study had no intervention of home visits.
Stanwick 1982	There were major protocol deviations in this study and results were not reported according to randomisation group.

Characteristics of studies awaiting assessment *[ordered by study ID]*

[Furnieles-Paterna 2011](#)

Methods	Randomised trial.
Participants	200 women giving birth in study hospitals in Valencia, Spain.
Interventions	First postpartum visit at home compared with a health centre visit.
Outcomes	Breastfeeding, contraception, use of healthcare resources.
Notes	The original report was in Spanish and we were unable to make a full assessment of risk of bias and results. We are awaiting translation.

[Salazar 2011](#)

Methods	Randomised trial.
Participants	430 women following uncomplicated pregnancies giving birth at the study hospital in Spain.

Salazar 2011 (Continued)

Interventions	A single postpartum home visit was compared with no home visit.
Outcomes	Maternal anxiety and depression at 7 and 14 days.
Notes	The original report was in Spanish and we were unable to make a full assessment of risk of bias and results. We are awaiting translation.

DATA AND ANALYSES

Comparison 1. Schedules involving more vs fewer postpartum visits

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Maternal mortality within 42 days post birth	1	951	Risk Ratio (M-H, Random, 95% CI)	2.46 [0.10, 60.14]
1.1 Home visits vs no home visits	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.3 More vs fewer visits (both groups had more than 4 visits)	1	951	Risk Ratio (M-H, Random, 95% CI)	2.46 [0.10, 60.14]
2 Neonatal mortality	3	1281	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.26, 3.69]
2.1 Home visits vs no home visits	2	873	Risk Ratio (M-H, Random, 95% CI)	3.06 [0.37, 25.39]
2.2 4 or more visits vs less than 4	1	408	Risk Ratio (M-H, Random, 95% CI)	0.48 [0.09, 2.60]
2.3 More vs less visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Severe maternal morbidity	3	1228	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.81, 1.15]
3.1 Home visits vs no home visits	2	876	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.80, 1.17]
3.2 4 or more visits vs less than 4	1	352	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.52, 1.54]
3.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Secondary postpartum haemorrhage	2	873	Risk Ratio (M-H, Random, 95% CI)	0.78 [0.49, 1.26]
4.1 Home visits vs no home visits	2	873	Risk Ratio (M-H, Random, 95% CI)	0.78 [0.49, 1.26]
4.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5 Abdominal pain up to 42 days postpartum	2	869	Risk Ratio (M-H, Random, 95% CI)	1.06 [0.83, 1.34]
5.1 Home visits vs no home visits	2	869	Risk Ratio (M-H, Random, 95% CI)	1.06 [0.83, 1.34]
5.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6 Back pain up to 42 days postpartum	2	871	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.83, 1.11]
6.1 Home visits vs no home visits	2	871	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.83, 1.11]
6.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Puerperal genital infection	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.1 Home visits vs no home visits	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Thromboembolic disease up to 42 days postpartum	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.1 Home visits vs no home visits	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9 Urinary tract complications up to 42 days postpartum	2	876	Risk Ratio (M-H, Random, 95% CI)	0.83 [0.63, 1.10]
9.1 Home visits vs no home visits	2	876	Risk Ratio (M-H, Random, 95% CI)	0.83 [0.63, 1.10]
9.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10 Maternal fever up to 42 days postpartum	2	876	Risk Ratio (M-H, Random, 95% CI)	1.30 [0.93, 1.82]
10.1 Home visits vs no home visits	2	876	Risk Ratio (M-H, Random, 95% CI)	1.30 [0.93, 1.82]
10.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
10.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11 Dyspareunia	2	869	Risk Ratio (M-H, Random, 95% CI)	1.18 [0.90, 1.55]
11.1 Home visits vs no home visits	2	869	Risk Ratio (M-H, Random, 95% CI)	1.18 [0.90, 1.55]
11.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12 Maternal perception of general health at 6 weeks (mean SF36)	1	539	Mean Difference (IV, Random, 95% CI)	-1.60 [-4.72, 1.52]
12.1 More vs fewer visits (both groups had 4+ visits)	1	539	Mean Difference (IV, Random, 95% CI)	-1.60 [-4.72, 1.52]
13 Postnatal depression (last assessment up to 42 days postpartum)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.1 Home visits vs no home visits	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Mean postnatal depression score (last assessment up to 42 days postpartum)	2	783	Mean Difference (IV, Random, 95% CI)	1.05 [0.27, 1.82]
14.1 4 or more visits vs less than 4	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
14.2 More vs fewer visits (both groups had 4+ visits)	2	783	Mean Difference (IV, Random, 95% CI)	1.05 [0.27, 1.82]
15 Maternal anxiety (last assessment up to 42 days postpartum)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.1 Home visits vs no home visits	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16 Mean maternal anxiety score (last assessment up to 42 days postpartum)	1	241	Mean Difference (IV, Random, 95% CI)	3.80 [-0.44, 8.04]
16.1 More visits vs fewer than 4 (both groups had more than four visits)	1	241	Mean Difference (IV, Random, 95% CI)	3.80 [-0.44, 8.04]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
17 Maternal satisfaction with postnatal care	2	862	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.90, 1.02]
17.1 Home visits vs no home visits	2	862	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.90, 1.02]
17.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18 Mean satisfaction score with postnatal care	1	280	Mean Difference (IV, Random, 95% CI)	14.70 [8.32, 21.08]
18.1 More visits vs fewer (both groups had more than 4 visits)	1	280	Mean Difference (IV, Random, 95% CI)	14.70 [8.32, 21.08]
19 Serious neonatal morbidity up to 6 months	4	1370	Risk Ratio (M-H, Random, 95% CI)	0.65 [0.45, 0.95]
19.1 Home visits vs no home visits	2	748	Risk Ratio (M-H, Random, 95% CI)	0.69 [0.38, 1.24]
19.2 4 or more visits vs less than 4	1	352	Risk Ratio (M-H, Random, 95% CI)	0.81 [0.57, 1.17]
19.3 More vs fewer visits (both groups had more than 4 visits)	1	270	Risk Ratio (M-H, Random, 95% CI)	0.35 [0.17, 0.73]
20 Exclusive breastfeeding (last assessment up to 6 weeks)	3	960	Risk Ratio (M-H, Random, 95% CI)	1.17 [1.01, 1.36]
20.1 Home visits vs no home visits	1	60	Risk Ratio (M-H, Random, 95% CI)	1.8 [1.00, 3.23]
20.2 4 or more visits vs less than 4	1	352	Risk Ratio (M-H, Random, 95% CI)	1.13 [1.05, 1.22]
20.3 More vs fewer visits (both groups had more than 4 visits)	1	548	Risk Ratio (M-H, Random, 95% CI)	1.16 [0.89, 1.51]
21 Exclusive breastfeeding (last assessment up to 6 months)	4	1309	Risk Ratio (M-H, Random, 95% CI)	1.38 [1.10, 1.73]
21.1 Home visits vs no home visits	3	816	Risk Ratio (M-H, Random, 95% CI)	1.50 [1.15, 1.94]
21.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
21.3 More vs fewer visits (both groups had more than 4 visits)	1	493	Risk Ratio (M-H, Random, 95% CI)	1.06 [0.66, 1.69]
22 Any breastfeeding (up to 6 weeks)	2	813	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.57, 1.38]
22.1 Home visits vs no home visits	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
22.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
22.3 More vs fewer visits (both groups had more than 4 visits)	2	813	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.57, 1.38]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
23 Any breastfeeding (last assessment up to 6 months)	3	1315	Risk Ratio (M-H, Random, 95% CI)	1.01 [0.99, 1.03]
23.1 Home visits vs no home visits	2	822	Risk Ratio (M-H, Random, 95% CI)	1.01 [0.99, 1.04]
23.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
23.3 More vs fewer visits (both groups had more than 4 visits)	1	493	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.68, 1.38]
24 Mean duration of any breastfeeding (months)	1	54	Mean Difference (IV, Random, 95% CI)	3.0 [2.33, 3.67]
24.1 Home visits vs no home visits	1	54	Mean Difference (IV, Random, 95% CI)	3.0 [2.33, 3.67]
25 Infant respiratory tract infection within 42 days	3	1217	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.84, 1.17]
25.1 Home visits vs no home visits	2	865	Risk Ratio (M-H, Random, 95% CI)	1.01 [0.89, 1.15]
25.2 4 or more visits vs less than 4	1	352	Risk Ratio (M-H, Random, 95% CI)	0.39 [0.12, 1.22]
25.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
26 Infant jaundice	2	861	Risk Ratio (M-H, Random, 95% CI)	1.04 [0.85, 1.26]
26.1 Home visits vs no home visits	2	861	Risk Ratio (M-H, Random, 95% CI)	1.04 [0.85, 1.26]
26.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
26.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
27 Infant diarrhoea up to 42 days postpartum	2	861	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.74, 0.98]
27.1 Home visits vs no home visits	2	861	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.74, 0.98]
27.2 4 or more visits vs less than 4	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
27.3 More vs fewer visits (both groups had more than 4 visits)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
28 Infant immunisation took place	2	868	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.96, 1.01]
29 Non prespecified - Contraceptive use	2	856	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.82, 1.16]

Analysis 1.1. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 1 Maternal mortality within 42 days post birth.

Analysis 1.2. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 2 Neonatal mortality.

Analysis 1.3. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 3 Severe maternal morbidity.

Analysis 1.4. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 4 Secondary postpartum haemorrhage.

Analysis 1.5. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 5 Abdominal pain up to 42 days postpartum.

Analysis 1.6. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 6 Back pain up to 42 days postpartum.

Analysis 1.9. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 9 Urinary tract complications up to 42 days postpartum.

Analysis 1.10. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 10 Maternal fever up to 42 days postpartum.

Analysis 1.11. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 11 Dyspareunia.

Analysis 1.12. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 12 Maternal perception of general health at 6 weeks (mean SF36).

Analysis 1.14. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 14 Mean postnatal depression score (last assessment up to 42 days postpartum).

Analysis 1.16. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 16 Mean maternal anxiety score (last assessment up to 42 days postpartum).

Analysis 1.17. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 17 Maternal satisfaction with postnatal care.

Analysis 1.18. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 18 Mean satisfaction score with postnatal care.

Analysis 1.19. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 19 Serious neonatal morbidity up to 6 months.

Analysis 1.20. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 20 Exclusive breastfeeding (last assessment up to 6 weeks).

Analysis 1.21. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 21 Exclusive breastfeeding (last assessment up to 6 months).

Analysis 1.22. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 22 Any breastfeeding (up to 6 weeks).

Analysis 1.23. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 23 Any breastfeeding (last assessment up to 6 months).

Analysis 1.24. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 24 Mean duration of any breastfeeding (months).

Analysis 1.25. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 25 Infant respiratory tract infection within 42 days.

Analysis 1.26. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 26 Infant jaundice.

Analysis 1.27. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 27 Infant diarrhoea up to 42 days postpartum.

Analysis 1.28. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 28 Infant immunisation took place.

Analysis 1.29. Comparison 1 Schedules involving more vs fewer postpartum visits, Outcome 29 Non prespecified - Contraceptive use.

Comparison 2. Studies comparing different ways of offering postnatal care at home

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Maternal mortality within 42 days post birth	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Neonatal mortality	1	2064	Risk Ratio (M-H, Fixed, 95% CI)	1.80 [0.16, 19.79]
2.1 Flexible schedule vs routine visits	1	2064	Risk Ratio (M-H, Fixed, 95% CI)	1.80 [0.16, 19.79]
3 Secondary postpartum haemorrhage	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Abdominal pain up to 42 days post-partum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Back pain up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Puerperal genital infection	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7 Thromboembolic disease up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Urinary tract complications up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Postnatal depression (EPDS $\geq$ 13 at 4 months postpartum)	1	1295	Risk Ratio (M-H, Fixed, 95% CI)	0.68 [0.53, 0.86]
9.1 Flexible schedule vs routine visits	1	1295	Risk Ratio (M-H, Fixed, 95% CI)	0.68 [0.53, 0.86]
10 Mean postnatal depression score (last assessment up to 42 days postpartum)	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 Flexible schedule vs routine visits	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Maternal anxiety (last assessment up to 42 days postpartum)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Mean maternal anxiety score (last assessment up to 42 days postpartum)	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
13 Maternal satisfaction with postnatal care	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Mean satisfaction score with postnatal care	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Neonatal morbidity up to 28 days	1	696	Risk Ratio (M-H, Fixed, 95% CI)	0.97 [0.85, 1.12]
15.1 Home visit vs telephone screen	1	696	Risk Ratio (M-H, Fixed, 95% CI)	0.97 [0.85, 1.12]
16 Stopped exclusive breastfeeding (last assessment up to 6 weeks)	1	647	Risk Ratio (M-H, Fixed, 95% CI)	0.81 [0.58, 1.14]
16.1 Breastfeeding promotion vs routine visits	1	647	Risk Ratio (M-H, Fixed, 95% CI)	0.81 [0.58, 1.14]
17 Exclusive breastfeeding (last assessment up to 6 months)	1	656	Risk Ratio (M-H, Fixed, 95% CI)	1.47 [0.81, 2.69]
17.1 Breastfeeding promotion vs routine visits	1	656	Risk Ratio (M-H, Fixed, 95% CI)	1.47 [0.81, 2.69]
18 Any breastfeeding (up to 6 weeks)	1	558	Risk Ratio (M-H, Fixed, 95% CI)	1.03 [0.99, 1.08]
18.1 Home visit vs telephone screen	1	558	Risk Ratio (M-H, Fixed, 95% CI)	1.03 [0.99, 1.08]
19 Any breastfeeding (last assessment up to 6 months)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20 Mean duration of any breastfeeding (days)	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
21 Maternal fever up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22 Perineal pain or dyspareunia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23 Infant respiratory tract infection within 42 days	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
24 Infant jaundice	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25 Infant diarrhoea up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 2.2. Comparison 2 Studies comparing different ways of offering postnatal care at home, Outcome 2 Neonatal mortality.

Analysis 2.9. Comparison 2 Studies comparing different ways of offering postnatal care at home, Outcome 9 Postnatal depression (EPDS ≥ 13 at 4 months postpartum).

Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Heterogeneity: Not applicable Test for overall effect: Z=3.19(P=0)					
	Experimental		0.01 0.1 1 10 100		Controls

Analysis 2.15. Comparison 2 Studies comparing different ways of offering postnatal care at home, Outcome 15 Neonatal morbidity up to 28 days.

Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.15.1 Home visit vs telephone screen					
Steel 2003	178/336	196/360		100%	0.97[0.85,1.12]
Subtotal (95% CI)	336	360		100%	0.97[0.85,1.12]
Total events: 178 (Experimental), 196 (Control) Heterogeneity: Not applicable Test for overall effect: Z=0.39(P=0.7)					
Total (95% CI)	336	360		100%	0.97[0.85,1.12]
Total events: 178 (Experimental), 196 (Control) Heterogeneity: Not applicable Test for overall effect: Z=0.39(P=0.7)					
	Experimental		0.5 0.7 1 1.5 2		Controls

Analysis 2.16. Comparison 2 Studies comparing different ways of offering postnatal care at home, Outcome 16 Stopped exclusive breastfeeding (last assessment up to 6 weeks).

Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.16.1 Breastfeeding promotion vs routine visits					
Kronborg 2007	50/312	66/335		100%	0.81[0.58,1.14]
Subtotal (95% CI)	312	335		100%	0.81[0.58,1.14]
Total events: 50 (Experimental), 66 (Control) Heterogeneity: Not applicable Test for overall effect: Z=1.21(P=0.22)					
Total (95% CI)	312	335		100%	0.81[0.58,1.14]
Total events: 50 (Experimental), 66 (Control) Heterogeneity: Not applicable Test for overall effect: Z=1.21(P=0.22)					
	Experimental		0.01 0.1 1 10 100		Controls

Analysis 2.17. Comparison 2 Studies comparing different ways of offering postnatal care at home, Outcome 17 Exclusive breastfeeding (last assessment up to 6 months).

Analysis 2.18. Comparison 2 Studies comparing different ways of offering postnatal care at home, Outcome 18 Any breastfeeding (up to 6 weeks).

Comparison 3. Postnatal visit at home vs hospital clinic visit

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Maternal mortality within 42 days post birth	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Neonatal mortality	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Severe maternal morbidity	4	3755	Risk Ratio (M-H, Fixed, 95% CI)	1.04 [0.85, 1.26]
4 Secondary postpartum haemorrhage	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5 Abdominal pain up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Back pain up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Puerpural genital infection	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Thromboembolic disease up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Urinary tract complications up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Postnatal depression (last assessment up to 42 days postpartum)	2	2177	Risk Ratio (M-H, Fixed, 95% CI)	1.10 [0.93, 1.30]
11 Mean postnatal depression score (last assessment up to 42 days postpartum)	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Maternal anxiety (last assessment up to 42 days postpartum)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
13 Mean maternal anxiety score (last assessment up to 42 days postpartum)	1	513	Mean Difference (IV, Fixed, 95% CI)	0.30 [-1.08, 1.68]
14 Maternal satisfaction with postnatal care	2	2177	Risk Ratio (M-H, Random, 95% CI)	1.26 [1.09, 1.45]
15 Mean satisfaction score with postnatal care	1	513	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-0.88, 0.68]
16 Exclusive breastfeeding (last assessment up to 6 weeks)	1	513	Risk Ratio (M-H, Fixed, 95% CI)	1.05 [0.93, 1.18]
17 Exclusive breastfeeding (last assessment up to 6 months)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18 Discontinued breastfeeding (up to 6 weeks)	2	2177	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.78, 1.12]
19 Any breastfeeding (last assessment up to 6 months)	1	1000	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [1.00, 1.18]
20 Mean duration of any breastfeeding (days)	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
21 Severe infant morbidity up to 6 weeks	4	3770	Risk Ratio (M-H, Fixed, 95% CI)	1.11 [0.86, 1.43]
22 Maternal fever up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23 Perineal pain or dyspareunia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
24 Infant respiratory tract infection within 42 days	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25 Infant jaundice	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26 Infant diarrhoea up to 42 days postpartum	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 3.3. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 3 Severe maternal morbidity.

Analysis 3.10. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 10 Postnatal depression (last assessment up to 42 days postpartum).

Analysis 3.13. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 13 Mean maternal anxiety score (last assessment up to 42 days postpartum).

Analysis 3.14. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 14 Maternal satisfaction with postnatal care.

Analysis 3.15. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 15 Mean satisfaction score with postnatal care.

Analysis 3.16. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 16 Exclusive breastfeeding (last assessment up to 6 weeks).

Analysis 3.18. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 18 Discontinued breastfeeding (up to 6 weeks).

Analysis 3.19. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 19 Any breastfeeding (last assessment up to 6 months).

Analysis 3.21. Comparison 3 Postnatal visit at home vs hospital clinic visit, Outcome 21 Severe infant morbidity up to 6 weeks.

ADDITIONAL TABLES

Table 1. Description of interventions and control conditions

Name of study	Intervention	Control
STUDIES COMPARING MORE VS LESS HOME VISITS		
Ransjo-Arvidson 1998	208 women randomised. Women were visited at home 4 times, at 3, 7, 28 and 42 days pp by a midwife. Each visit lasted about an hour. Women were asked about their own and their babies' health but there was no formal health education.	200 women received 1 visit by a midwife at about 42 days postpartum.
4 home visits vs 1 home visit		
Bashour 2008a; Bashour 2008b	2 intervention groups: (1) Women (301) received 4 home visits on the first, 3 rd , 7 th day and 4 weeks after delivery. The aim of visits was to provide emotional support, assess maternal and infant health, assess the home, educate re breastfeeding and to discuss family planning. The visits were carried out by midwives. (2) Women (301) received a home visit on the first day only. The aim was to support and educate the woman and assess condition of mother and newborn. The visit was carried out by a midwife.	301 women received normal care in Syria which was early discharge (as early as 2 hours following delivery) and no planned postnatal care.
4 vs 1 vs 0 home visits		
Christie 2011	136 women completed the pretest in the intervention group (referred by 39 health visitors). The intervention group received 6 health visitor visits between 10-14 days and 8 weeks postpartum (approximately weekly visits). Health visitors provided advice and support, carried out assessments and offered health promotion. First visit 10-14 days, 6 visits up to 8 weeks (weekly).	159 women completed the pretest (nominated by 40 health visitors). The control group received 1 health visitor visit at 10-14 days. Health visitors provided advice and support, carried out assessments and offered health promotion. Any further visits were discretionary. All women received usual postnatal care (midwife visits at home).
6 health visitor home visits vs 1		
Aksu 2010	Women in both groups received standard care which included in-hospital breastfeeding education. 33 women. Women were visited once at home 3 days after delivery by a trained supporter who provided advice and support. Visits lasted about 30 minutes.	33 women received standard care which included breastfeeding education before hospital discharge.
Single pp visit vs no visit		
Morrell 2000	All women received routine postnatal care at home from midwives and health visitors. 311 women received additional support from trained community support workers. Women received up to 10 visits lasting up	312 women received routine postnatal care which included home visits from community midwives and health visitors. Women received no additional visits from support workers
10 additional home visits vs 0		

Table 1. Description of interventions and control conditions *(Continued)*

additional home visits	to 3 hours between hospital discharge up to 28 days. Community workers helped with housework, caring for the baby and provided emotional support and reinforced midwife advice re breastfeeding.	Women in both groups received routine pp care with approximately 7 midwife visits and a health visitor visit.
STUDIES COMPARING DIFFERENT WAYS OF OFFERING CARE		
Steel 2003 Up to 2 home visits versus telephone screen by nurse and discretionary home visits	353 women were telephoned on the first working day following discharge and arrangements were made for 2 home visits to take place within 10 days postpartum with the first visit being scheduled as soon as possible. The visits were structured to include infant assessment and public health nurse carrying out the visits could refer for other care if necessary.	380 women were allocated to the telephone screen group. On the first working day following discharge women were phoned by a public health nurse with a structured screening questionnaire and to elicit any concerns about feeding or the mother or infant's health. A home visit was made if the nurse or mother thought one was needed (In 1 of the sites where home visits were routine care before the trial 54% of the women allocated to telephone screen had at least 1 home visit).
Kronborg 2007 1-3 structured pp visits by specially trained health visitors vs 1 or more unstructured health visitor visits.	11 areas; 780 women recruited. The intervention included special health visitor training (18 hrs) focusing on promoting breastfeeding. Health visitors then visited women at home on 1-3 occasions and the visits were structured, focusing on breastfeeding continuation. Women received the first visit soon after hospital discharge and mothers with limited or no breastfeeding experience were offered up to 2 further visits focusing on breastfeeding (mean number of visits 2.5). It was not clear whether health visitors also offered standard care (i.e. covered content of visits as per control group).	11 areas; 815 women. Health visitors received no additional training. Women were offered standard care which was 1 or more unstructured visits by health visitors up to 5 weeks postpartum. Women tended to receive approximately 2 home visits (mean 2.1); the content of visits was not specified.
In this trial the intervention group did receive slightly more visits (mean 2.5 vs 2.1) but the main thrust of this intervention seemed to be the special HV training and the focus on promotion of breastfeeding through more structured visits.		
MacArthur 2002 Flexible visits vs routine care (scheduled visits)	18 intervention practices (1 dropped out before recruitment of women) 1087 women recruited. Midwives were trained to provide a more flexible model of postnatal care responsive to women's needs. There was no fixed schedule or number of postnatal visits. The number and content of visits at home was determined by midwives in consultation with women. After the initial visit a symptoms checklist was used and visits could take	19 clusters, 977 women recruited. Routine care which "generally consists of 7 midwife home visits to 10-14 days (can continue to day 28)" with care from health visitors thereafter. Mean number of midwife visits was approximately 4, it was not clear how many health visitor visits women received.

Table 1. Description of interventions and control conditions *(Continued)*

place up to 10-12 weeks. (Midwife records suggest the mean number of visits was 6). It was not clear if women also received health visitor care.

STUDIES COM- PARING HOME VS HOSPITAL PN CARE		
Lieu 2000	580 women were allocated to receive a single home visit within 48 hours of hospital discharge by a nurse. Visits were scheduled to last 60-90 minutes with some educational component. (This single visit was INSTEAD of rather than in addition to usual care; women received home visit rather than attending clinic visit in the hospital).	583 women attended a 20 minute paediatric clinic visit within 48 hours of the birth. This visits may also have included some guidance and education.
Single home visit vs single hospital visit		
Escobar 2001	508 women were allocated to receive a single home visit within 48 hours of hospital discharge by a nurse. Visits were scheduled to last 60-90 minutes with some educational component. (This single visit was INSTEAD of rather than in addition to usual care; women received home visit rather than attending clinic visit in the hospital. 96% received a home visit as allocated although 75 women also attended for a hospital visit).	506 women allocated to attend a 1-2 hour group based visit where women (in groups of 5-8). Women were offered newborn checks and guidance as part of group sessions. Multiparous women could opt for a 15-minute paediatric clinic visit within 48 hours of the birth. This visit may also have included some guidance and education (157 had the group visit only, 264 the individual visit only, 64 both and 4 both home and hospital).
Single home visit vs single hospital (group or individual visit)		
Gagnon 2002	All women received a nurse telephone contact at 48 hours post birth. 283 women were allocated to receive follow-up at home at 3-4 days postpartum. Home visits were by a community nurse. Visits were planned to last 1 hour and included newborn examination and guidance on infant care and breastfeeding. Women did not attend for hospital clinic visit at 3-4 days (usual care).	All women received a nurse telephone contact at 48 hours post birth. 282 women were randomised to receive usual care which included a hospital clinic visit at 3-4 days for newborn check and guidance on infant care and breastfeeding. Visits lasted up to 45 minutes (no home visit).
Single home visit vs single hospital visit		
Paul 2012	576 women. Single visit by health visiting nurses within 48 hours of hospital discharge (typically 3-5 days after the birth). The nurse had special training in promoting and supporting breastfeeding.	578 women. Usual care. Clinic based postnatal follow-up arranged by obstetricians. Women in both groups also had an office based visit for the baby approximately 1 week after the nurse visit or 5-14 days after birth arranged by the hospital newborn nursery doctor).
Single home visits vs single hospital visit		

vs: versus

FEEDBACK

Feedback from MacArthur and Bick, 12 March 2015

Summary

The findings of our study ([MacArthur 2002](#)) have been included in this review in the opposite direction to the results reported in our Lancet paper. The review states that the intervention group had worse (higher) EPDS scores than the control group, which is opposite to the actual findings.

Schedules for home visits in the early postpartum period (Review)

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The review concludes "Significantly more women receiving extended postnatal care had high EPDS scores (RR 1.47, 95% CI 1.13 to 1.92) (Analysis 2.9)". This is completely wrong as it was significantly FEWER, not more.

Similarly, the Discussion states "For the three studies comparing different ways of offering care involving postnatal home visits it was not clear that interventions had a consistent or positive effect, and many of our prespecified outcomes were not reported. There did not appear to be strong evidence from two studies that experimental interventions increased the number of women breastfeeding their babies. In one study, women in the experimental groups receiving an extended programme of home visits by health visitors appeared to have higher EPDS scores. The reason for this finding is not clear". Again this is incorrect.

This serious inaccuracy should be rectified, and the conclusions of the overall review amended.

Comment submitted by Christine MacArthur and Debra Bick, March 2015

Reply

Thanks to Professors MacArthur and Bick for this feedback. The feedback is correct - in a previous version of this review data on postnatal depression scores for the [MacArthur 2002](#) trial was entered the wrong way around and appeared to favour the control group. The review team apologises for this serious data entry mistake and the data have now been corrected. The text has also been amended in the abstract, the plain language summary, the main results section and the discussion, so that it is now clear that results from this trial show a reduction in depression scores in the group receiving an extended programme of home visits by health visitors.

Contributors

Reply from Naohiro Yonemo, Therese Dowswell, Shuko Nagai, and Rintaro Mori, April 2017

WHAT'S NEW

Date	Event	Description
6 April 2017	New citation required but conclusions have not changed	The review has been amended to correct an error in the data entered for the MacArthur 2002 trial.
6 April 2017	Feedback has been incorporated	The authors have added a response to Feedback 1
6 April 2017	Amended	In a previous version of this review data on postnatal depression scores for the MacArthur 2002 trial was entered the wrong way around and appeared to favour the control group. This has now been corrected (see Analysis 2.9). The text has also been amended in the abstract, the plain language summary, the main results section and the discussion, so that it is now clear that results from this trial show a reduction in depression scores in the group receiving an extended programme of home visits by health visitors.

HISTORY

Protocol first published: Issue 9, 2011

Review first published: Issue 7, 2013

Date	Event	Description
9 April 2015	Feedback has been incorporated	Feedback 1 from Christine MacArthur and Deborah Bick.

CONTRIBUTIONS OF AUTHORS

Naohiro Yonemoto, Shuko Nagai and Rintaro Mori contributed to conceptualisation of this review and development of the protocol. Naohiro Yonemoto and Shuko Nagai screened and reviewed the identified studies, and contributed to data entry. Naohiro Yonemoto

contributed to the analyses. Therese Dowswell also reviewed the identified studies and contributed to analyses and preparation of the manuscript. Rintaro Mori also contributed to writing and advised on the analyses. All the review authors approved the final version of the review.

DECLARATIONS OF INTEREST

None known.

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DIFFERENCES BETWEEN PROTOCOL AND REVIEW

In the *objectives* and *types of interventions* sections, we changed the description of interventions. The interventions and control conditions varied considerably across studies with trials focusing on three broad types of comparisons: schedules involving more versus fewer postnatal home visits, schedules involving different models of care, and home versus hospital clinic postnatal check-ups.

INDEX TERMS

Medical Subject Headings (MeSH)

*House Calls [statistics & numerical data]; Infant Mortality; Maternal Mortality; Perinatal Mortality; Postnatal Care [*organization & administration] [statistics & numerical data]; Postpartum Period; Randomized Controlled Trials as Topic

MeSH check words

Female; Humans; Infant; Infant, Newborn